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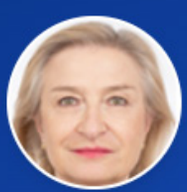

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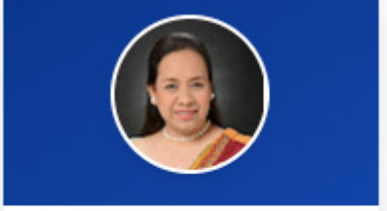

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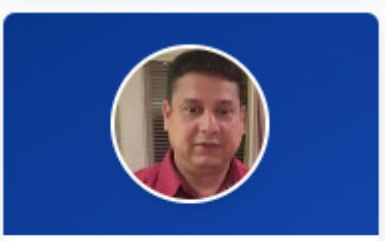

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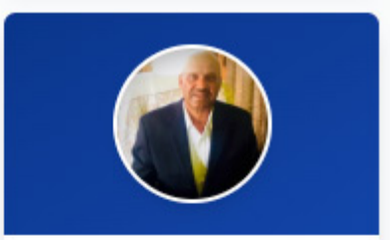

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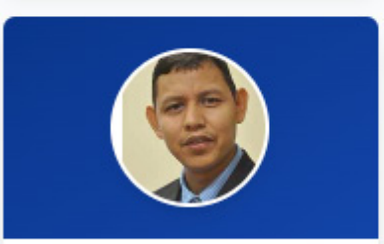

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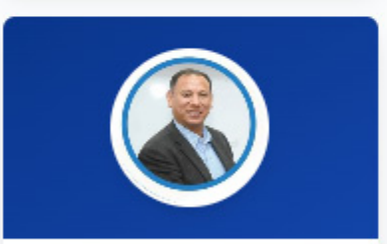

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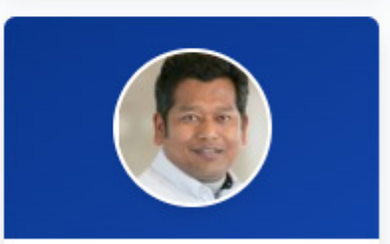

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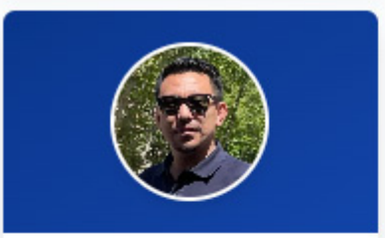

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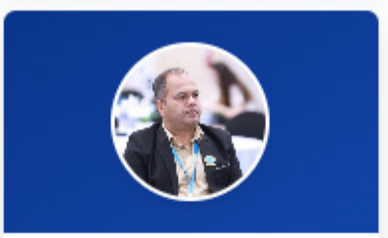

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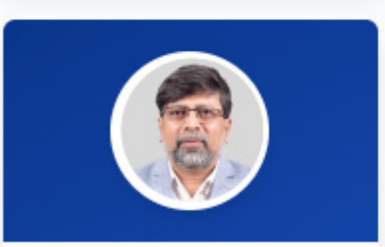

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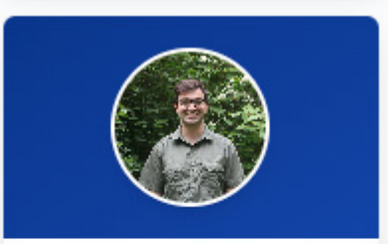

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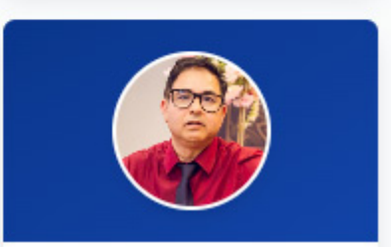

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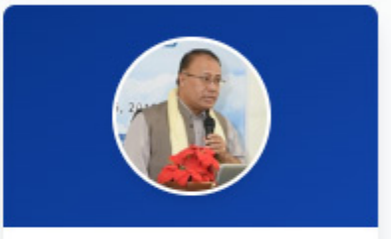

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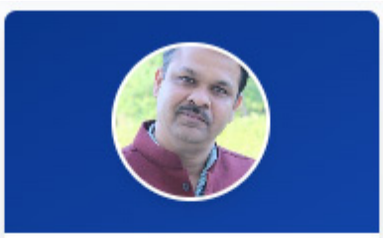

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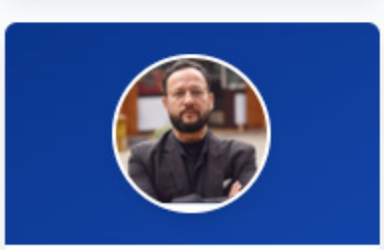

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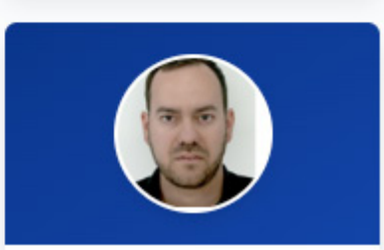

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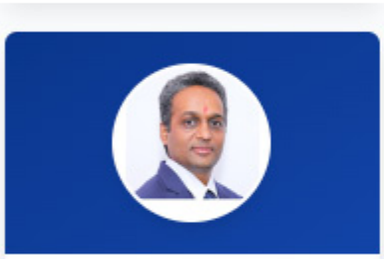

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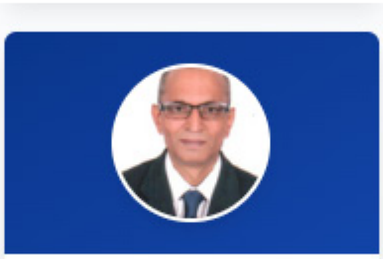

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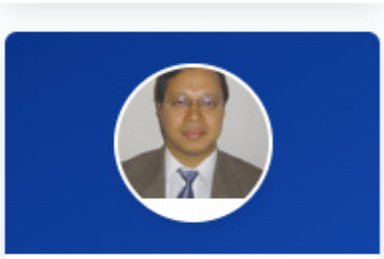

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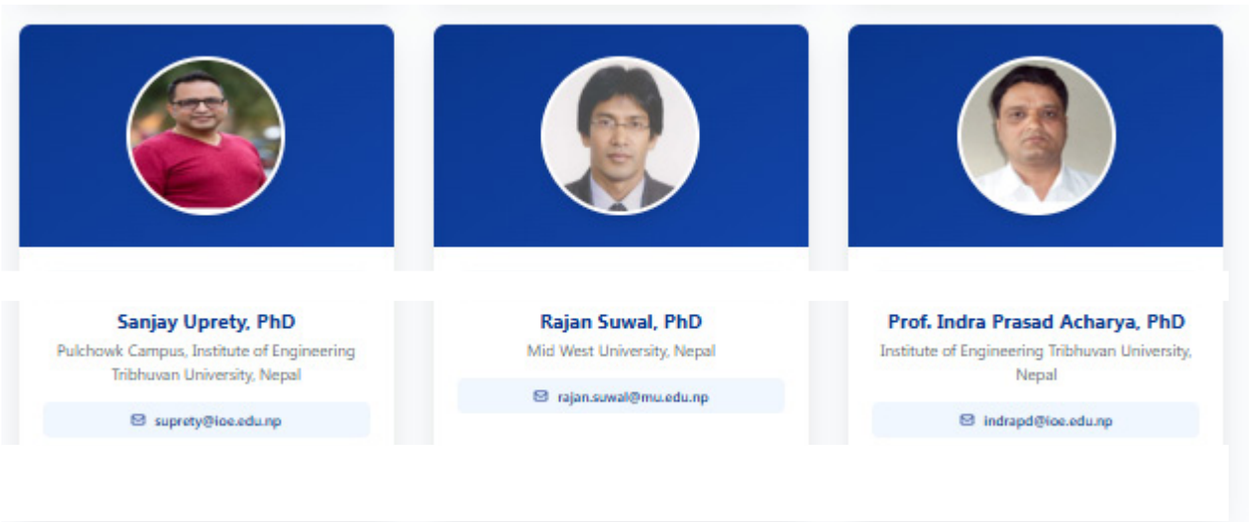

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Message from the Vice Chancellor

It is my great pleasure to warmly welcome you to the Third International Conference on Heritage, Innovation and Transformation, jointly addressing critical issues of Society, Culture, History, Science, Engineering, Technology, Agriculture, Forestry, Natural Resource Management, Health, Population, Migration, Development, Policy, Planning, Governance, Education, Environment, Ecology, Entrepreneurship, Business, and the Economy, hosted by Far Western University.

In today's rapidly changing global landscape—marked by social transformation, technological advancement, environmental challenges, and shifting development paradigms—universities play a vital role as spaces for knowledge creation, critical inquiry, innovation, and interdisciplinary dialogue. This conference is envisioned as a vibrant academic platform that brings together leading researchers, academics, professionals, and practitioners from diverse disciplines to share research findings, lived experiences, and innovative ideas that respond to contemporary local, national, and global challenges.

The theme of heritage, innovation, and transformation underscores the importance of valuing indigenous knowledge, historical experience, and cultural identity while simultaneously embracing scientific progress, technological solutions, and forward-looking development strategies. By fostering interdisciplinary engagement across the humanities, social sciences, natural sciences, engineering, health, and policy domains, this conference seeks to generate holistic insights and actionable knowledge for sustainable and inclusive development.

Far Western University, as one of Nepal's youngest public universities, is firmly committed to promoting inclusive, context-responsive, and globally connected scholarship, particularly from geographically and socially underrepresented regions. By organizing this international multi-disciplinary conference in hybrid mode (in-person and online), we aim to ensure broad participation, equitable access, intellectual exchange, and meaningful international collaboration.

I sincerely encourage researchers, academics, policymakers, and emerging scholars to actively participate, present their work, and engage in thoughtful and constructive discussions. I am confident that this conference will contribute significantly to advancing research culture, strengthening academic and professional networks, and generating policy-relevant and socially impactful insights.

I wish the conference every success and look forward to its valuable academic and societal outcomes.

With Warm Regards,
Prof. Hem Raj Pant, PhD
Vice Chancellor
Far Western University, Mahendranagar, Kanchanpur, Nepal

Message from the Registrar

It is my privilege to extend a warm welcome to all distinguished scholars, researchers, and professionals participating in the Second International Conference on Heritage, Innovation, and Transformation, scheduled to take place from 7–9 February, 2025 in Far Western University, Mahendranagar, Kanchanpur, Nepal in collaboration with Indian Institute of Technology, Roorkee, India. This conference represents a significant academic gathering, providing a platform for interdisciplinary exchange, intellectual engagement, and the dissemination of research that addresses contemporary challenges and opportunities.

As an institution committed to fostering research, innovation, and knowledge dissemination, Far Western University is honored to host this esteemed conference. We deeply appreciate the contributions of all participants, keynote speakers, and organizers whose dedication and expertise enrich this academic endeavor.

I am confident that this conference will serve as a catalyst for new perspectives, meaningful collaborations, and impactful research contributions. I encourage you all to actively engage in discussions, share your expertise, and make the most of this academic exchange.

With Warm Regards,

Prof. Binod Lekhak, PhD

Registrar

Far Western University, Mahendranagar, Kanchanpur, Nepal

Message from the Organizing Committee

The Organizing Committee is pleased to warmly welcome all distinguished scholars, researchers, practitioners, policymakers, and participants to the Third International Conference on Heritage, Innovation and Transformation, encompassing diverse thematic areas including Society, Culture, History, Science, Engineering, Technology, Agriculture, Forestry, Natural Resource Management, Health, Population, Migration, Development, Policy, Planning, Governance, Education, Environment, Ecology, Entrepreneurship, Business, and the Economy, hosted by Far Western University.

This international multi-disciplinary conference has been conceived as an inclusive academic platform to promote interdisciplinary dialogue, research dissemination, and knowledge exchange among national and international scholars. The central theme highlights the dynamic interplay between heritage and innovation, emphasizing how societies can draw upon historical knowledge, cultural identity, and indigenous practices while embracing scientific advancement, technological transformation, and sustainable development pathways.

The conference brings together experts from a wide range of disciplines to address pressing global and regional challenges, including social transformation, environmental sustainability, public health, migration, governance, economic development, and technological innovation. By fostering cross-sectoral and cross-disciplinary engagement, the conference aims to generate meaningful insights that are academically rigorous, policy-relevant, and socially impactful.

To ensure broad participation and global engagement, the conference is being conducted in hybrid mode (in-person and online). This format allows scholars from different geographic locations to actively contribute to plenary sessions, technical sessions, and panel discussions, enriching the quality of academic exchange.

The Organizing Committee sincerely acknowledges the guidance and support of the university leadership, the dedication of reviewers and session chairs, and the invaluable contribution of faculty members, volunteers, and administrative staff. We are also grateful to all authors and participants for their enthusiastic response and scholarly contributions.

We look forward to your active participation and hope that this conference provides a stimulating, collaborative, and rewarding academic experience for all.

Organizing Committee

Third International Conference on Heritage, Innovation and Transformation, 2026

Far Western University, Mahendranagar, Kanchanpur, Nepal

ORGANIZER'S PROFILE

Far Western University (FWU) was established in 2010 AD through an Act of Parliament as a government funded university. The central office of the university is located at Bheemdatta Municipality of Kanchanpur district. The strategic location of the University Central Campus and its constituent campuses in the Sudurpaschim Province is conducive to create an academic environment in the region. Since its inception, the university has been fulfilling its responsibility of making higher education accessible to the people of this region through its 16 constituent campuses in the nine districts of the Sudurpaschim Province and 31 affiliated campuses and 5 community campuses. FWU has been delivering diverse educational programs at undergraduate, graduate and research levels, through nine faculties: Humanities and Social Sciences, Education, Management, Science and Technology, Engineering, Agriculture, Law, Health Sciences and Natural Resource Management.

A prime academic institution of the country aiming at academic excellence, research-based education, community engagement and partnership. Far Western University has a total of 749 employees (522 faculty members and 227 non-teaching staff) excluding the part time employees serving in the university. At present, 19,563 students are pursuing their study at the University from different cultural and socio-economic background. The University has signed MoU with national and international academic institutions, universities, local and provincial government organizations, and international research and development organizations.

With the transforming world scenario and paradigm shift in the global education system, Far Western University is planning to improve pedagogy through capacity-building projects and collaboration with renowned academic institutions across the world. It aims at promoting the advancement of learning and dissemination of knowledge for the overall welfare of the nation. Therefore, the university seeks to facilitate the integration of several academic innovations by introducing new curricula, strengthening academic programs, and launching research (M. Phil. and Ph.D.) degrees. To make the university a destination of knowledge, research, and innovation and to achieve its goals by creating academic excellence and fulfilling to some extent the need of the province, nation and the global community as well, a comprehensive strategic document is necessary that supports the mission and vision of the university.

PROGRAM AND AGENDA

1. **Organizers**
    - Far Western University, Mahendranagar, Kanchanpur, Nepal
    - Nepal Materials Science Society, Kathmandu, Nepal
2. **Name of Program**
    - Third International Conference on Heritage, Innovation and Transformation
3. **Conference date and duration**
    - February, 17-19, 2026 (3 days)
4. **Conference Venue**
    - Central Office, Far Western University, Nepal
5. **Participants**
    - Professors, Researchers, Technologists, Academicians, Public representative, Policy makers, Students, Media
6. **Participating countries**
    - United Kingdom, Sri Lanka, Malaysia, Philippines, Germany, Bangladesh, South Korea, Nepal, India, China, Bhutan, Poland, New Zealand, Estonia
7. **Main Themes**
    - Society, culture, and history
    - Science, technology, and engineering
    - Agriculture, forestry, natural resource management
    - Health, population, migration, and development
    - Policy, planning, and governance
    - Education and pedagogy
    - Environment, ecology, and climate change
    - Entrepreneurship, business, and economy
8. **Mode of Presentation**
    - Physical
    - Virtual
9. **Number of Participants**
    - 300
10. **Opening Ceremony:** २०८२ फाल्गुन ५ गते मंगलबार **February 17, 2026**

Chief Guest

Najir Miya

Hon'ble Governor

Sudurpaschim Province

Table of Contents

Day 1: Tuesday, 17 February, 2026			
Time	**Opening Ceremony, Ramaroshan Hall & Online**		
8:00 – 9:00	**Registration and Tea**	**Central Office, Mahendranagar, Kanchanpur, Nepal**	
9:00 – 10:00	**Inaugural Program**	**Chair of the Inaugural Session:** Prof. Hem Raj Pant, PhD, Vice-Chancellor, Far Western University, Nepal **Chief Guest:** Hon'ble Najir Miya, Governor, Sudurpaschim Province, Nepal **Distinguished Guest:** Prof. Dev Raj Adhikari, PhD, Chairperson, UGC, Nepal **Guest on Dias** **Welcome Speech and Program Highlight:** Prof. Kishan Datta Bhatta, PhD, Convenor International Conference 2026 **Inauguration of the Program by lighting the lamp:** Chair of Inaugural Session and Chief Guest	
	Inaugural Remarks	- Prof. Binod Lekhak, PhD - Prof. Binod Dhakal, PhD - Prof. Amar Prasad Yadav, PhD - Prof. Sharada Thapaliya, PhD - Prof. Biju Kumar Thapalia, PhD - Prof. Dhurba Kumar Gautam, PhD - Prof. Deepak Aryal, PhD - Prof. Dev Raj Adhikari, PhD - Chief Guest of the Program	
	Closing Remarks	**Chair of the Session, Prof. Hem Raj Pant, PhD**	
Plenary Sessions			
10:00 – 10:45	**Plenary Speech-I**	**Belonging to Academia? Institutions – People – Knowledge** ***Prof. Joanna Pfaff-Czarnecka, PhD*** *Faculty of Sociology at Bielefeld University, Germany/ Former Pro-Vice-Rector at Bielefeld University, Germany*	
10:45-11:30	**Plenary Speech-II**	**Bamboo Science, Technology and Innovation (BambooST): Harnessing Bamboo Science and Innovation to Preserve Filipino Heritage and Empower Community Livelihoods** *Jennifer P. Tamayo, PhD, Department of Science and Technology, Philippines*	
11:30-11:40	**Tea Break**		
Invited Speakers I			
Time/Hall	**Parallel Session A** **Shuklaphanta Hall & Online** **Zoom Link:** **Theme: Engineering** **Facilitator: Madan Singh Deupa, PhD**	**Parallel Session B** **Api Hall & Online** **Zoom Link:** **Theme: Chemistry and Chemical Engineering** **Facilitator: Yagya Raj Pandey, PhD**	**Parallel Session C** **Ramaroshan Hall & Online** **Zoom Link:** **Theme: Economics and Entrepreneurship** **Facilitator: Deepak Chandra Bhatt, PhD**
11:40-12:00	Violation of River Rights *Prof. Hari Krishna Shrestha, PhD*	Air Pollution: A Growing Threat to Kathmandu Valley *Prof. Ram Kumar Sharma, PhD*	Putting the Last First: Strategies for the Transformation of Sudurpashchim Province Through the Enhancement of the Entrepreneurial Ecosystem *Prof. Hem Raj Pant, PhD* *Former Registrar, FWU*

12:00-12:20	Emerging Heritage Discourses for Innovation and Transformation: Towards an Interdisciplinary Discourse of Heritage *Prof. Neel Kamal Chapagain, PhD*	Insight into Electrocatalytic Water Splitting Activity of Tungstate-based Nanomaterials for Green Hydrogen Production *Dasu Ram Paudel, PhD*	From Access to Active Usage: A Comparative Perspectives on Digital Financial Inclusion in India and Nepal *Prof. Ashutosh Priya, PhD*
12:20-12:40	Heritage Structures Should be Timely Renovated but Never Replaced with Non-sustainable Structures *Prof. Tek Raj Gyawali, PhD*	Synthesis and Characterization of Biomass based Nanoporous Carbons for Adsorption of Pollutants fror Water *Prof. Sahira Joshi, PhD*	Governing Circular Entrepreneurship for Ecological Transformation: Policy-Relevant Pathways for Waste, SMEs, and Innovation in South Asia *Vijayapala Sinnathamby, PhD*
12:40-1:00	Carbon-Negative Combustion Technologies for Sustainable Heritage and Innovation *Prof. Alar Konist, PhD*	Catalytic Pyrolysis of Waste Plastic: Product Quality and Environmental Suitability Aspect of the Process *Navneeta Lal, Sanjeevani Hooda, Prasenjit Mondal*	Leading the Entrepreneurships from Local to Global by Encouraging Indo-Nepal, Traditional Knowledge Practices *Ashok Kumar Pant, PhD*
1:00-2:00	**Lunch Break**		
2:00-3:00	**Round Table Session-I: Rethinking Development in a New World Order** **Moderator: Pragya, Dipak Gyawali, NAST and Distinguished Fellow, NWCF** **Panelists:** 1. *Prof. Joanna Pfaff-Czarnecka, PhD (Faculty of Sociology at Bielefeld University, Germany)* **2.** *Jennifer P. Tamayo, PhD (Department of Science and Technology, Philippines)* **3.** *Krishna P. Adhikari, PhD (Oxford University, UK)* **4.** *Kamran ul Baset, PhD (Dean, School of Farmacy and Public Health, Independent University, Bangladesh)* **5.** *Vijayapala Sinnathamby, PhD (Sri Lanka)* **6.** *Surendra Joshi, PhD (IUCN, Nepal)*		
3:00-3:10	**Tea Break**		

Technical Session I				
Time/Hall	**Parallel Session A** **Shuklaphanta Hall & Online** **Zoom Link:** **Theme: Engineering** **Session Chair: *Prof. Neel Kamal Chapagain, PhD***	**Parallel Session B** **Khaptad Hall & Online** **Zoom Link:** **Theme: Chemical Engineering** **Session Chair: *Dasu Ram Paudel, PhD***	**Parallel Session C** **Api Hall & Online** **Zoom Link:** **Theme: Entrepreneurship and Business** **Session Chair: *Prof. Padam Raj Joshi, PhD***	**Parallel Session D** **Ramaroshan Hall and Online** **Zoom Link:** **Theme: Science and Technology** **Session Chair: *Prem Singh Saud, PhD***
3:10-3:20	Disaster Dynamics in Nepal: A Geotechnical Perspective on Earthquake-induced, Rainfall-induced and GLOF-induced Hazards *Indra Prasad Acharya*	Biomass as Sustainable Resource for Energy and Environmental Remediations *Tanka Mukhiya, Rajesh Shrestha, Bipana Ojha Khatri, Aek Narayan kamal, Ashman Karki, Hem Raj Pant*	Social Media Influencer and Brand Loyalty of Generation (Z) in Kanchapur District of Nepal *Hari Prasad Awasthi, Vishal Vinayak, PhD*	Waste Management Baseline Survey of Nepal *Bhoj Raj Pant, PhD*
3:20-3:30	Transforming Higher Education for the SDGs: Whole-University Lessons from an Erasmus+ CBHE Initiative in Bhutan and Nepal *Ramesh Kumar Shrestha*	Nepali Paper: A Sustainable Platform for Free-Standing Energy Storage Electrodes *Rajesh Shrestha, Tanka Mukhiya, Hem Raj Pant*	Monthly Return Patterns and Volatility Seasonality in the Nepal Stock Exchange: Evidence from an EGARCH Model *Tek Bahadur Madai*	Formation of an Almost Abelian Semigroup Generated by a Pair of Transcendental Entire Functions under Given Condition(s) *Dal Bahadur Saud*
3:30-3:40	Self-Adaptive Traffic Light System Based on Deep Reinforcement Learning *Niranjan Khakurel, Subarna Shakya, Dibakar Raj Pant, and Sanjeeb Prasad Panday*	Circular Bioeconomy Approach to Supercapacitor Electrode Materials from Agricultural Bioresidues *Deval Prasad Bhattarai, PhD, Sabin Aryal, Hari Bhakta Oli, Pawan Kumar Mishra, Sanuja Shrestha, Ram Lal (Swagat) Shrestha*	Factors influencing employees' job satisfaction in the service sector." *Umesh Chand*	Integrating Artificial Intelligence in Education to Sustain Cultural Heritage and Innovation *Ankur Bhatnagar, Deepali Singh*
3:40-3:50	Between People and Place: Examining Place Attachment in the Lalitpur Metropolitan Office Building *Ganga Sagar Bhatt*	Efficient Separation of Positive Current Collector from Spent Lithium-ion Battery Cathodes *Binod Mahara, Ding Tong, Wang Mauyong, Li Futao, Shuxuan Yan, Hari Bhakta Oli, Xiangping Chen*	Impact of Training Programs on Cooperative Management Efficiency *Tika Ram Kharel, Shiva Raj Poudel, PhD*	Microbiome and Resistome of Wastewater and Impacted Rivers *Dev Raj Joshi, PhD*
3:50-4:00	Investigation of Subsoil Bearing Capacity for Design Analysis of Isolated and Raft Foundations of Academic Buildings at Far-Western University *Jayram Panthi, Crimsan Singh Negi*	Unveiling the Effect of Cr in the Cathodic Process Transformation of NiCrCu Steel Corrosion eEmbedded in the Simulated Nuclear Waste Disposal Environment *Hari Bhakta Oli, Xin Wei, Madhusudan Dhakal, Xing Gao, Junhua Dong*	The Effects of Financial Socialization on Financial Well-Being: An Empirical Study of University Students *Babu Ram Rawat*	Screening of *VIP* gene in *Bacillus thuringiensis* Isolated from Different Geographical Areas of Nepal and a Preliminary Study of Vip Protein Effect on Fall Armyworm *Elisha Upadhyaya, Mohammad Ataullah Siddiqui, Sunil Regmi, Jyoti Maharjan, Ram Chandra Poudel, Deegendra Khadka, Nisha Rana, Jaishree Sijapati*

4:00-4:10	Strength of Concrete by Partial Replacements of Cement by Hypo Sludge as well as GGBS and Sand by Crushed Concrete *Vijay Kumar Pandit*	High-Temperature Corrosion Behavior of Low-alloy Steel in Simulated Deep Geological Environments *Madhusudan Dhakal, Hari Bhakta Oli, Xin Wei, Junhua Dong*	Impact of Balance Score Card Dimensions on Insurance Company Performance in Nepal *Narendra Prasad Pant*	Molecular Docking and Pharmacokinetics Evaluation of Quinazolinone Derivatives of Potential Therapeutic Colorectal Cancer *Janga Bahadur Kathayat*
4:10-4:20	Integrating Heritage Knowledge with Modern Mechanical Engineering for Solar Energy Solutions *Kranti Gangwar*	Bio-electrochemical Synergism: SRB-Chloride Interactions on Corrosion of 2205 Duplex Stainless Steel in Marine Environments *Maryann Chioma Ebeagwu, Boxin Wei, Naresh Pant, Hari Bhakta Oli, Cheng Sun*	Transforming Traditional Crafts through Design and Technological Innovation: A Case of Zari Zardozi in Rohilkhand Region of U.P. *Abhishek Yadav, Lavi Sahu*	Harnessing Microbes and Medicinal Plants for Sustainable Biotechnology and Therapeutic Discovery *Gorkha Raj Giri Jyoti Maharjan, Priti Saxena, Himani Pandit, Jarina Joshi, Sarbesh Das Dangol, Dipendra Kumar Mandal, Srinkhala Wagle, Madhav Dhakal, Yub Raj Pokharel, Rajani Malla*
4:20-4:30	Dynamic Modeling and Performance Assessment of an Induction Motor Electric Vehicle Drivetrain *Aarogya Shrestha, Anam Maharjan, Subin Manandhar, SuryaPrasad Adhikari*	Electron Transfer Coupled Synergistic Corrosion of X70 Steel Induced by Mixed Sulfate-Reducing and Electroactive Bacteria Consortia in Marine Environments *Naresh Prashad Pant, Boxin Wei[1,2], Zheng Cai, Maryann C. Ebeagwu, Jin Xu, Cheng Sun*	Cultural Identity, Heritage, and Economic Transformation: Insights from the Manjha-Kite Trade of Bareilly *Aryama, Vansh Gupta, Sanskriti Rathore, Ankit Gangwar*	Potential of Nepalese Wild Food Plants as Nutraceuticals and Functional Foods *Lok Ranjan Bhatt, PhD*
4:30-4:40	Mix Design Formulations for Recycled Aggregate Inclusive Rigid Pavements *Rabin Khadka, Surender Singh*	Advanced Self-Standing 3D Oxygen Electrodes Engineered at the Atomic Level for Fuel Cell Applications and Rechargeable Zinc-Air Batteries *Milan Babu Poudel1, Tapendra Bhandari1, Dong Jin Yoo*	Sustainable Digital Infrastructure for Long-Term Heritage *Dr. Kaushal Kishor, Sanjeev Ganagwar, Raveesh Agarwal, PhD*	Controlled Formation of Honeycomb-Like Silver Nanoflakes on Electrospun PAN Nanofibers *Kshitij Thapa*
4:40-4:50		Economic effects of wild boar damage of crops in protected areas of Nepal *Bindu Pant*	Impact of Merger and Acquisition on Achievement Motivation of Employees at Nepalese Commercial Banks *Dinesh Pant, Shailesh Pal*	Ultrafiltration Chemical Cleaning: A State of Art *Rupak Aryal*
4:50-5:00			Soft Skill Training and Employee Performance of Private Sector Commercial Banks in Nepal *Malisha Rajopadyaya (Sharma)*	Linking of Water Quality Research to Policy *Tista Prasai Joshi*
5:10-6:30	**Cultural Program**			

Day II: Wednesday, 18 February, 2026				
8:30 –9:00	**Registration/Tea**			
Plenary Session				
9:00–9:45	**Plenary Speech-I** **Ramaroshan Hall & Online**	**Cathode Materials for Enhanced Sulfur Redox Kinetics and Polysulfide Regulation in Lithium Sulfur Battery** ***Prof. Hak Yong Kim, PhD*** *Jeonbuk National University, South Korea*		
Invited Speakers I				
Time/Hall	**Parallel Session A** **Shuklaphanta Hall & Online** **Zoom Link:** **Theme: Engineering** **Facilitator: *Prof. Tek Raj Gyawali, PhD***	**Parallel Session B** **Api Hall & Online** **Zoom Link:** **Theme: Society, Culture and Education** **Facilitator: *Rajendra Prasad Bhatt, PhD***	**Parallel Session C** **Khaptad Hall & Online** **Zoom Link:** **Theme: Energy, Environment and Agriculture** **Facilitator: *Prof. Bishnu Bilas Adhikari, PhD***	**Parallel Session D** **Ramaroshan Hall and Online** **Zoom Link:** **Theme: Science and Technology** **Facilitator: *Prem Singh Saud, PhD***
9:50–10:05	The impact of Artificial Intelligence on e-Government Service Delivery *Prof. Subarna Shakya, PhD*	Nature, Culture and Community of Sudurpaschim: Revisiting Practices and Reimagining Sustainable Futures *Prof. Amma Raj Josh, PhD*	Frontiers of Agronomic Researches at Nepalese Higher Education Institutes *Prof. Lal Prasad Amgain, PhD*	Strengthening Cryo-Climatic Monitoring and Research Capacity in the Southern Slope of the Himalayas *Prof. Deepak Aryal, PhD*
10:05-10:20	Transforming Cultural Heritage Preservation Through a Novel Reverse Engineering Method for 3D Printing *Tashi, PhD*	Digital Society and Political Value: A Theoretical Quest *Sanjeev Humagain, PhD*	Hydrochemistry of Important Rivers in the Third Pole Region *Ramesh Raj Pant, Memet Varol, Chen Zeng, Faizan Ur Rehman Qaisar, Guanxing Wang, Kiran Bishwakarma, Muhammad Dodo Jagirani, Smrita Acharya*	Spectroscopic Characterization and Quantum Chemical Study of Materials *Prof. Bhawani Datt Joshi, PhD*
10:20-10:35	Adopting Outcome-Based Education in Engineering Programs: Global Practices, Institutional Challenges, and Pathways for Nepal *Prof. Dr. Padma Bahadur Shahi* *Er. Dev Raj Joshi*	Natural Language Processing for Low Resource Languages: Current Progress and Open Challenges *Brajesh Kumar, PhD*	Chemical Looping Gasification of Biomass and Mineral-Rich Oil Shale: Recent Advances and Opportunities *Alejandro Lyons Ceron*	Indigenous Knowledge and Scientific Innovation: Transforming Nepal's High-Altitude Medicinal Flora into Pharmaceutical Assets *Khem Raj Joshi, PhD*
10:35-10:50	Ecological Planning as a Metropolitan Paradigm: Theory and Policy Insights from Kathmandu Valley *Sanjaya Uprety, PhD*	Pedagogical Shift and Local Adjustment in Higher Education *Prof. Shobhakhar Kandel, PhD & Yadu Prasad Gyawali, PhD*	Research towards Eco-resilience *Prof. Mahua Mukharjee, PhD*	Supramolecular Self-Assembly of Fullerenes: From Zero-to-Higher Dimensions *Lok Kumar Shrestha, PhD*
10:50-11:05	The Inference Crisis & Modular AI *Prof. Sudan Jha, PhD*	Heritage as Future Intelligence: Appropriate Technology, Vernacular Wisdom, and the Transformation Toward Sustainable Living *Johannes Widodo, PhD*	Precision Agriculture: Remote-Sensing-Based Agriculture System Characterization and Management *Prof. Javed Iqbal, PhD*	Solar Energy Potential and Its Uses Over Nepal *Prof. Khem N Poudyal, PhD*

11:05-11:20	Blending Science with Partnership for Addressing Water Insecurity *Prof. Vishnu Prasad Pandey, PhD*	An Urgent Need to Rewrite Sudurpaschim's Future Utilising Local Academia and Evidence *Puspa Raj Pant, PhD*	Assessing the Role of Biochar for Climate Change Mitigation and Adaptation in Developing Countries *Dilip Khatiwada, PhD*	Science, Society, and Sustainability in a Connected World *Prof. Gopal Bhatta*
11:20-11:30	**Tea Break**			
	Technical Session I			
Time/Hall	**Parallel Session A Shuklaphanta Hall & Online Zoom Link: Theme: Education and Pedagogy Session Chair: Madan Singh Deupa, PhD**	**Parallel Session B Api Hall & Online Zoom Link: Theme: Development Session Chair: Deepak Chandra Bhatt, PhD**	**Parallel Session C Khaptad Hall & Online Zoom Link: Theme: Agriculture, Forestry, Natural Resource Management Session Chair: Prof. Lal P. Amgai, PhD**	**Parallel Session D Ramaroshan Hall and Online Zoom Link: Theme: Science and Technology Session Chair: Prof Bhawani Joshi, PhD**
11:30-11:40	Higher Education Transformation through Policy Intervention in Nepal: Insights from America, China, and India to Minimize Outmigration *Bishnu Prasad Pokharel, Ph.D.*	Reluctance of Younger Generation People in Farming Occupation: Implications in Nepalese Agriculture *Badri Aryal, PhD*	Indigenous Knowledge on Vegetable Seed Collection and Storage in Sudurpaschim, Nepal *Kiran Prasad Bhatta[1], Raksha Sharma*	Synergistic Co–N–Doped Carbon Nanotube/MoS_2 Hybrids Enable Efficient and Durable Oxygen Evolution Electrocatalysis *Prakash Chandra Lohani, PhD*
11:40-11:50	Issues of Culture and Identity in English Language Teaching *Arjun Singh Negi*	Himalayan Buffer to Hybrid Bridges: Nepal's Geography, Open Borders and Techno Security Dynamics of India Pakistan Rivalry *Gajedra Pavaiya*	Effect of Rhizobium and Panchagavya on Growth and Yield of Mungbean in Kanchanpur, Nepal *Raksha Sharma, Santosh Joshi, Aayush Pant, Pradeep Poudel*	A Challenge of Emerging of the Multi-drug Resistance Gram Negative Bacteria in Urinary Tract Infections *Madan Singh Bohara, Dwij Raj, Bhatta, PhD, Supriya Sharma, PhD*
11:50-12:00	The Influence of Induction Training on Job Satisfaction and Teaching Outcomes among New English Teachers in Nepalese Community Schools: A Mixed-Methods Study *Arjun Jung Rayamajhi*	Socioeconomic Impact of Foreign Employment on Households in Bheemdatta Municipaly Nepal *Bir Bahadur Singh Thakuri*	Climatic Change: Impact on Animal production *Akshat Kumar, Anuj Bishnoi, Prof. Jyoti Palod*	Preclinical Nanoparticle Platforms for Advanced Biomedical Imaging and Cancer Therapy *Krishna Kattel, Gang Ho Lee and Ram I. Mahato*
12:00-12:10	Discoursal Construction of Identity of an M.Phil. Level Student in Academic Writing at Far Western University *Ashok Raj Khati*	Public–Private Partnerships in Heritage Innovation and Development *Dharambir Singh, Abhishek Gangwar*	Trend and Forecasting of Major Cereals Production in Nepal Using Autoregressive Integration Moving Average (ARIMA) Methods *Milan Ghimire*	Exploring Hidden Gems in Nepalese Soil: Actinomycetes from Kanchanpur Combatting Antimicrobial Resistance *Krishna Prasad Pant, Madan Singh Bohara, Teej Kumari Shahu*

12:10-12:20	Digital Professional Development Experiences of Nepali English Language Teachers *Dammar Singh Saud*	Arun-III and the Politics of Hydropower Development *Poshal Gyamba*	Effect of panchagavya and chemical fertilizers on yield and quality attributes of potato in Dadeldhura *B. Thakurathi, R. Sharma and A. Pant*	Early Prediction of Diabetes Using Ensemble Based Machine Learning Model *Ramesh Prasad Bhatta, Akhtar Husain*
12:20-12:30	Inclusive Education in Practice: Exploring Teachers' Struggles in Far-West Province in Nepal *Baldev Bhatt*	Ecotourism in Nepal *Wasila khan*	Phenotypic Characterization and Performance Evaluation of Foxtail Millet Genotypes in Khairahani, Chitwan *Srijana Mahar and Bishnu Prasad Kandel*	Optimizing Power Conversion Efficiency of Lead free $CH_3NH_3SnI_3$ Perovskite Solar Cells: A Numerical Simulation Approach *Prem Raj Joshi, Prem Singh Saud*
12:30-1:30	**Lunch Break**			
1:30-2:30	**Round Table Session-II: Policy–Academia Dialogue** **Local Economic Development and Far West: Prospects and Challenges** **Moderator: Sanjeev Humagain, PhD**			
	Panelists 1. Mr. Gopal Hamal, Mayor (Dhangadhi Sub-Metropolitan City) 2. Mr. Bharat Badayar Joshi, Mayor (Parshuram Municipality) 3. Mr. Durga Datta Ojha, Chairperson (Jorayal Rural Municipality) 4. Mr. Ganesh Chaudhary, Chairperson (Janaki Rural Municipality)	**Special Remarks** 1. Prof. Padam Raj Joshi, PhD, Dean (Faculty of Management, FWU) 2. Prof. Rajendra Prasad Bhatt, PhD, Dean (Faculty of Humanities and Social Sciences, FWU) 3. Assoc. Prof. Rajendra Bir Chand, PhD, Economist (Kailali Multiple Campus, FWU) 4. Mr. Ashok Bikram Jairu, Executive Director (NNSWA Kanchanpur)		
	***Invited Speakers II**		**Technical Session II**	
Time/Hall	**Parallel Session A** **Shuklaphanta Hall & Online** **Zoom Link:** **Theme: Policy and Planning** **Session Chair: Milind Dhaware, PhD**	**Parallel Session B** **Api Hall & Online** **Zoom Link:** **Theme: Health and Migration** **Facilitator: Prof. Hem Nath Joshi, PhD**	**Parallel Session C** **Khaptad Hall & Online** **Zoom Link:** **Theme: Business Economy and Development** **Session Chair: Deepak Chandra Bhatt, PhD**	**Parallel Session D** **Ramaroshan Hall and Online** **Zoom Link:** **Theme: Education and Pedagogy** **Session Chair: Prof. Rakesh Kumar Sharma, PhD**
2:30-2:45* 2:30-2:40	Why Policies Fall Short in Nepal: Analyzing the Implementation Gaps *Lal Bahadur Pun, PhD*	Transforming Rural Healthcare and Medical Education: KAHS Experiences and Opportunities for Dashrath Chand Health Sciences University and Far Western University *Assoc. Prof Dr. Dabal Bahadur Dhami, MD*	Microfinance and the Multidimensional Empowerment of Rural Women: Evidence form Kailali District, Nepal *Prof. Dharma Dev Bhatta*	Exploring Social Constructivist Pedagogy to strengthen Linguistic and Critical skills in Nepalese ESL classroom *Niraj Chaudhary, PhD*

2:45-3:00* 2:40-2:50	Strategic Integration and Hydropower Governance in Nepal's Engagement with India and China *Harshita Singh*	Injury Prevention and Safety Promotion: Challenges and Way Forward *Prof. Kulanthayan KC Mani, PhD*	Energy Transition and Economic Growth Dynamics in Nepal: Evidence from Time Series Analysis *Khem Raj Subedi, PhD, Shankar Datt Bhatt*	Correlation Between Educational Achievement and Intelligence: An Empirical Investigation *Madan Singh Deupa, PhD & Yagya Raj Pandey, PhD*
3:00-3:15* 2:50-3:00	Access to Justice: Challenges for Marginalized Communities in Nepal *Dev Awasthi*	Bangladesh Public Health Challenges and Success: A Policy Document *Dr. Kamran ul Baset*	Tourism Industry in Enhancing Economic Development: Mediating Effects of Quality of Life and Skill Enhancement in Sudurpaschim Province, Nepal *Ram Kumar Chataut*	*Jagar* Rituals as Living Heritage and Spiritual Pedagogy: Indigenous Knowledge in *Dashrathchand Muncipality*-11 *Baitadi* *Sheel Nidhi Chand*
3:15-3:30* 3:00-3:10	Re-examining Development Partnership: Tracing India's Evolving Role in South Asia *Jasveer Singh*	Some Thoughts on Migration within and from Nepal *Prof. David N. Gellner, PhD*	Impact of E-Service Quality Dimensions on Customer Satisfaction: Evidence from Online Shopping in Nepal *Hari Singh Saud*	The Impact of Student Migration on Bachelor-Level ELT Programs *Prithvi Raj Awasthi*
3:10-3:20	Talent Management and Organizational Performance in Civil Service Offices of Kanchanpur District, Nepal *Kirpa Charya Bhatt*	From Ethnomedicine to Molecules: Building National Drug Discovery Ecosystems *Asst. Prof. Dirgha Raj Joshi, PhD*	Challenges of Infrastructure Development and Economic Growth in South Asia *Swati Jain, PhD*	Challenges in Implementing Individualized Education Plans for Students with Autism Spectrum (ASD) Disorders in Special Schools *Yagya Raj Pandey, PhD, & Madan Singh Deupa, PhD*
3:20-3:30			Factors Affecting Stock Market Investment Decision of Young Investors in Nepal *Upendra Sunar*	SMEs Sustainability in Kailali and Kanchanpur District of Nepal *Avishek Bhandari, Nrip Bahadur Kunwar*
3:30-3:40	**Tea Break**			
Technical Session III				
Time and Hall	**Parallel Session A** **Shuklaphanta Hall & Online** **Zoom Link:** **Theme: Society, Culture and History** **Session Chair: Prof. Amma Raj Joshi, PhD**	**Parallel Session B** **Api Hall & Online** **Zoom Link:** **Theme: Migration and Development** **Session Chair: Krishna Adhikari, PhD**	**Parallel Session C** **Khaptad Hall & Online** **Zoom Link:** **Theme: Language and Culture** **Session Chair: Gambhir Bahadur Chand, PhD**	**Parallel Session D** **Ramaroshan Hall and Online** **Zoom Link:** **Theme: Business, Entrepreneurship, and Health** **Session Chair: Shiv Raj Poudel, PhD**
3:40-3:50	Evolution of the Legal Order in Nepal: From Dharma to the *Muluki Ain* (1854) *Pankaj Kumar, PhD*	Migration and Identity: Negotiating Nepali Transnationalism in *Seasons of Flight* *Chabi Sharma*	Cultural Diplomacy and People-to-People Connectivity in India–Nepal Relations: Pilgrimage and Tourism as Soft Power Instruments *Haamid Ali Shah*	Reimagining Transit Governance: Rail Connectivity and Nepal's Path to Industrialization *Aasifa Fatama*

3:50-4:00	Integrating Heritage Learning and Artificial Intelligence for Educational Transformation and Cultural Revitalization *Dr. Raveesh Agarwal, Dr. Ankit Agarwal, Dr. Gaurav Kapoor*	Women's Migration and Inclusive Development in Nepal post 2015: Emerging Trends and Policy Responses *Umra Khan*	Diversity and Stratification Among Dalit (A Sociological Study of Dhangadhi Municipality -13 Shreelaka) *Hari Prashad Badu*	Nepalese Tax Structure: An Analytical Perspective *Ishor Kumar Hamal*
4:00-4:10	Cultural Heritage as a Driver of Sustainable Development and Social Change *Gaurav Yadav, Pawan Singh*	Nepal's Strategic Hedging Between India and China: Navigating Asymmetric Power Relations in South Asia *Rahul Kumar Tamang*	Exploring Indigenous Mathematical Knowledge of *Byansi Sauka* Community in Darchula District of Nepal *Man Bahadur Chand*	Knowledge, Attitude and Practice of Antibiotic se among Community People in Waling Municipality *Samiksha Kafle*
4:10-4:20	Imposed Identity and Claimed Identity: An Analysis of the Creation of Anxiety in Percival Everett's *James* *Mohammed Solaiman Chowdhury*	Aging and Livelihoods in a Changing Urban Periphery: From Traditional Support Systems to Adaptive Strategies Among Senior Citizens in Dhangadhi *Sashank Joshi*	Feminist Protest as Cultural Transformation: Gender, Law, and Dissent in Zia-era Pakistan *Yashvi Pandit*	Impact of Risk Management Practices on Financial Performance of Commercial Banks in Nepal *Bhuwan Raj Joshi*
4:20-4:30	Role of Artificial Intelligence in Documenting and Conserving Cultural Heritage *Ruchin Jain, Raveesh Agarwal, Harshit Gupta*	Living with the River: Indigenous Life, Water Wisdom and Living Heritage Along the Karnali *Sumnima Bhandari*	Reviewing the Role of English in Business Communication *Prem Singh Bhat, PhD*	Education for Sustainable Cultural Heritage Preservation through Innovation *Priyanshi Gupta, Reeta Singh Lodhi and Dolly Singh*
4:30-4:40	Reconstructing the Past: Memory and War in the novels *When We Were Orphans* and *The Remains of the Day* by Kazuo Ishiguro *Rumana Chowdhury*	Rethinking Institutionalization of Soft Power: A Case Study of Nepal *Vibha Sharma*	नेपालको सङ्घीय संरचनामा डोटेली भाषाको स्थान *भुवेश्वरी बडू*	
Day III: Thursday, 19 February, 2026				
8:00-8:30	**Registration and Tea**			
Plenary Sessions				
8:30-9:15	**Plenary Speech-I** **Ramaroshan Hall & Online**	**Chemistry-Guided Combustion Design for Viable Ammonia-Based Fuels** ***Prof. Binod Raj Giri, PhD*** *Brandenburg University of Technology, Germany*		
	Invited Speakers I	**Technical Session I**		
Time/Hall	**Parallel Session A** **Shuklaphanta Hall & Online** **Theme: Science and Technology** **Session Chair: Prof. Shubarna Shakya, PhD**	**Parallel Session B** **Api Hall & Online** **Theme: Agriculture and Economy** **Session Chair: Rajendra Bir Chand, PhD**	**Parallel Session C** **Khaptad Hall & Online** **Theme: Tourism and Development** **Session Chair: Prof. Mukund Ballabha Kalauni, PhD**	**Parallel Session D** **Ramaroshan Hall and Online** **Theme: Education and Pedagogy** **Session Chair: Bhawan Singh Chalaune, PhD**
9:25-9:40	Knowledge Synthesis and Entrepreneurial Strategy in the Age of AI *Rajendra Khanal, PhD*	Role of Plastic Mulch to enhance the Productivity and Water Saving in Paddy Cultivation *Sanjay Kumar Nirala, Pravendra Kumar and P.K.Singh*	Exploring the Impact Dynamics of Semester-Based Academic System on Its Implementation at Far Western University, Nepal *Lal Bahadur Bohara*, Suresh Prasad Pandit*	Revisiting Social Constructivism in Post-Method Pedagogy for ELT Classrooms in Nepal *Krishna Singh Saud*

9:40-10:55	Generative AI - From Foundations to Frontiers *Rabindra Bista, PhD*	Advances in Remedial Technologies for Groundwater Contamination: Challenges and Sustainable Solutions *Deepak Kumar, Shubhi Khare*	E-Commerce and Heritage Innovation in Emerging Economies: Pathways to Economic Transformation *Deepak Mahaur*	Barriers to Effective ICT Integration in English Language Teaching *Chandani Pant*
10:55-11:10	A Robust LiDAR-Based Framework for Real-Time Human Detection and Tracking in Autonomous Systems *Pavan Kumar B N and Gyanendra Prasad Joshi*	Yield and Yield Components of Different Oat (*Avena sativa* L.) Varieties Influenced by Sowing Dates in Inner Terai, Nepal *Saroj Regmi, Naba Raj Devkot, Ram Prasad Ghimir, Sujan Chapagain, Kapur Bhusal and Shanker Raj Barsila*	Audit Committee Governance, Digitalization, and Sustainability Performance: Evidence from an Emerging Economy *Md. Mokshud Ali, Mohammad Jobir Monjur*	Effects of AI in Completing Assignments: A Narrative Inquiry *Nirmala Dhami*
11:10-11:25	High Precision Nonlocal Positioning of Multiple Targets *Binod Joshi*	Wildlife Tourism and Local Communities: Evidence from Sudurpaschim Province, Nepal *Gagan Raj Ghimire*	Federalism without Fiscal Deepening: Governance Capacity, Public Investment, and the Political Economy of Development in Post-Constitutional Nepal *Rahul Kumar*	Understanding Students' Anxiety in Speaking English: An EAR Study *Deepak Raj Bhatt*
11:25-11:40	Jajarkot Darbar and Its Seismic Capacity *Rajan Suwal, Sangam Mahar*	Sustainable Management Strategies for Cultural and Heritage Organizations *Dr. Ankit Agarwal, Aman Gupta, Naved Khan, Mayank Gangwar*	Managing Cultural Heritage Institutions: Challenges and Innovation Opportunities *Dr. Gaurav Kapoor, Pawan Singh, Aryan Kumar*	English Language Teaching in Nepal: Issues of Teacher Professional Development *Krishna Kumari Mahara*
11:40-11:50	**Tea Break**			
Technical Session II				
Time/Hall	**Parallel Session A** **Shuklaphanta Hall & Online** **Zoom Link:** **Theme: Education and Pedagogy** **Session Chair: Yagya Raj Pandey, PhD**	**Parallel Session B** **Api Hall & Online** **Zoom Link:** **Theme: Development** **Session Chair: Khem Raj Subedi, PhD**	**Parallel Session C** **Khaptad Hall & Online** **Zoom Link:** **Theme: Entrepreneurship and Business** **Session Chair: Dipendra Bahadur Chand, PhD**	**Parallel Session D** **Ramaroshan Hall and Online** **Zoom Link:** **Theme: Science and Engineering** **Session Chair: Tirth Raj Paneru, PhD**
11:50-12:00	Attitude of University-Level Students of the Faculty of Education towards Sports and Physical Activity *Kishore Bohara, Shailendra Chiluwal, Suresh Bahadur Thapa*	The "Pathao-fication" of the Academe: Income Insecurity and Institutional Constraints Faced by Sessional Lecturers in Kathmandu *Roshan Kumar Basnet*	Do Management Accounting Practices Improve Organizational Performance? Evidence from Post-Merger Commercial Banks in Nepal *Atmaram Khatiwada*	Electrical Innovations in the Transformation of India's Heritage *Vivek Rajput*
12:00-12:10	Exploring Flipped Learning Environment and Practices in Secondary Mathematics Classrooms in Nepal *Narayan Datta Bhatta*	Transforming Education with Cultural Heritage: Challenges and Opportunities for Innovation *Anshika Singh, Anshi Jaiswar, Muskan Awasthi*	Consumer Perception and Behavioral Intention toward QR Code Payment Systems in Dhangadhi, Nepal *Deepak Raj Pant*	Innovative Civil Engineering Approaches for Sustainable Conservation of Cultural Heritage Structures *Anuj Verma, Rajat Kannojia*

12:10-12:20	Perceptions of Secondary Level English Language (ELT) Teachers use of ICT in Public Schools: A Study in Doti District *Nar Bahadur Bist*	Cultural Values as Drivers of Innovation in Organizational Management *Anushka Bajpai, Anamika Singh, Priyanshi*	Management Control System and Organizational Performance of Micro Finance Companies in Nepal *Prem Bahadur Singh*	Isolation and Characterization of Rhizobacteria from Vegetation of Diudapatan Bajura as PGPR Candidates *Jyoti Singh, Deepjyoti Shahi, Rolina Kafle, Garima Shah, Sandeep Thapa, Dilip Bhattarai, Gorkha Raj Giri*
12:20-12:30	Transforming Classroom Communication: The Impact of Experiential Learning, Role-Playing, and Project Work on Speaking Anxiety in Nepal *Niru Sharma*	Economic Growth, Income Inequility, and Fiscal Policy Effectiveness in Nepal *Kapil Bista*	Influence of Work-Life Balance on Job Satisfaction: A Study of Hotel Employees in Sudurpaschim Province *Shailesh Pal, Dinesh Pant*	Transition Metal Tungsten-Infused Metal Oxyhydroxide Hybrid Nanomaterial for Green Hydrogen Production *Soniya Gadal, Namrata Shree Pandey, Niraj Dhital, and Dasu Ram Paudel*
12:30-12:40	Wellbeing and Workplace *Asha Khadka*	Integrating Tradition and Innovation: A Management Perspective on Cultural Organizations *Sheetal Sharma, Khushi Agarwal, Meenakshi Gangwar, Aanchal Singh*	Impact of Accounting Information on Managerial Decision Making in the In-Service Sector in Nepal *Amit Bhatt*	Detection of class A *bla-CTX-M*, *bla-TEM*, *bla-SHV* and class B *bla-VIM*, *bla-IMP* genes in β- lactamase producing Gram negative clinical isolates *Tek Raj Ojha*
12:40-1:40	**Lunch Break**			
		Technical Session III		
Time/Hall	**Parallel Session A** **Shuklaphanta Hall & Online** **Theme: Environment** **Session Chair: Prof. Bhawani Chand Thakuri, PhD**	**Parallel Session B** **Api Hall & Online** **Theme: Health** **Session Chair: Prof. Hem Nath Joshi, PhD**	**Parallel Session C** **Khaptad Hall & Online** **Theme: Migration** **Session Chair: Badri Aryal, PhD**	**Parallel Session D** **Ramaroshan Hall and Online** **Theme: Society, Culture and History** **Session Chair: Prof. Amma Raj Joshi, PhD**
1:40-1:50	Strengthening Biodiversity Conservation for Sustainable Environmental Policies *Sandeep Arya, PhD*	Effect of Awareness on Communicable Disease Transmission Dynamics Using an SIR Model *Raghu Bir Bhatta, PhD*	Indian Labour Migrants in Nepal: Livelihood Strategies and Changing Trend of Occupations in Mahendranagar Town *Deepak Chandra Bhatt, PhD*	Dharma as the Rule of Law: Vedic and Gita Foundations for Ethical Governance and Sustainable Peace *Prof. Mukund Ballabh Kalauni, PhD*
1:50-2:00	Women in the Cross-border River System: The Gendered Impact of the Kosi River Disaster in Nepal and India *Divya Chopra*	Bacterial Contamination of Frequently Touched Objects in a Tertiary Care Hospital of Pokhara, Nepal: How Safe are Our Hands? *Dharm Raj Bhatta, Deependra Hamal, Rajani Shrestha, Supram Hosuru Subramanya, Nisha Baral, Rajesh Kumar Singh, Niranjan Nayak and Shishir Gokhale*	Soft Power: Education, Language, Tourism, and Professional Networks between Nepal and China *Kanaklata Yadav, PhD*	Nature as Kin: Deep Ecological Consciousness in Deuda *Narendra Bahadur Air, PhD*

2:00-2:10	Regeneration Status of *Shorea robusta* Under Irregular Shelterwood System in the Sal Forest of Kailali District *Hem Chandra Joshi*	Disaster Preparedness among health workers of the sudurpaschim province *Rupam Bhatt*	Sociological Perspectives on Rural–Urban Migration in Beldandi Rural Municipality-1, Nepal *Nirmala Kumari Bam*	From (de) Sanskritisation to Ethnicisation: Brahman Identity in Central West Nepal *Krishna P. Adhikari*
2:10-2:20	Climate Change, Human Rights, and Environmental Justice in Nepal *Prapti Bhatta, Mamata Rokaya*	Exploring the Interplay between Social Media Use, Sleep, and Emotion Regulation in Adulthood *Dolendra Subedi*	Opportunities and Challenges Created by the Nepal-India Open Border (A Case Study of the Sudurpashchim and Uttarakhand Border) *Pirt Bahadur Bist*	Critical Consciousness of *Ḍeuḍā* in the Folkloristic Practice towards Nepalese Education *Bhupesh Joshi*
2:20-2:30	Integration of Mobile LiDAR and UAV-based Remote Sensing for Single Tree Analysis in Chitlang, Nepal *Robert Jackisch, Ritu Raj Lamsal, Ashim Babu Shrestha, Sudip Pandey, Rajib Subba*	City, River and Living Heritage: A Socio-Spatial Imageability of the Sadarghat Waterfront, Dhaka *Yeasir Mohammad Amin, Lutfun Nahar Lopa, Farhadur Reza*	Climate-Induced Migration and Gendered Vulnerability in India: A Case Study of the Bagapatia Rehabilitation and Resettlement Site in Odisha *Anjelina Patrick*	Changing Aesthetics in the Performance Patterns of *Deudā* *Bir Bahadur Katuwal*
2:30-2:40	**Tea Break**			
2:40-3:40	**Round Table Discussion-III: Far Western University at the Crossroads: Leadership Reflections, Regional Transformation, and the Vision Ahead** ***Moderator:*** Deepak Chandra Bhatt, PhD, Far Western University ***Panelists:*** 1. Prof. Bhushan Shrestha- Former Vice Chancellor 2. Prof. Amma Raj Joshi, PhD - Former Vice Chancellor 3. Prof. Hem Raj Pant, PhD - Vice Chancellor, Far Western University 4. Prof. Hem Raj Pant, PhD - Former Registrar 5. Prof. Yagya Raj Pathak - Former Registrar 6. Prof. Binod Lekhak, PhD - Registrar, Far Western University			
3:40-5:00	**Closing Ceremony**			

Poster Presentation: February 17-19, 2026
Time: 9:00-5:00

Name	**Title**
Aashish Gyawali, Apsara Neupane, Achyut Gaire & Kapil Kafle	Host Preference Dynamics of Rice Weevil (Sitophilus oryzae L.) in Stored Cereals

Sapana Pandey, Mukesh Pant, Sagar Bista, Adarsh Joshi	IoT-Enabled Smart Agriculture Monitoring and Decision Support System
Anil Rajaure, Hari Bhakta Oli, Ram Bahadur Gharti, Deval Prasad Bhattarai	Estimation of Copper in Copper Ores Collected from Jangkot, Rolpa, Nepal
Aek Narayan Kamal, Deval Prasad Bhattarai, Sahira Joshi, Rajesh Shrestha, Tanka Mukhiya, Hem Raj Pant	Ficus Infectoria Bio-waste Derived Nanoporous Carbon for the Fabrication of Electrode for Sustainable Energy Storage Devices
Ashman Karki, Bipana Ojha Khatri, Bibek Ghimire, Rajesh Shrestha, Tanka Mukhiya, Deval Prasad Bhattarai, Hem Raj Pant	Jacaranda Seed Waste-derived Activated Carbon as Negative Electrode for Energy Storage Applications
Bibek Ghimire, Rajesh Shrestha, Ashman Karki, Sahira Joshi, Salina Pant, Tanka Mukhiya, Hem Raj Pant	Azolla Derived Advanced Carbon Composite for Methylene Blue Degradation in Wastewater
Bipana Ojha Khatri, Deval Prasad Bhattarai, Sahira Joshi, Tanka Mukhiya, Hem Raj Pant	Bimetallic MOF-Derived Carbon from Azolla Biomass for Photocatalytic Dye Degradation
Birendra Thapa , Aek Narayan Kamal, Ashman Karki, Salina Pant, Purnima Mulmi, Deval Prasad Bhattarai, Tanka Mukhiya, Hem Raj Pant	Engineering Asphaltum Punjabianum (Shilajit) Incorporated Nanofibrous Mats for Biomedical Applications
Bharat Roshyara, Dr. Gorkakh Raj Giri, Gunanand Pant	Vegetation Diversity and Its Utilization in Taranagar Community Forest Area, Dhangadhi, Kailali
Bhawana KC	Returnee Youths' Experience of Employment in India: A Case in Mahendranagar
Devichandra Thapa, Jyoti Kuikel, Prabesh Paudel, Rebisha Sapkota, Sabita Sapkota, Damaru Prasad Paneru, Niranjan Shrestha	Outbreak Investigation of Cholera in Birgunj, Nepal: An Unmatched Case-Control Study
Govinda Raj Upadhyay	Household Willingness to Pay for Wetland Conservation in Nepal: Evidence from Ghodaghodi Lake Based on Perceived Ecosystem Services
Hemant Mahara	Farmers Perception and Adaptation Strategies on Climate Change in Deukhuri, Dang
Himani Pandit, Pareekshya Devkota, Usha Giri, Rajani Malla, Giri Raj Tripathi, Gorkha Raj Giri	Harnessing Rhizosphere Phages of medicinal plants for Bioremediation of Multidrug-Resistant Environmental Pathogens
Devichandra Thapa, Jyoti Kuikel, Prabesh Paudel, Rebisha Sapkota, Sabita Sapkota, Damaru Prasad Paneru, Niranjan Shrestha	Outbreak Investigation of Cholera in Birgunj, Nepal: An Unmatched Case-Control Study
Aashutosh Kalauni, Bhawana Karki, Bhupendra Joshi, Dileep Pant, Kiran Bhatt	Brain Computer Interface-driven Neural Prosthetics for Lower Limb Rehabilitation: Current Progress and Challenges
Nabin Bisht, Chiranjivi Adhikari, Harikishor Yadav	Municipality-Level Spatial Clustering and Socio-Environmental Determinants of Tuberculosis in Nepal, 2019-2024
Nabin kumar Yadav, Rajesh Mahara, Mamta Pal, Kumar Bhandari, Laxmi Bhat, Aashish Kumar Bist	Green Energy System for a Low-Carbon Future: Innovation and Transformation

Namrata Shree Pandey, Soniya Gadal, Dasu Ram Paudel	Bimetallic FeCu-LDH Derived Mixed Metal Oxide Nanostructures for Electrochemical Water Splitting
Parmeshwar Paudyal, Dasu Ram Paudel	Synthesis Characterization and Electrochemical Application of Wolframite (CoWO4) Nanoparticles
Prabin Kumar Joshi, Sabina Dahal, Raj Kumar Rai, Ganesh Bhandari, Gopi Chandra Kaphle, Dasu Ram Paudel	Bifunctional Electrocatalysis of Copper-Doped Cerium Oxide Nanocage Networks Enabling HER and OER
Pratik Rijal	Diet Quality and Its Associated Factors Among School-Going Adolescents of Thakurbaba Municipality, Bardiya
Samir Singh	Sexual and reproductive health literacy and its associated factors among undergraduate students studying in Dhangadhi Sub-Metropolitan City
Sandesh Bhetuwal , Surendra Bishwakarma, Dasu Ram Paudel	Synthesis, Characterization and Biological Activity of α- $SnWO_4$ Nanoparticles
Sojan Sharma, Anil Rajaure, Govinda Subedi, Avin Bista, Hari Bhakta Oli, Deval Prasad Bhattarai	Evaluation of Glycine max and Phaseolus vulgaris Methanol Extracts as Green Corrosion Inhibitors for Mild Steel Corrosion in 1 M HCl Solution via Gravimetric Method
Suja Maharjan, Guheswari Chataut, Pramod Aryal, Alina Shree Sapkota, and Rajani Malla	Promising Realm for Managing Antimicrobial Resistance Against Dam gene of Salmonella typhimurium (LT2): An In silico approach
Sushila Subedi, Xu Jinfeng, Zhao Shiyong, Liu Chang	FePc Single-molecule Grafted Carbon Spheres for High ORR Catalytic Activity and Stability for Zn Air Battery
Swasti Khanal	Mental Health Status and Associated Factors among Public School Teachers in Bardaghat Municipality, Nawalparasi
Kripa Thapa, Madhusudhan Adhikari, Aek Narayan Kamal, Deval Prasad Bhattarai, Sahira Joshi, Tanka Mukhiya, Hem Raj Pant	Synthesis and Characterization of Cobalt–Cerium Co-Doped Zinc Oxide Nanoparticles for Photocatalytic Degradation of Methylene blue and Safranin O and Antimicrobial Applications

Note: Please be aware that all times mentioned in the schedule are in Nepal Standard Time (NPT), which is UTC +5:45.

P1 Belonging to Academia? Institutions – People – Knowledge

Prof. Joanna Pfaff-Czarnecka, PhD
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For centuries, the academia seemed to be a natural site of dwelling for special groups of people and their knowledge reservoirs. How the academic institutions were shaped, who belonged to the deserving body of actors (academic teachers, administrators, and students) and what knowledge formed the canon, and through which mechanisms, did not seem contested – at least not from the West-dominated venture points of view. But since more than 100 years the nature of academia all over the world has been more and more contested. Gender, race, class, and other dimensions of 'social sorting' increasingly became a bone of contention, empowering some sections of marginalised populations while threatening and enraging parts of the academic establishment. This contribution discusses the modalities of belonging in contemporary academia while addressing three interrelated dimensions of academic constellations. First, the positional competition among the academic institutions in the contemporary world society that is still significantly shaped through post-colonial coordinates and imbalances. Second, the modalities of inclusion and exclusion within the academic faculties and student bodies that become more and more contested as we witness a significant widening of academic rank and file. Third, the question which knowledge is considered valid and how the processes of canonising and exclusion are negotiated, and by whom. While discussing the persisting asymmetries, boundaries and contestations, this contribution also discusses the recent problematisations and attempts at re-centring of Western, white, male, middle class '*academic normalities'* – while also paying attention to powerful reactions geared at preserving the social and ideational *status quo* in academia. Empirically, this contribution will be grounded in Asian research, drawing upon new quantitative data presented in relevant literature, using conceptual positions elaborated by Asian scholars located at different sites in Asia, and by using own qualitative material collected in South Asia.

P2 Bamboo Science, Technology and Innovation (BambooST): Harnessing Bamboo Science and Innovation to Preserve Filipino Heritage and Empower Community Livelihoods

Jennifer P. Tamayo, PhD
Department of Science and Technology – Forest Products Research and Development Institute, Philippines
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Bamboo Science, Technology, and Innovation (BambooST) is an integrative initiative that advances bamboo as a culturally significant, environmentally sustainable, and economically viable resource in the Philippines. Rooted in the preservation of Filipino heritage, BambooST combines indigenous knowledge with modern scientific research, technological innovation, and design applications to revitalize traditional bamboo use while addressing contemporary development challenges. The program highlights bamboo's role in cultural identity, ecological resilience, and sustainable material science, positioning it as a strategic resource for heritage conservation and innovation-driven development. Through community-based capacity building, product development, and research on the whole utilization of bamboo, BambooST transforms traditional bamboo practices into inclusive livelihood opportunities. The initiative supports local communities by enhancing skills in bamboo processing, and value-added production, while promoting sustainable enterprise development and market integration. By bridging heritage preservation with science and innovation, BambooST contributes to community empowerment, green economic growth, and the long-term sustainability of bamboo-based livelihoods in the Philippines.

P3 Cathode Materials for Enhanced Sulfur Redox Kinetics and Polysulfide Regulation in Lithium Sulfur Battery

Prof. Hak Yong Kim, PhD
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Lithium-sulfur batteries (LiSBs) are regarded as promising next-generation energy storage systems owing to their high theoretical energy density, yet their practical application is hindered by sluggish sulfur redox kinetics, severe polysulfide shuttling, and structural degradation of sulfur hosts. Here, we report hemispherical mesoporous hollow carbon nanobowls (HM-HCNBs) as a multifunctional platform that simultaneously serves as a high-efficiency sulfur host and as a functional interlayer for modified separators. The hollow and mesoporous architecture of HM-HCNBs provides high sulfur-loading capability, robust structural stability, and efficient charge transport, while functionalization with Mo-V-S introduces abundant polar catalytic sites that strongly anchor soluble polysulfides and promote their reversible conversion. Systematic electrochemical evaluation demonstrates that Mo-V-S@HM-HCNBs/Celgard-based LiSBs exhibit significantly enhanced reaction kinetics, reduced polarization, and accelerated Li^+ diffusion compared to pristine Celgard and HM-HCNBs-only separators. The optimized cell delivers a high discharge capacity of 1387 mAh g^{-1} at 0.1 C, superior rate performance with ~51.2% retention at 5 C, and excellent long-term cycling stability, maintaining 84.9% of its initial capacity after 200 cycles with a low decay rate of ~0.073% per cycle, and sustaining stable performance over 1000 cycles at 3C. Morphological analyses further confirm effective suppression of polysulfide migration, preservation of separator integrity, and homogeneous lithium deposition without dendrite growth. These findings establish a separator-cum-cathode concept that integrates physical confinement, chemical anchoring, and catalytic acceleration within a single platform, offering a versatile strategy for overcoming key limitations of LiSBs and paving the way toward high-performance and durable next-generation energy storage systems.

Keywords: Lithium-sulfur batteries (LiSBs), polysulfide, energy

P4 Chemistry-Guided Combustion Design for Viable Ammonia-Based Fuels

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Ammonia (NH_3) has emerged as a promising carbon-free energy carrier for future combustion systems; however, its widespread adoption is constrained by low intrinsic reactivity, limited flame stability, and challenges in emissions control. Dual-fuel combustion strategies**,** in which NH_3 is blended with hydrogen, oxygenates, or hydrocarbons, provide an effective route to overcome these limitations while preserving its decarbonization potential. Drawing on extensive experimental investigations and detailed chemical kinetic modeling, this keynote presents recent advances in understanding NH_3 dual-combustion behavior, with emphasis on flame propagation, ignition characteristics, and pollutant formation under engine- and gas-turbine-relevant conditions. A central focus of this talk is the pivotal role of carbon–nitrogen interaction chemistry in controlling the combustion dynamics of NH_3–oxygenate and NH_3–hydrocarbon blends. Carbon-derived radicals enrich the H/O/OH radical pool, promote NH_3 oxidation, and restructure nitrogen reaction pathways, thereby governing flame stability and heat-release rates. Simultaneously, these interactions critically influence the formation and interconversion of NO_x, N_2O, and key intermediate nitrogen species, underscoring the necessity of accurately representing C–N chemistry in predictive combustion models. By bridging fundamental chemical kinetics with engineering-relevant combustion metrics**,** this work offers insights essential for both engineers developing NH_3-fueled combustion systems and chemists advancing next-generation reaction mechanisms, contributing toward cleaner and more efficient ammonia-based energy technologies.

Keywords: Combustion, calorific value, ammonia-based fuels, green energy

I1 Strengthening Cryo-Climatic Monitoring and Research Capacity in the Southern Slope of the Himalayas

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The High Himalayas are a critical cryospheric zone facing rapid climatic changes, resulting in unprecedented glacier retreat, permafrost thaw, altered snow dynamics, changes in hydrological regime and heightened related hazards. Understanding this rapidly evolving system is crucial for ensuring future water security and reducing disaster risk across the region. To address this challenge, we emphasize three interlinked strategic fronts: (i) strengthening cryo-climatic monitoring to close critical observational gaps, especially at high altitudes., (ii) advancing capacity building to equip early-career scientists and local institutions with modern field, modeling, and analytical skills, and (iii) addressing emerging scientific questions related to cryo–climate feedbacks, and high-altitude hydro-meteorology. Strengthening these pillars will provide robust datasets and scientific insights necessary for improved prediction, risk assessment, and adaptation planning in the entire Himalayan region.

I2 Frontiers of Agronomic Researches at Nepalese Higher Education Institutes

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The UN-SDG defined technical education as one of the prime indicators of sustainable development and the Government of Nepal (GoN) has also implemented this vital task after launching the National Technical Education Policies (2019) and 16th Five Years Plant (2024/25-2028/29) in national perspective. The GoN established the formal system of higher-level agriculture education from 1968 by the name Institute of Agriculture and Animal Sciences (IAAS) under Tribhuvan University (TU), which now has been expanded throughout the country as national universities. The University Grants Commission (UGC) Nepal as the apex academic body, IAAS/ TU, Purwanchal University, FWU and the Agriculture and Forestry University (AFU) as the single Technical University have launched the under- and post-graduate research activities in different timelines in various departments of agriculture and veterinary sciences and several theses and journals have been produced as the output of those research activities. After the cursory views of about 2500-3000 availed publications from those post-graduate research outputs, approximately 50-75 PhD and 450-500 post-graduate research works have been produced only in Agronomy. Similarly, about 3500-4000 undergraduate research theses in allied sectors of agriculture under different universities has fostered the broader directions of the research for the future. The new research innovation recorded till now were on long-term agronomic researches mainly on no-cost, low-cost and high-cost technologies with the focus on minimizing the cost of cultivation and increasing resource-use efficiencies (RUEs) as the vital importance. The huge expansion of conservation agriculture and precision agriculture practices like site-specific nutrient, water and weed management, changes in planting windows of winter maize and spring rice, use of crop simulation modeling for various cereals, legumes, oilseed crops, practices of on-farm trials instead of on-station trials in integrated system approaches, initiation of advanced research on industrial crops, and piloting and promoting the high yielding hybrid cultivars of rice and maize are looking the most sustainable ways of agronomic research for the future. Moreover, the agro-biodiversity conservation mainly of the un-utilized crop species suited to the diverse agro-ecological niches under the adverse scenario of climatic change are the next action to be taken promptly. The strong collaboration with various national and international organizations and linkages with agriculture-based industries in promoting the employment options could be the next actions to be taken as the frontiers of agronomic research. The UGC as the apex body of HEIs in Nepal is working for the overall promotions of qualitative education systems at national level after launching the labor market driven programs in designing the new course curricula, innovative training, problem-based action research, scholarship, conferences and publications, the young faculties and graduate students of agriculture basically in agronomy are advised to promote their activities in achieving those grant opportunities.

Keywords: Agronomic research frontiers, Climate change scenario, Food security, Higher Education Institutions (HEIs)

I3 Insight into Electrocatalytic Water Splitting Activity of Tungstate-based Nanomaterials for Green Hydrogen Production

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The global shift to renewable energy is increasing interest in clean hydrogen fuel technology, particularly through electrocatalysis. We are developing efficient tungsten-based nanomaterials for hydrogen and oxygen electrocatalysis, leveraging various nanostructures like oxides, carbides, and nitrides due to tungsten's abundant reserves and versatile oxidation states. Our research utilizes a simple chemical reduction technique combined with hydrothermal treatment to produce nickel nanoparticles within an iron tungstate framework, demonstrating effective hydrogen evolution and oxygen evolution activities with low overpotentials. This innovative catalytic combination demonstrates good activity in hydrogen evolution reactions (HER) with overpotentials of 174 and 432 mV at 10 and 50 mA cm^{-2}, respectively. It also exhibits superior oxygen evolution reaction (OER) activity with 264 and 342 mV overpotentials at 10 and 50 mA cm^{-2}, respectively. The Ni-NPs@FeWO4 (+,-) fuel cell achieves a cell potential of 1.69 V at 10 mA cm^{-2}, showcasing effective electrochemical performance and hydrogen production efficiency, making it a promising and eco-friendly alternative for clean energy applications. Thus, by tuning the electronic properties of the tungsten-based nanomaterial, it is possible to unlock its catalytic power and make it a stable and economically viable electrocatalyst for industrial hydrogen production.

Keywords: Electrocatalyst, tungastae, water splitting, functional nanomaterials, green hydrogen

I4 Catalytic Pyrolysis of Waste Plastic: Product Quality and Environmental Suitability Aspect of the Process

Navneeta Lal, Sanjeevani Hooda, Prof. Prasenjit Mondal, PhD*
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Pyrolysis has emerged as an important technology for converting waste to valuable fuels and chemicals thereby reducing the environmental pollution and landfill burden. However, the thermal pyrolysis of plastic waste results in broad and uncontrolled distribution of products mainly consisting of waxes and long-chain hydrocarbons which limit their direct applicability as a high-grade fuel. In contrast the application of suitable catalyst significantly alters the reaction pathway through selective cracking, β-scission, isomerization, aromatization, and hydrogen transfer reactions thus producing desirable range of products. Therefore, the present study examines the influence of metal loaded spent adsorbent based catalysts on the catalytic pyrolysis of waste plastics (LDPE and PP). The integration of spent absorbent catalyst not only improves the oil quality but also provides an effective route for mitigating plastic waste accumulation. This study also evaluates the environmental footprint of the pyrolysis of polypropylene rich disposable face mask by assessing multiple impact categories and consequently examine how these impacts vary with the incorporation of catalysts using Life Cycle Assessment (LCA) methodology. This research demonstrates that the inclusion of spent adsorbent catalysts in the pyrolysis process not only optimizes resource recovery but also advances the transition toward a robust circular economy.

Keywords: Life cycle assessment, pyrolysis, hydrocarbon-oil, LDPE, PP, catalyst

I5 Air Pollution: A Growing Threat to Kathmandu Valley

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Air pollution has emerged as a critical environmental and public health threat in the Kathmandu Valley, Nepal. Rapid urbanization, population growth, increased vehicular emissions, industrial activities, construction dust, and the widespread use of fossil fuels have significantly deteriorated air quality in the region. The valley's unique bowl-shaped topography further exacerbates the problem by trapping pollutants, particularly during the dry winter season when temperature inversions are common. Kathmandu frequently ranks among the world's most polluted cities. Recent monitoring data show that the valley experienced hazardous air quality (AQI >300) on numerous occasions, with residents enduring unhealthy to hazardous air for more than 75 out of 90 days. $PM_{2.5}$ concentrations have been recorded at levels 12.4 times higher than World Health Organization (WHO) guide line. This article examines the major sources of air pollution in the Kathmandu Valley, trends in ambient air quality especially particulate matter ($PM_{2.5}$ and PM_{10}) and their associated health and socio-economic impacts. Evidence indicates a strong link between prolonged exposure to polluted air and rising cases of respiratory and cardiovascular diseases, reduced life expectancy, and increased healthcare costs. The study also highlights the vulnerability of children, the elderly, and individuals with pre-existing health conditions. Finally, the article reviews existing policy responses and mitigation measures, emphasizing the need for integrated air quality management, stricter emission controls, sustainable urban planning, and regional cooperation to address Trans boundary pollution. Addressing air pollution in the Kathmandu Valley is essential for safeguarding public health, environmental sustainability, and long-term economic development.

Keywords: Urbanization, particulate matters, cardiovascular diseases, trans boundary, Air quality Index

I6 Synthesis and Characterization of Biomass based Nanoporous Carbons for Adsorption of Pollutants from Water

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Contamination of drinking water by heavy metals, synthetic dyes, and pharmaceutical pollutants represents a critical global health crisis. In this study, nanoporous carbons (ACs) were synthesized from biomass by chemical activation using $ZnCl_2$, H_3PO_4 and KOH as activating agents. The resultant nano-porous carbons were characterized through iodine adsorption, methylene blue adsorption, scanning electron microscopy (SEM), X-ray diffraction, fourier transform infrared spectroscopy (FTIR), N_2 adsorption–desorption etc. Based on the results, it revealed that nano-porous carbon possesses amorphous structures with a large specific surface area, a porous structure, and abundant surface functional groups. Batch adsorption study was conducted for nanoporous carbon to assess their capability to remove various pollutants from the aqueous solutions. The effects of various experimental parameters such as contact time, solution pH and adsorbent dosage were investigated. The extent of pollutant adsorption increased with the increased in contact time, solution pH and amount of adsorbent used. The adsorption isotherm data were fitted to Langmuir and Freundlich adsorption models. Moreover, the adsorption isotherm data fitted well to the Langmuir model, suggesting monolayer adsorption on a surface. This study demonstrated that biomass derived nanoporous carbons showed huge potential for numerous applications.

Keywords: Biomass, nanoporous carbons, adsorption, pollutants, water

I7 From Access to Active Usage: A Comparative Perspectives on Digital Financial Inclusion in India and Nepal

Prof. Ashutosh Priya, PhD.
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Digital financial inclusion has become one of the key components of the inclusive growth policies in South Asia, especially in India and Nepal, where large segments of the populations continue to be vulnerable to financial marginalization. In this paper, a comparative study has been undertaken to examine the advancements, persistent issues and policy implications in digital financial inclusion in both countries using the statistics available in national surveys, central bank reports, and the international data. The process experienced in India is an indicator of rapid scale and depth, which is driven by the presence of digital public infrastructure. The implementation of the Unified Payments Interface (UPI) has revolutionized the retail payment and the volume of transactions is expected to grow as a result of the adoption of the interface, as transaction volumes reached approximately at 100 billion in 2023-24, representing an exponential increase from fewer than one billion transactions in 2017–18 (NPCI, 2024; Ministry of Finance, 2024).” The World Bank Global Findex (2021) states that in India, 78% of adult people have a bank account, and 35% use digital payments, which means that the proportions of access have changed to active use.
In Nepal, the development has been observable but at a slower pace. More than 21 million registered mobile banking users by 2022/23, reflecting Nepal Rastra Bank’s policy efforts to promote digital wallets, QR payments, and interoperable systems such as connectIPS (NRB, 2023). However, according to the Global Findex, ownership of accounts and the use of digital payments are lower in comparison with India, which demonstrates the restrictions associated with the income level, digital access, and infrastructure inequality (World Bank, 2021). Although the scales differ, the two nations share similar issues: rural connectivity is uneven, genders have disparities in the use of digital technologies, there are not many merchant networks in isolated communities, people need protection, and onboarding is based on smartphones. Some of the most important lessons identified in the analysis are interoperable digital public, simplified and inclusive KYC framework and investment in last-mile connectivity as well as coordinated financial and digital literacy programmes. The paper postulates that to shift from nominal access to meaningful and committed digital financial activities, it is necessary to synchronize technological innovation with sound regulatory oversight and equitable social policy. These lessons can offer other emerging economies that hope to have digitally empowered financial inclusion with viable advice.

Keywords: Digital financial inclusion, digital payments, financial inclusion policy, digital public infrastructure; Unified Payments Interface (UPI), mobile banking, South Asia, India, Nepal

I8 Leading the Entrepreneurships from Local to Global by Encouraging Indo-Nepal, Traditional Knowledge Practices

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The world, at the current, is moving like an explosion of technology, especially with Artificial Intelligence (AI), Data Engineering, Machine Learning, Automation, Cyber Security, and Quantum Computing. Role of machine has dominated the human initiatives, economy, daily life, and even the social relationships within the countries as well as globally. Although the entrepreneurship models are changing rapidly and the countries are searching new models of entrepreneurship and focusing on start-ups with new innovations to lead the economy in global perspective. Southeast Asia, Africa, and Latin America are emerging as exporters of innovation, with the latest AI technique based ultra-electronic devices serving as the key sources. Keeping in view, the entrepreneurships at global level, apart from ultra-electronic and AI based techniques, one can move to seek the entrepreneurship through Traditional Knowledge practices, which on one hand will open the door for self-employment, enhance economy and on the other hand, sustain the traditional knowledge system and culture in the machine-based modern society. India and Nepal have shared cordial relations for many years and possess strong similarities in their geographic, social, cultural, and traditional aspects. Through collaborative efforts, both countries can take a joint initiative to promote their rich traditional knowledge systems at the global level. Such an initiative can position these traditions as sources of global entrepreneurship by effectively showcasing, presenting, and promoting the value and beauty of medicinal practices, cultural, handicrafts, traditions and artisanal skills worldwide. The western countries are at demanding level to have such varieties from different corners of the world and have a temptation to enjoy this. This can be done by the youth of both the countries either separately even jointly at global level, which will be a new and a unique model of entrepreneurship by catching the temptations, choices and enjoyment of the people at global level parallel expanding the Indo-Nepal, traditional knowledge practices globally.

I9 Putting the Last First: Strategies for the Transformation of Sudurpashchim Province Through the Enhancement of the Entrepreneurial Ecosystem

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The objective of this study is to analyze the present socio-economic development in Sudurpashchim Province and to explore an alternative development paradigm centered on uplifting marginalized communities through the enhancement of the entrepreneurial ecosystem. Notwithstanding seven decades of development planning and the implementation of various approaches, the province remains the poorest of the nation's seven provinces with nearly 34 percent of the population living below the poverty line. While some changes in socio-economic indicators are evident, the province is characterized by a critical absence of livelihood opportunities resulting in mass migration from hill villages to the plains in search of livelihood , As a result many villages in the hill districts have been left deserted. This presentation proposes a "Putting the Last First" approach as a strategic alternative, with a specific focus on fostering entrepreneurship among rural youth. . An ecosystem comprises the various elements that enable economic activities to start and grow To boost entrepreneurship in this province, focus must be placed on connectivity, skill training, local resource use, tourism, intermediate technology, commercialization of ethnic products and government support.
The presentation concludes by outlining a framework of policy measures required to promote an entrepreneurial ecosystem in the province.

Keywords: Entrepreneurship, ecosystem, livelihood, policy measures, intermediate technology, government support, mass migration

I10 Governing Circular Entrepreneurship for Ecological Transformation: Policy-Relevant Pathways for Waste, SMEs, and Innovation in South Asia

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Nepal, like many South Asian countries, is confronting intensifying ecological pressures associated with plastic waste accumulation, rapid urbanisation, and growing demands on municipal service delivery systems. National policy commitments to environmental protection, urban development, and small and medium-sized enterprise (SME) promotion—led by ministries responsible for environment, industry, and urban development—provide a critical governance context for advancing circular economy approaches that align ecological sustainability with economic opportunity. Within this context, this keynote address examines how circular entrepreneurship and open innovation, grounded in regional heritage and institutional realities, can contribute to policy-relevant pathways for ecological and economic transformation. Drawing on action-oriented research from Sri Lanka's plastic recycling industry, the keynote offers comparative insights into how entrepreneurs collaborate with regulators, municipal authorities, universities, non-governmental organisations, and private sector actors to strengthen plastic waste collection, recycling, and value recovery systems. These insights are particularly pertinent for Nepal, where municipal solid waste management systems and evolving plastic control measures and bans increasingly necessitate complementary market-based, innovation-driven, and SME-led solutions. The address highlights how informal recycling practices, community participation, and traditional reuse behaviours—widely observed across Nepal and Sri Lanka—can be strategically integrated into formal governance frameworks through enabling regulation, public–private partnerships, and targeted innovation incentives. With a strong emphasis on governance and implementation, the keynote underscores the role of ministries and local governments in shaping circular entrepreneurship through regulatory coordination, green public procurement, fiscal incentives, and institutional support mechanisms for SMEs. It further emphasises the role of universities as boundary-spanning institutions capable of translating academic research into pilot initiatives, policy instruments, and scalable solutions aligned with national and local development priorities. By situating these insights within Nepal's ecological and development priorities, the keynote identifies opportunities for cross-country collaboration between Nepalese and Sri Lankan universities and policymakers, enabling comparative research, joint pilot initiatives, and regional learning in circular economy governance. Key takeaways for policymakers and practitioners include: (i) policy levers for strengthening SME-led circular entrepreneurship; (ii) governance mechanisms for improving municipal plastic waste management through open innovation; and (iii) the role of action-oriented research in delivering implementable, context-sensitive sustainability solutions for Nepal and South Asia. Ultimately, this keynote calls for research that moves beyond theory towards implementation, balancing academic rigour with practical problem-solving to support sustainable entrepreneurship, ecological resilience, and inclusive development across South Asia.

Keywords: Ecological transformation, policy, waste, SMEs, innovation

I11 Pedagogical Shift and Local Adjustment in Higher Education

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The shift from pedagogy to andragogy and heutagogy is crucial for modernizing higher education in Nepal. Pedagogy fits dependent school learners, while andragogy supports self-directed adult students in tertiary settings. Heutagogy encourages self-determined, capability-focused learning for careers and lifelong development in the 21st century. Despite government and university capacity-building programs, faculty often struggle to apply the knowledge, skills, attitudes, and aptitudes gained in classrooms. This limits the adoption of learner-centered teaching and local context adjustments. This qualitative study uses a descriptive, cross-sectional approach and inductive analysis to evaluate faculty readiness and to help members embrace these shifts, so they can better utilize their expertise and improve student outcomes. Findings reveal a persistent traditional mindset among faculty, with limited readiness to adopt innovative strategies that address modern learners' needs. Connecting professional development to the priorities of Karnali and Far Western provinces through community-based learning and digital access in remote areas can transform university teaching and learning. These insights offer practical guidance for faculty development to successfully adopt andragogical and heutagogical practices.

Keywords: Learner-centered education, capacity building, local adjustment, 21st century learning, mindset

I12 CarbonNegative Combustion Technologies for Sustainable Heritage and Innovation

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This keynote will explore integration of clean combustion technologies with carbon capture and utilization (CCU), specifically: oxy-fuel combustion in circulating fluidized-bed boilers, co-combustion of biomass and oil shale for negative-carbon emissions, and utilization of ash and CO_2 in sustainable applications. The topic aligns directly with the conference's intersection of heritage, technology, and transformation—showcasing how legacy energy systems (e.g., oil-shale-based power) can be retrofitted into forward-looking, sustainable energy solutions. The transition toward sustainable energy systems requires innovative approaches that both reduce emissions and enable the transformation of legacy power-generation technologies. This keynote addresses emerging pathways for carbon-negative combustion, focusing on how modern combustion engineering can contribute to the dual goals of heritage preservation and technological transformation. Drawing on recent research from TalTech's Department of Energy Technology, the talk examines advances in oxy-fuel combustion, circulating fluidized-bed (CFB) technologies, and co-combustion of biomass with oil shale, highlighting how these processes can achieve substantial reductions in net CO_2 emissions while maintaining the reliability of existing thermal-energy infrastructure. Special attention is given to integration of combustion systems with carbon capture and utilisation (CCU) strategies, including mineral carbonation and the use of ash-derived materials in construction applications. These pathways offer a practical means of converting industrial by-products into high-value resources, enabling circular-economy solutions within the energy sector. Additionally, the presentation discusses operational and material challenges associated with high-oxygen environments, ash behaviour, and fuel variability, along with current engineering solutions and monitoring strategies. Overall, the keynote demonstrates how traditional energy technologies—often viewed as part of industrial heritage—can be re-designed into forward-looking, sustainable platforms that support long-term climate objectives. This approach strengthens the link between heritage, innovation, and transformation, offering a blueprint for decarbonising power generation in regions with established combustion-based infrastructures.

Keywords: Combustion, sustainable heritage, circulating fluidized-bed (CFB)

I13 Chemical Looping Gasification of Biomass and Mineral-Rich Oil Shale: Recent Advances and Opportunities

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This study investigates the potential of chemical looping gasification (CLG) for the climate-neutral valorisation of biomass and mineral-rich oil shale into industrial feedstocks. Oil shale is an organic-rich sedimentary rock that yields energy and chemicals upon thermal conversion and is characterised by a high mineral content, resulting in the formation of substantial amounts of ash. Unlike conventional approaches that treat this ash as waste, the present work examines its use as an active component of the CLG process. In particular, oil shale ash is considered as a potential oxygen carrier, enabling fuel conversion with inherent CO_2 capture while simultaneously supporting mineral valorisation. The study focuses on CLG process concepts in which oil shale is gasified either alone or in combination with biomass. In these systems, mineral phases originating from oil shale ash participate in redox reactions within the looping cycle. Typical oil shale ashes contain significant amounts of calcium-, magnesium-, and iron-bearing phases, such as CaO, $CaSO_4$, and iron oxides, which are known to have oxygen transfer capability under gasification conditions. These mineral components provide a basis for oxygen carrier functionality while also influencing gas composition, sulphur behaviour, and solid-phase transformation pathways. Within the CLG configuration, ash-based oxygen carriers enable the production of hydrogen-rich gas without the need for gaseous oxygen, without the additional energy demand associated with air separation. Following reduction, the solid residues are converted into reactive mineral streams with properties relevant for use as raw materials in the cement and construction industries. The dual role of oil shale ash, as an oxygen carrier during gasification and as a construction material precursor after reduction, supports integrated process concepts that aim to minimise waste generation and maximise overall resource efficiency. Overall, the work investigates chemical looping gasification as a process capable of linking hydrogen production, mineral valorisation, and energy generation while reducing carbon emissions compared to conventional thermochemical routes. The analysis presented here establishes the scientific and process-level basis for subsequent experimental investigations of CLG, including thermogravimetric analysis of ash-based oxygen carriers, testing in laboratory-scale reactors, process modelling, and validation in pilot-scale chemical looping systems.

Keywords: Biomass, chemical looping gasification, co-gasification, CO_2 capture, oil shale, oxygen carrier

I14 Assessing the Role of Biochar for Climate Change Mitigation and Adaptation in Developing Countries

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Farmers in the developing world burn million tonnes of crop wastes/residues in their agricultural fields, generating large quantities of greenhouse gases (GHG) emissions and local air pollutants such as particulate matters (PM2.5) and smog (SOx). Besides, agricultural producitivity in low-income countries is low and remained stagnated due to various problems such as lack of fertilizers, irrigation, and conventional agricultural practices. Recently, irregular rain fall patterns and droughts have further impacted the agricultural sector. Agriculture, Forestry, and Land Use sector accounts for 18.4% of GHG emissions and out of which agricultural soils (4.1%), crop burning (3.5%), crop land (1.4%). Nitrogen fertilizers, crop burning, and agricultural management practices are the key contributors of the GHG emissions. The amount of inorganic fertilizer has caused biodiversity loss and GHG emissions, leading not only to changes in ecosystem functioning but also threats to the stability and resilience of agricultural systems. Agricultural residues can be utilized in several ways. Historically, open burning practices have been common, which not only burns the useful bioresources, but also contributes in local and global emissions. Recently, waste-to-energy (biomass power, pellet, biogas) are being promoted. But, many developing countries face challenges due to investments, logistics (supply chains) of agricultural residues, and availability of suitable conversion technologies. Due to resource constraints, limited land, producing more food from few resources is one of the key challenges. Agricultural residues can used to produce biochar which improves agricultural resource efficiency, and thereby contributing to climate change mitigation and adaptation. Water use (irrigation) and fertilizer application can be reduced when biochar is used in the agricultural field. Therefore, it is essential to evaluate the role of biochar for climate change mitigation and adaptation. This study explores the role of biochar for climate gains . The focus is to evaluate the merit of bio-char production in terms of land, water, and resource efficiency.

Keywords: Biochar, agricultural residues, climate change mitigation and adaptation, developing countries

I15 Jajarkot Darbar and Its Seismic Capacity

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Historic masonry buildings in Nepal are highly vulnerable to earthquakes, and Jajarkot Darbar is no exception. This investigation focused on the monumental heritage structure of Jajarkot Darbar. The limited research available on this topic in existing literature analyzes heritage through the FEM approach. A Finite Element analysis (FEA) method was employed for modeling the building by ETABS V21.0, and plan and structural details were created by AutoCAD tools and evaluated based on NBC 105:2020. The live load was considered from IS 875 Part 2: 1987. The response spectrum analysis was performed to determine the structural dynamic response, including natural periods, mode shapes, storey displacements, storey drift, and base shear demand. The Nonlinear static (Pushover) analysis was performed to determine structural capacity, evaluate the performance point of the structure by the capacity spectrum method CSM with the help of ATC-40, FEMA 356, based on spectral displacement Sd and spectral acceleration Sa in terms of ADRS format. The fragility curve was developed using the Barbat guidelines to quantify the probability of exceeding specific damage states (slight, moderate, extensive, and collapse) across varying spectral displacements. The likelihood of slight damage increases rapidly at low spectral displacement levels, while moderate and extensive damage become highly probable at intermediate displacement demands. At higher spectral displacements, the probability of collapse approaches a critical level, indicating that the structure is unable to sustain strong seismic excitation without incurring a significant risk of failure. Based on these findings, targeted conservation-oriented retrofitting is recommended to enhance the structure's seismic resilience while preserving its cultural and architectural value.

Keywords: Jajarkot Darbar, seismic vulnerability, pushover analysis, capacity spectrum method, performance point, fragility analysis

I16 Violation of River Rights

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Rivers across the world have been the cradle of civilizations, and many are revered as sacred and divine entities. A river's fundamental right is to flow freely throughout the year within its natural channel, guided by local topography and hydrological processes. However, increasing pressure from unmanaged urbanization, short-sighted "development" practices, the convenient neglect of hydrological analyses in infrastructure design—particularly bridges—and unchecked human greed have led to widespread violations of river rights. These violations manifest as encroachments, waste dumping, conversion of rivers into sewers, indiscriminate excavation, damming and diversion, aggressive "river training" works, and even complete enclosure of rivers within Hume pipes or long box culverts. As living physical systems, rivers adapt to such disturbances through processes such as aggradation, degradation, avulsion, and by following the altered pathways imposed upon them. When gradual adjustment is no longer possible, rivers respond by reclaiming their space and rights. These responses are commonly labeled as flooding, inundation, erosion, destruction, or disaster—sometimes manifesting with non-moral but violent force. Instead of learning from these signals, human interventions often intensify, relying on increasingly rigid structural measures to "tame" rivers, which in turn provoke stronger and more destructive responses over time. This paper documents evidence of river-rights violations of urban rivers and presents basic technical analyses of river systems, including hydrology, land-use and land-cover change, and hydrological and hydraulic modeling. It further examines the warning signs exhibited by Dhobi Khola and Chakhuncha Khola in Kathmandu. The lessons from these rivers underscore that timely learning and the prevention of further violations of river rights are long overdue.

Keywords: Violation, hydrological, unmanaged urbanization

I17 Research towards Eco-resilience

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Eco-resilience is the ability of natural and human systems to withstand, adapt to, and recover from environmental shocks, which is an important aspect, specific to climate-vulnerable areas like South Asia which faces frequent extreme weather, water scarcity, and ecosystem disruptions due to climate change and development pressures. Strengthening ecological resilience is crucial for sustainable development as South Asian region, face the challenges of excessive population growth, habitant expansion, and developmental exploitation that has resulted in degrading the strength of nature, making these areas vulnerable to disasters and disrupting environmental stability. Climatology Lab in DAP, Indian Institute of Technology Roorkee is working to conduct a multi-hazard risk analysis through participatory surveys, proactive predictions, and assessment frameworks to mitigate risks and vulnerabilities. Tools are being developed to achieve the above purpose, like GeoSM-NatE tool used for geospatial mapping of ecosystems to detect changes in them and find the solutions to maintain nature-based ecosystems. SAADRI is one such organization involved in advancing eco-resilience by focusing on the importance of data-driven planning and ecosystem-based solutions.

I18 Emerging Heritage Discourses for Innovation and Transformation: Towards an Interdisciplinary Discourse of Heritage

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Heritage discourses have emerged in diverse disciplinary fields like archaeology, architecture, biology, cultural studies, development studies, environmental studies, and so on. Accordingly, there are international systems and processes that facilitate preservation of different types of heritage, and how they can support sustainable development. Since much of these international discourses have their roots in European and North American contexts, sometimes we notice divergences in discourses and practices particularly in countries like Nepal. Unlike a preservation-centric notion, the discourses in Nepal have been on the premises of continuity but these are not explicitly articulated until recently. Moreover, the overarching heritage discourse in Nepal seems to be that of the traditions and practices, rather than the physical things themselves. Today, we are caught up between these different sets of discourses and at times confused with yet another discourse of development which is perceived as contrary to the heritage discourse. This is where often the calls for innovation and transformation are situated to find some negotiations between the ideals of heritage (or conservation / preservation) and the desires of development. This talk will provide an overview of the evolution of these discourses with reference to how they have attempted to facilitate innovation and transformation so far, and will further explore the prospects for innovation and transformation of, and with heritage. The talk concludes with a call for an interdisciplinary discourse on heritage.

Keywords: Interdisciplinary, heritage, innovation, transformation

I19 Adopting Outcome-Based Education in Engineering Programs: Global Practices, Institutional Challenges, and Pathways for Nepal

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Outcome-Based Education (OBE) has become a widely accepted approach in engineering education as it emphasizes the actual competencies and abilities of students upon graduation and throughout lifelong learning. However, in the context of Nepal, engineering education is still largely grounded in conventional teaching–learning practices. These traditional approaches tend to focus narrowly on students' examination performance rather than on the development of professional competencies. As a result, students are often trained to recall and reproduce theoretical concepts and lecture notes merely to pass examinations. Such practices limit students' capacity for critical thinking, problem-solving, and practical application of engineering knowledge, thereby undermining the professional competence of future engineers. In response to this challenge, the present study aims to identify and analyze the gaps between conventional engineering education practices and the principles of Outcome-Based Education. Furthermore, the study seeks to highlight the need for adopting OBE-oriented curriculum design, pedagogy, and assessment methods to enhance the quality of engineering education in Nepal, support sustainable professional development, and promote lifelong learning among future engineers. The study explores the contextual framework for implementing Outcome-Based Education (OBE) by drawing on lessons learned from South Asian countries. This transition is a critical and necessary step for Nepalese engineering academia to develop graduates with engineering skills that meet professional, industrial, and societal expectations. The study examines the influence of OBE on teaching and learning processes, including transformations in curriculum design, classroom practices, and assessment methods. It also discusses the potential challenges faced by different types of engineering institutions during OBE implementation, such as faculty preparedness, outcome assessment mechanisms, and institutional support systems. Based on global best practices and the current state of engineering education in Nepal, the paper proposes practical, phased pathways for introducing OBE in engineering programs. The recommends the step-by-step actionable guidance for policymakers, accreditation bodies, universities, and educators working toward a structured, sustainable, and quality-driven transition to outcome-based engineering education in Nepal.

Keywords: Outcome-Based education, accreditation, curriculum design, program outcomes, learning Outcomes, pedagogy, assessment system

I20 The Inference Crisis & Modular AI

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Current artificial intelligence development is approaching a fundamental inflection point. This presentation argues that the prevailing paradigm of scaling ever-larger, monolithic language models is unsustainable and misguided. We detail the mounting evidence of diminishing returns, where exponential increases in parameters and computational cost yield only marginal gains in true reasoning and capability. This path creates severe downstream crises: prohibitive energy and water consumption, an inference bottleneck straining cloud infrastructure, and the looming exhaustion of high-quality human-generated training data, which risks causing irreversible "model collapse" through AI inbreeding. The alternative is a shift toward modular, specialized intelligence. We illustrate an architectural vision where discrete, optimized modules for vision, language, planning, and control interact synergistically—mirroring functional specialization in biological brains. This approach promotes efficiency, allowing targeted capability gains without brute-force scaling. Furthermore, we expand the definition of AI beyond large language models (LLMs) to encompass the vast landscape of non-verbal intelligence in robotics, computer vision, and real-time control systems. The conclusion is a call for a more sustainable and effective AI future. Progress must come not from building bigger models, but from building smarter, leaner, and more integrated systems. This requires prioritizing energy-efficient design, diversifying beyond text-centric training, and fostering collaborative "teams" of specialized AI agents. The next breakthrough in artificial intelligence depends on architectural innovation, not merely computational expansion.

Keywords: Modular AI architecture; AI scaling crisis; model collapse; inference bottleneck; GPU debt; AI energy efficiency; specialized intelligence

I21 Ecological Planning as a Metropolitan Paradigm: Theory and Policy Insights from Kathmandu Valley

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Urban regions located in ecologically constrained settings are increasingly confronted with interlinked challenges related to flooding, water scarcity, environmental degradation, and socio-spatial vulnerability. Conventional urban planning approaches, which remain largely sectoral, land-use focused, and institutionally fragmented, have shown limited capacity to respond to these complex dynamics. This paper examines ecological planning as a metropolitan-scale paradigm, using Kathmandu Valley as an empirical case to explore its theoretical and policy relevance. Kathmandu Valley is a closed hydrological basin formed on an ancient lakebed, where rapid urban expansion has coincided with extensive land-use conversion, river corridor encroachment, and weak regulatory enforcement. Drawing on analytical insights from the various studies done, the paper interprets recurrent flooding, groundwater depletion, declining water quality, and loss of ecological connectivity as outcomes of long-term spatial and institutional misalignment rather than isolated environmental problems. The analysis highlights the importance of watershed-based spatial logic as an alternative to conventional municipal and sectoral planning frameworks. It also identifies critical gaps in existing policy instruments, which remain poorly aligned with ecological processes operating at basin and metropolitan scales. Attention is given to the social dimensions of ecological planning, particularly the concentration of informal settlements along river corridors, where environmental risk and socio-economic marginalization intersect. By positioning ecological planning at the interface of spatial theory and policy coordination, this paper contributes to debates on metropolitan governance and urban resilience, offering insights applicable to other rapidly urbanizing basin cities.

Keywords: Ecological planning, blue and green infrastructure, metropolitan governance, urban resilience, Kathmandu Valley

I22 The impact of Artificial Intelligence on e-Government Service Delivery

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Artificial Intelligence (AI) is increasingly transforming e-government service delivery by improving efficiency, accessibility, and quality of public services. This *research* examines the impact of AI on e-government systems, focusing on its role in automating administrative processes, enhancing decision-making, and supporting citizen engagement. AI applications such as chatbots, data analytics, and intelligent information systems enable governments to deliver faster, more personalized, and cost-effective services. However, the adoption of AI in e-government also raises critical challenges, including data privacy, security risks, ethical concerns, and algorithmic bias. Through a review of existing literature, this *research* highlights both the opportunities and limitations of integrating AI into public service delivery. The findings suggest that while AI has the potential to significantly improve public service delivery, successful implementation depends on transparent governance, data security, skilled human resources, and citizen trust. The research concludes by recommending strategic policy measures to support responsible AI integration in e-government systems

Keywords: Artificial intelligence, E-government, public service delivery, digital governance, automation, citizen engagement, data privacy, public sector innovation

I23 Transforming Cultural Heritage Preservation Through a Novel Reverse Engineering Method for 3D Printing

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The preservation of cultural heritage is increasingly shaped by advances in digital technologies, particularly reverse engineering and additive manufacturing (e.g., 3D printer). While conventional reverse engineering methods enable accurate digitization of artifacts, they typically depend on sophisticated 3D scanning systems and computationally intensive processing. Such requirements often limit their adoption in contexts where cultural heritage is abundant but technological resources are constrained. This keynote presents a novel reverse engineering method that adopts an analytical and recursive approach to generate point clouds without the need for advanced scanning devices or complex data processing. The method relies on a small set of parameters, including instantaneous distance and rotational angle, together with fixed reference inputs, to iteratively construct geometric features. By varying these parameters using simple and well-established mathematical functions, the approach can model object features even when explicit mathematical representations are unavailable. As a result, the generated point clouds are compact, structured, and free from noise and outliers. The effectiveness of the proposed method is validated through comparisons with point clouds generated using standard parametric equations for basic geometric forms, demonstrating close correspondence in shape and structure. Its relevance to cultural heritage preservation is demonstrated through the digital reconstruction of traditional Ainu motifs from Hokkaido, Japan. These motifs, which are rooted in indigenous craftsmanship rather than formal geometry, are recreated as digital models and subsequently fabricated using a 3D printer. By integrating analytical modeling with accessible fabrication technologies, this work highlights how innovation can support the transformation of cultural heritage preservation practices. The proposed reverse engineering framework offers a practical and inclusive pathway for digitally safeguarding cultural artifacts while enabling their physical reproduction for education, research, and intergenerational knowledge transmission.

Keywords: Cultural heritage, technological innovation, digital preservation, reverse engineering, additive manufacturing

I24 Heritage Structures Should be Timely Renovated but Never Replaced with Non-sustainable Structures

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Infrastructure constructed since ancient times with strong historical, cultural, and social significance can be categorized as heritage structures. In Nepal, stone masonry houses in high-altitude mountainous regions, adobe structures in hills and mountains, bamboo–mud composite houses in the Terai, temples, historical monuments, and traditional Newari houses in the Kathmandu Valley and other regions collectively represent the country's diverse architectural heritage. These structures were built using specific locally available materials and indigenous construction techniques, resulting in buildings that are durable, aesthetically appealing, and naturally well insulated. Consequently, their indoor built environment remains relatively stable despite extreme external temperature and humidity variations during summer and winter seasons. Preserving such sustainable heritage structures is essential; however, they should be renovated using modern technologies and locally available sustainable materials rather than being replaced by non-sustainable reinforced cement concrete (RCC) structures. Although these traditional buildings generally exhibit adequate capacity to resist vertical loads, they are vulnerable to lateral loads induced by wind and earthquakes. The extensive damage and collapse of masonry houses during the 2015 Gorkha earthquake and the recent Jajarkot earthquake highlight the urgent need for lateral strengthening to enhance seismic resistance. The Nepal Building Code recommends the use of seismic bands, including plinth, sill, lintel, roof, and gable bands. Nevertheless, transporting steel reinforcement to remote mountainous regions remains challenging. Similarly, bamboo–mud composite houses in the Terai also require effective lateral strengthening solutions. This research article presents sustainable materials and construction techniques for enhancing the seismic resistance of heritage structures. The performance of various bio-fibers and bio-based reinforcement materials was evaluated by investigating their influence on the mechanical and durability properties of mortar and concrete required for flexural elements such as seismic bands. In addition, the application of bamboo *quincha* reinforcement in masonry walls is discussed as a viable technique for improving the lateral strength of bamboo–mud composite houses. These approaches contribute to sustainable infrastructure development and support the achievement of selected United Nations Sustainable Development Goals.

Keywords: Heritage structures; sustainable materials; stone masonry; adobe structures; bamboo–mud composites; seismic resistance

I25 Blending Science with Partnership for Addressing Water Insecurity

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Nepal has average annual water availability of over 7,000 m^3/capita/yr; yet facing issues of water insecurity. It's predominantly the issue of access, which can be called as economic water insecurity than physical water insecurity. Despite adequate priority on this topic in local, national, regional, and global forums, we are yet to make a significant progress towards ensuring water security. One of the bottlenecks has been less priority to science-based interventions design. Given the nexused relationship of water with other resources (e.g., energy, food, ecosystem), addressing water security requires a broader partnership of multiple sectors and actors. Considering value of partnership in this endeavor, Institute of Engineering at Tribhuvan University has been prioritizing the agenda of partnership for water security for more than a decade. It started with a partnership on a SATREPS project on water security of Kathmandu Valley, and subsequently expanded with partnership with Asian Institute of Technology (AIT) in developing a tool for water security assessment (called as WATSAT), partnership with Kathmandu Valley Water Supply Management Board, WaterAid Nepal, and beyond. This talk will highlight drivers of water insecurity, efforts made towards promoting water security by Tribhuvan University, and finally concludes with key considerations required for addressing water insecurity, specially in the context of increasing water-related risks with climate change.

Keywords: Climate change, nexus, partnership, science; water security

I26 Heritage as Future Intelligence: Appropriate Technology, Vernacular Wisdom, and the Transformation Toward Sustainable Living

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Across cultures and climates, communities have long relied on forms of knowledge that are ingenious precisely because they are simple, contextual, and human-centred. This keynote argues that such vernacular intelligence, rooted in climate adaptation, cultural continuity, and ecological balance, offers a powerful foundation for addressing today's intertwined crises of climate change, resource depletion, and social fragmentation. Drawing from case studies across Asia and the Middle East, including tropical highland houses of Yunnan, the climatic ingenuity of Iranian desert cities, and the passive modernity of Southeast Asian architecture, the presentation reframes "appropriate technology" as a return to cultural wisdom rather than a leap into high-tech novelty. The talk examines how passive design, modular construction, climate-responsive forms, and resilience principles, embedded from vernacular to modern and contemporary architecture, demonstrate that sustainability is not a technological invention but a cultural inheritance. These examples reveal how architecture can reduce energy demand, enhance well-being, and strengthen community resilience without relying on resource-intensive systems. The keynote further explores contemporary applications at the National University of Singapore, including the SDE Net-Zero Energy Building, Yusof Ishak House, and the NUS Baba House, to illustrate how heritage conservation and cutting-edge sustainability can coexist. These projects show that preserving embodied carbon, revitalising traditional knowledge, and designing for human comfort are not separate agendas but mutually reinforcing strategies. Positioned within the conference themes of heritage, innovation, and transformation, the keynote proposes a paradigm shift: sustainability, livability, and resilience depend less on "smart" technologies than on culturally grounded design, ethical stewardship, and behavioural change. By integrating local wisdom, passive systems, and circular thinking, societies can protect their past while securing a viable future. The call to action is clear—heritage must not only be conserved but mobilised as a transformative resource for shaping equitable, regenerative, and human-centred environments.

Keywords: Heritage, intelligence, technology, sustainable living

I27 Hydrochemistry of Important Rivers in the Third Pole Region

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The Third Pole (TP) headwaters supply fresh water to over 1.4 billion people across the Indus, Tarim, Ganges, Amu Darya, Brahmaputra, Yangtze, Yellow, Mekong, Salween, and Irrawaddy river basins, directly supporting their livelihoods. However, the TP environment is highly sensitive to global climate change. The global climate change, alongside unprecedented glacier loss, is expected to significantly impact water resource quality and availability in these regions. This review discusses the hydro-geochemistry of these ten major rivers originating from the TP to understand the dominant processes, solute sources, and their influence on river water quality. The rivers in the TP are alkaline with relatively similar chemical compositions; Ca^{2+} and HCO_3^- are the major dominating ions, generally derived from carbonate weathering and evapo-crystallizations. Geological and climatic factors, exacerbated by climate change, primarily govern the intra- and inter-basin heterogeneity for varying chemical constituents or solute fluxes, with minor inputs from anthropogenic pollutants. Climate change has been linked to considerably higher TDS, Na^+, Cl^- or SO_4^{2-} concentrations reported in the Amu Darya, Tarim and Yangtze rivers, making them unsuitable for drinking purposes and likely posing potential risks to human health. A long-term water quality monitoring network within the TP region is crucial for understanding regional water quality and associated detrimental changes due to climate warming, thus aiding in sustainable water resource management and water security.

Keywords: Third pole, hydrochemistry, water quality, geochemical processes, climate change, water security

I28 Nature, Culture and Community of Sudurpaschim: Revisiting Practices and Reimagining Sustainable Futures

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Sudurpaschim Province—comprising 75.14 percent high Himal (40.6%) and mountains (34.54%), and 24.58 percent plains, ranging from 109 m to 7,134 m in altitude and covering 15,539 square kilometers (13.28 percent of Nepal's total land area)—is marked by profound ecological diversity, cultural richness, and geographical uniqueness. Despite a population share of 9.4 percent, with a youthful demographic structure (63.25% youth), and the prominent presence of natural resources—water, forests, mineral deposits, and biodiversity—development indicators present an alarming picture. The province ranks third from the bottom in per capita income, has the lowest employment rate (24.1%), the second lowest contribution to gross domestic product (7.1%; NPR 404 billion), and the highest poverty rate (34.4%) in the country. The ecological, cultural, human-developmental, and economic sustainability of the province therefore needs to be reimagined and reconfigured as a holistic civilizational paradigm grounded in a rational relationship between humans and non-humans, tradition and modernity, and past and future. The province currently confronts multiple challenges: ecological crisis, climate anxiety, cultural transition, the disappearance of traditional knowledge systems, the uncritical adoption of modern development models, and emerging sustainability threats. With these concerns in view, this keynote explores the interconnections between nature (ecology), culture, and community life; traditional knowledge and modern scientific development; and the challenges that arise during phases of socio-ecological transition. It foregrounds the urgent need for renewed environmental attitudes and culturally rooted practices in order to reimagine sustainable futures. Drawing on environmental humanities, biocentric and deep ecology perspectives, cultural ecology, and development studies, the paper argues that Sudurpaschim acutely confronts ecological loss due to expanding local development interventions and other exploitative pressures on landscapes, flora, and fauna—adversely affecting ecology, livelihoods, and life systems. Migration, economic pressures, and growing exposure to the outside world are catalyzing rapid transformations in the social and cultural fabric. These shifts are rendering communities increasingly intolerant, less accommodative, less self-reliant, less industrious, more parochial, and more vulnerable to addictive behaviors—gradually making villages and community life less habitable. Although ecological, cultural, and developmental transitions are inevitable historical processes, they demand urgent reimagining and critical reassessment to enable constructive redirection toward sustainable and humane futures.

Keywords: Environmental humanities, ecology, sustainability, deep ecology, cultural ecology, modernity, migration

I29 Natural Language Processing for Low Resource Languages: Current Progress and Open Challenges

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The Indian subcontinent represents one of the most linguistically diverse regions in the world. It encompasses hundreds of languages across multiple language families, scripts, and socio-cultural contexts. In recent times natural language processing (NLP) has emerged as bridge between human communication and machine intelligence. Despite advances in NLP, the majority of existing models and benchmarks remain heavily biased toward high-resource languages. Languages like Hindi, Nepali, Bengali, etc. despite their rich scripts, grammar, and literature lack in digital data and computing resources. It limits effectiveness of NLP for such languages. This talk presents an overview of the current progress and open challenges in NLP for such languages. The talk highlights recent developments in datasets, pretrained language models, and large language models tailored to multilingual and low-resource settings. Particular emphasis is placed on challenges unique to these languages, including complex morphology, script diversity, code-mixing, scarcity of annotated corpora, and socio-linguistic biases. The discussion further examines the implications of large language models, identifying gaps in representation, evaluation, and fairness. Finally, the talk outlines emerging research directions and collaborative initiatives aimed at building inclusive, linguistically grounded, and socially responsible NLP systems for low resource languages.

I30 Digital Society and Political Value: A Theoretical Quest

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It is widely discussed that Nepal is undergoing a rapid transformation into a digital society, particularly in the sphere of political communication, where change has been most rapid. Existing studies and surveys indicate that more than-fifty percent Nepali people use social media to get political news and updates. Social media, as a key medium of political communication, plays a significant role in voting behavior and electoral outcomes in Nepal. However, how this growing reliance on social media interacts with broader changes in political values has received limited scholarly attention in the Nepalese context. Globally, the emergence of a digital society has been widely expected to foster greater accountability, transparency, and democratic practices, while expanding political participation and enhancing governmental effectiveness. Contrary to these expectations, however, many countries—including traditionally strong democracies—are experiencing a range of unintended consequences, such as post-modern forms of totalitarianism, the rise of populism, and deepening political polarization. Nepal is also not an exception. The key question of this study is what fosters democratic values. It argues that contemporary political values in Nepal are shaped primarily by utilitarianism, republican notions of citizenship, a state-centric economy, and personalized politics. Before developing the theoretical framework, it is important to note that these values remain far from what the constitution envisions. Overall, it can be argued that a political culture of anti-establishment sentiment has become widespread in contemporary Nepal, contributing to various social and political challenges. This study argues that a combination of three phenomena helps us understand the emergence of new political values in Nepal, which remain far from the constitutional vision. The first is the diagnosis–treatment gap. Prior to 2015, socioeconomic inequalities in Nepal were primarily analyzed through Marxist perspectives and the Frankfurt School, particularly the work of Iris Marion Young. However, proposed solutions are basically based on the theories of John Rawls, Will Kymlicka, and Amartya Sen. This disconnect is closely linked to issues of political ownership and a pervasive sense of lack of establishment, highlighting the gap between understanding social injustices and implementing effective solutions. Second, the communitarian character of Nepali society has been largely overlooked by policy approaches that emphasize individual capacity–based solutions. Local elites' concerns about the gradual erosion of informal institutions—a phenomenon anticipated in Michael Sandel's communitarian critique—have not only intensified anxiety but also actively nurtured anti-establishment sentiments in Nepali politics. Third, the rise of digital media has provided a shared platform for both these concerned local elites and dissatisfied youth to promote new political values, despite their divergent socio-economic grievances. An additional and crucial factor is that a significant number of Nepalis work in undemocratic countries. Their sustained political engagement through digital media is further accelerating skepticism toward process-centric models of democratic politics.
Taken together, these three phenomena—the diagnosis–treatment gap, communitarian displacement, and digitally mediated transnational discourse—constitute a critical framework for understanding the rise of new political values in Nepal.

Keywords: Society, digital**,** transformation, social media

I31 Some Thoughts on Migration within and from Nepal

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It is not just the history of Nepal, it is the whole history of the world that is a history of migration. What has changed in recent decades is the speed with which one can move around the world and the ease with which one can find out about opportunities on the other side of the world. As many have documented and as is the daily experience of many Nepalis, migration is now an almost universally supported cultural norm in Nepal, whether that is migration from village to town, from provincial town to the capital city, or from towns and cities to destinations abroad. Parents may protest but children insist that they must go, as all the members of their peer group are already planning to go. There are some methodological consequences of these facts about the world for social scientific study. Prime among these is to avoid the pitfalls of methodological nationalism (taking the existing nation-state units as a given, inevitable, and natural way to divide up the world, and to treat those units as separate and separable fields of study). Field-based studies are exhorted to be multi-sited, that is, to locate themselves in more than one place. There are justifiable worries on the part of anthropologists that 'multi-sited' inevitably means 'superficial'. One solution may be team-based research; another would be longitudinal studies that return repeatedly to the same sites over many years.

Keywords: Migration, Nepal, social change, methods, social research

I32 Transforming Rural Healthcare and Medical Education: KAHS Experiences and Opportunities for Dashrath Chand Health Sciences University and Far Western University

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The experience of the Karnali Academy of Health Sciences (KAHS) demonstrates that geographically peripheral institutions can lead nationally significant transformation in healthcare and medical education. Established in one of Nepal's most remote regions, KAHS deliberately redefined academic success by embedding social accountability at the core of its mission. Through a *community-as-a-campus* model, the academy integrated clinical service delivery, public health mandates, and medical education into a unified strategy for regional health system strengthening. This keynote address distills the strategic, governance, and operational lessons of the "KAHS Model" and positions them as a practical blueprint for emerging institutions in Sudurpashchim Province Dashrath Chand Health Sciences University and the Faculty of Health Sciences at Far Western University. The Far West faces comparable socio-geographic constraints, yet also holds a unique opportunity to bypass early institutional inefficiencies. The address will highlight actionable pathways, including the strategic use of existing provincial hospitals as teaching platforms, context-specific policies for student selection and workforce retention, and governance frameworks that balance institutional autonomy with public accountability. The central argument is that transforming rural healthcare is not solely a technical endeavor, but a political and academic imperative. Purpose-built health sciences universities designed for their local realities rather than modeled on urban centers are essential to achieving equitable healthcare access and sustainable workforce development. By translating KAHS experiences into the Far Western context, this keynote aims to inspire institutional leaders and policymakers to build resilient, community-anchored universities capable of reshaping Nepal's health equity landscape from the ground up. The KAHS experience affirms that rural and peripheral institutions can drive nationally relevant health system transformation when grounded in social accountability and local realities. By adapting the "KAHS Model," Dashrath Chand Health Sciences University and Far Western University have a unique opportunity to build purpose-driven, community-anchored institutions that strengthen rural healthcare, ensure workforce sustainability, and advance health equity in Nepal.

Keywords: Rural healthcare, medical education, KAHS, Dashrath Chand Health Sciences University, Far Western University

I33 Injury Prevention and Safety Promotion: Challenges and Way Forward

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Injury prevention and safety promotion is crucial for any country to continue growing healthier and helps nations to achieve the 17 Sustainable Development Goals by United Nation. This will lead us immediately to achieve SDG Goal 3: Ensure healthy lives and promote well-being for all at all ages. This latter will also lead us to achieve our ultimate goal which is SDG Goal 1 No Poverty which aims to end poverty in all its forms everywhere. Achieving SDG1 will help to elevate nation's Gross Domestic Product and National Productivity. The objective of this paper is to raise the importance of injury prevention and safety promotion by highlighting the challenges faced and way forward in future. Multiple methods were used in organizing this paper which is based on sharing of experience of the journey from problem to research to dissemination to engagement of stakeholders to policy change. Various injury prevention fields covering injuries from traffic, drowning, fire and burn, falls and home injuries. New ventures in suicide and violence prevention also contributed to the paper. Both literature reviews covering own studies as well as others studies were used to understand and enrich the subject matter. This helped to shape the new research much better and contributed to the existing knowledge. A total of 6 major observations of challenges in the field of injury prevention and safety promotion were drawn from this exercise: i) justification of research, ii) human capital capacity, iii) capacity building period, iv) type of outcomes, v) importance of initiatives and lastly vi) role of policymakers. Way forward for betterment of the field is working at local level and exploring bottom-up approach and engaging non-traditional partners (royalty, large industry workforce, employers, retired, women, unions and victims)

I34 From Ethnomedicine to Molecules: Building National Drug Discovery Ecosystems

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Ethnomedicine embodies generations of empirical therapeutic knowledge, while contemporary drug discovery requires molecular validation, standardization, and regulatory rigor. Integrating these domains provides a strategic pathway for building sustainable national drug discovery ecosystems, particularly in biodiversity-rich, resource-limited settings. This presentation outlines a rational translational framework that progresses from ethnomedicinal prioritization to phytochemical characterization, bioactivity-guided screening, and small-molecule optimization through medicinal chemistry. Emphasis is placed on strengthening endogenous research capacity by linking academia, healthcare institutions, and public research laboratories to reduce reliance on imported medicines and enhance national health security. Key enabling factors-including ethical bioprospecting, protection of traditional knowledge, intellectual property management, and skilled workforce development-are discussed as essential components of a functional innovation ecosystem. By positioning drug discovery as a coordinated national strategy rather than an isolated laboratory activity, the talk demonstrates how traditional medical knowledge and biodiversity can be transformed into scientifically validated therapeutics with lasting public-health and economic impact.

***Keywords**:* Ethnomedicine, drug discovery, natural products, medicinal chemistry, national innovation ecosystem

I35 Bangladesh Public Health Challenges and Success: A Policy Document

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Bangladesh is widely recognized as a global public health success story in several areas—especially maternal and child health, immunization, family planning, and infectious disease control. However, the country deals with the complex epidemiological transition toward non-communicable diseases (NCDs), climate-related health risks, infectious disease outbreaks (e.g., dengue, NIPAH), and challenges in financing the health system. Bangladesh has made significant progress in population health despite resource constraints, and life expectancy has increased to around 73 years, reflecting improved healthcare access and living conditions. Bangladesh has made great progress in the last thirty years in areas like reducing infant mortality (from 96 per 1,000 in 1990 to 19.9 in 2025), under-five mortality rates (from 146 to 31 per 1,000 live births), and increasing skilled birth attendance (over 75% by 2020). Maternal mortality has also dropped significantly, showing that health programs are working. The Expanded Program on Immunization (EPI) achieved high vaccine coverage, which contributed to eliminating polio and reducing vaccine-preventable diseases like TB. However, NCDs and injuries now account for about 70% of deaths in Bangladesh, including heart disease, cancer, diabetes, chronic respiratory diseases, road traffic injuries, and drowning. These also create an economic burden because most healthcare spending is out-of-pocket. Bangladesh has one of the highest shares of out-of-pocket spending globally, limiting access and pushing households into poverty. Moreover, Bangladesh is highly vulnerable to floods, cyclones, and heat waves due to climate change, which disrupt health services and worsen chronic disease outcomes. There are new health issues raised in the coastal areas due to the climate change effect. In addition, the Bangladesh health system is managing the forcibly displaced Myanmar nationals' (FDMN) community health issues. Bangladesh's public health journey shows a dual reality: major global successes in maternal-child health and infectious disease control, alongside emerging challenges from NCDs, climate change, and health system financing. Moreover, there are few key structural barriers present in the health services, such as rural-urban service disparities, weak digital health infrastructure, limited emergency preparedness, and a poor referral system. Bangladesh has successfully demonstrated strong capacity to implement low-cost, high-impact public health interventions. The government should take initiatives to strengthen primary healthcare, improve health financing, address chronic disease prevention, build climate-resilient health systems, and strengthen disease surveillance to sustain health gains and move toward universal health coverage. Strategic policy actions focusing on prevention, equity, and system resilience will be critical for future progress.

Keywords: Policy, public health, immunization, disease

I36 An Urgent Need to Rewrite Sudurpaschim's Future Utilising Local Academia and Evidence

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This presentation examines the wider social determinants of health and resilience in Nepal's most vulnerable province, Sudurpaschim. Despite its geographic and cultural diversity, this province shares profound challenges, including high poverty rates, socioeconomic disparities, limited healthcare access, and the compounding impacts of climate change and migration. Through analysis of existing literature, health facility data, sociocultural practices, and community experiences, the study highlights critical issues such as preventable health conditions including maternal and child health risks, and a severe shortage of trained health workers. Traditional beliefs, fatalistic attitudes, and reliance on informal healers further delay care and exacerbate poor health outcomes. Digital health technologies and community-led approaches offer promising pathways toward increased resilience through empowerment. In this context, the presence and leadership of Sudurpaschim University create significant opportunities to deepen and expand this work through localised research and innovation. The University can lead critical studies on adapting digital health tools for remote places, integrate local health topics into higher education, and pioneer interdisciplinary research at the intersection of technology, community mobilisation, and public health systems. However, persistent barriers—including low health literacy, infrastructural deficits, and a deep digital divide—must be addressed by province and local governments using evidence thus generated. The presentation concludes with recommendations for policy and practice, emphasising community engagement, strengthened health systems, and the strategic use of technology. To fully harness this potential and create lasting impact, the establishment of a local, multi-disciplinary research centre at Sudurpaschim University. Such a centre would serve as a vital hub for evidence generation, capacity building, and collaborative action to build sustainable health resilience in Nepal's most marginalised region.

I37 Spectroscopic Characterization and Quantum Chemical Study of Materials

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In recent years, a large group of researchers is engaged in material science study like preparation, synthesis, and extraction. Spectroscopic characterization supported by quantum chemical study is very common powerful combination in modern material science. XRD, UV-Vis spectroscopy, vibrational spectroscopy, NMR spectroscopy etc. are some famous experimental tools in which electromagnetic radiations interact with matter and provide information in the molecular level. Quantum chemical methods provide theoretical understandings of electronic structure, molecular orbitals, chemical reactivity, stability and optical behaviors of the materials. Density functional theory (DFT) is widely used to compute geometry optimization, frontier molecular orbitals analysis, reactive sites, vibrational frequencies as well as NLO properties [1]. We have optimized frovatriptan, cefradine, Ondansetron hydrochloride (Ond HCl), cephalexin, and riparins employing B3LYP functional using Gaussian software [1]. Ond HCl is useful in controlling nausea and vomiting induced by cytotoxic chemotherapy and radiotherapy, and postoperative vomiting in patients who have undergone gynecological surgery [2]. Frovatriptan is used to treat the migraine and vascular headaches, especially in women at the time of menstruation [3]. Similarly, cephalexin is used for the treatment of infections against the genitourinary system, skin and soft tissue, upper and lower respiratory tract, bones and joints and several other infections. Cephalexin gives 117, Ond HCl gives 141 and riparins I, II and III give 102, 105 and 108 normal modes respectively [4].

I38 High Precision Nonlocal Positioning of Multiple Targets

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This paper reports on a study to demonstrate high precision nonlocal positioning of *multiple* remote targets based on the rangefinding application of optical correlation measurements. The continuous wave (CW) output beam of a fiber ring laser is split into two paths: one detected by a photodiode very close to the laser source, while the other sent out to multiple distant targets. The light reflected by these targets is collected with suitable optics and then detected by another photodiode. By correlating the output photocurrents of these two diodes, a second-order correlation measurement is realized, which can determine the positions of the targets with high precision. While the deployment of a variety of light sources in similar applications has been extensively reported in literature, the work presented here specifically focuses on *nonlocal* measurements. Additionally, considering multiple targets for detection, as opposed to a single target as is done in typical rangefinding schemes, this study makes itself more appealing to real-life scenarios where there is a need to track more than one object. Such measurements have potential applications in several fields under the umbrella of Light Detection and Ranging (LiDAR). Examples include remote sensing for atmospheric physics missions, satellite navigation, autonomous driving, and defense technologies. The paper will first cover a brief survey of a recently reported work which was based on the same physical principle but utilized a single target and was focused on a separate application. Then, a proof-of-concept experimental setup to modify the aforementioned work for multiple target detection will be presented. Finally, the results of a simulation comparing the positioning of a single target vs. multiple targets will be discussed.

I39 Generative AI - From Foundations to Frontiers

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Generative AI represents a fundamental shift in modern computing, moving beyond simple discriminative classification to systems that learn the "shape of possibility" from high-dimensional data. Rather than memorizing examples, these models internalize patterns to create novel content—including text, images, and code—by navigating complex probability landscapes. At the architectural core of this "symphony of mathematical operations" is the Transformer, which utilizes embedding layers to capture semantic meaning, attention mechanisms to establish contextual relationships, and feed-forward networks for refinement. Mechanically, these systems generate content by seeking "peaks" of probable word sequences, with parameters like temperature controlling the balance between exploration and exploitation. The "Economics of Intelligence" reveals a staggering barrier to entry, with training costs for frontier models like Gemini Ultra reaching an estimated $191M. Beyond initial training, the hidden economics of inference present a "perpetual" cost; for instance, GPT-4's annual inference bill is projected at $2.3B, roughly 15 times its training cost. This economic reality is compounded by the "Freshness Challenge" and the Stability-Plasticity Dilemma. While methods like Parameter-Efficient Fine-Tuning (PEFT) offer affordable updates, full retraining remains prohibitively expensive, and models frequently face "catastrophic forgetting," where learning new information overwrites existing knowledge. Looking toward the frontier, AI is evolving from passive tools into Agentic AI characterized by autonomy, tool use, and complex planning. New learning paradigms are emerging to address current limitations, such as Nested Learning (HOPE) for long-term memory consolidation and Reinforcement Learning with Verifiable Rewards (RLVR) for objective reasoning. As 86% of students already use these tools, the impact on higher education is mandatory and profound. The presentation concludes that society must pivot from information delivery to "wisdom cultivation," teaching students to be architects of intelligent systems rather than mere operators.

I40 A Robust LiDAR-Based Framework for Real-Time Human Detection and Tracking in Autonomous Systems

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Accurate perception of dynamic environments is essential for the safe operation of autonomous vehicles, mobile robots, and intelligent surveillance systems, where reliable human detection and tracking remain critical challenges. LiDAR sensing offers dense three-dimensional spatial information that is robust to illumination changes and preserves privacy, making it well suited for safety-critical pedestrian monitoring. However, identifying humans in raw LiDAR point clouds is difficult due to clutter, ground interference, occlusions, and dynamic scene variations. This paper presents a structured LiDAR-based framework for real-time human detection and tracking that integrates ground-plane removal, Euclidean clustering, Density-Based Spatial Clustering of Applications with Noise (DBSCAN), and temporal motion analysis. Euclidean clustering efficiently groups spatially proximate points, while DBSCAN enhances robustness to noise and irregular object shapes. Temporal association across frames enables stable trajectory estimation of moving targets. The framework was validated through pilot experiments using a Velodyne HDL-32 LiDAR sensor, demonstrating accurate separation of pedestrians from static background structures, reliable tracking under partial occlusions, and real-time computational performance. Beyond conventional urban scenarios, the proposed approach is particularly relevant for regions with complex terrain and limited infrastructure, such as the far-western areas of Nepal, where mixed traffic, low lighting, and unstructured roads reduce the reliability of vision-based systems. Overall, the results confirm that adaptive clustering combined with temporal tracking provides a dependable and scalable solution for LiDAR-based human perception in diverse environments.

I41 Solar Energy Potential and Its Uses Over Nepal

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Nepal's diverse and complex topography presents both opportunities and challenges for energy harvesting; however, the country possesses substantial solar energy potential due to its favourable geographical location. It is situated between latitudes 26°N and 30°N within the global solar belt. Nepal receives abundant solar radiation, with annual solar insolation ranging from approximately 3.7 to 6.6 kWh/m²/day and nearly 300 sunny days per year in different regions of the country. This makes solar energy a reliable and sustainable alternative to conventional energy sources, particularly as national energy demand continues to grow and electricity access remains limited in rural and remote areas. Solar energy in Nepal is utilized through various technologies, including photovoltaic (PV) systems for electricity generation, solar water heaters, solar dryers, solar cookers, electric car chargers and solar-powered irrigation systems. Off-grid and mini-grid solar PV installations have significantly contributed to the rural electrification by improving access to lighting, communication, education, healthcare services, and supporting small-scale cottage industries. In urban and semi-urban areas, the grid-connected rooftop solar systems are increasingly being adopted to reduce dependence on imported fossil fuels and to reduce pressure on the national power grid during peak demand periods. Despite its vast potential, the large-scale deployment of solar energy in Nepal faces several challenges, such as high initial investment costs, limited availability of high skilled human resources, inadequate policy implementation, and low public awareness. Nevertheless, with supportive government policies, international cooperation, and declining solar technology costs, there are crucial opportunities for expanding solar energy utilization. Such expansion strengthens national energy security, lowers greenhouse gas emissions, and plays a vital role in sustainable economic development through agricultural modernization, tourism promotion, and biodiversity conservation.

I42 Indigenous Knowledge and Scientific Innovation: Transforming Nepal's High-Altitude Medicinal Flora into Pharmaceutical Assets

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Indigenous communities of Nepal's Himalayan and trans-Himalayan regions have preserved extensive ethnomedicinal knowledge based on the use of high-altitude medicinal plants adapted to extreme environmental conditions such as low temperatures, hypoxia, and high ultraviolet radiation. These ecological stresses stimulate the production of diverse secondary metabolites, including alkaloids, flavonoids, terpenoids, glycosides, and phenolic compounds, which account for the significant therapeutic potential of these plant species. The integration of indigenous knowledge systems with modern scientific approaches has become an important pathway for unlocking the pharmaceutical value of Nepal's high-altitude medicinal flora. Medicinal plants from alpine and sub-alpine regions, including *Nardostachys jatamansi*, *Rhodiola rosea*, *Aconitum heterophyllum*, *Swertia chirayita*, and *Ophiocordyceps sinensis*, demonstrate strong convergence between traditional use and experimentally validated pharmacological activities. Phytochemical and pharmacological studies have reported neuroprotective, adaptogenic, anti-inflammatory, antimicrobial, hepatoprotective, and anticancer properties, supported by *in vitro* and *in vivo* evidence. Advances in analytical and bioassay-guided techniques, such as chromatographic separation and spectroscopic characterization, have further strengthened the scientific validation of traditionally used medicinal plants. Academic institutions, national research centers, and policy-driven initiatives in Nepal, including universities and the National Academy of Science and Technology (NAST), play a key role in research, documentation, and standardization of medicinal plant resources. The convergence of cultural heritage and scientific innovation supports evidence-based healthcare development, biodiversity conservation, and sustainable socio-economic transformation.

Keywords: Innovation, indigenous, ethnomedicinal, hypoxia

I43 Supramolecular Self-Assembly of Fullerenes: From Zero-to-Higher Dimensions

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Buckminsterfullerene (C_{60}), an ideally zero-dimensional (0D) molecular nanocarbon building block, undergoes supramolecular assembly and forms various assembled nanostructures, including one dimensional (1D) fullerene nanorods or nanotubes, two-dimensional (2D) nanosheets, and three dimensional (3D) cubes at the liquid-liquid interface. These nanostructures result from the supramolecular assembly of fullerene molecules due to the π-π stacking interactions. These fullerene nanomaterials have emerged as novel π-electron-rich carbon sources for producing shape-controlled porous carbon materials demanded in the sensing, energy storage, and energy conversion applications. In this contribution, we will discuss the recent advances in the production of self-assembled fullerene crystals from zero-to-higher dimensions, including porous fullerene crystals with bimodal pore architectures and hierarchical superstructures composed of fullerene nanorods growing out of a cubic solid core. We also discuss the direct conversion of these fullerene nanomaterials into hierarchically porous carbon materials comprising micro- and mesopore architectures by direct carbonization at higher temperatures and their applications for energy storage applications. The insertion of micro/mesoporosity enhances energy storage performances due to the ultrahigh specific surface areas and rapid diffusion of electrolyte ions through the interconnected mesoporous channels. Finally, we will discuss the novel MOFOF and COFOF composite materials obtained by integrating coordination and supramolecular chemistry.

Keywords: Buckminsterfullerene (C_{60}), molecular nanocarbon, supramolecular

I44 Knowledge Synthesis and Entrepreneurial Strategy in the Age of AI

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In today's development landscape, Artificial Intelligence (AI) has become indispensable for managing complex systems, yet it presents significant implementation challenges regarding contextual relevance. In this presentation, I will talk about the evolving dynamics of knowledge synthesis and entrepreneurial strategy in the age of AI. Based on my over 2 decades of experience in project management, academic sector and entrepreneurship development across South Asia and Southeast Asia, my focus will be learning from SATREPS project in Tonle Sap Lake, Cambodia and PLEASE project for plastic waste management in Nepal. These cases highlight the symbiosis between academic rigor for the generation of knowledge, and technological innovation by enabling entrepreneurs to scale it up. I will demonstrate that AI excels at synthesis but requires human specific sectoral knowledge and intuition to ensure relevance and novelty. While the accelerating diffusion of AI offers unprecedented tools for managing complex systems and synthesizing data, the generation of new, context-specific knowledge remains a deep domain of rigorous academic and applied research through human endeavor. The academic sector is crucial not only for generating primary data but also for cultivating graduates who can transition into entrepreneurship. However, the integration of AI requires a shift from viewing it as a standalone tool to treating it as a core organizational capability. Even though AI can enhance entrepreneurial decision-making, it often reduces novelty unless moderated by human sector knowledge and intuition. Therefore, entrepreneurs must rely on their own self-intelligence to filter AI outputs. In addition, entrepreneurship education must treat AI as a practice environment where failure is reframed as a key mechanism for learning and adaptation. Using the PLEASE project as a primary case study, I examined how AI was used to digitize the circular value chain through a Plastic Waste Information Management System, aiming for better data accuracy and operational efficiency. I will also address the accompanying challenges observed in these projects—such as the vital need for including the physical infrastructure, human resources, and strong community engagement—which technology alone cannot solve. Finally, I discuss the critical implications for human capital development, particularly for nations like Nepal that are transitioning from Least Developed Country status. I advocate for an educational shift that fosters knowledge synthesis capabilities, equipping graduates with systematic thinking, ethical reasoning, and the ability to use AI as a practice environment for experimentation rather than passive consumption. Sustainable development ultimately relies on a collaborative ecosystem where universities generate foundational knowledge and entrepreneurs leverage AI to translate that knowledge into inclusive, and scalable solutions.

Keywords: Knowledge synthesis, AI-enabled entrepreneurship, Nepal LDC graduation, sector knowledge, SATREPS/PLEASE, critical thinking, collaborative ecosystem

I45 Precision Agriculture: Remote-Sensing-Based Agriculture System Characterization and Management

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Pakistan's agriculture sector faces mounting challenges from population growth, land conversion, water scarcity, and climate change, necessitating the adoption of precision agriculture technologies to optimize resource use and enhance productivity. This project, Precision Agriculture: Remote-Sensing-Based Agriculture System Characterization and Management, aimed to (i) characterize soil spatial variability in tobacco-growing regions, (ii) develop AI-based algorithms for crop discrimination, and (iii) engage farmers and students in precision agriculture practices. The methodology involved field surveys in Ghazi and Hund, Swabi, where soil samples were collected and analyzed for chemical and physical properties, followed by spatial interpolation using ArcGIS and IDW techniques. Remote sensing data from Sentinel-1 and Sentinel-2 satellites were processed to extract vegetation indices, while machine learning models, particularly Random Forest, were employed to classify crops and delineate tobacco acreage. Results revealed significant spatial variability in soil attributes, with organic matter and potassium showing high heterogeneity, underscoring the need for site-specific management. Correlation analysis highlighted key interactions among soil properties, while DEM analysis confirmed homogeneous terrain suitable for agriculture. In Hund, AI-driven crop discrimination achieved 95% overall accuracy, with tobacco classification reaching 98% precision and delineation of 224 individual fields totaling 258 hectares. The project successfully introduced precision agriculture technologies, trained students, and engaged farmers, demonstrating tangible benefits in resource efficiency, soil health monitoring, and targeted input application. In conclusion, precision agriculture offers a viable pathway to sustainable farming in Pakistan, and it is recommended to extend project duration, utilize remaining funds for student engagement, and pursue commercialization through farmer workshops, industry partnerships, and academic dissemination to ensure widespread adoption and long-term impact.

Keywords: Remote-Sensing-Based Agriculture, Management, crop, organic

O1 Climatic Change: Impact on Animal production

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Livestock production is an integral part of agriculture and both are mutually beneficial. By-products of agricultural crops/grains are utilized as animal feed and dung of animals is used to increase the soil fertility. Cultivable land throughout the world is less, especially in India, as India has 16% of the world livestock population with only 2% of the world geographical area. There is competition whether the land is utilized for fodder production for animals or used for crop production for human beings to fulfil nutritional requirements. Adverse climatic conditions also influence fodder production and crop production ecosystem that disturb crop and fodder production system by virtue of this nutritional requirement of human population and animal population is disturbed. Climate change has direct and indirect impact on animal production. The climatic stress such as extreme temperatures, humidity, wind and solar radiation adversely influences animal physiological balance, productivity and reproductive efficiency, which in turn affect farm profitability. Understanding climatic stress and adopting appropriate mitigation measures such as plantation of shady trees availability of fresh and clean water round the clock, wallowing for buffaloes, use of bedding materials, controlled ventilation systems in animal houses are the need of hour to maintain production and reproduction efficiency of animals.

Keywords: Climate change, animal production, climatic stress

O2 Effect of Panchagavya and Chemical Fertilizers on Yield and Quality Attributes of Potato in Dadeldhura

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Potato, a second most important food crop in terms of human consumption in Nepal, faces significant challenges in terms of production and productivity. Inappropriate nutrient management is one of the critical concerns leading to low yield and profitability. Hence, a field study was carried out with the potato (*Solanum tuberosum* L.) variety Cardinal to determine the effect of different combinations of NPK and Panchagavya on growth, yield and quality of potato in Dadeldhura district in 2025 A.D. The experiment was conducted in Randomized Complete Block Design with five treatments viz., T_1: (Control), T_2: (RDF), T_3: (½ RDF + Panchagavya spray 10% @ 2 times), T_4: (½ RDF + Panchagavya spray 10% @ 4 times), and T_5: (Panchagavya spray@ 4 times), which were replicated four times. Growth parameters like plant height, number of stem/hill, number of leaves/ plant, sprouting rate and yield parameters like average number of tuber/hill, average weight of tuber/hill, total yield as well as quality parameter like marketable and unmarketable tubers were subjected to ANOVA and treatment means were compared. Significant variations were observed for days to 50% sprouting, number of leaves, average weight of tubers/hill and total tuber yield, where early sprouting was observed in T3 at 5% level of significance. Statistically the total yield of tubers was at par with all other treatments except T4. Significantly lowest number of leaves, average weight of tubers per hill and total tuber yields were observed in T4 when compared to all other treatments. Among all the treatments, T1 (farmers' practice) recorded the highest benefit-cost ratio (2.22) indicating it to be the most profitable method of nutrient management practices.

Keywords: Burning symptoms, farmers' practice, nutrient management, profitability, tubers

O3 Advances in Remedial Technologies for Groundwater Contamination: Challenges and Sustainable Solutions

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Groundwater contamination has emerged as a critical global challenge due to rapid urbanization, industrial expansion, intensive agriculture, and inadequate waste management practices. Contaminants such as heavy metals, nutrients, organic pollutants, and emerging contaminants pose severe risks to human health, food security, and ecosystem integrity. Recent advances in remedial technologies have shifted groundwater management from conventional containment-based approaches toward sustainable and in-situ restoration strategies. This paper reviews key developments in groundwater remediation, including permeable reactive barriers, bioremediation, and adsorption-based techniques using biochar, and nanomaterials. Hybrid and nature-based solutions integrating physical, chemical, and biological processes are highlighted for their enhanced efficiency and reduced environmental footprint. The study also discusses major challenges related to site heterogeneity, long remediation timeframes, cost constraints, and uncertainties under changing climatic conditions. Emphasis is placed on sustainable, site-specific remediation frameworks supported by hydrogeological characterization, monitoring, and modelling tools.

Keywords: Bioremediation, biochar, groundwater contamination, in-situ restoration

O4 Indigenous Knowledge on Vegetable Seed Collection and Storage in Sudurpaschim, Nepal

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Indigenous knowledge transferred from our forefathers, which has passed the natural trial and error process for tens of thousands of years surviving changes over time must be efficient, especially in the changing climatic context. Research and trials in the lab or field by the modern agriculturist that gets validation in 3 years may not be well-equipped to challenge thousands of years of practical experimentations in the farmers field. However, with commercialization and modernization climatically sustainable indigenous technologies and practices are gradually vanishing. Hence, this research endeavors to collect local and traditional technologies and practices from the vegetable farmers of Bajura, Doti and Kailali districts representing high-hills, mid-hills and terai of Sudurpaschim province of Nepal. Data was collected from focus group discussions and key informant interviews, especially aged farmers. This data is supplemented by 282 sample surveys from farming households. Results showed some interesting indigenous technologies and practices being used by some of the vegetable farmers although it is much abundant in cereal and other agronomical crops, may be due to recent practice of vegetable farming and more commercial nature of these crops. Our analysis also highlighted a dire need for preserving these knowledges may be by documenting in detail since this may be probably the last generation to preserve this knowledge since modern commercial farmers are more inclined to improved and modern technologies. Academic and research institutions may come to rescue by setting-up research trials to improve its efficacy and for demonstration whereas government and development organizations should promote scaling-up/out.

Keywords: Agriculture; climate resilience, indigenous technologies and practices, local knowledge, traditional practices

O5 Trend and Forecasting of Major Cereals Production in Nepal Using Autoregressive Integration Moving Average (ARIMA) Methods

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The present study was carried out to analyze the pattern and future prediction of production of paddy, maize and wheat in Nepal. Paddy, maize and wheat are the major staple food crops grown and having high production in the country (MoALD, 2025). The time series data on production of paddy, maize and wheat in Nepal for the period of 1961/62 to 2023/24 were used to identify the trend and the most widely used time series model autoregressive integrated moving average (ARIMA) was applied for modelling and forecasting the production of three major staple crops paddy, maize and wheat. However, the best fit model for forecasting were ARIMA (1,1,1,) for paddy, ARIMA (3,1,1,) for maize and ARIMA (1,1,1,) for wheat respectively. These models were further analyzed to validate for no significance autocorrelation among residuals. Although the identified models were found more reliable in forecasting production trend of paddy, maize and wheat for 2024/25 to 2029/2030. Moreover, the increasing trend was projected for all the three crops through these best fit models. The result from the study implies the increasing trend of paddy, maize and wheat in future which would play a vital role in food security, import reduction and maintain price stability in the market.

Keywords: Box Jenkins model, forecasting, Augmented Dickey Fuller test, production

O6 Effect of Rhizobium and Panchagavya on Growth and Yield of Mungbean in Kanchanpur, Nepal

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Mungbean (*Vigna radiata* L.) which is one of the most important summer and kharif season catch crop is grown mainly as pulse crop in Nepal. The yield of this short-term crop is restricted due to inadequate fertilizer application and lack of proper seed inoculants. A field study was conducted at Bhimdatta Municipality-12, Kanchanpur district during March-June, 2024 to study the effect of rhizobium and panchagavya on growth and yield of mungbean variety Pratikshya. The field experiment was laid out in Randomized Complete Block Design with eight treatments viz. FYM+RDF,P(ST+FA), R(ST), FYM +1/2RDF +P(ST+FA), FYM +1/2RDF + R (ST), FYM+P(FA)+R(ST), P(FA)+R(ST) and CONTROL. The treatments were replicated thrice. For seed treatment 5g/kg rhizobium was used whereas for foliar spray (FA) 5% solution was used. Farmyard manure was applied @5t/ha and recommended dose of chemical fertilizers (RDF) was applied @ 20:20:20 NPK kg/ha, as per the treatments. The findings showed that rhizobium and panchagavya had a significant influence on flowering, pod formation, pod weight per plant, and total grain yield at 5% level of significance. A 10% increase in plant height at 60 DAS was recorded with panchagavya under the treatment FYM +1/2RDF+P (ST+FA) compared to the CONTROL. Similarly early flowering and pod formation were observed in FYM +1/2RDF+P (ST+FA) and FYM +1/2RDF+R (ST) compared to CONTROL. In the same way, FYM +1/2RDF+P (ST+FA), recorded the highest pod weight resulting in maximum grain yield of 1.88 t/ha. This treatment also showed the highest benefit-cost ratio (2.03), indicating greater profitability over the others. Overall, the study demonstrated that the combined application of rhizobium and panchagavya plays a crucial role in enhancing the growth and yield of mungbean.

Keywords: Rhizobium, Panchagavya, Yield of Mungbean, fertilizer

O7 Role of Plastic Mulch to enhance the Productivity and Water Saving in Paddy Cultivation

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Rice production consumes large quantity of irrigation water. Judicious use of water is essential for increasing area under crop production with limited water supply. Film Mulching has been advocated as an effective means for conserving soil moisture in rice production. Plastic film-mulched had a significant water-saving effect on rice cultivation and could increase the seedling emergence rate, the number of tillers and effective panicles. This study aimed to assess the production potential, performance of rice under plastic mulching. The experiment conducted vide ten treatments with three replications; namely T1= Flooding with 5 cm continuously, T2 = Flooding with 5 cm Alternate Wetting and Drying (AWD) , T3 = Flooding with 5 cm continuously with mulch, T4 = Flooding with 5 cm Alternate Wetting and Drying with mulch, T5 = Flooding with 7 cm continuously, T6 = Flooding with 7 cm Alternate Wetting and Drying , T7 = Flooding with 7 cm continuously with mulch, T8 = Flooding with 7 cm Alternate Wetting and Drying with mulch ,T9 = No flood with mulch, T10 = Conventional (as control). The optimum yield can be achieved 81.53 q/ha in treatment T7 followed by treatment T3 (79.16 q/ha), T5 (78.36 q/ha), T8 (78.06 q/ha), T4 (77.63 q/ha), T6 (76.93 q/ha), T1 (75.26 q/ha), T2 (73.10 q/ha), T10 (68.96 q/ha) and T9 (67.13 q/ha). Maximum water use efficiency was found in 3.53 q/hc-cm in T9 followed by 1.62 q/hc-cm in T4 whereas water saving was found 66.67 per cent in T9.

Keywords: Paddy, productivity, mulch, yield, water saving.

O8 Yield and Yield Components of Different Oat (*Avena sativa* L.) Varieties Influenced by Sowing Dates in Inner Terai, Nepal

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The oat seed yield is strongly influenced by multiple factors such as genotype, cultural practices and their interaction with the growing environment respectively. The objective of this study was to evaluate seed yield and yield attributing traits for selection of suitable genotypes of oat in the inner Terai condition of Nepal. The experiment was conducted at the National Cattle Research Program (NCRP), Rampur, Chitwan during November to April, 2023/2024 using Randomized Completely Block Design (RCBD) in two-factorial arrangements with four replications. Four oat genotypes, namely Nandini, Amritdhara, Swan Pak, and Longford were used as one factor while three sowing dates; November 1, November 15, and November 30 were second. Analysis of variance showed significant differences ($P < 0.05$) among the genotypes in all studied traits. Swan Pak and Amritdhara had the best effective tillers plant^{-1} (NET), seed yield (SY), thousand seed weight (TSW), and harvest index (HI) respectively. Longford also had the highest dry matter straw yield (9.33 t/ha). The mean value for SY (2.18 t/ha) and TSW (28.68 g), were higher for genotypes sown on November 15. Based on yield and yield-attributing traits, SwanPak and Amritdhara remained the best, when sown on November 15 had the maximum economic yield. Positive association were found among seed yield attributing parameters (number of branch plant^{-1}, effective tillers plant^{-1} and; thousand seed weight) and seed yield. These findings validate the use of genotypes on the ideal sowing date to enhance seed yield, contributing to seed growers in Nepal's inner Terai region.

Keywords: Sowing date, seed yield, yield attributing characters

O9 Phenotypic Characterization and Performance Evaluation of Foxtail Millet Genotypes in Khairahani, Chitwan

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Characterization and evaluation of foxtail millet germplasm is important for identifying desirable traits and effective utilization of diversity for future breeding programmes. The objectives of this research are to unveil phenotypic characterization and hidden genetic variability. Using a randomized, complete block design with three replications, this study was carried out at Rampur Campus, Chitwan, from January to May 2025 using ten genotypes with Bariyo Kaguno as a check. Analysis of variance revealed significant differences among all genotypes at $p<0.05$. Most of the genotypes lacked anthocyanin colour, had horizontal and dark-coloured leaves, moderately drooping, cylindrical, and short-bristled panicles, and medium ovate, yellow grains. Chi-square revealed significant variation for brace root colour, leaf colour, grain colour, and leaf pedestal anthocyanin colouration. The Shannon-Weiner index (H') ranged from 1.07 for foliage intensity of green colour, showing higher variation, to 0.3 for grain colour. Similarly, evenness for maximum traits was moderate to high except for grain colour (0.44) and anthocyanin colouration of leaf pedestal (0.55). Cluster analysis gathered the genotypes into four clusters, with cluster I having the best-performing genotypes for grain yield, flag leaf area, and panicle length. The first two principal components (PCs) accounted for 81.7% of the total variation, where thousand-grain weight contributed positively to PC1, whereas flag leaf area, spike length, PL, and grain yield contributed positively to PC2. NGRC06659 and NGRC05087 were more resistant to blast and smut due to the presence of anthocyanin colour. Taller genotypes had higher DTH due to exhaustion of energy in vegetative growth. The intensity of green colour of the leaf showed higher variation because it is impacted by environmental adaptation, photosynthetic efficiency, and abiotic stress responses, all of which encourage genetic differentiation across accessions. Thus, the findings of this study can give valuable insights for further research in this area.

Keywords: Agro-morphological characterization, diversity assessment, diversity richness, PC

O10 Efficient Separation of Positive Current Collector from Spent Lithium-ion Battery Cathodes

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The positive-current-collector (Al) impurity present in the cathode materials of spent lithium-ion batteries (LIBs) poses significant challenges during the separation and recovery of valuable metals. The efficient and sustainable recycling of LIBs is of great strategic and environmental importance, which consequently creates an urgent need for the development of a reliable method to separate Al from the LIBs cathode material. Hitherto, the majority of reported separation methods have suffered from high costs and severe environmental concerns, including solvent toxicity, gaseous emission hazards, and the generation of alkaline waste residues, which have limited their large-scale practical application. In contrast, the separation method proposed in this study effectively addresses all the aforementioned issues, thereby providing a promising and superior alternative for Al separation. To maximize the separation performance, key process parameters, including solvent concentration, solid-to-liquid ratio, working temperature, processing duration, and supplied power, have been systematically optimized. The proposed method exhibits highly efficient Al separation performance with minimal economic cost, and its tunable operational parameters further enhance its practical applicability, collectively highlighting its superiority as the optimal alternative for Al separation in spent LIBs recycling processes.

Keywords: Lithium-ion battery, cathode material, current collector, separation

O11 Circular Bioeconomy Approach to Supercapacitor Electrode Materials from Agricultural Bioresidues

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The rapid depletion of fossil fuels and the growing demand for high-performance energy storage systems highlight the need for sustainable and environmentally friendly electrode materials. Biomass-derived activated carbon has emerged as a promising alternative for next-generation supercapacitors due to its renewability, low cost, and tunable porous structure. Activated carbon materials were synthesized from bio-residue seeds of *Zanthoxylum armatum, Accia catechu, Diospyros malabarica* and *Prunus persica* through multi-step carbonization and chemical activation using H_3PO_4 and KOH at elevated temperatures. Structural and physicochemical properties were investigated using XRD, FTIR, FESEM, and BET surface area analysis, revealing well-developed nanoporous architectures and high specific surface areas suitable for electrochemical applications. Electrochemical performance evaluation demonstrated favorable specific capacitance and stability, indicating the suitability of these biomaterials as negative electrode materials for electrochemical double-layer supercapacitors. The results highlight the potential of agricultural biowaste residue-derived carbon materials to contribute to sustainable energy storage technologies, promoting circular bioeconomy and green material development. This work supports global sustainable development goals by valorizing biomass waste into high-value functional materials for clean energy applications.

Keywords*:* Agriculture bioresidue, circular bioeconomy, supercapacitor

O12 Unveiling the Effect of Cr in the Cathodic Process Transformation of NiCrCu Steel Corrosion eEmbedded in the Simulated Nuclear Waste Disposal Environment

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The long-term corrosion behavior plays a pivotal role in the durability of metallic overpacks used for the geological disposal of high-level radioactive waste. In this study, the corrosion evolution behavior and corrosion kinetics of NiCrCu low-alloy steels in a simulated disposal environment were systematically investigated using weight loss test, electrochemical measurements, and several characterization techniques. Initially, the cathodic corrosion process transitioned from the reduction of residual oxygen to the combined reduction of oxygen and corrosion products, while the anodic process involved the active dissolution of Fe and electrochemical oxidation of ferrous corrosion products. Over time, oxygen was gradually depleted, promoting the cathodic process to shift towards rust reduction and the HER. The incorporation of Cr was found to mitigate the decreasing rate of OCP by forming a stable oxide layer on the steel surface. The double-edged effect of Cr in the long-term corrosion has been explored. Both the detrimental and beneficial effects of Cr on corrosion performance have been revealed.

Keywords: Nuclear waste, geological disposal, compacted bentonite, low-alloy steel, corrosion mechanism

O13 High-Temperature Corrosion Behavior of Low-alloy Steel in Simulated Deep Geological Environments

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Low-alloy Steels are extensively used as a structural and containment material in deep geological environments, such as underground repositories, where they are exposed to elevated temperatures and aggressive chemical conditions. Temperature is a critical factor influencing corrosion kinetics, electrochemical behavior, and the stability of corrosion products. This study examines the effects of high temperature and water infiltrating through the rock pores on the corrosion behavior of steel in simulated deep geological environments. Corrosion kinetics and behavior was investigated using weight loss test, in-situ electrochemical measurements, and surface characterization techniques. The corrosion evolution behavior of steel is influenced by the complex interplay of various environmental factors, such as pH, temperature, oxic conditions, and water saturation. The results obtained from these in-situ electrochemical measurements, surface characterization techniques, and corrosion product analysis will be discussed during the conference presentation.

Keywords: Low alloy steel, deep geological disposal, temperature, electrochemical measurements, corrosion evolution

O14 Bio-electrochemical Synergism: SRB-Chloride Interactions on Corrosion of 2205 Duplex Stainless Steel in Marine Environments

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Duplex stainless steels such as 2205 DSS are extensively used in marine and offshore engineering owing to their excellent combination of mechanical strength and corrosion resistance. However, under practical service conditions, these materials are simultaneously exposed to aggressive inorganic ions and active microbial communities. Chloride ions are well known for their strong ability to penetrate and destabilize passive films, while sulfate-reducing bacteria (SRB) are among the most detrimental microorganisms due to their biofilm-forming capability and production of corrosive sulfide metabolites. Despite extensive studies on either chloride-induced corrosion or microbiologically influenced corrosion, the synergistic effects of SRB and chloride ions and their impact on passive film stability remain insufficiently understood. In this study, the coupled corrosion mechanisms of SRB and chloride ions on 2205 DSS were systematically investigated in a simulated marine environment. A multi-technique approach combining electrochemical measurements (electrochemical impedance spectroscopy, Mott-Schottky and potentiodynamic polarization) with surface characterization (scanning electron microscopy and energy-dispersive spectroscopy) was employed. The results reveal that SRB inoculation promotes the formation of dense biofilms and generates sulfide species (HS^-, H_2S, FeS), which actively participate in interfacial electrochemical reactions. In the presence of chloride ions, these processes synergistically accelerate passive film breakdown, leading to a 2-fold increase in corrosion rate, a pronounced negative shift in corrosion potential (to −698.2 mV), and a substantial reduction in charge-transfer resistance. These findings demonstrate that SRB significantly amplifies chloride-induced corrosion of 2205 DSS and highlight the necessity of incorporating microbial activity into corrosion assessment and mitigation strategies for marine engineering applications.

Keywords: Microbiologically influenced corrosion (MIC), sulfate-reducing bacteria (SRB), 2205 duplex stainless steel, synergistic corrosion, Mott Schottky

O15 Advanced Self-Standing 3D Oxygen Electrodes Engineered at the Atomic Level for Fuel Cell Applications and Rechargeable Zinc-Air Batteries

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The oxygen evolution reaction (OER) and oxygen reduction reaction (ORR) play a pivotal role in a wide range of electrochemical energy conversion and storage systems. Single-atom catalysts offer exceptional atomic efficiency by maximizing the exposure of isolated active sites, while pyridinic nitrogen incorporation in carbon frameworks further enhances oxygen electrocatalytic activity by generating abundant reactive centers. In this work, we present a novel electrode architecture constructed through the atomic-level dispersion of cobalt species within pyridinic-nitrogen-rich carbon nanotubes encapsulating nickel nanoparticles, which are uniformly integrated into three-dimensional electrospun carbon nanofiber networks. The resulting Co_{SA}Ni-NCNT/CNF catalyst demonstrates outstanding bifunctional oxygen electrocatalytic performance, characterized by low OER overpotentials and enhanced ORR half-wave potentials. The atomically dispersed cobalt sites, anchored on a multidimensional carbon scaffold dominated by pyridinic nitrogen, ensure optimal accessibility of catalytic centers, while cooperative interactions with embedded nickel nanoparticles regulate the electronic structure of the metal sites and promote favorable adsorption of oxygen intermediates. DFT calculations confirm that these synergistic effects lower the reaction energy barriers and favor a four-electron reaction pathway. When employed as the air cathode in zinc–air batteries, the catalyst delivers high power density and impressive specific capacity. This study provides valuable insights into the rational design of single-atom-based bifunctional electrocatalysts and offers a scalable, cost-effective approach for advanced oxygen electrodes in rechargeable zinc–air batteries and anion exchange membrane fuel cells.

Keywords: Oxygen evolution reaction (OER), Oxygen reduction reaction (ORR), Fuel Cell Application, Rechargeable Zinc-Air Battery

O16 Electron Transfer Coupled Synergistic Corrosion of X70 Steel Induced by Mixed Sulfate-Reducing and Electroactive Bacteria Consortia in Marine Environments

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Microbiologically influenced corrosion (MIC) remains a persistent threat to steel infrastructure in oil/gas and marine environments, yet the mechanistic role of microbial interactions within mixed communities is still insufficiently understood. This study demonstrates that mixed microbial consortia induce the most severe corrosion, with corrosion rates significantly exceeding those observed under sterile conditions and in single-species systems dominated by sulfate-reducing bacteria (SRB) or electroactive bacteria (EAB). In SRB-dominated systems, corrosion is primarily driven by sulfide production and localized chemical attack, whereas EAB-induced corrosion is governed by direct microbial electron uptake from the steel surface. Notably, the mixed consortium exhibits a pronounced synergistic effect, markedly accelerating anodic iron dissolution and enhancing cathodic reactions. This enhanced corrosion behavior is attributed to electron-transfer-coupled interactions between SRB and EAB, which promote cathodic depolarization, destabilize corrosion product layers, and sustain continuous metal dissolution. Surface morphology and confocal laser scanning microscopy further confirm the formation of dense and heterogeneous biofilms in the mixed system, facilitating metabolic coupling and persistent extracellular electron transfer between microbial cells and the steel substrate. These findings highlight that corrosion severity in marine environments is governed not only by individual microbial processes but also by cooperative interactions within complex microbial communities.

Keywords: Microbiologically induced corrosion, sulfate-reducing bacteria, electroactive bacteria, electron transfer, surface morphology.

O17 Nepali Paper: A Sustainable Platform for Free-Standing Energy Storage Electrodes

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The environmental pollution is increasing rapidly due to global growth of population and industries. Among the potential solutions, eco-friendly functional materials such as nanoporous adsorbents, filters, and photocatalysts have demonstrated strong effectiveness in the removal of environmental pollutants. Here, locally available natural resource lokta plant has been used to fabricate clean energy storage material and promote and strengthen economy. Advanced carbon materials derived from the fibrous inner bark of Lokta and other plants, Nepali paper (NP) demonstrates versatility in integrating various materials. This study focuses on design and development of highly porous metal-organic frameworks (MOFs) at the nanoscale on the surface of NP. The synthesis of nanostructured material technologies provides eco-friendly framework for energy storage and energy conversion. This synthesis draws attention to the coupling between local resources and modern scientific innovation for cultivating a sustainable future.

Keywords: Lokta paper, energy storage, metal-organic framework, porous carbon

O18 Biomass as Sustainable Resource for Energy and Environmental Remediations

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Advanced functional carbons and their composite with nanoscale engineering possess great global demands for diverse applications. Use of expensive synthetic polymeric resource, toxic organic solvents and complex process of fabrication are critical issues in their production. Developing a simple method for utilizing locally available renewable resource to engineered advanced materials by using green solvent, instead of toxic organic solvents, is urgent need for sustainable economic development of the country. Here, we propose a simple and low-cost process for nanoengineering abundantly available local and renewable bio-waste into engineered advanced carbon and their nanocomposites. Different biomass, bio-waste and agro-wastes have been explored for energy and environmental applications are promising results were reported. This innovative idea will advance and promote the use of bio-waste as local renewable resources for the production of nanoengineered advanced materials leading to sustainable development.

Keywords: Biomass, sustainable, renewable, energy storage, wastewater

O19 Ultrafiltration Chemical Cleaning: A State of Art

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Ultrafiltration (UF) is widely integrated into water treatment systems as a secondary or tertiary barrier to protect against pathogens and their carriers, including colloidal and suspended particles. Due to its small pore size and ability to treat large volumes within a compact footprint and short hydraulic retention time, UF can simplify conventional treatment trains by replacing processes such as media filtration and/or by serving as an additional polishing step to produce high-quality, clarified water. However, UF membrane performance is highly dependent on effective fouling control. During operation, particles, organic and inorganic matter, and microorganisms accumulate on the membrane surface and within membrane pores, leading to flux decline, increased transmembrane pressure, higher energy demand, and reduced membrane lifespan. Routine chemical cleaning is therefore essential to remove reversible and irreversible fouling and maintain operational efficiency. Common cleaning agents include acids for inorganic scaling and biocides or oxidants for biological fouling control. Proper chemical selection and sequencing are critical, as inappropriate cleaning protocols will cause incomplete membrane cleaning and will result in poor membrane performance.

O20 Controlled Formation of Honeycomb-Like Silver Nanoflakes on Electrospun PAN Nanofibers

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Electrospun polymer nanofibers (ENFs) have attracted significant interest as versatile platforms for nanoparticle immobilisation due to their exceptionally high surface-area-to-volume ratio, tunable morphology, and functional stability. Among available polymers, polyacrylonitrile (PAN) is widely employed for nanofiber fabrication owing to its excellent chemical resistance, mechanical robustness, and compatibility with post-processing treatments. Decorating ENFs with metallic nanoparticles (NPs) can impart multifunctional properties; which is achieved using in-situ and ex-situ methods. In situ methods are able to produce well-decorated NPs on the surface of ENFs in comparison to ex-situ methods. In this study, we introduce a solvent-assisted, mild ultraviolet (UV) irradiation technique as a simple, efficient, and versatile in situ method for fabricating silver (Ag) nanoflake-decorated PAN ENFs. Freshly electrospun PAN nanofibrous membranes prepared from N,N-dimethylformamide (DMF) solutions were directly utilized without vacuum drying, thereby retaining residual solvent within the fiber matrix. The fiber membranes were subsequently treated with aqueous $AgNO_3$ under mild UV irradiation, enabling localised silver reduction and growth on the nanofiber surface. Characterisation techniques revealed the formation of uniformly distributed, honeycomb-like Ag nanoflakes strongly anchored to the PAN nanofibers. X-ray diffraction (XRD) analysis indicated that the deposited silver predominantly exhibited an amorphous structure, suggesting a distinct growth mechanism influenced by solvent retention and UV-assisted reduction. The resulting Ag nanoflake-decorated ENFs demonstrated pronounced antibacterial activity, due to the high surface exposure of silver, nanoscale morphology, and controlled ion release behavior. Overall, this solvent-assisted UV treatment provides a facile and scalable route for producing noble metal nanospecies-decorated ENFs with tailored surface architectures. The proposed mechanism and processing strategy offer a new platform for designing multifunctional nanofibrous materials for numerous applications.

Keywords: Electrospinning, silver nanoparticles, amorphous, nanofibers

O21 Reimagining Transit Governance: Rail Connectivity and Nepal's Path to Industrialization

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This study examines how the reconfiguration of transit governance and the expansion of cross-border rail connectivity can contribute to Nepal's long-term industrialization. As a landlocked and developing country, the Nepal's economic structure is deeply shaped by the efficiency, predictability and institutional design of its transit arrangements particularly with India. While existing transit frameworks have ensured basic access to external markets. They remain inadequately aligned with the requirements of modern, export-oriented industrial production. The purpose of this study is to assess how reforms in transit governance and rail-based connectivity can transform Nepal's structural constraints into developmental opportunities. The study addresses three core research questions: (i) How does transit governance influence industrial location and competitiveness in landlocked economies? (ii) What role can rail connectivity play in reducing logistics costs and improving supply-chain reliability in Nepal? (iii) How can institutional reforms in transit agreements support Nepal's industrial policy objectives while preserving economic sovereignty? The analysis is grounded in theories of landlocked development, new economic geography and trade facilitation which emphasize the relationship between transport infrastructure, institutional efficiency and industrial clustering. Methodologically, the study employs qualitative policy analysis which is supported by secondary data on trade flows, logistics costs and infrastructure development. Alongside a review of treaty provisions and connectivity initiatives also. The core argument advanced is that the transit governance should be conceptualized as a strategic component of industrial policy rather than merely a logistical arrangement. The findings suggest that rail-centric transit systems when combined with predictable legal frameworks and digitalized customs procedures can significantly lower transaction costs, enhance export competitiveness and stimulate industrial clustering within Nepal. The study concludes that a reimagined transit governance framework integrating institutional reform with infrastructure development can play a pivotal role in advancing Nepal's path toward sustainable and inclusive industrialization.

Keywords: Governance, economic sovereignty, digitalized customs procedures, efficiency

O22 Socioeconomic Impact of Foreign Employment on Households in Bheemdatta Municipaly Nepal

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This paper examines the impact of foreign employment and remittances on households in Bheemdatta Municipality-13, Kanchanpur, analyzing the reasons behind migration and differences between remittance receiving and non-receiving households. This study is based on both classic and recent theories of migration, including push-pull theory and the new economics of labor migration. The study adopts a mixed research design. The quantitative research is based on a census study of 500 households, half of whom send remittances. The data is collected through a semi-structured questionnaire. The qualitative research is based on a focus group discussion, six key informant interviews, and three case studies. The research indicates that remittance-receiving families have more women as household heads (23.6% compared to 17.2%), larger family sizes (approximately 5.7 persons compared to 4.8 persons), and higher literacy rates (79.4%). Remittance-receiving families also have higher educational attainment, with approximately 60% having completed secondary education or higher, better access to healthcare and insurance (64%), higher food security, better housing conditions, higher land ownership (83.2%), and higher asset accumulation, including universal smartphone ownership among remittance-receiving families. Remittance flows through formal banks and is dominated by mothers (32%). On the flip side, foreign employment has significant social consequences, including 40% family separation, higher dependence on remittance, declining interest in agriculture, skill degradation, and marital volatility. The current research provides empirical evidence at the micro level for the broader migration literature, thus highlighting the economic and social consequences of engaging in foreign labor in Nepal's rural areas. This paper is divided into four sections: an introductory part along with the discussion of the relevant literature, methodology, results and discussion, and finally, conclusions and policy implications.

Keywords: Foreign employment, socioeconomic impact, higher asset accumulation, migration

O23 Public–Private Partnerships in Heritage Innovation and Development

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Public-Private Partnerships (PPP) have emerged as a key means of controlling and managing projects, which assist in preserving and developing cultural heritage. They particularly come in used when the government funds are insufficient to conserve, repair and utilize heritage sites in a sustainable manner. Over the past few years, heritage projects are no longer about preserving something old but a more creative exercise, with the involvement of local people and long-term sustainability in mind. Precisely in this evolving setting, the PPPs unite the rules, the public objectives of the state with the money, management and technology of the private firms. The study examines the role of Public–Private Partnerships in advancing heritage innovation and development, with a focus on understanding their strategic relevance and developmental outcomes. The study analyze how PPP models contribute to the innovation, conservation, and adaptive reuse of heritage resources with the help of secondary data. The findings indicate that PPPs assist in increasing finances, introducing new digital and managerial concepts, and streamlining heritage projects. Whenever PPPs are properly executed, they not only ensure that heritage sites are better preserved but also ensure that the visits are made enjoyable, more tourism money is brought in and more jobs are created in the local areas. The study also highlights the certain issues like power cuts, commercial interests, lack of community engagement, ambiguous regulations, etc. that can harm cultural integrity unless managed carefully. It is also observed that the liberalization of policies, effective policy checks, and participation of all community members can align the goals of the private company with the goals of the public culture to preserve the heritage site and enhance innovation and development. The study demonstrates that PPPs can be effective instruments of heritage creativity and sustainable development when done thoughtfully and ethically. There is need to balance between preserving heritage and getting revenue and remain socially relevant. In the future, we may require more PPP models that are more localized, rely more on digital tools, engage communities in community creation, and examine the long-term effects. This will have the heritage projects remain inclusive, robust, and culture-authentic in a global, technology-intensive world.

Keywords: Collaboration, conservation, development, innovation, sustainability

O24 Reluctance of Younger Generation People in Farming Occupation: Implications in Nepalese Agriculture

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By the end of the twentieth century, there was labor force overcrowding in the agriculture sector in Nepal; while this sector is facing acute shortages of manpower at present. The aim of the study was to trace out the occupational shifts of sons in reference to their fathers and consequent effects in Nepalese agriculture. Data were collected as the occupation of father and son in terms of agriculture, salary based jobs, business and trades and wage labor works from 385 father-son pairs at *Gajuri* Rural Municipality in Nepal. Data were analyzed using Binary logistic regression method to short out the occupational relationships in between fathers and the sons. Findings indicated that while fathers are doing agriculture, their sons are likely to leave father's occupations; when the fathers themselves are doing other occupations than agriculture; their sons tend to catch father's occupations. This result confirmed that the younger generation's people try to leave faming occupation at any cost. The potential reasons behind such reluctance of youths in continuing occupations in agriculture sector would be the acute problems facing agriculture sector in Nepal like high input costs, uncertainty of climate, low level of mechanization and commercialization, fluctuation of market prices for the products and overall low return from the investment. Hence, resolving such issues is imperative to revive agriculture sector and retain youths in the agriculture occupation in Nepal.

Keywords: *Agriculture, father, son, occupation, reluctance*

O25 Himalayan Buffer to Hybrid Bridges: Nepal's Geography, Open Borders and Techno Security Dynamics of India Pakistan Rivalry

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This paper reconceptualizes Nepal from a classical Himalayan buffer state into a contemporary hybrid bridge where geography, open borders, and emerging technologies intersect to reshape the meaning of security in South Asia. Traditionally viewed as a terrain that separated larger powers through altitude, passes, and valleys, Nepal's landscape now hosts telecom relays, fiber routes, and dense mobile connectivity that enable new forms of transmission rather than obstruction. When this evolving infrastructure is read alongside the uniquely open India–Nepal border and the everyday sociology of the Terai, a distinctive space emerges where physical mobility and digital anonymity coexist. Drawing on buffer state theory, borderland studies, and hybrid/grey-zone warfare literature, the paper argues that Nepal's terrain and social openness acquire renewed relevance in the techno-security environment surrounding India–Pakistan rivalry. The argument does not position Nepal as a site of confrontation, but as a connective environment through which narratives, coordination, and influence can travel without visible militarization. In this sense, geography has not declined in importance in the digital age; its function has evolved through connectivity. By introducing the concept of the Hybrid Bridge—the interaction of terrain advantage, social openness, and digital density—the study offers a new framework to understand how small states and mountainous regions shape contemporary security dynamics. Nepal becomes a compelling illustration of how emerging technologies transform the strategic meaning of space while preserving the dignity of openness and peaceful coexistence.

Keywords: Hybrid bridge, buffer state, open borders, emerging technologies, Nepal, grey-zone security

O26 Nepalese Tax Structure: An Analytical Perspective

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Tax is the major source of revenue for the government, and development of any country's economy largely depends on the tax structure it has adopted. A Tax structure which facilitates easy business and leaves no chance for tax evasion brings prosperity to a country's economy. On the other hand, tax structure that has provisions for tax evasion and the one which does not facilitate ease of doing business shows down the economic growth. Nepal has a well-developed tax structure. The power to levy taxes and duties is distributed among the three tiers of the Government, in accordance to the constitutional provisions. Nepali tax system has gone through many reforms but still it is very far from being an ideal one. Tax collect from three level of government like federal level, province level and local level. Many problems like tax evasion, reliance on indirect taxes, black money and existence of parallel economy show that Nepali tax system requires some major reforms in the future ahead to address all this problem. This study is purely based on secondary data. Various figures are obtained from different sources of the government of Nepal. It is seen that there is major dependence on indirect taxes than the direct taxes.

Keywords: Direct taxes, indirect taxes, tax structure of Nepal, taxation, tax collection, tax evasion, federal, province and local level tax

O27 Arun-III and the Politics of Hydropower Development in Nepal

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Hydropower has been central to Nepal's development imagination, promising energy security, economic growth, and regional integration. Yet large hydropower projects have also been sites of political contestation, social resistance, and unresolved questions of sovereignty and benefit sharing. This paper examines the Arun-3 Hydropower Project as a longitudinal case study to analyse how development projects persist, adapt and regain legitimacy over time despite earlier political failure. Initially promoted in the 1990s with World Bank support and later abandoned amid strong civil society opposition. Arun-3 re-emerged in the 2010s under India's state-owned company, SJVNL, framed as a flagship project of national prosperity. Drawing on post-structuralist discourse analysis, the paper argues that Arun-3's revival was enabled not by the resolution of its underlying political and social contradictions, but by a shift in development discourse. Whereas earlier debates centred on displacement, accountability, and external imposition, contemporary narratives emphasize energy security, technical efficiency, and export-oriented growth. This is rendering political contestation as secondary. This discursive shift reflects broader dynamics within South–South Cooperation, where the language of partnership, sovereignty, and mutual benefit often depoliticizes development planning while preserving structural asymmetries. By tracing the historical and contemporary framings of Arun-3, the paper demonstrates how hydropower functions as both infrastructure and statecraft in Nepal. It links development cooperation with regional power relations between India and Nepal. The study contributes to debates on development politics by showing how large projects acquire a 'second life' through discursive reconfiguration. Raising questions about whose interests are prioritised when development is framed as inevitable and technical rather than contested and political.

Keywords: Arun III, India-Nepal relations, hydropower, discourse analysis

O28 Ecotourism in Nepal

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Ecotourism has emerged as an important alternative to mass tourism, particularly in ecologically fragile regions such as the Himalayas. Nepal, endowed with exceptional natural landscapes and deep cultural diversity, represents one of South Asia's most prominent ecotourism destinations. This paper examines the evolution and practice of ecotourism in Nepal within the wider South Asian context, focusing on its conceptual foundations, policy frameworks and on ground outcomes. It explores how Nepal's tourism strategy seeks to balance environmental conservation, community participation and economic development while also confronting persistent structural challenges. Drawing on existing literature and case studies from major ecotourism zones such as the Annapurna Conservation Area, Everest Base Camp and culturally significant sites like Palpa district's Rani Mahal, the study highlights both achievements and limitations of Nepal's ecotourism model. Studies reveal that while ecotourism has contributed to environmental awareness and socio-cultural revitalization, it has also generated uneven impacts including environmental pressure, cultural commodification and disparities in benefit distribution. Community participation remains inconsistent often constrained by weak institutional capacity and infrastructural limitations. The paper also situates Nepal's experience in comparative perspective with Bhutan's Gross National Happiness–oriented tourism model. While Bhutan's approach cannot be directly replicated due to differing political, economic and social contexts, it offers valuable lessons for sustainable tourism governance, regulation and community-centric planning in Nepal and the broader South Asian region. The study argues that Nepal's ecotourism potential remains immense but under-realized, particularly in lesser-known regions such as Palpa. By synthesizing policy analysis and empirical data , this paper contributes to ongoing debates on sustainable tourism in the Himalayas and underscores the need for inclusive, climate-sensitive, and regionally balanced ecotourism strategies in Nepal.

Keywords: Ecotourism, policy, fragile regions, cultural commodification

O29 Transforming Education with Cultural Heritage: Challenges and Opportunities for Innovation

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Education plays a vital role in preserving and transmitting cultural heritage, yet traditional teaching methods often struggle to engage learners in meaningful ways, leaving heritage underappreciated and at risk. Transforming education by integrating cultural heritage offers both challenges and opportunities, as it requires balancing historical authenticity with modern pedagogical innovation. The first objective of this study is to identify the key challenges faced by educational institutions in incorporating cultural heritage into curricula, including resource constraints, teacher preparedness, and the complexity of representing diverse cultural narratives. The second objective is to explore innovative strategies and approaches that can enhance learning outcomes, increase student engagement, and promote sustainable preservation of cultural heritage through education. The study employs a secondary data methodology, analyzing scholarly articles, institutional reports, policy frameworks, and documented case studies from schools, universities, and heritage organizations across different regions. The data were reviewed using a qualitative and thematic approach to uncover patterns, best practices, and innovative solutions. The findings indicate that challenges such as limited funding, lack of teacher training, and difficulties in integrating heritage content into existing curricula can hinder effective implementation. However, opportunities arise through the use of digital technologies, experiential learning, interactive museum programs, collaborative community projects, and interdisciplinary curriculum design, all of which foster innovation in education while maintaining cultural integrity. In conclusion, integrating cultural heritage into education is a transformative process that enhances learning, strengthens cultural awareness, and supports sustainable preservation. The study highlights that thoughtful innovation can address existing challenges and amplify the impact of heritage education. Future implications include the development of policy support for heritage-based educational initiatives, capacity-building programs for educators, and the adoption of technology-driven approaches that engage diverse learners. The scope of this research spans formal and informal educational settings, museums, heritage sites, and digital learning platforms, providing insights for educators, policymakers, and cultural organizations aiming to innovate while preserving cultural heritage.

Keywords: Cultural heritage, education, innovation, preservation, transformation

O30 Cultural Values as Drivers of Innovation in Organizational Management

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In today's dynamic business environment, organizations are increasingly recognizing that innovation is not driven by technology alone but is also deeply influenced by cultural values embedded within the organization. Cultural values such as trust, openness, collaboration, respect for diversity, and shared purpose shape how employees think, interact, and respond to change, making them important drivers of innovation in organizational management. The first objective of this study is to examine how cultural values influence innovation-oriented behaviors and decision-making within organizations. The second objective is to analyze the role of organizational management in nurturing cultural values that support continuous learning, creativity, and innovation. This study adopts a secondary data–based methodology, drawing insights from academic journals, management literature, organizational case studies, and reports from reputed institutions focusing on culture and innovation. The collected data were analyzed using a qualitative and thematic approach to identify recurring patterns, relationships, and managerial practices that link culture with innovation outcomes. The findings reveal that organizations with strong, positive cultural values are more likely to encourage idea-sharing, risk-taking, and employee engagement, which in turn enhance innovation performance. The study also finds that management practices such as participative leadership, transparent communication, and inclusive decision-making play a crucial role in translating cultural values into innovative actions. In conclusion, cultural values act as powerful internal resources that drive innovation when they are actively supported by effective organizational management. Rather than viewing culture as a constraint, the study highlights its potential as a strategic asset for innovation and long-term competitiveness. Future implications of this research suggest that managers should consciously align organizational culture with innovation goals, invest in value-based leadership development, and design policies that reinforce ethical and collaborative work environments. The scope of the study extends to organizations across sectors, including corporate enterprises, public institutions, and cultural organizations, offering practical insights for managers seeking to build innovation-driven organizations rooted in strong cultural values.

Keywords: Cultural values, innovation, organizational culture, strategic management, transformation

O31 E-Commerce and Heritage Innovation in Emerging Economies: Pathways to Economic Transformation

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The use of the digital marketplace has been growing in the past few years as the emerging economies as a way of striking the balance between economic modernization and the conservation of cultural heritage. The objective of this research paper is to find out that how e-commerce can be used to revitalize and commercialize tangible and intangible cultural heritage in new economies; further it also determines the contribution of heritage-based digital entrepreneurship to overall economic change, specifically in producing employment, accessing markets, and creating value to local populations. The data for this study is taken from secondary sources like journals, newspapers, reports, books, magazines, etc. The results indicate that e-commerce systems substantially reduce the barriers of entry of artisans, micro-entrepreneurs, and heritage based enterprises by increasing access to international markets, decreasing the reliance on intermediaries and allowing the narration and branding of cultures. The emergence of digital tools becomes an essential enabler of increasing visibility, consumer confidence, and value delivery of heritage products. Simultaneously, the research highlights enduring obstacles, such as digital infrastructural issues, lack of digital literacy, intellectual property issues, etc. that cannot be properly controlled by the community. The analysis also reveals that the governance of the ethics platform, capacity-building programs, and favorable policy framework are the determinants of whether the e-commerce will result in the true economic empowerment or strengthen the inequalities that are already present. To sum up, the paper contends that e-commerce as a means of innovation leveraged strategically in line with heritage innovation has the potential of becoming a formidable engine of economic change in the emerging economies with a combination of cultural maintenance and market-driven development. Nevertheless, this is not the automatic transformation and the transformation should be uniform; it needs purposeful interventions in which a cultural authenticity, community involvement, and sustainable business models are prioritized. In future, further research can be done based on the necessity to conduct interdisciplinary studies combining economics, cultural studies, and digital governance alongside having evidence-based policy-making that leads to the creation of inclusive digital ecosystems. Improving the digital infrastructure, skills development, and integrating ethics into the daily practices of e-commerce will play a crucial role in making sure heritage innovation can be relevant in the long-term economic viability and cultural sustainability of emerging economies.

Keywords: Cultural heritage, digital platforms, economic transformation, e-commerce, emerging economies

O32 Microfinance and the Multidimensional Empowerment of Rural Women: Evidence form Kailali District, Nepal

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The current research paper focuses on evaluating the effects of microfinance involvement on rural women in Nepal, Kailali District, in terms of economic, socio-cultural and household welfare. The study is based on a quantitative cross-sectional design and is based on a primary survey data of 400 women beneficiaries in four rural municipalities, namely, Bardagoriya, Janaki, Joshipur, and Kailali, in the year 2025 to evaluate multidimensional outcomes of microfinance participation in a systematic manner. To compare the change in income, savings, household expenditure, and women empowerment before and after attending microfinance programmes, the analysis uses descriptive statistics, paired sample t -tests, Wilcoxon signed -rank tests, chi -square analysis, correlation analysis, and binary logistic regression. The findings indicate statistically significant increases in household income and savings, as well as expenditure on health and education, which means a better financial stability and welfare outcomes. Additional discussion indicates that there is significant increase in the female decision-making power and social-cultural empowerment, especially when it comes to making joint household financial decisions. The regression results point to the length of membership, successful use of productive loans, education, and general empowerment rates as high predictors of income growth, highlighting the accumulative and capability-enhancing character of the microfinance participation. However, the paper equally reports the continuity of structural obstacles such as financial illiteracy, institutional constraints, and enshrined socio-cultural standard, which still dampen the full achievement of microfinance advantages. These institutional barriers prevent the optimum role of financial services on the welfare and empowerment of the women. In general, it can be concluded in the paper that microfinance can be used as a successful tool of women economic and social empowerment when it is integrated into an integrated development program that includes financial services together with education, capacity building and enabling policy interventions. The paper provides context- specific empirical data of western Nepal to the existing discussions on the transformative possibilities of microfinance on gender-inclusive rural development.

Keywords: Microfinance, women empowerment, rural development, household welfare, Nepal.

O33 Sustainable Management Strategies for Cultural and Heritage Organizations

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Cultural and heritage organizations like museums, archives, cultural centers and heritage trusts are increasingly under pressure to be financially viable, socially relevant and environmentally responsible in an ever changing world. It has thus become mandatory that sustainable management strategies must also be involved in order to secure their long term survival and influence. The objectives of this research is to discuss the essential management practices that can ensure sustainability of cultural and heritage organizations and preserve their primary role as preservation organizations. The other objective is to examine the role of innovation in governance, resource use and stakeholder participation in organizational resilience and continuity. The research is based on the secondary methodology, such as published papers from journals, research articles, policy documents, organizational reports, and case studies on cultural and heritage management. The data that had been gathered was examined and examined in a qualitative and thematic manner in order to determine the frequent challenges, successful practices, and new trends. The results show that organizational stability and engagement in the community are much better with such types of sustainable management plans as diversified funding models, community engagement, responsible utilization of digital technologies, and long-term planning. The paper also finds out that when it comes to alignment of management practices with cultural values and local environments, the trust of the stakeholders becomes stronger and the institutional legitimacy is enhanced. Cultural and heritage management has the ability to look beyond short-term management issues to focus on long-term value development of the society using sustainable management approaches. The paper emphasizes that sustainability in heritage management is not financial only but incorporates cultural integrity, social inclusion and environmental responsibility. There is the need to build capacity in the management of heritage, provide policy guidance in sustainable systems of governance, and enhance the interactions of cultural professionals and managers with communities. The study is also applicable to the understanding of public and private culture institutions, heritage organizations, non-profitable, and policy-making organizations, which provide information that can be used to perform sustainable decision-making in various cultural and institutional settings.

***Keywords*:** Cultural heritage, innovation, organizational sustainability, strategic management, sustainable development

O34 Managing Cultural Heritage Institutions: Challenges and Innovation Opportunities

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Cultural heritage institutions such as museums, archives, libraries, and heritage trusts play a crucial role in preserving collective memory and cultural identity, yet they operate in an environment marked by financial constraints, technological change, shifting visitor expectations, and growing demands for inclusivity and sustainability. Managing these institutions has therefore become increasingly complex, requiring a balance between preservation responsibilities and the need for innovation. The first objective of this study is to identify the key managerial challenges faced by cultural heritage institutions in the contemporary context, including governance issues, resource limitations, and organizational resistance to change. The second objective is to explore innovation opportunities that can enhance institutional effectiveness, public engagement, and long-term sustainability while respecting cultural values. The study adopts a secondary data based methodology, drawing on academic literature, policy reports, case studies from cultural institutions across different regions. The collected material was analyzed using a qualitative and thematic approach to compare management practices, innovation strategies, and outcomes. The findings reveal that major challenges include inadequate funding models, skills gaps, limited digital capacity, and tensions between conservation priorities and commercial pressures. At the same time, the study finds strong innovation opportunities in areas such as digital engagement, participatory governance, strategic partnerships, and heritage-based storytelling. Innovative management practices, when aligned with institutional mission and cultural sensitivity, are shown to improve operational efficiency, audience reach, and social relevance. In conclusion, effective management of cultural heritage institutions depends on the ability to navigate challenges through adaptive leadership and innovation-oriented strategies rather than relying solely on traditional administrative models. The study highlights that innovation does not weaken heritage values but can strengthen institutional resilience and public trust when implemented thoughtfully. Future implications of this research include the need for capacity-building in heritage management, policy support for innovation-driven governance, and greater collaboration between cultural professionals, managers, and technology experts. The scope of the study extends to public and private heritage institutions, cultural organizations, and policy-making bodies, offering insights relevant to both developed and emerging cultural economies.

Keywords: Cultural heritage, innovation management, institutional governance, organizational challenges, sustainable management

O35 Challenges of Infrastructure Development and Economic Growth in South Asia

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Research Objectives: The paper aims to analyse the challenges of infrastructure development faced by South Asian economies and relationship between infrastructure investment and development parameters. Engagement with relevant literature: South Asian region is undergoing structural transformation creating an urgent need for public infrastructure investment. Persistent infrastructure deficits, despite rising economic growth and investment, further impede progress toward achieving Agenda 2030 (Straub, 2008; Claderon and Servén, 2014 and Foster et. al., 2023). Concurrently, infrastructure demand is increasing, but infrastructure investment remains insufficient, given competing investment demands and capital market imperfections. Methods and methodology: Panel regression models, consisting of eight economies, with fixed and random effects are used to assess the influence of gross fixed capital formation, government capital expenditure, private sector investment, foreign investment, per capita GDP growth, bank credit allocation, and tax revenues on infrastructure development during 2000-2025. Four dimensions of infrastructure availability—physical, social, financial, and digital—are analysed through model estimations. Key contributions and significance: The results reveal that gross fixed capital formation, bank credit allocation, and GDP growth negatively affect infrastructure growth, while per capita GDP growth, government capital expenditure, and tax revenues have a positive impact. Government expenditures significantly continues as the primary financing mechanism, because private sector investment in public infrastructure remains challenging in South Asian economies. Outline of the paper: the paper has five sections. The first explains the status of public infrastructure and public spending in South Asia; second reviews the current literature on the relationships between growth, public spending and infrastructure development and the research gap; third details the methodology followed by the results and conclusion sections.

Keywords: Economic growth, infrastructure, public spending, South Asia

O36 Wildlife Tourism and Local Communities: Evidence from Sudurpaschim Province, Nepal

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This paper examines the impact of wildlife tourism on the livelihoods of the local population around the Khaptad National Park in Sudurpaschim Province Nepal. A detailed household questionnaire was used to elicit information on demographic details, income sources, and consumption expenditure from 224 households. An empirical assessment of the economic impacts of tourism reveals that tourism development has failed to provide tangible benefits to the community. A qualitative evaluation of community perceptions of tourism impacts and information from key informant interviews reveals contrasting ideologies among diverse stakeholders regarding park use. With tourism development largely driven by big private, often non-native players in the tourism industry, residents often feel alienated, which does not bode well for conservation efforts. The study village's households are separated into two categories those that participate in tourism (SVp) and those that do not (SVn). The main null hypotheses are that if tourism has a major direct influence on the community, then SVp would have significantly higher average monthly per capita expenditure (PCE), average monthly per capita income (PCI), and average labor force participation rates (LFPR) in nonagricultural activities, which include tourism, than SVn. All of the mentioned variables (LFPR, PCI, and PCE) would have larger averages for SVn than the CV due to the indirect impact, also known as the trickle-down effect. Both multivariate regression analysis of the factors influencing economic well-being and hypothesis testing based on linear regression were used in the quantitative study. Local young people should be prioritized when it comes to direct jobs in the park. A portion of the money made by tourists should be used to further enhance the park and the neighborhoods around it. To shift the nature of tourism's contribution to income and employment from a seasonal to a regular one, alternative tourist attractions in and around the park should be created and promoted.

Keywords: Wildlife tourism, economic, livelihoods, employment

O37 Impact of E-Service Quality Dimensions on Customer Satisfaction: Evidence from Online Shopping in Nepal

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The quality of e-services is very important in customer satisfaction and loyalty in online shopping, especially in the emerging e-commerce markets like Nepal. This paper analyzes the role of e-service quality dimensions in relation to customer satisfaction and the relationship between customer satisfaction and customer loyalty with respect to Nepal. The cross-sectional study design was applied and 387 online buyers were sampled and the data were collected and analyzed through the Partial Least Squares Structural Equation Modeling using SmartPLS 4and SPSS 26. According to the results, the strongest positive effects on customer satisfaction are associated with fulfillment quality ($\beta = 0.233$, $p < 0.001$) and website security ($\beta = 0.230$, $p < 0.001$), although merchandize attributes ($\beta = 0.144$, $p = 0.003$) and website design quality ($\beta = 0.125$, $p = 0.016$) also have a significant impact on the satisfaction. Furthermore, customer satisfaction had a significant impact on customer loyalty ($\beta = 0.394$, $p < 0.001$). These findings are compelling arguments to the fact that e-service quality improves customer satisfaction and loyalty in online customers. The research provides theoretical insights in confirming the validity of the e-service quality model in developing nation contexts and it provides practical insights that online customers can utilize to enhance the fulfillment process, the security of the websites, product representation and the customer engagement strategy.

Keywords: Customer satisfaction, customer loyalty, E-service quality, online shopping, Pls-SEM, Nepal

O38 Economic Growth, Income Inequility, and Fiscal Policy Effectiveness in Nepal

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This study examines the economic factors influencing growth and development in an economy. It focuses on key variables such as production, consumption, income distribution, employment, and investment. The research analyzes how government policies, market forces, and resource allocation affect overall economic performance. Using qualitative and quantitative data, the study highlights major challenges including inflation, unemployment, and income inequality. The findings suggest that balanced fiscal and monetary policies, efficient use of resources, and inclusive growth strategies are essential for sustainable economic development. This study contributes to understanding economic decision-making and provides policy recommendations for improving economic stability and growth. This dissertation investigates the dynamic relationship between economic growth, income inequality, and policy interventions in developing economies. Employing advanced econometric models, including panel data analysis and structural equation modeling, the study utilizes cross-country data over an extended period. The findings demonstrate that inclusive fiscal policies and targeted public investment significantly reduce income inequality while sustaining long-term economic growth. The research further identifies institutional quality as a critical mediating factor in policy effectiveness. This study advances economic theory by integrating growth and inequality frameworks and offers evidence-based policy recommendations for achieving inclusive and sustainable development.

Keywords: Growth, economic factors, investment, sustainable development

O39 Quantifying the Contribution of Informal Waste Collectors to Circular Economy: Evidence from Godawari Municipality, Kailali, Nepal

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Municipal waste management is one of major issue for municipalities of Nepal and informal waste collector's paly significant role to promote circular economy by collecting and shorting municipal solid waste. This study, investigates the role of informal waste collectors to the advancement of circular economy in the Godawari municipality, Kailali, Nepal. Mixed research design had been applied where primary data were collected from field survey with semi-structured questionnaires and secondary data from different published sources and literatures. 58 random sample were surveyed from municipality territory and five KIIs were conducted with recyclable waste traders. Result indicates that there are 55 cycle hawkers and 8 waste pickers actively engaged as informal waste collectors and they significantly influence the municipal waste diversion rate by shorting of recyclable waste. Each informal waste collector collects about 128 kg of recyclable materials daily from different areas and sell it in local market. This significantly reducing landfill pressures of municipal waste and contribute about 82% of total scrap materials sold from municipality territory. This advance circular economy by ensuring resource recovery and reintegration of materials into production cycles as well as supporting local livelihoods of informal workers. Gender disparities in informal workers were seen where more women (12.82%) represented in waste picking and shorting activities in dumping area and men dominating cycle hawking and collecting from communities. Moreover, cross-border labor is prominent in this sector where most cycle hawkers are Indian citizens (84.78%) and waste pickers are exclusively Nepali. Study concludes that integrating informal scrap collectors into formal system by keeping their records, providing training and integrating them with tax system through inclusive policies and institutional recognition is essential for enhancing sustainable circular economy through informal workers.

Keywords: Informal workers, waste pikers, socio-economic, circular economy

O40 Energy Transition and Economic Growth Dynamics in Nepal: Evidence from Time Series Analysis

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The ongoing global agenda is development with environmentally sustainable energy transformation from fossil fuel to renewable energy. The paper adopts a quantitative, explanatory times-series design to examine the energy consumption-economic growth nexus employing Autoregressive Distributed Lag (ARDL) bound testing and error correction framework in Nepal using the data spanning from1980-2023. The ARDL approach to co-integration suitable to accommodate variables integrated of different orders and handle potential endogeneity through dynamic lag structure. The estimated result for the ARDL bound test confirms the existence of stables and long-run co-integrating relation between GDP growth, renewable energy consumption, CO2 emissions, trade openness, total investment and urban population. Moreover, the long-run estimates reveals per capita renewable energy consumption and total investment exerts a positive and statistically significant impact on economic growth, reflecting the importance of clean energy expansion and capital accumulation in supporting long-term economic growth. Notably, urban population growth has a significant negative influence on economic growth, indicating structural and infrastructural constraints associated with unplanned urbanization. CO2 emission do not have a significant long-run effect on economic growth, suggesting that environmental degradation does not constitute a sustainable driver of growth. The short-run estimate indicate that changes in CO2 emission is positively and significantly influence economic growth, highlighting the persistence of carbon-intensive growth in the short-run. However, total investment exerts a negatives short-run effect, reflecting adjustment and gestation costs before materializing long-term benefits. Moreover, the estimated error correction coefficient is negative and highly significant confirming long-run stability, indicating approximately 71.5 per cent of any short run-deviation is corrected annually. The findings suggest that economic growth remains environmentally intensive in the short run, but renewable energy drives the long run. The study provides empirical support for a policy-driven green growth transition and offers important insights for aligning economic development strategies with environmental sustainability goals in Nepal.

Keywords: Renewable energy consumption, economic growth, CO2 emission, sustainable development, JEL classification: Q44, Q53,Q56

O41 Audit Committee Governance, Digitalization, and Sustainability Performance: Evidence from an Emerging Economy

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Corporate governance has progressed beyond mere financial supervision, necessitating a comprehensive incorporation of environmental, social, and governance (ESG) goals. In emerging economies, the audit committee (AC) is progressively acknowledged as a driver of sustainable value creation; yet, empirical data is still few. This study investigates the interaction of AC characteristics—such as size, independence, meeting frequency, and financial expertise—with gender diversity and digitalization, and their impact on accounting-based performance (return on assets), market-based performance (Tobin's Q), and ESG performance in publicly listed financial institutions. Utilizing agency theory and stakeholder theory, a balanced panel including 338 firm-year observations from 26 Bangladeshi commercial banks (2011–2023) was examined by regression and structural equation modeling. The results indicate that larger, autonomous, and financially astute committees enhance ESG scores and accounting profitability, whereas excessively frequent meetings hinder performance. Gender diversity and digital adoption enhance the beneficial impacts of audit committee knowledge, but ESG performance somewhat mediates the connection between audit committee features and financial results. Robustness assessments utilizing alternative model specifications, variance inflation factors, and heteroscedasticity diagnostics validate the consistency of the findings. This study enhances corporate governance literature by including digitalization and diversity into the audit committee framework, illustrating how equitable committee forms can promote sustainable growth in emerging markets. Practical implications urge regulators and boards to prioritize independence, experience, and diversity in committee appointments while limiting excessive meeting frequency.

Keywords: Audit committee characteristics, corporate sustainability, environmental social governance performance, digitalization, gender diversity, structural equation modeling, emerging economies.

O42 Federalism without Fiscal Deepening: Governance Capacity, Public Investment, and the Political Economy of Development in Post-Constitutional Nepal

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Nepal's transition to a federal democratic republic under the 2015 Constitution marked a major institutional shift aimed at strengthening democratic governance and fostering more inclusive development. Nearly a decade after this restructuring, however, economic outcomes remain uneven. While poverty reduction has been significant, domestic growth, employment creation, and productive public investment have lagged behind expectations, raising questions about the developmental impact of federalization. This paper examines why political decentralization in Nepal has not been accompanied by fiscal deepening or sustained economic progress. The central objective is to analyze how governance capacity, intergovernmental fiscal arrangements, and political economy dynamics shape public investment performance and development outcomes within Nepal's federal system. The study adopts a qualitative political-economy methodology, combining institutional analysis with a review of secondary macroeconomic and fiscal data. It draws on policy reports and datasets from the World Bank, the Asian Development Bank, Nepal's Ministry of Finance, Nepal Rastra Bank, and selected provincial governments, alongside peer-reviewed academic literature on fiscal federalism, decentralization, and state capacity. Engaging with broader debates on decentralization and development, the paper situates Nepal's experience within a comparative South Asian context. The analysis suggests that the principal constraints arise not from federalism as a constitutional design, but from limited fiscal capacity, weak coordination across tiers of government, uneven administrative capability at subnational levels, and fragmented coalition politics that undermine long-term investment planning. These factors have constrained the developmental potential of decentralization and reinforced reliance on consumption-led growth. The paper contributes to governance and development scholarship by highlighting the conditions under which federal systems can support economic development. It argues that without fiscal deepening, effective intergovernmental coordination, and sustained investment in institutional capacity, federal restructuring alone is unlikely to deliver inclusive and resilient development.

Keywords: Federalism, fiscal deepening, governance capacity, public investment; political economy, Nepal, development

O43 Tourism Industry in Enhancing Economic Development: Mediating Effects of Quality of Life and Skill Enhancement in Sudurpaschim Province, Nepal

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This research paper examines how tourism industry plays role in the economic development based on the mediating effect of quality of life and skill and capacity building in a developing territory like Sudurpaschim, Nepal. This study applied quantitative approach, cross sectional research design. The data were analyzed using SPSS 26 and Smart PLS 4 software (Partial Least Squares Structural Equation Modeling (PLS-SEM). The result shows a positive and significant relationship of tourism to economic development directly and indirectly. The relationship is partially affected through quality of life improvement which defines 24.4 of the total influence and skill and capacity building has a lesser but significant mediating influence of 14.1. The model is associated with moderate predictions of the economic development due to the fact that it explains 44.6% of the variance. Measurement and structural models have high reliability, validity and good model fit. These results emphasize the need of combined tourism policies which invest not only in infrastructure, but also in the welfare of communities and development of human capital. The research provides useful suggestions to policymakers on how to increase tourism in emerging areas as driven by sustainable tourism to boost socio-economic performance.

Keywords: Tourism industry, economic development, quality of life, skill development, mediation analysis, Sudurpaschim, Nepal, PLS-SEM

O44 The "Pathao-fication" of the Academe: Income Insecurity and Institutional Constraints Faced by Sessional Lecturers in Kathmandu

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This paper investigates the socioeconomic hazards of part-time and sessional (Anshakalik and contract) lecturers in Kathmandu. It aims to analyse how "labour casualisation" in the higher education sphere creates income volatility and institutional barriers to financial stability, specifically within the banking and credit sectors. Also, it aims to establish a relation between brain drain among the educators as a consequence. This study adopts a qualitative case-study approach, the research utilises "auto-ethnography" and document analysis. It tries to analytically examine recent 2025 faculty protest narratives at Tribhuvan University alongside Nepal Rastra Bank's 2024/25 consumer lending directives to highlight the "stability gap" between professional status and financial recognition. The study engages with the global discourse on "The Gig Academe" and academic capitalism (Rhoades, 2025). It tries to understand these global trends and ground them in the local context. Also, it will help to analyse Nepal's own "Pathao-fication," in the academic sector, where professional labour is increasingly treated as insecure piecework, as discussed in recent studies on academic uncertainty in developing economies. The paper identifies a critical "economic dead zone" where high-skilled educators, especially for higher education, are functionally excluded from traditional financial systems. It argues that the "Six-Month Wall"—the requirement for identical, consistent salary transfers and a permanent employment letter for credit eligibility—acts as a structural gatekeeper. By linking this financial exclusion to the national "brain drain," the study provides a novel argument for policy reform in employment and economic inclusion, including more flexible financial protection for seasonal faculty.

Keywords: Socioeconomic hazards, financial protection, auto-ethnography, Pathao-fication

O45 The Influence of Induction Training on Job Satisfaction and Teaching Outcomes among New English Teachers in Nepalese Community Schools: A Mixed-Methods Study

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The retention and effectiveness of new teachers are essential to induction training. In Nepalese community schools, this training is not always structured, and dissatisfaction and novice turnover are evident. This is a mixed-methods research study on the effects of induction training on the job satisfaction and teaching performance of newly appointed English teachers (N=6, 3 males/3 females) in community schools in Nepal. Informed by the objective of understanding the drivers and barriers to professional development, quantitative survey and checklist data indicated levels of satisfaction, and semi-structured interviews provided thematic analysis of the qualitative data (Braun & Clarke, 2006). The results demonstrate low satisfaction with poor training materials, insufficient resources, poor monitoring, and poor collaboration, leading young teachers to dislike the profession. Quantitatively, the mean satisfaction score was below 50 percent in critical domains, and thematically, participants reported losing confidence due to a lack of mentoring and isolation. The findings highlight the necessity of practice-based induction, reformed and supported by mentoring and peer support, to increase retention and outcomes. Implications promote policy changes to systematic programs, strengthening the professionalism of teachers under resource-scarce conditions. This paper provides empirical support for education reforms in Nepal that advise specific professional development for English language instructors.

Keywords: Job satisfaction, induction training, new teachers, English education, Nepal, mixed methods

O46 Issues of Culture and Identity in English Language Teaching

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Culture and Identity are well discussed topics in intercultural communication. The role of language in creating and expressing identity has been well discussed and documented. Language reflects our cultural identity as language expressions are culturally loaded. Language expresses cultural values or representations of cultural identities, moving from local to international contexts depending on situation and interlocutor. Pronunciation, style, role relationships, body language, value system, etc are the issues to be discussed in the relation of culture and identity. Through intercultural communication, participants adjust the extent to which they use language to express localized identities and cultures in response to the communicative situation. It means that in intercultural communication, where there are few shared cultural frames of reference, the speakers may choose to focus more on successful communication rather than expressing identity. The objective of the study is to find out the perceptions of university level English teachers in assimilating native culture by using intercultural communication in teaching English as a Foreign Language. In this qualitative study, the data were collected from five English teachers teaching English in Central Campus, Far Western University, Mahendranagar, kanchanpur. In this phenomenological study, data have been collected through in depth interview. The study found that the issues of culture and identity in intercultural communication are less discussed and less prioritized areas in English language teaching. However, in this globalized world, these are burning issues and should be given high priority in English language teaching. Students' local cultures should be assimilated with the target language culture. Sharing students' native cultures should be encouraged and assimilated with learning target language culture. We should prioritize to develop intercultural competence with empathy, flexibility, cross-cultural awareness, technological skills in the learners so that they could adjust and work with the people from various cultural backgrounds.

Keywords: Intercultural communication, culture, identity, native culture, ELT

O47 Wellbeing and Workplace

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This study explores the concerns of school teachers about their well-being at workplace and how the lack of it has affected their life, both professional and personal. It also highlights that better management and supportive school leaders will help in promoting happiness and sense of fulfillment among the teachers. The theories connected to positive psychology has shaped most of our understanding about happiness and satisfaction which is highlighted in this paper. These theories have played significant role in shaping the outlook on well-being. By using narrative inquiries, this qualitative study aims to examine and pinpoint the factors that contribute to teachers' lack of wellbeing, as well as the issues that influence wellbeing and how school administration might bridge the gap between teachers' welfare and their workload. The three participants of this study were from various schools and teaching experiences. The interviews with them were an insight to learn that many teachers require assistance with their daily tasks, and are at times overwhelming for the teachers to work with students, meet deadlines and also perform efficiently with other administrative tasks. With the help of interviews and their stories it was revealed that, the roles school leaders play in enhancing wellbeing among the teachers is crucial. Promoting teacher wellbeing will holistically aid to the wellbeing of students and the school.

Keywords: Wellbeing, management, welfare, promote

O48 Discoursal Construction of Identity of an M.Phil. Level Student in Academic Writing at Far Western University

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This presentation reports findings from my doctoral study on a student's discoursal construction of self in academic writing. Specifically, it examines how an M.Phil. scholar at Far Western University constructs an academic writer identity through the use of discursive and non-discursive features in his M.Phil. thesis. Drawing on Ivanič's (1998) model of writer identity as the theoretical and analytical framework, the study focuses on discoursal (textual) characteristics of the text (thesis) such as nominalization, self-mention, reporting verbs, hedges and boosters, APA-style citation practices, argumentation, level of formality, claim-making, and engagement with relevant literature. Using qualitative textual analysis, I present illustrative examples from the thesis to show how the writer represents himself in the text, negotiates academic writing conventions, and positions himself in relation to disciplinary norms. The findings indicate that the scholar's discoursal identity is emerging but cautious, reflecting limited authorial confidence. The study contributes to existing body of knowledge by demonstrating that prevailing assessment systems and institutional practices often fail to capture identity-related elements of academic writing, such as stance, engagement, and authorial voice. The presentation begins setting the context. Then it briefly highlight the concept of writer identity in academic writing, followed by a detailed analysis of the linguistic and stylistic features employed used in the thesis of this selected M.Phil. scholar.

Keywords: Academic, discoursal construction, writing, engagement

O49 Inclusive Education in Practice: Exploring Teachers' Struggles in Far-West Province in Nepal

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This study explores the challenges faced by teachers in teaching students with physical disabilities. Using an explorative qualitative case study design, data were collected through in-depth interviews with three physically disabled teachers in an inclusive school in Kailali district. The study identifies five key challenges related to the teaching and learning process for physically disabled students, such as a lack of disability-assistive infrastructure, limited parental support, financial constraints, inadequate teacher training and instructional materials, and personal and individual challenges. These multiple factors hinder not only the learning of disabled students but also the creation of an inclusive and supportive learning environment. The study concludes that addressing these challenges demands collaborative efforts from policymakers, stakeholders, researchers, and educators to ensure equitable access to quality education for all students, regardless of their physical abilities. The study suggests the need for comprehensive targets such as investments in specialized teacher training and resources, infrastructure, and instructional materials, along with initiatives to enhance community and parental engagement in the educational process, tailored to the diverse needs of students with physical disabilities.

Keywords: Inclusive education, physical disabilities, support, engagement

O50 Higher Education Transformation through Policy Intervention in Nepal: Insights from America, China, and India to Minimize Outmigration

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The paper explores outmigration as a challenge to the Nepalese higher education system and examines the opportunities for improvement through the discussion of best policy practices prevalent in America, China, and India. This paper argues that Nepal's higher education policy needs to be revamped, getting insights from the document study of UNESCO, the United States, China, and India because neither the existing strategy retains young learners nor does it attract international students in higher education intake, developing credibility in quality assurance. The argument is informed through a cross-national document study, like those of America, China, and India. To analyze the existing problems and address them through policies intervention, this study develops insights for reforming Nepal's Higher education program, using John W. Kingdon's Multiple Streams Framework (1984, Updated 1995,2011) to infer a policy window for the outcome. This framework aims to frame a probable prevailing roadmap for the change in Nepal's Higher education, setting up the agendas, analyzing the existing strategy and politics, and recommending the outcomes to intervene for the change. Moreover, the strategy has to address a provision that prioritizes multidisciplinary education, a student-centric support system, and professors' supportive systems that empower learners and instructors to implement interventions. This study recommends that every five years, Nepal's plan provision requires a revision informed by national requirements, the current international market trend, and SDG-4 goal provisions in relation to education and knowledge economy to address the global citizens' requirements.

Keywords: Critical thinking pedagogy, higher education policy, multidisciplinary, outmigration, policy window

O51 Barriers to Effective ICT Integration in English Language Teaching

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This article explores the problems faced by the secondary level English language teachers in the teaching learning activities while applying Information and Communication Technology (ICT) in the context of community schools of Kanchanpur district, Nepal. The study was based on qualitative research design and data was collected from four English language teachers via questionnaire, interviews and classroom observation. Major problems of teaching learning activities were identified via qualitative analysis. The findings show that teachers faced pedagogical and administrative challenges higher than the technical ones. Lack of ICT training, limited digital competences, low confidence and motivation along with extended class size were taken as major barrios. The major administrative obstacles of ICT implementation are high ICT costs, weak policies, poor monitoring and inadequate planning. Along with this, poor internet connectivity and insufficient infrastructure are some major technical problems. The study concludes that effective ICT integration requires teacher training, supportive policies, institutional backing, and improved facilities. Empowering teachers with ICT skills and confidence can transform traditional classrooms into interactive, learner-centered spaces, enhancing the quality and relevance of English language education in Nepal.

Keywords: ICT integration, barriers, ELT, English language classroom, teachers' perception

O52 Digital Professional Development Experiences of Nepali English Language Teachers

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This qualitative phenomenological study explores the experiences of English language teachers in remote areas of Nepal who engage with digital technologies for professional development (TPD). The study investigates how teachers access and use digital tools, the perceived benefits of digital TPD, the challenges they encounter, and the strategies they adopt to sustain learning in resource-constrained contexts. Data were collected through semi-structured interviews with eight teachers, reflective journals, and relevant document analysis. Thematic analysis identified three overarching themes: (1) affordances and benefits of digital TPD, including increased access to resources, peer collaboration, and enhanced pedagogical confidence; (2) barriers and contextual constraints, such as limited connectivity, device scarcity, workload pressures, and content relevance; and (3) adaptive strategies, including offline content use, peer mentoring networks, and reflective practice. Findings highlight the interplay of technological affordances and sociocultural factors, demonstrating teachers' agency and adaptability in leveraging digital tools despite infrastructural limitations. The study provides insights for policymakers, teacher educators, and local authorities to design context-sensitive, equitable, and sustainable digital professional learning initiatives in remote Nepali contexts.

Keywords: teacher professional development, digital technology, English language teachers, remote Nepal, phenomenology

O53 Understanding Students' Anxiety in Speaking English: An EAR Study

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This study explores 'Factors Influencing Students' Reluctance to Speak English in Classroom' in the context of Nepalese secondary EFL classroom. It examines the main sources of English speaking anxiety among learners and its effects on their spoken English. The study investigates the circumstances in which students interact or get distracted from interaction in English with teachers and friends. The study further unpacks the role of teachers to encourage students use English as their medium of communication at least in English language classroom. This research is based on survey. The study used purposive non-random sampling and questionnaires to gather data and analyzed descriptively and statistically. The teacher researcher selected 20 secondary level students as his respondents. The findings reveal that fear of making mistakes; low self-confidence, peer judgment, and limited vocabulary are significant sources of anxiety. The study also highlights the role of classroom environment and teacher behavior in either mitigating or exacerbating students' speaking apprehension. The study identifies social factors such as fear of negative evaluation, lack of confidence, limited exposure to spoken English, and bullying from friends to be creating barriers for learners to speak English. Findings indicate that anxiety significantly hinders students' willingness to participate in speaking tasks, often leading to avoidance behavior and lower academic performance.

Keywords: Speaking anxiety, EFL classroom, medium of communication, students' interaction

O54 Exploring Social Constructivist Pedagogy to strengthen Linguistic and Critical skills in Nepalese ESL classroom

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This research paper explores Vygotsky's social constructivist theory and its application in ESL classrooms in Nepal to address learners' linguistic and cognitive limitations. It emphasizes the role of interaction, collaboration, and scaffolding in strengthening learners' linguistic competence and critical thinking skills. Furthermore, the paper highlights how adapting existing ESL materials to align with social constructivist principles can promote learner autonomy, collaborative learning, reflective practices, and the development of 21st-century skills.

Keywords: ESL, social constructivist theory, linguistic skills, 21st century skills

O55 Attitude of University-Level Students of the Faculty of Education towards Sports and Physical Activity

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This paper tries to investigate the attitudes of university-level students enrolled in the Faculty of Education toward sports and physical activity. In a descriptive quantitative research design, participants' attitudes were gauged through a structured Likert scale comprising 20 statements, both positive and negative, about sports and physical activity. The sample size consisted of 150 students and was divided equally between those enrolled in Health and Physical Education programs and those from other specializations. The results indicated a generally positive attitude towards sports and physical activities for both groups, though the overall mean scores for HPE students were higher compared to non-HPE students. The analysis of attitudes shows significant statistical differences; therefore, these favorable attitudes are made because of greater knowledge and involvement in sports and physical activities. Results emphasize the need for increasing physical activity within educational curricula, since it will increase the engagement of students and improve their lives. Recommendations for policy implementation to integrate sports and physical activities into educational programs are discussed to foster positive health behavior.

Keywords: University students, faculty of education, attitude, sports, physical activity

O56 English Language Teaching in Nepal: Issues of Teacher Professional Development

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This paper aims at exploring the issues of teacher professional development that influence English language teaching in the context of Nepal, specifically in the context of Kailali district. Adopting phenomenological qualitative research design, the data were collected from four secondary level English language teachers of government-funded community schools of Godawari municipality and Dhangadhi sub-metropolitan city of Kailali district, Nepal. Using in-depth and semi-structured interviews as data collections tools, the data were analyzed and discussed qualitatively drawing upon relevant literature in the field. The paper reveals that the strategies, planning and current approaches for teachers' professional development are limited, conventional and in most occasions irrelevant, which have negative impact on English language teaching and learning. Thus, it recommends for immediate and absolute reform on the existing professional development practices. The study can be beneficial to the teachers, researchers, school administrators, policy makers, curriculum developers and textbook writers to obtain the fruitful results in teaching English as a second language in Nepal in Nepal.

Keywords: Challenges, foreign language, mother tongue, language teaching, learning

O57 Revisiting Social Constructivism in Post-Method Pedagogy for ELT Classrooms in Nepal

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The study aims to examine the implications of social constructivism within post-method pedagogy for English Language Teaching (ELT) classrooms in Nepal. Social constructivism is a socially mediated collaborative learning theory which concentrates on student involvement, discussion and knowledge exchange. Post-method pedagogy emphasizes on context-sensitive teaching, teacher autonomy and learner-responsive practices. Drawing on a qualitative research design, the study collected data from in-depth interviews with English language teachers, classroom observations and document analysis conducted in Nepalese ELT contexts. The findings indicate that social constructivist principles such as collaborative learning, learner-centeredness, contextualized interaction and active knowledge constructions support to operate post-method pedagogy in ELT classrooms. The teachers' experiences show that the integration of social constructivism within post-method pedagogy enhances learner participation, critical thinking and meaningful language use. However, the study also identifies the challenges, including examination-driven assessment, rigid curricula, large class sizes and limited institutional support. The study argues that revisiting social constructivism offers a practical epistemological framework to operate post-method pedagogy in diverse and resource-constrained ELT contexts. It concludes by suggesting the implications for teacher education, curriculum flexibility and policy support to strengthen contextually responsive ELT practices.

Keywords: Social constructivism, post-method pedagogy, english language teaching, pedagogical implications, classroom practices

O58 Correlation Between Educational Achievement and Intelligence: An Empirical Investigation

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Human competency includes educational achievement and intelligence as its two important aspects. Intelligence provides cognitive capacity, whereas educational achievement provides structured knowledge and practical skills. The literature shows that educational achievement and intelligence are closely related to each other. In this context, the study aims to identify the relationship between educational achievement and intelligence. For this study, a quantitative research design was adopted. The survey method was used to collect the required data. An intelligence test was administered to determine the level of intelligence and achievement scores were collected as secondary data. For this purpose, two independent samples of 100 respondents each were randomly selected from India and Nepal to cross verify the results. Pearson's correlation was calculated by using SPSS. In the Nepalese sample, the correlation between educational achievement and intelligence was found to be .878. The results also showed that the correlation was significant at the 0.01 level. For the Indian sample, achievement and intelligence were found to be significantly correlated at 0.01 level, with a correlation coefficient .302. In both samples, the relationships between educational achievement and intelligence were found significantly correlated. However, the correlation coefficient in the Nepalese sample was higher than that in the Indian sample. This indicates that achievement and intelligence have a positive relationship, but its degree depends on other influencing factors as well. This study supports the selection of intelligent persons for various programs on the basis of their academic achievement.

Keywords: Educational achievement, intelligence, correlation, quantitative research design

O59 Perceptions of Secondary Level English Language (ELT) Teachers use of ICT in Public Schools: A Study in Doti District

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This research intends to assess the Perceptions of ELT teachers teaching in public schools regarding the Use of ICT in English Classrooms in Sudupachim province in Nepal. Technology has made this world a small place for us. The wide use of technology has changed teaching learning approaches these days. So, the research explores the perception of teachers of the Public schools of Doti district in Sudurpachim province, I decided to do research on this issue because of my interest and because being a teacher how do ICT practitioners perceive them in
ELT classrooms? This paper includes a brief background with the issue, purpose of the study,
exploration questions, rationale of the study, delimitation of the study, and concludes this part.
The use of ICT in academia hasn't been so long and in the context of Nepal, it is in the phase of growth. Whatever concrete data and findings, I have thematized. I used a narrative inquiry as a research design through observation and interview tools.

Keywords: *ICT integration, ELT, teacher perspective, narrative study*

O60 Exploring Flipped Learning Environment and Practices in Secondary Mathematics Classrooms in Nepal

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The flipped learning approach (FLA), a technology-driven, active pedagogical model, has been widely researched and adopted globally across all academic levels and disciplines to enhance educational quality. However, in the context of Nepal, there appears to be a notable lack of flipped learning (FL) studies on school mathematics education. This micro-ethnographic study examined the FL environment and practices in Grade 10 mathematics classrooms (MCs) in Far Western Province of Nepal. One school, a mathematics teacher, and three students were purposively selected as participants. Qualitative analysis of information collected through direct observation and in-depth interviews revealed an inadequate environment for adopting FLA in secondary MCs, with challenges related to teachers, students, technology, and the school authority. The study investigated constructivist, inquiry-based, and problem-solving in-class practices involving discussions, interactions, group work, completing exercises, and problem-solving activities, that were closely linked with FLA. However, out-class practices were constrained to solving exercises and practicing old question sets due to the lack of teachers' lecture videos. Thus, the study concludes inappropriate FL environment for school MCs in Nepal due to various existing challenges. As a result, the out-class learning is limited to text based materials. However, in-class practices align well with FLA. This study seems significant to inform school education stakeholders and policymakers about the situation of FL environment and make provisions for creating favorable FL environment and promoting its practices in school MCs for effective learning. The study suggests scholars in mathematics education to conduct more rigorous studies on FLA to fill up the gaps and add new knowledge to the existing literature as well as familiarize FLA as an innovative pedagogical approach in school mathematics contexts in Nepal.

Keywords: Flipped learning approach (FLA), FL environment, practices, mathematics classrooms, student-centered, effective learning.

O61 Effects of AI in Completing Assignments: A Narrative Inquiry

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This paper explores the positive and negative effects of AI (Artificial Intelligence) in student writing, specifically on the completion of the assignments. This study aims to unfold the reflection of teacher in the use of AI by students to complete their assignments. This research uses phenomenological narrative inquiry as a research design under qualitative study and applies post humanism theory. The data are collected from my own experience and reflection on students' writings when I gave them the assignments. The findings of this study reveal that as students complete their task based on AI, there is loss of diagnostic data. Teachers cannot detect students' problems because they have submitted the assignments error free, although they know nothing and teacher move on to advanced level thinking students have mastered the basics. Another important finding is that it creates unfair comparison because those who have worked hard to complete the assignment are also compared with those who copied from AI. The findings of this study offers significant suggestions to the stakeholders such as teachers and educators to provide real world assignments that need students' own experience, authenticity can be maintained by viva or oral presentation. AI should be used as an assistant in getting ideas clear rather than just copying.

Keywords: AI generated assignments, effects in student learning, narratives, reflections

O62 Transforming Classroom Communication: The Impact of Experiential Learning, Role-Playing, and Project Work on Speaking Anxiety in Nepal

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This teacher participatory action research (T-PAR) aimed to reduce students' speaking anxiety and increase classroom participation. The study was conducted with 45 grade nine students at a remote private school in the Far-Western region of Nepal, using role-playing and project-based activities. The study was carried out in two cycles. The first cycle involved role-playing tasks aligned with students' interests, followed by experiential and individualized family tree presentations. In the second cycle, students collaborated to create a wall magazine. This study revealed a significant improvement in students' confidence, active participation, and communication skills, with previously shy learners becoming more expressive and engaged. The qualitative data further confirmed the effectiveness of student-centred, context-based, and experiential teaching strategies in fostering learner autonomy and reducing speaking anxiety. This research underscores the importance of collaborative, interest-driven, and experiential teaching approaches in enhancing students' speaking abilities and highlights the value of participatory action research in improving instructional practices.

Keywords: Participatory action research, speaking anxiety, context-based learning strategies, collaborative learning

O63 The Impact of Student Migration on Bachelor-Level ELT Programs

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As youngers move to cities, terai or abroad for their higher studies and employment, campuses in Nepal's hilly terrain face a crisis of students. This study highlights the effect of student out-migration on English Language Teaching (ELT) in the bachelor level in Baitadi. Using a qualitative design, semi-structured interviews and focus-group discussions were conducted with 5 purposively selected campus level English language teachers and 10 learners from three different campuses. The findings show that migration creates "hollowed-out" classrooms, where low enrollment reduces institutional funding and lowers student motivation with a total absence of English Language (EL) learners. The low enrollment reduces institutional funding and lowers student motivation. Critically, the study finds that campus teachers are becoming jobless due to low workloads. Furthermore, the lack of undergraduate English students predicts a future shortage of qualified English teachers for secondary schools. The study concludes that to address the enrollment gap, campuses should implement motivational and bridging ELT courses for senior school students to motivate them toward higher education. The ELT sustainability requires a shift toward vocational English and low-bandwidth digital tools.

Keywords: ELT, migration, hilly, consequences, shortage, teachers

O64 Education for Sustainable Cultural Heritage Preservation through Innovation

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The preservation of cultural heritage is critical for maintaining the identity, history, and values of societies, yet rapid modernization and technological advancement pose significant challenges to safeguarding these assets. Education plays a pivotal role in raising awareness, fostering skills, and promoting practices that ensure the sustainable preservation of cultural heritage. The first objective of this study is to explore how educational programs and initiatives can effectively contribute to the sustainable conservation of cultural heritage. The second objective is to examine the role of innovation in education, including digital tools, creative pedagogical methods, and interdisciplinary approaches, in enhancing the understanding and protection of cultural heritage. This research adopts a secondary data methodology, analyzing scholarly articles, institutional reports, policy documents from educational institutions and heritage organizations. The data were reviewed and synthesized using a thematic and comparative approach to identify best practices, challenges, and innovative strategies. The findings indicate that integrating heritage education into formal and informal learning contexts, coupled with innovative teaching methods such as digital simulations, virtual tours, and project-based learning, significantly enhances learners' engagement and understanding of cultural values. The study also finds that innovation in curriculum design, community collaboration, and knowledge-sharing platforms strengthens the sustainability of heritage preservation efforts. In conclusion, education, when combined with innovation, is a powerful driver for the long-term protection and promotion of cultural heritage. The study highlights that sustainable heritage preservation is not only about maintaining physical sites but also about nurturing awareness, cultural appreciation, and active participation among learners and communities. Future implications suggest expanding the use of technology in heritage education, promoting interdisciplinary programs that connect culture, science, and technology, and developing policies that support innovative heritage education initiatives. The scope of this research extends to schools, universities, museums, community learning centers, and digital education platforms, emphasizing the potential of education-driven innovation in preserving cultural heritage for future generations.

Keywords: Cultural heritage, education, innovation, preservation, sustainability

O65 *Jagar* Rituals as Living Heritage and Spiritual Pedagogy: Indigenous Knowledge in *Dashrathchand Muncipality*-11 *Baitadi*

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Indigenous knowledge system is historically rooted and culturally embedded forms of knowing in society. But it is almost ignored within the discourse and practices in modern in modern epistemology. This paper explored the *Jagar* tradition of Dasrathchand Municipality-11 in *Baitadi*, presenting it as a living expression of intangible cultural heritage and a vital epistemic space for the preservation and transmission of Indigenous Knowledge. It is observed in alternate years, with worship and devotion to God, remembering history, and renewing collective memory, ancestral consciousness, and social continuity. During the ritual, it combines worship, trance, oral narration, communal participation, strengthening kinship ties, moral and social values, and harmony and livelihood based on cultural practices. Episodes from the *Mahabharata,* locally reinterpreted through a variety of ritual vocals used as a pedagogical narrative that encodes indigenous cosmology, social and cultural systems and local history. Using qualitative ethnographic methodology- including participant observation, oral histories, and narrative analysis the study finds that the *Jagar* integrates Devine worship of local deities, linking it with social awareness towards sustainable social values, and socialization, and social harmony. Ultimately, *Jagar* is a hidden source of cultural institution and a form of spiritual pedagogy that sustained Indigenous Knowledge, contributing to the discussion on intangible heritage, indigenous historiography, and decolonial knowledge preservation.

Keywords: *Jagar* rituals, spiritual pedagogy, indigenous knowledge, ethnographic study

O66 Integrating Tradition and Innovation: A Management Perspective on Cultural Organizations

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Cultural organizations such as museums, cultural centers, performing arts institutions, and heritage foundations are deeply rooted in tradition, yet they operate in an environment shaped by rapid social change, technological advancement, and evolving audience expectations. Managing these organizations today requires a thoughtful integration of traditional values with innovative management practices. This study aims, first, to examine how cultural organizations can balance the preservation of tradition with the adoption of innovation from a management perspective, and second, to analyze the role of managerial strategies in facilitating organizational transformation without diluting cultural authenticity. The study follows a secondary data–based research methodology, drawing upon academic literature, management studies, documents, and case studies of cultural organizations across different regions. The collected data were analyzed using a qualitative and thematic approach to identify patterns in leadership styles, innovation practices, and organizational outcomes. The findings reveal that cultural organizations face key challenges such as resistance to change, limited financial resources, and tensions between artistic integrity and commercial pressures. At the same time, the study finds that innovation opportunities exist through adaptive leadership, digital engagement, collaborative partnerships, and inclusive governance models. Effective integration of tradition and innovation is shown to strengthen organizational resilience, enhance audience engagement, and improve long-term sustainability. In conclusion, the study emphasizes that tradition and innovation are not opposing forces but complementary elements that, when managed strategically, can reinforce the mission and relevance of cultural organizations. Management plays a central role in guiding this integration by aligning innovation initiatives with cultural values and institutional identity. Future implications of this research highlight the need for capacity-building programs for cultural managers, supportive policy frameworks that encourage responsible innovation, and greater interdisciplinary collaboration between cultural practitioners and management professionals. The scope of the study extends to public and private cultural organizations, heritage institutions, and creative enterprises, offering insights that can support culturally sensitive management practices in diverse organizational contexts.

Keywords: Cultural organizations, innovation management, organizational culture, strategic leadership, tradition

O67 Challenges in Implementing Individualized Education Plans for Students with Autism Spectrum (ASD) Disorders in Special Schools

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Individualized Education Plan (IEP) is a learner-centered document designed to support the academic, communicative and adaptive skills of students with ASD. This study explores the challenges associated with implementing individualized education plans for students with autism spectrum disorders in special school context. Guide by the interpretive paradigm, the study adopted a phenomenological approach within the qualitative research design to understand the lived experiences of the teachers and parents. The study was conducted in a special school for children with autism located in Kailali district. Three special education teachers and six parents with ASD were selected by using purposive sampling method. Data were collected through in-depth interview with teachers and Focus group discussion with parents. The collected data were analyzed thematically. The findings disclose several interrelated challenges in the implementation of IEPs. These include knowledge and understating of IEP, inadequate teacher training, difficulties in forming effective of IEP teams, identifying students' functional limitations, high student-teacher ratios, insufficient resources, parental awareness and involvement, communication problem, lack of administrative support, difficulties setting measurable and achievable goals and problem in using IPEs as tools for assessment and progress monitoring. In conclusion, the study has suggested that systemic, professional and contextual factors limit the successful implementation of IEPs among students with ASD in special schools. To overcome these difficulties, it is necessary to direct teacher education, enhance collaboration among stakeholders, allocate sufficient resources, and provide institutional support to ensure IEPs function as meaningful and effective tools for inclusive and special education.

Keywords: Individualized Education Plan (IEP), Autism, implementing, functional limitations, parental involvement

O68 Exploring the Impact Dynamics of Semester-Based Academic System on Its Implementation at Far Western University, Nepal

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There are different academic systems –annual, semester, tri-semester-based, etc. to practice academic activities within different universities. In case of Far Western University (FWU), the academic activities have been conducted through a semester system. This faculty research aims to explore and assess the impact dynamics of the semester system on its implementation at FWU, Nepal. For this research, a mixed-methods research design combining narrative inquiry and survey design were used as the qualitative and quantitative approach, respectively. As the research participants/respondents, three/three teachers and students were selected for the narrative inquiry purposively and 50 teachers for survey design randomly by considering geographical, faculty and institutional variation. With the help of in-depth interviews, the qualitative information with respect to the dualities and dynamics of semester system on behalf of the participants was collected duly. Similarly, the quantitative data with respect to the students' enrollment and retention, workload, engagement, strategy of classroom instruction, job satisfaction, etc., were collected through the questionnaires. Findings reveal the strengths, weaknesses, and challenges of the semester system, including issues of resource accessibility, workload intensity, misconceptions among stakeholders, and the influence of neighboring annual-based institutions. Similarly, the ratio of students' enrollment and sustainability had been remarkably decreasing due to their misconceptions, community hearsays and provisions of massive engagement both at home and in classrooms. Moreover, though the teachers observed the semester system as a contemporary and needed system, it seemed quite poor and haphazard during its implementation. The study concludes with recommendations for strategic interventions to enhance resource provision, faculty support, and student engagement to optimize the semester system's effectiveness in FWU's higher education context. This study contributes empirical evidence specific to Nepal's higher education and offers insights for policymakers, educators, and institutions aiming to improve semester system implementation.

Keywords: Semester system, faculty, under-graduates, misconceptions, engagement, retention

O69 Innovative Civil Engineering Approaches for Sustainable Conservation of Cultural Heritage Structures

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Cultural heritage structures such as historical monuments, temples, forts, and traditional buildings represent the social, cultural, and architectural identity of civilizations, yet many of these structures are increasingly threatened by aging materials, environmental stress, urban expansion, and climate change. Innovative civil engineering approaches have therefore become essential for ensuring the sustainable conservation of such heritage assets without compromising their original character. The first objective of this study is to examine modern civil engineering techniques that support the sustainable preservation and structural stability of cultural heritage structures. The second objective is to analyze how innovation in materials, design methods, and monitoring technologies can enhance long-term conservation outcomes while respecting cultural and historical values. This study adopts a secondary data–based research methodology, drawing insights from peer-reviewed journals, heritage conservation reports, government publications, and case studies. The collected information was analyzed using a descriptive and comparative approach to identify effective conservation practices and emerging engineering trends. The findings reveal that innovative solutions such as non-invasive structural assessment, sustainable retrofitting methods, advanced material usage, and digital documentation significantly improve the durability and resilience of heritage structures. The study also finds that combining traditional construction knowledge with modern civil engineering tools helps reduce intervention risks and promotes environmentally responsible conservation practices. In conclusion, innovative civil engineering approaches play a vital role in achieving sustainable conservation of cultural heritage structures by balancing structural safety, cultural authenticity, and environmental responsibility. The study highlights that engineering-led innovation enables heritage conservation to move beyond repair-based approaches toward preventive and adaptive strategies. Future implications of this research suggest the need for interdisciplinary collaboration among engineers, architects, historians, and policymakers, along with the adoption of smart technologies for continuous monitoring and maintenance. The scope of the study extends to heritage buildings, archaeological sites, urban heritage zones, and infrastructure-linked cultural assets, emphasizing the importance of innovation-driven civil engineering practices in preserving heritage structures for future generations.

Keywords: Civil engineering, cultural heritage, innovation, structural conservation, Sustainability

O70 Between People and Place: Examining Place Attachment in the Lalitpur Metropolitan Office Building

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Place attachment is the emotional and functional connection between people and the spaces they use. It is an important concept in architecture and planning because it affects comfort, satisfaction, and productivity. While many studies have explored place attachment in homes and public areas, there is little research on how it develops in office environments in Nepal. This study aims to fill this gap by examining the level of place attachment among employees of the Lalitpur Metropolitan Office and identifying the factors that influence their attachment to the office environment. This study used a mixed-method approach, combining questionnaire surveys with in-depth interviews of office staff allowing the study to measure overall level of attachment and understand employee opinions about the office design and environment. Results show that place attachment in the municipal office is at a moderate level. Factors such as overall layout of the office, safety and security concern in the office, indoor environmental quality factors, technological advancements, biophilic design and aesthetical aspect,. were found to be important, but they are not properly provided or maintained in the current office buildings. Interviews also revealed that employees spend most of their day in the office, yet spaces beyond the main work areas are limited, which reduces overall satisfaction. The study concludes that office design should consider employee needs and comfort to improve place attachment. Updating design knowledge and applying guidelines that focus on interaction spaces, aesthetics, safety and security, indoor environmental quality, and technological advancements can enhance both employee satisfaction and productivity. This research provides useful insights for designers, planners, and policymakers, and contributes to understanding workplace place attachment in the Nepalese context.

Keywords: Office, belonging, attachment, comfort, productivity

O71 Disaster Dynamics in Nepal: A Geotechnical Perspective on Earthquake-induced, Rainfall-induced and GLOF-induced Hazards

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Nepal's fragile geology, steep topography and active tectonics setting make it highly susceptible to a range of geotechnical disasters. Earthquake-induced landslides, rainfall-triggered slope failures and glacial lake outburst floods (GLOFs) pose significant threats to lives, infrastructure and long term developments. This study presents a forensic geotechnical analysis of disaster dynamics in Nepal, emphasizing the mechanisms, triggers and cascading effects associated with major hazard types. Earthquake induced disasters such as those observed during the 2015 Gorkha earthquakes, reveal widespread co-seismic landslides, liquefaction in unconsolidated sediments and long term slope destabilization along weak geological formations. Rainfall-induced failures particularly during extreme monsoon events, demonstrate complex interactions between pore water pressures build up, lithological weakness and slope geometry resulting in shallow landslides, debris flows and riverbank erosion.GLOF- induced disasters further highlight the vulnerability of downstream regions, where rapid flood surges trigger channel widening scour and slope collapses. The findings underscore the growing influence of climate change in amplifying hazard frequency and intensity, particularly through increased rainfall extremes and accelerated glacial melt. By synthesizing multi-hazard forensic evidence, the study offers insights into failure thresholds, spatial patterns of vulnerability and emerging risk pathways. The research ultimately contributes to improved hazard assessment engineering design and disaster mitigation strategies tailored to Nepal's high risk Himalayan terrain.

Keywords: Disaster, earthquake, rainfall, GLOFs, hazards, Nepal

O72 Investigation of Subsoil Bearing Capacity for Design Analysis of Isolated and Raft Foundations of Academic Buildings at Far-Western University

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The performance and safety of building structures largely depend on the bearing capacity of the supporting soil. This study evaluates the subsoil bearing capacity for the design of isolated and raft foundations for selected academic buildings at the Central Campus of Far Western University, Kanchanpur, Nepal. Field investigations and laboratory tests were conducted to determine key geotechnical properties, including moisture content, specific gravity, grain size distribution, and shear strength parameters. Settlement analysis was carried out using in-situ Standard Penetration Test (SPT) data. The subsurface soils were found to be predominantly cohesionless with low fines content and angles of internal friction ranging from 29° to 30.6°. Specific gravity values varied between 2.62 and 2.69, while natural moisture content ranged from 14.59% to 23.19%. Allowable bearing capacities were estimated using both shear failure and settlement criteria considering the depth of footings as 3 m. For isolated footings (3 m × 3 m), allowable bearing capacity ranged from 207.2 to 281 kN/m², whereas raft foundations (15 m × 15 m) showed values between 215.46 and 297 kN/m². The results suggest that isolated footings are suitable for moderately loaded academic buildings, while raft foundations are preferable for structures with higher load demands or stricter settlement control. The study highlights the importance of site-specific geotechnical evaluation for safe and economical foundation design.

Keywords: Subsoil, bearing capacity, isolated footing, raft foundation, settlement

O73 Integrating Heritage Knowledge with Modern Mechanical Engineering for Solar Energy Solutions

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The growing demand for clean and sustainable energy has renewed interest in solar energy solutions, especially when combined with insights drawn from traditional and heritage-based knowledge systems. Many ancient civilizations used solar principles for heating, ventilation, and energy efficiency through architectural design, material selection, and natural thermal management. Integrating such heritage knowledge with modern mechanical engineering offers innovative pathways to develop efficient and culturally rooted solar energy systems. The first objective of this study is to examine how traditional solar and thermal practices can inform the design and performance of modern mechanical solar energy systems, particularly solar thermal technologies. The second objective is to analyze the role of mechanical engineering innovations in transforming heritage-based concepts into scalable and practical solar energy solutions. This study adopts a secondary data–based methodology, relying on published research articles, books, historical reports, and case studies related to solar energy, mechanical engineering, and traditional thermal practices. The collected data were reviewed and analyzed using a descriptive and comparative approach to identify patterns, synergies, and technological gaps. The findings reveal that heritage-inspired designs such as passive heating, natural airflow control, and thermal mass utilization can significantly enhance the efficiency and sustainability of modern solar systems when supported by advanced mechanical components and materials. The study also finds that blending traditional knowledge with modern engineering reduces energy losses, lowers system costs, and improves adaptability in diverse climatic conditions. In conclusion, the integration of heritage knowledge with modern mechanical engineering not only strengthens solar energy solutions but also promotes sustainable innovation rooted in cultural wisdom. The study highlights that such integration supports energy transition goals while preserving valuable traditional practices. Future implications of this research include the development of hybrid solar technologies, heritage-sensitive energy infrastructure, and policy frameworks that encourage interdisciplinary collaboration for long-term sustainable energy transformation.

Keywords: Heritage knowledge, mechanical engineering, renewable energy, solar energy, sustainable innovation

O74 Self-Adaptive Traffic Light System Based on Deep Reinforcement Learning

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The growing economy and population results in increased travel demand that often exceeds the current transportation system's capacity, resulting in unavoidable traffic congestion. One of the solution to manage urban traffic is by using Adaptive Traffic Signal Controls. Adaptive traffic signal control, which modifies traffic signal timing based on real-time traffic, has been proven to be a successful means of reducing traffic congestion. A deep reinforcement learning agent for hybrid action space of TSC is developed using Multi Pass DQN (MP-DQN)
Algorithm. Which outperformed the traditional approaches in average travel time, queue length, and average waiting time. All the experiments are carried out using SUMO Simulator and TraCI interface.

Keywords: GPS trajectory data, deep reinforcement learning, adaptive traffic signal control, urban traffic management, hybrid action space6

O75 Mix Design Formulations for Recycled Aggregate Inclusive Rigid Pavements

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Urbanization and economic growth around the world significantly increased the need for infrastructure like bridges, buildings and transportation networks, making concrete a predominant construction material, consisting of approximately 75% of the total quantity of concrete mixtures by volume, including both coarse and fine aggregates. However, the depletion of natural aggregates has promoted the utilization of construction and demolition (C&D) waste, particularly recycled concrete aggregate (RCA), as an alternative in pavement-quality concrete (PQC). Despite its sustainability benefits, RCA contains porous adhered mortar, which increases the water absorption and makes it difficult to control the effective water-binder ratio, affecting the RAC performance. Although saturated surface-dry (SSD) conditioning is commonly recommended, maintaining SSD conditions in the field is difficult. Similarly, compensating W_{24h} often leads to excess free water because RCA absorbs only 50-80% of its capacity during practical mixing duration. Therefore, optimizing moisture compensation remains critical for PQC applications. To address this study gap, this study adopts a moisture compensation technique combined with two stage mixing approach (TSMA) for RAC, comparing oven-dry, SSD-conditioned and excess water (EW) at 50%,75% and 100%. Concrete mixes were assessed through fresh, mechanical, durability and microstructure characterization using thermogravimetric analysis (TGA). Compared to SSD and 100 % EW, the results indicate that reducing excess moisture to 50% enhanced RAC performance without affecting workability, resulting in strength comparable to conventional concrete and achieving the effective w/b ratios closest to the target value. Additionally, TGA confirmed that the higher the bound water development for 50 % EW, indicating improved hydration and a denser cementitious matrix. In comparison to 100% EW and SSD conditions, 50% EW is more efficient and field-feasible. Thereafter, the optimized method is validated for different paving concretes, including 100% RCA replacement, FRCA replacement, and DLC, supporting sustainable and durable RCA-based road infrastructure.

Keywords: Recycled Concrete Aggregate (RCA), Pavement Quality Concrete (PQC), Two Stage Mixing Approach (TSMA), Effective water-binder (w/b) ratio, excess water

O76 Transforming Higher Education for the SDGs: Whole-University Lessons from an Erasmus+ CBHE Initiative in Bhutan and Nepal

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Transforming higher education to effectively contribute to the Sustainable Development Goals (SDGs) requires more than curricular reform; it demands systemic, institution-wide change. This paper distils key whole-university lessons from the Erasmus+ Capacity Building in Higher Education (CBHE) project *Bhutan+Nepal Higher Education for Accomplishing Sustainable Development Goals (B+NESDG)*, implemented between 2020 and 2023 across partner universities in Bhutan, Nepal, and Europe. The initiative adopted a holistic transformation model embedding SDGs across governance, strategy, curriculum, teaching–learning processes, quality assurance, and community engagement. Central to this approach was the establishment of dedicated SDG Units in all partner institutions, supported by a context-sensitive panel of 59 SDG indicators enabling systematic monitoring, reporting, and institutional auditing. Capacity building was delivered through an integrated Training-of-Trainers framework combining online and on-site modalities, empowering academic, administrative, and technical staff to act as internal change agents. Curricular and pedagogical transformation resulted in 37 new or updated accredited courses aligned with Education for Sustainable Development (ESD), delivering 160.5 credits and engaging over 1,300 learners through competence-based, student-centered, and problem-based learning approaches. Beyond institutional reform, the project emphasized the principle of "Leaving No One Behind" through inclusive strategies and community-oriented initiatives such as the Music4All programme, linking universities with vulnerable social groups in Bhutan and Nepal. The paper synthesizes actionable lessons from the B+NESDG experience, demonstrating how Erasmus+ CBHE can enable sustainable, scalable, and context-responsive transformation of higher education institutions. These lessons offer a transferable model for universities seeking to move from fragmented sustainability initiatives to integrated, whole-university SDG implementation in diverse socio-cultural contexts.

Keywords: Whole-University Approach, Sustainable Development Goals (SDGs), Education for Sustainable Development (ESD), Capacity Building in Higher Education (CBHE)

O77 Dynamic Modeling and Performance Assessment of an Induction Motor Electric Vehicle Drivetrain

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This study presents the dynamic modeling and performance analysis of the drivetrain of a converted electric vehicle, with the objective of identifying an optimal gear ratio and battery configuration. A resistive force–based vehicle model, integrated with standard drive cycle simulations, was used to determine the power and torque requirements of the traction motor and to guide gear ratio selection. The complete drivetrain was modeled in MATLAB/Simulink to assess system performance, including motor power output, battery current, and battery state of charge. Simulation results demonstrate that the selected $LiFePO_4$ battery configuration, when combined with an appropriate gear ratio, is capable of delivering sufficient power and acceptable driving range across multiple drive cycles. Operating in second gear, the vehicle achieved energy consumption rates of 0.173 kWh/km for the HWFET cycle, 0.151 kWh/km for the WLTC Class-2 cycle, and 0.170 kWh/km for the BEV Fleet cycle.

***Keywords*:** Drive cycle, drivetrain modeling, regenerative braking, tractive power

O78 Strength of Concrete by Partial Replacements of Cement by Hypo Sludge as well as GGBS and Sand by Crushed Concrete

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To produce a concrete having low cost by combining different ratios of waste products like hypo sludge and GGBS with cement and sand with crushed concrete as well as to lower the problems caused by them on disposal and environmental aspects, it is much necessary to develop these materials as a substitute constituent material. And for the unusual use of hypo sludge in concrete formation as a supplementary material of cement must be checked as an alternative material to the traditional one. Also, we must seek an alternative for the aggregate materials like sand as they are the earth materials which are non-renewable sources by their nature. To find the best replacement of the sand aggregates we can use the crushed concrete from the waste or broken structures. The two materials being studied in this research, hypoglycemia sludge and discarded concrete, are by-products that have no value to the construction industry. Therefore, if either type were not removed from the production site, they would need to be disposed of somewhere, which will cause additional environmental damage and create an eyesore. Also, the durability of structures, reduction in the temperature rise and to help in avoiding early age thermal cracking, improved workability as well as light weight replacement of cement in large structures as bridges and retaining walls, GGBS can be very perfect replacement to the cement. As a by-product of industrial production, iron slag is a complete waste material which further can be processed and treated to produce a supplementary material of cement. It must be applied fluently in industrial sector in order to transform iron and steel production industrial wastes can be utilized to GGBS. So, as to be more optimistic, one must try the alternatives to replace the construction or building materials like cement and sand by hypo sludge, GGBS and crushed concrete respectively. Hence, this is the practical study of the possibilities of their feasibility in concrete production.

Keywords: Concrete, recycled fine aggregates, hypo sludge, GGBS, cement, strength

O79 Electrical Innovations in the Transformation of India's Heritage Sites: A Sustainable Development Perspective

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Heritage sites are the cultural memory of the civilizations, but they are also under growing pressure due to the aging infrastructure, increase in energy use, environmental destruction, and the necessity to match the current sustainability objectives. The paper examines how modern electrical technologies can be applied in the transformation of heritage sites without affecting their historical authenticity and cultural meaning. The purpose of this study is to analyse how electrical innovations services like renewable energy systems, energy saving lighting, smart grids, and building management technologies can be incorporated in heritage settings without disturbing their architectural and symbolic legacy. The study also examine how these electrical interventions improve overall sustainable development objectives such as energy efficiency, environmental protection, economic viability and improved visitor experience with the help of secondary data. The results show that carefully planned electrical systems significantly transform the management of heritage sites by minimizing carbon footprints, enhancing safety, and accessibility, and promoting adaptive reuse of old buildings. The examples of innovations in the use of LED-based heritage lighting, solar and hybrid energy systems, sensor-controlled monitoring, and smart electrical retrofitting are demonstrated as the way of improving the efficiency of operations, preserving the visual and material authenticity. It is also find out that interdisciplinary cooperation among engineers, conservationists, planners, and policymakers is the key to a successful implementation as the technical efficiency cannot be adequate unless there is cultural sensitivity and regulatory fit. In addition, electrical innovations can be used to achieve economic sustainability due to their role in reducing the cost of long-term maintenance and heritage-led tourism with the help of enhanced infrastructure and interpretive technologies. This study concludes that electrical innovations guided by conservation ethics and the principles of sustainability can serve as a transition between tradition and modernity and help to make sure that heritage sites continue to be operational, robust, and relevant in the modern world. The study also outlines future policy, capacity building, and research implications of the study especially in the field of smart heritage management, climate reactive electrical design, and integrating new technologies, including artificial intelligence and digital twins. These developments have a lot of potential to enhance the role of electrical innovations in the protection of heritage sites as well as to promote the goals of sustainable development, both in the local, national, and global levels.

Keywords: Conservation, Electrical innovation, Energy efficiency, Heritage sites, Sustainability

O80 Transforming Traditional Crafts through Design and Technological Innovation: A Case of Zari Zardozi in Rohilkhand Region of U.P.

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The traditional crafts in India constitute a rich blend of tradition, art, and regional identity but most of these crafts are under severe threat in the modern world in terms of their preference, market competition, and technological changes. The present study explores how traditional crafts can be reshaped in today's world with particular reference to Zari Zardozi embroidery practiced in Rohilkhand region of Uttar Pradesh. The purpose of this study is to understand how the technological interventions, like digital design tools, better production technology, and the use of internet-based marketing platforms, can help the craft to transform and sustain its livelihood. The other objective is to find out the problems of the workers associated in this work. The study is based on primary and secondary data approach utilizing the discussion with the respondents. The results indicate that design innovation has been extremely important in helping to reposition Zari Zardozi out of its usual bridal and ceremonial garments to the modern fashion, household decorations, and accessories market to further reach its consumer market. The development of technology such as computer added designs, improved embroidery equipment, etc. has allowed more experimentation of design and opened the doors of national and global markets for the artisans through digital marketing. The study also finds out the multiple numbers of problems of the workers like lack of digital education, lack of proper infrastructure facilities, lack of finance, poor market knowledge about the latest fashion trends, and many more. It also points to the continued issues of accessibility of technology, the lack of skills among the artisans, the threat of the erosion of design and the lack of institution support at the grassroots level. It is finds out that a moderate combination of tradition-aware design innovation and an inclusive technological uptake is necessary in the sustainable change of Zari Zardozi. The study also highlights the implications to policy makers, designers, and learning institutions, etc. about the necessity to have systematic education, digital capacity building, collaborative platforms, and heritage sensitive innovation frameworks. Such measures can be used as scaled models in recreating other traditional crafts in the country.

Keywords: Artisanal innovation, design intervention, Rohilkhand, technological integration, *Zari Zardozi*

O81 Impact of Accounting Information on Managerial Decision Making in the In-Service Sector in Nepal

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This research examines the impact of accounting information quality on managers' performance in service sector firms in Nepal. It focuses on five vital aspects of the information quality in accounting, including accuracy, comparability, consistency, timeliness, and completeness. The research adopted a quantitative design, and through the use of structured questionnaires distributed to 150 managers from different service sector organizations, primary data was collected. Descriptive statistics, reliability test, correlation, and multiple regression were used to analyze the relationships between the variables. The findings show that each of the five dimensions of accounting information quality has a positive and significant effect on managerial performance. Remarkably, accuracy and completeness came out to be the most important ones, pointing out that managers rely on accurate and complete financial data in order to make efficient decisions. The results of such highlight that quality accounting information significantly influences planning, control, and strategic decision-making in organizations. This paper contributes to existing literature by empirically testing in the developing country context, mainly from the service sector. The inferences are obvious: An organization will need to improve its accounting mechanisms and routine reporting routines to improve management efficiency.

Keywords: Accounting information quality, managerial performance, decision making, service sector, Nepal

O82 Cultural Identity, Heritage, and Economic Transformation: Insights from the Manjha-Kite Trade of Bareilly

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The manjha-kite trade of Bareilly represents a unique blend of cultural identity, traditional craftsmanship, and local economic activity that has been sustained across generations. Deeply rooted in regional festivals, social practices, and artisanal knowledge, this heritage trade has played an important role in shaping community livelihoods and cultural expression. However, changing regulations, safety concerns, market competition, and modernization pressures have significantly affected its continuity and economic relevance. The first objective of this study is to examine the role of the manjha-kite trade in preserving cultural identity and heritage in Bareilly. The second objective is to analyze how this traditional trade has contributed to, and been influenced by, processes of economic transformation over time. The study adopts a secondary data–based methodology, drawing upon academic literature, government reports, policy documents, and documented studies related to traditional crafts, informal economies, and cultural industries. The data were analyzed using a descriptive and interpretative approach to understand cultural significance, economic patterns, and transformation dynamics. The findings reveal that the manjha-kite trade has historically supported small-scale artisans, seasonal employment, and local entrepreneurship while reinforcing cultural continuity. At the same time, the study finds that lack of innovation, regulatory restrictions, and limited access to modern markets have reduced its economic viability. However, opportunities exist through safer material innovation, heritage branding, skill development, and integration with cultural tourism and creative industries. In conclusion, the manjha-kite trade of Bareilly serves as an important example of how cultural heritage and economic activity are closely interconnected. Preserving this trade requires balancing cultural authenticity with responsible innovation and policy support. Future implications of this research highlight the need for sustainable livelihood strategies, heritage-sensitive regulations, and innovation-driven value creation to ensure long-term economic transformation without eroding cultural identity. The scope of the study extends to traditional craft sectors, informal heritage-based economies, cultural policy planning, and local entrepreneurship, offering insights for researchers, policymakers, and development practitioners working at the intersection of culture, heritage, and economic transformation.

Keywords: Cultural heritage, economic transformation, innovation, Manjha-kite trade, traditional craftsmanship

O83 Do Management Accounting Practices Improve Organizational Performance? Evidence from Post-Merger Commercial Banks in Nepal

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This research examines how management accounting practices (MAPs) affect the performance of organizations in post-merger commercial banks in Nepal. The growth in operational complexity brought about by regulatory reforms, digital transformation, and merger and acquisition (M&A) processes has increased the need to have effective internal information systems which provide support in making strategic decisions, monitoring performance and operational control. Despite the fact that the importance of MAPs is highly acknowledged in the world, there is a lack of empirical research on the use of MAPs in underdeveloped economies, especially in the context of post-merger banking in Nepal. This study, therefore, aims at addressing this knowledge gap by conducting a systematic study on the level of MAP adoption and its effects on organizational performance among commercial banks in Nepal.The research is based on the positivist research philosophy and uses the cross-sectional survey research method. Primary data were gathered by use of structured questionnaires, which were administered to 119 managerial and accounting professionals who are working in 20 commercial banks in the Sudurpashchim Province in Nepal. Management accounting practices were operationalized at a number of dimensions which comprised of budgeting systems, cost management processes, performance appraisal processes, and decision support tools. Organizational performance was considered in terms of both the financial performance, as measured by profitability, and the return on assets, and the non- financial performance in terms of the efficiency of operations and the performance of employees. The analysis plan involved descriptive statistics, correlation tests and multiple regression equation to determine the relationships between variables.Empirical evidence shows that MAPs have a statistically significant positive influence on the work of organizations in the post-merger commercial banks. The findings highlight the importance of integrating management accounting systems in ensuring that organizations achieve strategic alignment, contribute to performance monitoring and resource optimization. The study provides practical implications to bank managers, regulators and policymakers by providing empirical information to the paucity of literature available on MAPs in developing economies to enhance performance and make the Nepal commercial banking sector sustainable in the long-term.

Keywords: Management accounting practices, organizational performance, commercial banks, post-merger integration, Nepal

O84 SMEs Sustainability in Kailali and Kanchanpur District of Nepal

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In peripheral border regions, small and medium enterprises (SMEs) are an important source for employment creation, income generation and local economic development in Nepal. The present study analyzes the factors which determine the sustainability of SMEs in the two districts Kailali and Kanchanpur of the Sudurpaschim Province using a quantitative research approach. Primary data were gathered by means of a standardized questionnaire from 550 registered SMEs engaged in trade, manufacturing and services. Descriptive statistics as well as a multiple regression analysis were applied to investigate the effects of access to finance, managerial capabilities, market access, infrastructural conditions and support of the government on business sustainability. As a result, it was found out that the access to finance, managerial capabilities and the access to markets have significant positive effects on the sustainability of SMEs. In contrast, the poor quality of the infrastructure and the low effectiveness of the support of the government represent major barriers to sustainable entrepreneurship in border-districts. The findings emphasize the necessity of a combination of financial and digital literacy programs for SMEs and better access to adequate financial services as well as targeted capacity building activities designed specifically for the needs of SMEs located in peripheral border-regions. Finally, the study concludes that to improve the long-term sustainability of SMEs in peripheral border regions of Nepal, governmental policies need to be developed that at the same time aim to develop the human capital and eliminate structural limitations within the financial sector.

Keywords: SME sustainability, access to finance, managerial capabilities, market access, infrastructure, government support, Kailali, Kanchanpur, Nepal

O85 The Effects of Financial Socialization on Financial Well-Being: An Empirical Study of University Students

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This study investigates the impact of financial socialization on university students' financial well-being, focusing on the mediating role of financial literacy. This study employed a quantitative approach, utilizing a cross-sectional survey design to collect data from a sample of 416 students from public and private educational institutions in Sudurpashim Province, Nepal. This study adopts a realism ontology that incorporates elements of positivism and interpretivism epistemology. Structural equation modeling (SEM) is used to analyze the relationships between parental financial education, educational influence, peer influence, social media influence, financial education programs, financial knowledge and financial well-being. The results indicate that social media influence, financial education programs and peer influence have moderate positive effects on financial knowledge, whereas parental financial education and educational influence have negligible effects. In turn, financial knowledge has a strong positive impact on financial well-being. The direct effects of financial education programs and parental financial education on financial well-being were also significant, albeit with weak partial mediation through financial knowledge. This study highlights the crucial role of enhancing financial knowledge in improving financial well-being, particularly through factors such as social motivation, financial experience and personal investment. These findings contribute to the understanding of financial socialization processes among university students and provide insights for the development of targeted interventions to enhance their financial well-being.

***Keywords*:** Financial education, financial knowledge, financial literacy, financial socialization, financial well-being, peer influence, social media

O86 Consumer Perception and Behavioral Intention toward QR Code Payment Systems in Dhangadhi, Nepal

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The main aim of this study is to investigate how the consumers in Dhangadhi, Nepal see and plan to use QR code payment systems. By applying an expanded version of the Unified Theory of Acceptance and Use of Technology (UTAUT) framework, the study identifies the specific drivers that encourage people to adopt this digital payment method. The study utilized a quantitative approach, focusing on both descriptive and causal relationships. Data collection involved structured questionnaires distributed to 386 active QR payment users in Dhangadhi, selected through convenience and purposive sampling. This analysis centered on four main factors: perceived risk, social influence, effort expectancy, and facilitating conditions. These variables were evaluated using descriptive. The data reveals a broadly positive attitude towards QR payments among consumers in Dhangadhi, while correlation analysis indicates that all studied factors are linked to consumer perception, the regression results highlight two critical drivers: effort expectancy and perceived risk. Notably, effort expectancy emerged as the most influential predictor, suggesting that ease of use is the most important factor for users. Interestingly, social influence and facilitating conditions did not show a significant direct impact. This implies that adoption in Dhangadhi is motivated more by personal convenience and security than by social influence or existing infrastructure. The scope of this research is confined to QR code users within Dhangadhi, which may limit how well the findings apply to other parts of Nepal. Furthermore, the study focuses exclusively on the consumer experience, leaving out the perspectives of merchants, financial institutions, and payment service providers. Practical implications: The results provide a clear roadmap for policymakers and financial institutions: to encourage wider and more consistent use of QR payments, the focus must remain on simplifying the user experience and enhancing security. Strengthening these areas will build greater consumer trust, particularly in regional urban centers.

Keywords: Behavior Intention, Consumer Perception, Digital Payment System, Effort Expectancy, QR code payment

O87 Impact of Merger and Acquisition on Achievement Motivation of Employees at Nepalese Commercial Banks

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This study explores the key factors influencing achievement motivation among employees in Nepalese banks post-mergers and acquisitions. It examines the interplay between personal attributes, relationships with managers, job characteristics, compensation, organizational culture, and how these elements collectively impact employee motivation.
The research found high internal consistency among various constructs, indicating reliable measures were used. The sample predominantly comprised individuals aged 27 to 42, highlighting a gender-diverse workforce within Nepalese banks. Descriptive statistics revealed insightful patterns in employee perceptions. Correlation analysis indicated that personal factors, managerial relationships, job features, and compensation have strong positive associations with achievement motivation. Regression analysis showed the model's significant effectiveness, explaining 93.3% of the variance in achievement motivation. All variables, except for organizational culture in specific instances, significantly contributed to predicting achievement motivation.
Overall, the study offers valuable insights into the determinants of achievement motivation in the banking sector, laying the groundwork for targeted interventions aimed at enhancing employee motivation and organizational performance following mergers and acquisitions.

Keywords: achievement motivation, mergers and acquisitions, employee performance, Nepalese banks, organizational culture.

O88 Sustainable Digital Infrastructure for Long-Term Heritage

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The high rate of digitalization of cultural assets has created new opportunities to preserve and spread the heritage, but it also contains the issues of long-term sustainability, accessibility, and dependency on technology. As a result, sustainable digital infrastructure has become a necessity to ensure that cultural heritage is preserved and can be used and retained as a source of meaning through time. The objective of this paper is to investigate the role of the sustainable digital infrastructure to make the long-term maintenance and transformation of cultural heritage. Further it also explores how innovative digital systems can add to resilience, inclusivity, and continuity in the management of cultural heritage. The study is based on secondary data approach. The qualitative and comparative analysis was taken up to find out the key objectives of the study. It is found that sustainable digital infrastructure is vital in protecting digital heritage asset against technological obsolescence and data loss. In addition, the integration of the sustainability concept within the digital infrastructure characterized by energy efficient data systems, scalable cloud platforms, open standards, and long-term data governance contributes to better collaboration, lower operation costs, etc. Sustainable digital infrastructure forms a cornerstone to long-term heritage transformation through ensuring ongoing documentation, adaptive preservation approaches, and meaningful public action. Further, there is a strong need to enhance the interdisciplinary cooperation between technologists, heritage professionals, and policymakers in creating resilient digital infrastructures and to embrace ethical frameworks that are both innovative and culturally aware. The study highlights that without sustainability-focused planning, digital heritage initiatives risk becoming fragmented or inaccessible over time. The study highlights the role of the cultural institutions, heritage sites, educational platforms, and policy-led digital initiatives together in ensuring the cultural heritage develops in a responsible manner and, at the same time, makes it available to the generations to come.

Keywords: Cultural heritage, digital infrastructure, sustainability, transformation, innovation

O89 Social Media Influencer and Brand Loyalty of Generation (Z) in Kanchanpur District of Nepal

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Influencer marketing has emerged as a fresh approach to brand or product promotion. Influencer marketing, according to marketers, can create a favorable consumer perception of a product or brand and increase brand loyalty. This study uses purchase intention as a mediating variable to examine how influencers affect Generation Z's brand loyalty. Generation Z is extremely tech-savvy, spending the majority of their time on social media. Generation Z can generate purchase intents and loyalty at a reduced cost by anticipating a marketing approach that is close to and accessible to them. To expect marketing strategy is very close and easily accessible to generation Z. To create purchase intention and loyalty at lower cost. Purposive sampling method is used for this study by taking 100 samples through questionnaire. Sobel test and path analysis was used to check the indirect effect. The reliability, validity and assumption test was conducted before path analysis; to check that the data is valid for more analysis. The result of this research shows that generation Z are influenced by social media influencers.

Keywords: Social media influencer, generation Z, purchase intention, brand loyalty

O90 Soft Skill Training and Employee Performance of Private Sector Commercial Banks in Nepal

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This study investigates the effects of training on soft skills on the performance of employees working in the commercial banks of the private sector in Nepal. The study centers on five dimensions of soft skill training, i.e., communication skills, leadership skills, teamwork, problem-solving skills, and interpersonal skills, and studies how these are related to the employee performance following training. The sample of 130 employees of five chosen private commercial banks was used to collect primary data with the help of a structured questionnaire. The descriptive research design was used in a quantitative research approach. The banks were selected through convenience sampling, and the employees were fairly represented through stratified sampling, and respondents were selected by convenience sampling. The analysis of data was done in the Statistical Package of Social Sciences (SPSS) in terms of descriptive statistics, correlation and regression. The results show that soft skill training is important to improve employee performance since 96.9% of the respondents indicated that they recorded positive change in their performance after training. The results of the analysis indicate that teamwork training and interpersonal skills training are statistically significantly related to the employee performance. Out of the entire set of dimensions, interpersonal skills training became the most significant predictor of employee performance in the case of private commercial bank in Nepal. On the other hand, training on communication skills, leadership skills and problem-solving skills training-significantly influence the performance of employees in post-training. The study also shows that employees can normally utilize obtained knowledge and skills in the workplace and make their ideas clear after receiving soft skills training. Altogether, the results prove that the properly developed training on soft skills improve knowledge, skills and capabilities of the employees and contribute to the improvement of job performance. The methodological approach applied to this study, i.e., quantitative, allowed conducting a thorough and rigorous assessment of the correlation between the training on soft skills and the performance of employees and empirically prove the fact that specific training on the history of teamwork and the development of interpersonal skills is an important factor in operational excellence in the commercial banks of Nepal in the private sector.

Keywords*:* Soft Skill Training, Employee Performance, Commercial Banks, Communication, Operational Excellence

O91 Impact of Balance Score Card Dimensions on Insurance Company Performance in Nepal

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Balance scorecard is an integrated performance measurement tool. The purpose of this study to examine the relationship between BSC dimensions and organizational performance of Life insurance Company in Nepal and to analyze the impact of BSC dimensions on Life insurance Company in Nepal. Population size of the study is all fifteen Life Insurance Companies in Nepal. Sample size was five Life Insurance Companies in Sudur Pascim province. A formal five point Likert scale questionnaire was used for collecting data. A total of 100 questioners were distributed to the employee (including senior managers, managers, officers, and assistant) of the 5 Life insurance companies with an average of 20 questionnaires per insurance company and a total of 60(60 percent) available responses were obtained and evaluated in this research. Empirical tests used for descriptive statistics and the regression model. The findings show that the use of the BSC method is satisfactory in the Nepalese insurance sector. Nepalese insurance company have improved relative performance on four of the BSC dimensions from the financial perspective. Also, the findings show a strong and significant impact of all four of the BSC dimensions considered in this study on the performance of the banks. This study indicates that a wider examination of corporate success is offered through the BSC approach. The Nepalese insurance sector can use BSC to more comprehensively assess their organizational performance.

Keywords*: Balanced scorecard, life insurance company, dimensions, impact, organizational performance*

O92 Management Control System and Organizational Performance of Micro Finance Companies in Nepal

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The impact of Management Control Systems (MCS) on the financial performance of Microfinance Institutions (MFIs) in Nepal is investigated in this study. MFIs are essential for increasing financial access, reducing poverty, and promoting regional economic development. Strong management procedures are becoming more and more necessary as these institutions expand in order to preserve their financial stability. MCS, which includes budgeting practices, performance evaluation techniques, and internal control systems, serves as an essential framework to guarantee that institutional operations stay in line with long-term objectives. The study uses a quantitative methodology to examine how MCS and financial performance are related. 150 financial managers and officers completed structured questionnaires with a five-point Likert scale, and ten MFIs were specifically chosen as samples. Google Forms was used to gather primary data, and academic sources, Nepal Rastra Bank publications, and annual reports were used to gather secondary data. Responses were interpreted using descriptive statistics like mean and standard deviation, and relationships between variables were tested using inferential techniques like regression analysis and correlation. The results demonstrate that sound planning, monitoring, and reporting are all components of effective MCS practices that have a positive effect on financial performance. Budgeting increases productivity and profit margins, and internal controls reduce credit risk, which leads to increased profitability and better loan recovery. These elements work together to improve the institution's overall financial viability. In summary, the study extends current understanding by emphasizing the role of management control systems in enhancing financial discipline and operational success within Nepalese MFIs. It demonstrates that robust internal control systems and well planned budgeting processes are fundamental to achieving financial stability, improving efficiency, and supporting the broader developmental mission of microfinance institutions in Nepal.

Keywords: Management control system, budgeting, internal control system, financial performance

O93 Influence of Work-Life Balance on Job Satisfaction: A Study of Hotel Employees in Sudurpaschim Province

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Hotel business is a highly labor-intensive industry in which the working conditions of employees directly affect the quality of service, the performance of an organization, and the sustainability of the organization. The practices of work-life balance (WLB) thus become very important in increasing job satisfaction (JS). Nevertheless, there is very scarce empirical data with regard to the hotel industry of Sudurpaschim Province, Nepal. This gap is filled in this study by assessing the relationship between the dimensions of work-life balance and job satisfaction among the employees of a hotel. The primary aim of the research was to develop a study that would analyze the inter-relationship that exists between five work-life balance dimensions of working hours, co-worker support, work pressure, flexible working conditions, and family-friendly programs and job satisfaction. The quantitative research design was applied and primary data were collected using a self-administered structured questionnaire on 250 employees. Convenience sampling was used and SPSS and Excel were used for the analysis of data. High internal consistency was assured by reliability analysis of all measurement scales (Cronbach's alpha> 0.7). Correlation and hierarchical multiple regression analysis has been done. The results show that job satisfaction is positively related to family-friendly programs (r =.41, p =.001), co-worker support (r =.39, p =.001), and working hours (r =.34, p =.001), whereas work pressure (r =.31, p =.001) and flexible working conditions (r =.27, p =.001) are negatively related to job satisfaction. The results of the regression also show that family-friendly programs and co-worker support are the most predictive variables, and the final model describes the amount of 40% of the variance. This study has emphasized that consideration of family-friendly policies and supportive working environments should be put at the forefront in improving job satisfaction in the hotel industry. The results also have great managerial and policy implications, as they underline the necessity to develop well-organized and appropriately controlled work-life balance practices, which would eventually lead to organizational achievement.

***Keywords*:** work-life balance, job satisfaction, hotel industry, human resource management, sudurpaschim province

O94 Monthly Return Patterns and Volatility Seasonality in the Nepal Stock Exchange: Evidence from an EGARCH Model

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This study analyzes seasonality in monthly stock returns in the Nepalese stock market from 2001 to 2025 by examining 300 monthly returns of the NEPSE composite index. The study employed descriptive statistics and an EGARCH (1,1) model with dummy variables. The results show significantly high mean returns in the months of Ashad (Jun/July) and Shrawan (July/Aug) and the lowest returns in Bhadra and Falgun. In the variance equation of the model, the ARCH (α =0.442) and GARCH (δ = 0.664) parameters indicate that volatility clustering exists in NEPSE returns, where large market shocks tend to be followed by further large shocks. The negative volatility term (γ=-0.048) is insignificant, implying no strong leverage effect or absence of asymmetric effects. (i.e., bad news doesn't increase volatility more than good news). Furthermore, the positive and significant volatility coefficient of Kartik (Oct./Nov.) implies heightened market volatility during the months. The results of this study are useful for stock market investors in Nepal, indicating that they can develop a buy-sell strategy for stocks based on these findings.

Keywords: Mean difference, dummy variables, seasonality, EGARCH

O95 Impact of Training Programs on Cooperative Management Efficiency

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The primary objective of this study is to examine the impact of training frequency and training quality on operational efficiency among cooperatives in Nepal. To identify the perceived relationships between the dependent and independent variables, descriptive and causal-comparative research designs were employed. Data were collected from 360 respondents using structured questionnaires based on a five-point Likert scale. The analytical tools applied in this study include descriptive statistics, correlation analysis, and multiple regression analysis. The regression results reveal that training frequency has a statistically significant positive effect on operational efficiency ($p = 0.004$). Similarly, training quality demonstrates a strong positive and statistically significant impact on operational efficiency, with a p-value of less than 0.001. These findings indicate that more frequent and higher-quality training programs substantially enhance cooperative performance. Overall, the results confirm that both training frequency and training quality play critical roles in improving operational efficiency among cooperatives operating in Nepal.

Keywords: Cooperative management, training programs, managerial skills, operational efficiency, training quality.

O96 Factors influencing employees' job satisfaction in the service sector

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Service organizations, where job satisfaction is of greatest interest (because the attitude of happy and not-so-scarce employees can also affect the quality-of-service delivery and customer retention), have, however, been reported to have mutual effects on QWL. In this context, the current paper probes into the determinants of job satisfaction among service sector employees in Nepal, whereas it focuses on compensation and benefits, work environment, job security, supervisory support, and career opportunities. A quantitative explanatory design was used for the study by administrating questionnaire among 325 employees employed in banking, hospital, education, and hospitality industries. Information was collected using a structured questionnaire that used a five-point Likert scale. Descriptive statistics, reliability analysis, Pearson correlation, and multiple regression were used for analysis. Results: Supervisory support, workplace environment, compensation/benefits, and career advancement opportunities positively influence job satisfaction. There is also a positive effect (low significant) of job security on job satisfaction, suggesting that the impact of a career does not matter as much as other factors. These findings are consistent with recent empirical evidence, and give us new insights of service sector in Nepal. This work contributes to the literature by integrating various antecedents of job satisfaction in one framework, which is expected to assist management and policymakers when trying to enhance employee satisfaction and organizational performance in service-type industries.

Keywords: Job satisfaction, service sector, supervisory support, working environment, compensation, and benefits.

O97 Factors Affecting Stock Market Investment Decision of Young Investors in Nepal

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The purpose of this study is to examine the determinants that influence investment behavior in stock market of young investors with reference to young potential investors in Nepal, which include financial literacy, risk perception, herding behavior, market information, social media influence and overconfidence bias. Adopting quantitative method, data was collected from 375 young investors in the age group of 18 -35 years investing actively at Nepal Stock Exchange. The data were gathered with the help of online and manual questionnaires and analyzed through descriptive statistics, correlation analysis and multiple regression in SPSS. This result suggests that financial literacy, risk perception, herding behavior, market information and overconfidence bias positively significantly affect investment decision-making at five percent significance level. Financial literacy and market information were found to be among the strongest factors predicting investment choices in our model. By contrast, social media influence was statistically insignificant, meaning that most young investors may not rely on digital tools to make final investment decisions. This research highlights the important effects of financial literacy and behavior on rational investment decisions. The results provide useful information for policy-makers, banks and teachers about how to design financial literacy programs that are effective in improving investor awareness. Furthermore, this research adds to the existing literature on behavioral finance by offering empirical evidence in an emerging market set up and directions for furthering the research on investors' behavior.

Keywords: *Financial literacy, investment decision behavior, behavioral finance, young investors, NEPSE, risk perception*

O98 Economic Effects of Wild Boar Damage of Crops in Protected Areas of Nepal

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Human wild-boar conflict is one of the prominent issues in Nepal, especially in areas adjacent to protected areas. Wild boars cause substantial damage to the agricultural crops and affect the lives of rural farmers through economic loss. However, the extent of this loss varies across protected areas. Thus, this study aims to compare the economic loss due to crop damage by wild boar between two protected areas with different management regimes; Shuklaphanta National Park (ShNP) and Dhorpatan Hunting Reserve (DHR). We used a questionnaire survey and descriptive statistics to characterize and compare the pattern of human wild boar conflicts between ShNP and DHR. Altogether, the two protected areas experienced a crop damage of 87,035.78 kg with an estimated economic loss of 26,389 USD within a year in our study. The most damaged crop in the ShNP was paddy whereas that in DHR was potato. We recorded a higher crop damage and economic loss in ShNP than in DHR. However, the severity of conflict is higher in DHR with around 8 % of the total production damaged by wild boar. Although the government declared wild boar an agricultural menace in 2023 and permitted killing on private lands, local communities should also apply other mitigation measures to prevent wild boars from entering crop fields. Additionally, the potential introduction of trophy hunting in ShNP (already permitted in DHR), following comprehensive studies, could help reduce economic losses associated with human-wild boar conflicts. Such combined efforts could create a more sustainable approach to managing wild boar populations while safeguarding local agriculture and livelihoods.

Keywords: Conflict, Wild boars, safeguarding, livelihoods

O99 Women in the Cross-border River System: The Gendered Impact of the Kosi River Disaster in Nepal and India

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Himalayan Ecology is the origin of great rivers. Greatness is in the sense of sustaining the whole lives of the Earth. From ants to giants, they depend on the water nurtured by nature. The transboundary river Kosi is a single hydrological unit. However, political institutions divide it into many parts. The Kosi floods, often called the "Sorrow of Bihar," (a designation rooted in British colonialism) significantly impacted various demographics, particularly women. Being primary caretakers and social roles are to provide pure water, good health, sanitation, and pure food for the whole family, connected women with the River Water and thus face impacts due to the recurrent River Floods. Due to other vulnerabilities like poverty and illiteracy, women faced psychological problems as well. The dislocating well-being of women and the river have similar roots that are maldevelopment rooted in patriarchy. The societal norms prioritise men. Empirical evidence from field surveys indicates that first, Himalayan rivers are experiencing significant disruption in their flow due to larger human-induced disasters and Second, Women are at higher risk from flood disasters because of social, economic, political, and cultural norms; lack of access to resources, decision-making, and low-waged employment tends to increase women's vulnerability to disasters. One of the findings depicts that across the villages of Supaul, Bihar and Saptari, Nepal, I repeatedly observed how women's presence in public spaces was limited. However, their labour sustained every aspect of household life. Second, Saptari women's vulnerability is slightly less geographical; often they can reach higher ground more easily, but it remains profound in social, economic and emotional terms. Supaul's women are more severely trapped by geography and household burden, while Saptari's women have a relatively larger foothold in the public and organisational domain.
This paper focuses on two questions: What social, economic, and institutional vulnerability do women face in two cultural and ecological systems around the Kosi River in India and Nepal? Second, how does the system of governance vary in these two sovereign geographies of India and Nepal, and how do women respond to such disasters in terms of adaptation and mitigation efforts? To examine these questions, the study uses Ethnographic and qualitative research methods by focusing on various cases of kosi floods in two districts of India (Supaul, Bihar) and Nepal (Saptari). In addition, the study would rely on the 'Eco-feminism' and 'Disaster vulnerability approach' to assess the relationship between women's vulnerability and flood disasters.

Keywords: Kosi river, women-vulnerability, disaster-governance, disaster-vulnerability approach

O100 Strengthening Biodiversity Conservation for Sustainable Environmental Policies

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Aquatic biodiversity is completely dependent on water systems and their flow characteristics. Fresh water makes up only 0.01% of the world's water and approximately 0.8% of the Earth's surface, yet this small fraction of global water supports at least 100,000 species out of approximately 1.3 million described species**.** Inland water and freshwater biodiversity constitute a valuable natural resource in economic, cultural, aesthetic, scientific and educational terms (Dudgeon *et al*., 2006). An estimated 126,000 described species rely on freshwater habitats, including species of fishes, mollusks, reptiles, insects, plants, and mammals. Biodiversity conservation will lead to strengthening of ecosystem rebound and will improve the ability of ecosystem to provide necessary services during increasing climate pressures. Climate change has created potential major threats to global biodiversity and strongly affected ecosystem services. Existing levels of greenhouse gases concentrations in atmosphere have led to a rapid increase in average global temperature. Climate change impacts on vegetation, water resources and habitat integrity may negatively affect fire regimes, forage production, water supplies, crop pollination services, and outdoor recreation and quality of life. They have a disastrous influence on economy of all countries, because there are several damages because of natural events. Therefore, there is an urgent need to present this paper basically focuses on the significance of biodiversity, the consequences faced by the plants, animals, humans and ecosystem due to the anthropogenic activities and the possible and effective mitigation and adaptation strategies in terms of conservation of biodiversity which can protect the planet from the adverse impacts on environment.

Keywords: Biodiversity, Conservation Approaches, Aquatic Pollution, Ecosystem services and Species extinction.

O101 Regeneration Status of *Shorea robusta* Under Irregular Shelterwood System in the Sal Forest of Kailali District

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Shorea robusta Gaertn. f. (Sal) is principal timber yielding species which spreads from Terai to the foothills of Himalayas in Nepal. It is the light demanding species, so the harvesting operation opens the canopy which favors the growth of its regeneration. With the realization of role of natural resources on economic development of country, GoN has envisioned "Forest for Prosperity". On this basis the silviculture system-based forest management under scientific forest management (SFM) was applied over 750 community forests in 58 districts till 2018.

The study aims to explore the regeneration status, assessing the mode of origin in managed *Shorea robusta* forests under shelterwood system. Systematic sampling was carried out to collect data. The working sub-compartment had 10 annual coupes of equal area among which 3 coupes already had silviculture treatment while remaining coupes were untreated. Diameter, height, crown height, plant condition, grazing & forest fire incidents were recorded. In addition to that, soil sample was collected from the soil depth of 0-20 cm from all plots and different physical and chemical properties were tested in soil laboratory. The result showed that seedlings number in the treated coupe was significantly higher than in untreated coupe, but sapling number was not significantly different in treated and untreated coupes. The seedling presence in treated coupe with three year of operation was 15,500/ha whereas in untreated coupe the seedling/ha was only 9,619. Similarly, the average height of the seedling in the treated area was 38.12 cm whereas of untreated area was only 34.14 cm. The multiple linear regression model of regeneration with selected variables showed that regeneration depends upon the crown opening and soil pH.

Keywords: Economic development, *Shorea robusta,* Irregular Shelterwood System

O102 Climate Change, Human Rights, and Environmental Justice in Nepal

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This paper situates Nepal's climate crisis within the conference's core themes of Heritage, Innovation, and Transformation, framing it as a critical case study in systemic change. Climate change in Nepal acts as a transformation agent of unprecedented scale, directly threatening tangible and intangible heritage—from agrarian livelihoods and indigenous knowledge systems to biodiverse landscapes and hydrological stability. These environmental shifts exacerbate deep-seated socio-economic vulnerabilities, posing fundamental challenges to human rights and environmental justice, particularly for indigenous, rural, and marginalized communities. This reality exposes a profound governance failure, where traditional environmental and legal frameworks are inadequate to address this transformative pressure. The analysis investigates this nexus by critically assessing the disconnect between Nepal's progressive constitutional and international commitments a significant legal innovation and the persistent on-the-ground injustices rooted in weak implementation and limited access to justice. Employing a doctrinal and qualitative methodology, the paper argues that effective climate response requires a parallel transformation in governance structures. It proposes a rights-based governance model founded on three pillars: (1) the innovative operationalization of human rights principles in climate policy; (2) the transformation of legal and civic education to empower rights-holders and duty-bearers; and (3) the integration of community heritage and ecological knowledge into equitable adaptation strategies. Ultimately, the paper contends that securing climate justice in Nepal necessitates moving beyond technical solutions to embrace a holistic transformation that re-centers governance, education, and environmental stewardship on the principles of equity, resilience, and the preservation of dignity for future generations.

Keywords: Climate governance, environmental justice, heritage, innovation, transformation, human rights, Nepal, rights-based approaches

O103 Integration of Mobile LiDAR and UAV-based Remote Sensing for Single Tree Analysis in Chitlang, Nepal

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Climate warming and rapid urbanisation are affecting forests in Nepal. Increasing frequency and severity of disturbance events such as floods, droughts, insect infestations and wildfires increase pressure on the Nepali forest ecosystems, straining their ability to recover, impacting ecosystem services and agroforestry systems alike. In this study, we acquired remote sensing data from a forested hillslope in Chitlang valley near Kathmandu, using an unoccupied aerial vehicle (UAV) equipped with an RGB camera. The UAV-based imagery is processed to derive geospatial products, mainly high-resolution orthomosaics and elevation models. Additionally, high-resolution point clouds were used to capture forest structural properties and single tree attributes in 3D space, by employing a mobile LiDAR (light detection and ranging) scanner (MLS).
MLS is a promising technology and well suited to overcome logistical challenges in regard to Nepal's mountainous landscape, steep terrain and rapidly changing slope, as well as in the tropical forests and the Lower Himalayan Range. We used a handheld Eagle-Lidar scanner that features a Livox Mid-360 unit. MLS data products include manually segmented single trees, understory and canopy height models, and a subset of forest structural metrics.
We aligned and integrated our data to create a unified geospatial model of the forest plot. Our project serves as a capability demonstrator to showcase the utilization of rapidly deployable and lightweight geospatial equipment which is suitable for the local context. Our analysis is ongoing and aims to expand the survey region across the Chitlang valley area.

Keywords: Mobile LiDAR, unoccupied aerial vehicle (UAV), sensing

O104 Linking of Water Quality Research to Policy

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The existence of glaciers, lakes, and rivers along with sufficient groundwater, are the crucial sources of drinking water in Nepal. Rising population and urbanization with unmanaged solid waste and untreated wastewater have polluted surface and groundwater sources and consequently worsened the water quality. The polluted water affects the health of animals and humans directly due to the presence of chemical and microbial contaminants. Currently, numerous countries are facing exceptional pressure on water resources. The United Nations sets the Sustainable Development Goals to achieve a better and more sustainable future for all. Achieving the Sustainable Development Goal (SDG-6) on water and sanitation is essentially significant and provisional to reaching all other SDGs goals. However, reaching this goal by 2030 is a difficult process, especially in developing countries like Nepal. The goal could address the global water crisis caused by increased water shortage, poor sanitation, worldwide pollution and rapid declines in freshwater biodiversity. Our recent studies have revealed that different urban drinking water sources are contaminated with potential enteric pathogenic bacteria, chemicals and emerging pollutants. Water isolates are resistant to common therapeutic antibiotics. Biofilm-forming bacteria are a major burden of piped and bottled water in Nepal, which poses a significant public health threat. In order to remove harmful bacteria and chemicals from drinking water, treatment technologies are necessary to be optimized. Likewise, we periodically launched a laboratory to land-oriented programs for safe drinking water and sanitation. The awareness among people and proper sanitation practice can help to reduce the risk of epidemic outbreaks of water- and sanitation-related infections. If water is properly treated and regularly monitored, it is the best alternative to reduce water insecurity. Though, identification of priority areas and significant investment in water research in developing countries is much needed to achieve the sustainable goals. Integrating scientific research with policy making is crucial for enhancing drinking water quality, protecting public health, and ensuring sustainable water resources in Nepal.

Keywords: Water Pollution; Sustainable Development Goal (SDG-6); Water treatment; Policy making

O105 Bacterial Contamination of Frequently Touched Objects in a Tertiary Care Hospital of Pokhara, Nepal: How Safe are Our Hands?

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Objects frequently touched by patients and healthcare workers in hospitals harbor potential pathogens and may act as source of infectious agents. This study aimed to determine the bacterial contamination of common hospital objects frequently touched by patients, visitors and healthcare workers. A total of 232 samples were collected from various sites like surface of biometric attendance devices, elevator buttons, door handles, staircase railings, telephone sets and water taps. Isolation, identification and antibiotic susceptibility testing of the isolates was performed by standard microbiological techniques. Biofilm forming ability of the *S. aureus* isolates was tested by a microtitre plate method. A total of 232 samples were collected and 219 bacterial isolates were recovered from 181 samples. *Staphylococcus aureus* was the most common bacterial isolate (44/219). Majority of *S. aureus* isolates were recovered from elevator buttons, biometric attendance devices and door handles. Among the *S. aureus* isolates, 36.3% (16/44) were methicillin resistant *Staphylococcus aureus* (MRSA) while remaining were methicillin sensitive *Staphylococcus aureus* (MSSA). Out of 44 *S. aureus* isolates, 12 (29.5%) were multidrug resistant and 14 (31.8%) were biofilm producers. The majority of MRSA isolates 62.5% (10/16) were biofilm producers. *Acinetobacter* was the most common Gram negative isolate followed by *E. coli* and *Pseudomonas* species. High bacterial contamination of frequently touched objects with variety of potential pathogens and normal flora was detected. S. aureus was the most common bacterial isolate. Biofilm forming ability offers additional survival advantage to the organisms on these objects. Present study highlights the need of improved hand hygiene among healthcare workers and regular cleaning/disinfection of sites of frequent public contact.

Keywords: Hospital surfaces, bacterial contamination, MRSA, drug resistance, disinfection, biofilm

O106 Exploring the Interplay between Social Media Use, Sleep, and Emotion Regulation in Adulthood

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Adulthood mental health is increasingly impacted by heavy usage of digital technologies, excessive social media use is associated with poor sleep quality which in turn contributes to difficulties in emotion regulation. This study aims to examine how social media addiction, sleep quality and emotion regulation together influence mental health outcome in adulthood using three independent valid instruments i.e., Bergen Social Media Addiction Scale (BSMAS), Epworth Sleepiness Scale (ESS) and Emotional Regulation Questionnaire (ERQ) among N=100 by using convenience sampling. This research assumes that there is significant correlation among social media addiction, sleep quality and emotional regulation. The correlation analysis revealed several noteworthy relationships among social media usage, sleepiness, reappraisal and suppression. Social Media usage showed a significant positive correlation with sleepiness (r=.286, p=0.004) and significantly correlated with both reappraisal (r=.459 p<0.001) and suppression (r=.509, p=.001), sleepiness and the other hand was weakly but significantly correlated with suppression (r=.209, p=.037) though its correlation with reappraisal (r=.189, p=0.60) did not reach statistical significance. Finally, reappraisal and suppression demonstrated a strong positive correlation (r=.515, p<0.001).

Keywords: Social media use, sleep, emotion regulation, appraisal, suppression, adulthood

O107 Effect of Awareness on Communicable Disease Transmission Dynamics Using an SIR Model

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Communicable diseases pose significant public health challenges and have a profound impact on the economic stability of nations. Consequently, educating populations about disease transmission dynamics and effective control strategies has become a priority for both developed and developing countries. With changes in modern lifestyles, approaches to disease prevention and treatment have also evolved. In this study, *yoga awareness* is considered as a preventive lifestyle intervention encompassing *Ahar* (diet), *Vihar* (daily activities), *Achar* (behavior), and Vichar (thought process). These components collectively contribute to the physical, mental, social, and spiritual well-being of individuals. The primary objective of this work is to model the role of yoga awareness in controlling the dynamics of communicable disease transmission. Yoga awareness not only disseminates health-related information but also enhances physical fitness and improves the overall metabolic functioning of the human body. To capture this effect, the classical SIR model is modified by introducing a new awareness-induced transmission rate β_1, which is assumed to be lower than the standard transmission rate β. The resulting disease transmission dynamics are governed by a system of three ordinary differential equations, which are analyzed using standard mathematical techniques. The yoga awareness reproduction number R_a is derived using the next-generation matrix method. Sensitivity analysis of R_a with respect to key parameters reveals that R_a decreases as the coverage level of yoga awareness increases. Additionally, the recovery rate exhibits an inverse relationship with R_a, indicating a reduction in the infectious period with higher awareness coverage. Both local and global stability analyses demonstrate that the disease-free equilibrium exists when $R_a<1$, while an endemic equilibrium emerges when $R_a>1$. Furthermore, the results indicate that theory-based and data-based effect terms yield comparable outcomes. Numerical simulations support the analytical findings and suggest that awareness plays a positive role in controlling disease transmission dynamics. Increased awareness coverage reduces both susceptibility and infectivity, thereby contributing to effective disease control through yoga awareness.

***Keywords*:** Mathematical modeling, transmission dynamics, yoga awareness, SIR model, stability analysis

O108 Disaster Preparedness among Health Workers of the Sudurpaschim Province

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Disaster preparedness among health worker serves as crucial foremost line of defense during public health emergency; therefore they must be adequately equipped and trained. Sudurpaschim province experiences recurrent landslide, forest fire, floods annually and is disaster prone area. Projection indicates that the extreme event are increasing immensely in Sudurpaschim province. Hub hospitals in Nepal were conceptualized in 2014 and play a crucial role in managing the causalities during disaster and have significant role in pre disaster, during disaster and post disaster phase. This study aimed to assess the Disaster preparedness level and factors associated with it among health workers of sudurpaschim province. A cross sectional study was conducted among 255 health workers in randomly selected two hub hospital (out of three) in Sudurpaschim province. The study duration was from June to December 2025. Disaster management assessment tool for health care professional was used to assess the preparedness level which had Cronbach's alpha value of 0.930 in this study. 'Proportionate-to- population size' sampling technique was used and health worker were selected on random basis. Written consent was taken. Self-administered technique was used for data collection. The preparedness level was categorized into high, moderate and low based on blooms cutoff. The normality of continuous variable was tested using Shapiro wilk test. The clustering effect was tested using variance component analysis. Under descriptive analysis; Median, Minimum and maximum value were calculated for continuous variable whereas frequency and percentage were calculated for Nominal variable. Under inferential statistics, Chi square and Fisher-Freeman Halton exact test were applied. Futhermore ordinal regression was subsequently performed after verifying that proportional odds assumption was met. Of the 255 respondent, 62% had moderate level of preparedness. Chi square showed Marital status(p=<0.001), confidence in work safety(p=0.033), level of health worker(p=0.006), participation in disaster training(p=<0.001), and prior exposure to disaster(p=0.001) were associated with disaster preparedness level. Further analysis using ordinal logistic regression revealed that specific groups exhibited higher odds of achieving a higher preparedness level: those who were married (AOR 2.774, 95% CI: 1.376-5.593), not residing with family members (AOR 2.865, 95% CI: 1.375-5.968), held a bachelor's degree or above (AOR 2.488, 95% CI: 1.133-5.465), were below seventh level (AOR 2.995,95% CI: 1.051-8.533), had participated in disaster-related training (AOR 3.691,95% CI: 1.990-6.845), and had prior disaster exposure (AOR 2.234,95% CI: (1.007-4.953). Notably, moderate level preparedness was found among most of the Health workers. Provision for disaster related training including simulation exercise is recommended to enhance the preparedness level.

Keywords: Disaster preparedness, health workers, hub hospitals, sudurpaschim province

O109 Knowledge, Attitude and Practice of Antibiotic use among Community People in Waling Municipality

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Antimicrobial resistance (AMR), especially antibiotic resistance, is a growing global health concern, making infections harder to treat. In Nepal, irrational antibiotic use in humans, animals, and the environment has increased AMR risks. Despite national efforts, community level evidence in semi-urban is limited. This study assessed knowledge, attitudes, and practices (KAP) regarding antibiotic use Waling Municipality using a One health lens. A cross-sectional quantitative study was conducted among total 218 participants aged 18 years and above in Waling Municipality, Syangja, Nepal. Participants were selected using multistage sampling from four wards and data were collected via face-to-face interviews using a structured KAP questionnaire adapted from WHO and USAID. Ethical approval was obtained from the IRC, Pokhara University and written informed consent was taken from all participants. Among 218 community members, 90.4% had heard term of antibiotics, but overall knowledge was poor, with only 19.3% demonstrating moderate knowledge and 80.7% having poor knowledge. Misconceptions including 17.9% believing antibiotics could treat HIV/AIDS and 39% thinking they were effective against the common cold. Attitudes were generally positive, with 61% showing positive attitude. Most respondents disagreed with using leftover antibiotics (70.6%), requesting antibiotics without professional advice (82.6%). Practices were largely inadequate, with only 2.3% demonstrating good practice. Over half (56.4%) had used antibiotics in the past six months, but only 38.5% completed the full course. Binary logistic regression showed that having health insurance and marital status was significantly associated with good knowledge. Monthly income was associated with good attitude, while practice was significantly better among insured individuals. Despite widespread awareness, detailed antibiotic knowledge was poor and misconceptions persisted. Attitudes were generally positive, but inappropriate practices remained common. Health insurance and marital status predicted knowledge, income predicted attitudes, and health insurance predicted practices.

Keywords*:* Antimicrobial resistance, antibiotic use, one health, knowledge, attitude, practice, community, Nepal

O110 Climate-Induced Migration and Gendered Vulnerability in India: A Case Study of the Bagapatia Rehabilitation and Resettlement Site in Odisha

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Climate change–induced migration in India's coastal regions is deeply embedded in long-standing relationships between communities and dynamic land–sea environments. This paper examines the gendered dimensions of climate-induced displacement and post-resettlement vulnerability through an in-depth case study of the Bagapatia Rehabilitation and Resettlement Site in Kendrapara District, Odisha. The study focuses on communities displaced from Satabhaya Gram Panchayat, a cluster of seven coastal villages that have been progressively devastated by sea-level rise, severe coastal erosion and recurrent extreme weather events. Today, only a small fragment of the original panchayat remains, illustrating how climate-induced migration represents not merely a change of location but a profound disruption of coastal livelihoods, settlement practices and social organisation. In 2008, in response to an escalating humanitarian and environmental crisis, the Government of Odisha initiated India's first organised rehabilitation and resettlement programme for climate-affected communities, relocating the displaced population from Satabhaya to Bagapatia. Although the programme sought to provide a durable solution, households were allocated only ten-decimal residential plots of environmentally fragile and low-quality land. The absence of adequate infrastructure and viable livelihood opportunities has significantly constrained post-resettlement recovery and resilience. These shortcomings have generated a new phase of distress-driven mobility. A growing number of men migrate from Bagapatia to distant urban and industrial centres, particularly in Kerala, to seek employment in the plywood sector. This secondary migration has reconfigured household and community structures, producing a settlement increasingly dominated by women, children and the elderly. Women now head nearly ninety per cent of households and shoulder intensified domestic, economic and caregiving responsibilities while simultaneously facing persistent exposure to climate-related hazards, limited institutional support and restricted livelihood options. Children and older persons experience additional vulnerabilities related to disrupted education, declining health and reduced adaptive capacity. Using a mixed-methods research design, this study combines a structured household survey of 100 randomly selected households with in-depth interviews and field-based qualitative observations, including photographic documentation. The paper traces the multi-stage migration trajectory from Satabhaya to Bagapatia and beyond, and critically evaluates the systemic gaps in India's inaugural climate rehabilitation initiative. It highlights how inadequate livelihood restoration and gender-insensitive resettlement planning intensify male out-migration and deepen gendered and age-based vulnerabilities among stay-behind populations. The findings emphasise the need for climate resettlement policies in India that integrate gender-responsive planning, strengthen social protection mechanisms and prioritise sustainable livelihoods for women-headed households, children and the elderly in post-relocation settings.

Keywords*:* Climate-induced migration, gendered vulnerability, rehabilitation and resettlement, secondary (distress) migration, women-headed households, Coastal Odisha

O111 Migration and Identity: Negotiating Nepali Transnationalism in *Seasons of Flight*

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Displacement, deterritorialization, diaspora, and cultural conflict have become defining features of modern life, as migration increasingly gives rise to transnational identities. This article examines the formation of transnational identity among Nepali immigrants in the United States through the character of Prema in *Seasons of Flight* by Manjushree Thapa. By analysing Prema as a representative migrant figure, the study reveals the fluid, unstable and contested nature of immigrant identity shaped by contemporary cross-border mobility. Recent patterns of mass migration contribute to this instability, positioning migrants within a transnational space where they simultaneously adopt elements of the host culture while striving to retain connections to their cultural roots. Although experiences of alienation, displacement, and frustration persist in the host country, the promise of freedom, opportunity, and personal autonomy continues to attract migrants. Focusing primarily on cultural negotiation and identity formation, this study employs the theory of postcolonial and hybridity to interpret and analyse the text, highlighting the complexities of Nepali transnationalism in a globalised world.

Keywords: Diaspora, identity, migration, transnational

O112 Indian Labour Migrants in Nepal: Livelihood Strategies and Changing Trend of Occupations in Mahendranagar Town

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This study investigates the livelihood strategies and shifting occupational patterns of Indian labour migrants in Mahendranagar, a key border town in Nepal's Sudurpaschim Province. Drawing on a qualitative approach with in-depth interviews and key informant insights—the research reveals that Indian migrants, mainly from Uttar Pradesh and Uttarakhand, engage in diverse occupations ranging from wage labour to small-scale entrepreneurship. While traditional roles in agriculture and construction remain, there is a noticeable transition toward service-based jobs and informal urban work. Factors such as local labour shortages, urbanization, social networks, and economic incentives drive these changes. Despite their contributions to the local economy, migrants face multiple challenges, including lack of formal recognition, limited access to services, and housing insecurity. The paper calls for policy interventions including registration systems, social protections, and bilateral cooperation to ensure the safe integration of these migrants and to address emerging socio-economic dynamics in the border region.

Keywords*:* Indian labour migrants, livelihood strategies, cross-border migration, occupational trends, Sudurpaschim (Nepal)

O113 Soft Power: Education, Language, Tourism, and Professional Networks between Nepal and China

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As citizens, we gradually acquire the politics of soft diplomacy through the concept of soft power, which is an ideological hegemony that moves very slowly. China, a relatively large and strong nation, is gradually implementing this diplomatic strategy in Nepal by using soft power. China's soft power involvement in Nepal has grown significantly through professional network building, language promotion, education, and tourism diplomacy, accessibility enhancing policies. The Confucius Institute at the University of Kathmandu, established in 2007, is a major part of this effort, and continues to offer Mandarin language courses, HKS exams and cultural events, with support from similar centres in other parts of Nepal. It has an increasing impact on Nepal's academic and technical workforce. Education diplomacy has been further enhanced through Chinese government subsidies and university partnerships. This strategic convergence, in particular under the Belt and Road initiative, has had an impact on the nature of the people-to-people links between the two countries. It affects all of South Asia, because everything that happens in Nepal affects India. This has a two-way impact on both countries and needs to be addressed.

Keywords: Power, tourism, diplomacy, professional

O114 Sociological Perspectives on Rural–Urban Migration in Beldandi Rural Municipality-1, Nepal

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This study on rural–urban migration is an in-depth exploration of a central sociological phenomenon, which has significant implications for restructuring household livelihoods, social relations and community in rural Nepal. Specifically, the study on rural–urban migration in the Bijayapath Tole of Beldandi Rural Municipality–01 in Kanchanpur focuses on the underlying causes of as well as the pattern of, rural–urban migration and furthermore examines the social implications of such migration for both households and society at large. Consistent with a host of classical and contemporary sociological theories of migration, including the push-pull factors, new economics of labor migration and livelihood and social transformation theories, the study has conceptualized migration as not only a personal decision but as a critical household strategy in a broader socio-economic context. The research used a descriptive-analytical approach based on a mixed method design in which primary data was collected using a census survey of 65 households, key informant interviews, as well as observations. Quantitative data analysis techniques were used to analyze the data, while thematic analysis was used in the qualitative analysis of the findings in the research on changes in family organization, labor relations, and community participation. Results show that 79.4% of households had at least one migrant member, and the leading factor for migration was employment-related motives accounting for 58.8%. However, the migration process involved international migration (66.7%), which was circular (50%). Remittances (52.9%) played a crucial role in improving the standard of living among 41.3% but it also created sociological problems associated with agricultural labor shortages, weakened social cohesion and reliance on external income. This study highlights the uneven and often contradictory social effects of rural-urban migration, contributing to ongoing debates in sociology concerning migration. The paper follows a pattern that allows it to discuss literature, methodology, findings and implications.

Keywords: Rural-urban migration, sociological perspective, descriptive-analytical approach

O115 Opportunities and Challenges Created by the Nepal-India Open Border (A Case Study of the Sudurpashchim and Uttarakhand Border)

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Nepal and India are South Asian nations that have long practiced the tradition of an open border. While the Mechi River in the east and the Mahakali River in the west serve as natural boundaries, the Terai region consists of a man-made demarcation known as the "Dasgaja" (No Man's Land). This open border has fostered deep-rooted ties between the people of both nations, dating back to ancient times. This study is based on qualitative data gathered through fieldwork conducted in the border regions of Darchula and Gaddachauki, situated between Nepal's Sudurpashchim Province and India's Uttarakhand State. Citizens of both countries cross the border daily to meet their essential needs. The open border facilitates social bonds such as marriage and kinship, as well as opportunities for livelihood and daily shopping. It provides a convenient market for agricultural inputs like seeds, fertilizers, animal feed, and plants, as well as dairy products. Furthermore, people frequently cross for religious purposes, pilgrimages, and the worship of deities. The open border has created both organized and individual self-employment opportunities for people on both sides, significantly benefiting their daily lives. Many individuals commute to nearby border villages for trade and labor, returning home in the evening, while others have settled across the border for long-term employment. However, alongside these benefits, the open border has escalated security challenges, including theft, robbery, murder, kidnapping, terrorism, drug trafficking, and human trafficking. Because the border can serve as a hiding place for criminals and a transit point for terrorists, increased security surveillance and strict checks by both nations often impact the daily lives of ordinary citizens. In conclusion, while the social, cultural, and economic (livelihood) benefits of the Nepal-India open border are immense, the emerging challenges must be managed through mutual cooperation between both countries.

Keywords: Open border, bridges of relationship, border mobility, opportunities, challenges

O116 Women's Migration and Inclusive Development in Nepal post 2015: Emerging Trends and Policy Responses

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Migration has become core of Nepal's socio-economic transformation in the post-2015 that is after the promulgation of a new constitution, influencing patterns of household organization, livelihood and development planning. The new constitution of Nepal in 2015 marked an important institutional event, along with renewed policy emphasis on gender equality, inclusion and social justice. In this very context, women's participation in internal as well as international migration has assumed prominence in recent times, reshaping "gendered" social roles and contributions in Nepalese society. This study tries to look into the changing trends of women's migration in Nepal in post 2015 era and analyses how evolving patterns in wake of constitutional consolidation intersect with state's policies aiming for an inclusive and dignified future for all. Migration has been a part of Nepal's development trajectory since ages, yet, post-constitutional period represents a distinct phase characterized by legal recognition of gender parity and renewed governance frameworks. Therefore, there is a need to systematically understand how women's migration patterns have evolved during this period. The primary objective of this paper is to examine emerging trends in women's migration in Nepal, what role has state played especially in wake of adoption of a new constitution and to assess how women's migration contributes to social and economic inclusion at the household and community level. The study focuses on to identify key shifts in women's participation in migration and to assess the extent to which migration-related policies incorporate gender-sensitive perspectives. Methodologically, paper adopts a qualitative approach while drawing on secondary data, policy documents, government reports and academic literature. It employs trend-based analysis and policy review to explore the connection between women's migration and development planning in the post- 2015 context. By locating Nepal's experience within broader framework on migration and gender inclusivity, the paper makes contribution to the debates on "gendered" policy frameworks. It points out that understanding women's migration via post-constitutional lens is crucial for strengthening an all- inclusive development strategy and aligning issue of women's migration within broader social and economic transformation in Nepal.

Keywords: Migration, inclusive development, economic transformation, community

O117 Access to Justice: Challenges for Marginalized Communities in Nepal

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Access to justice is a fundamental component of the rule of law and a cornerstone of democratic governance. In Nepal, despite constitutional guarantees and progressive legal frameworks, marginalized communities continue to face significant barriers in accessing justice. This study examines the key challenges encountered by groups such as Dalits, women, indigenous nationalities, persons with disabilities, sexual and gender minorities, and economically disadvantaged populations. Major obstacles include legal illiteracy, poverty, social discrimination, geographical isolation, language barriers, and weak institutional responsiveness. Additionally, delays in judicial processes, limited availability of legal aid, and lack of trust in formal justice institutions further exclude marginalized communities from effective legal remedies. The study also highlights the gap between law and implementation, particularly in rural and remote areas, where informal justice mechanisms often prevail over formal systems. By analyzing constitutional provisions, existing policies, and practical realities, this paper underscores the need for inclusive legal reforms, strengthened legal aid mechanisms, community-based justice initiatives, and greater participation of marginalized groups in justice sector institutions. Ensuring meaningful access to justice is not only a legal obligation of the state but also a critical step toward social inclusion, equality, and sustainable peace in Nepal.

Keywords: Access to justice, marginalized communities, legal aid, rule of law, social inclusion, human rights, Nepal

O118 Strategic Integration and Hydropower Governance in Nepal's Engagement with India and China

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Nepal's hydropower development occupies a crucial premise of interaction between environmental governance, developmental priorities and neighbourhood engagement. The geographical positioning of Nepal has translated into its increasing reliance on India and China, for advancement of hydropower projects in ecologically fragile Himalayas. This paper examines how the prevailing differences in financing modalities are reflected in environmental governance priorities with respect to hydropower development in Nepal. This paper takes a qualitative approach, comparing Indian- and Chinese-supported hydropower initiatives launched over the last decade. The paper argues that externally financed hydropower projects are largely reflective of the institutional incentives available to the Nepali state. These stand to encompass enhancing the pace of projects, strategic considerations or financial viability over environmental scrutiny. There is a tension between funding speed and oversight. Fast tracking of financing is more likely to cause a rush through procedural requirements often at the expense of environmental scope. Methodologically, the paper performs a comparative study of hydropower projects with significant interests of Indian and Chinese actors since 2010. Drawing on EIAs, project agreements, documents and regulatory guidelines, it demonstrates how government mechanisms differ across projects with differing financing modalities. The analysis engages with literature on small-state hedging, political economy of infrastructure finance, and environmental governance in the Himalayas. The study throws light on how the type of financing stands to shape the future of a small state deeply intertwined with foreign investment. It contributes to the discourse of sustainable development in tandem with strategic thinking.

Keywords: Hydropower, financial viability, infrastructure

O119 Re-examining Development Partnership: Tracing India's Evolving Role in South Asis

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India's growing political and economic stature has established it as a key actor in global development cooperation. Unlike traditional DAC donors, whose aid is often tied to conditionalities, India presents an alternative model based on mutual benefit and non-conditionality. Rooted in its post-independence trajectory, India's development partnerships have evolved considerably, with South Asia receiving the largest share of its assistance. Therefore, it's timely to evaluate the paradigms of India's engagement with its smaller South Asian neighbours by examining both the rationale and modalities of its development partnership strategy. This study adopts an exploratory and case study methods, and informed by a mix of theoretical perspectives - on one hand, realism, which focuses on status and survival in geopolitics, on the other hand, neo–liberalism emphasized on win–win and mutual benefits, and on another most importantly constructivism focuses on identity, norms and values that distinguish India's development cooperation from DAC aid. In its core, this paper argues that despite enduring power asymmetries and Indo-centric perceptions among neighbouring states, the imperatives of political and economic survival have led to continued and active engagement in development partnerships with India.

Keywords: Development partnerships, power asymmetries, India and South Asia, LOCs

O120 Talent Management and Organizational Performance in Civil Service Offices of Kanchanpur District, Nepal

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The paper examines the mediating impact of employee engagement in the association between talent management and organizational performance in the civil offices of Kanchanpur District, Nepal. The aim was to investigate the relationship between the practices of human resource management, especially recruitment, compensation and training and development, and the engagement of the muncipal employees who can in turn affect the performance of the organization. In this research, a descriptive research design was applied to investigate the influence of talent management practices on organizational performance, and the role employee engagement plays as the mediating variable. A questionnaire was designed in a structured manner to obtain data from 385 employees selectedusing purposive sampling in order to make sure that the sample was in line with the research objectives, and the derived data was analysed using Structural Equation Modeling (SEM) covering the Partial Least Squares (PLS) methods through the help of SPSS. The findings verify the fact that compensation practices have shown a considerable positive influence on employee engagement (beta = 0.577, p = 0.000), and engagement proved to be a strong determinant of organizational performance (beta = 0.223, p = 0.005). Compensation also exhibited the direct, but less significant, effect on the organizational performance (beta = 0.171, p = 0.028). In comparison, the recruitment practice did not have a statistically significant effect on employee engagement and organizational outcomes, and there is still a possibility to carry out some improvement in this aspect. Even though training and development practices have indicated a direct and positive correlation with the organizational performance (b = 0.183, p = 0.023), they did not influence employee engagement significantly. The findings of the study indicate the importance of the strong compensation policies to the enhancement of employee engagement as a factor which determines high organizational performance. The mediating role of compensation practices on organizational performance via employee engagement also explains why employee engagement matters in terms of employees being engaged via fair and motivating compensation schemes.

Keywords: Talent management, employee engagement, organizational performance, compensation practices, recruitment practices, training and development, civil service, Nepal

O121 Why Policies Fall Short in Nepal: Analyzing the Implementation Gaps

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In the policy world of Nepal, the policies are designed aesthetically, but the state is facing challenges in implementing them, which is the mouthpiece of policymakers, planners, and academics; this issue remains unexplored academically. Thus, this study has attempted to uncover the answers to the failure of policy implementation in Nepal. To interpret the findings, policy implementation theory is employed, which focuses on top-down, bottom-up, and institutional approaches to analyze the structural as well as governance challenges, as these attributes contribute to policy implementation challenges. Within the framework of a qualitative inquiry, this study draws on document analysis, implementation guidelines of policy uptake, empirical studies on policy implementation, and policy illustrations from some program sectors. In addition, this study also applies thematic analysis to find patterns between policy plans and implementation results. The findings of this study reveal that weak institutional capacities, uneven intergovernmental cooperation among the three tiers of government, political patronage, and limited administrative independence weaken the policy execution at large. Likewise, the policy failures of Nepal are a result of flawed policy formulation processes, exclusion of people from the last line, institutional misalignment, and deficits of governance. This study aligns theoretical pathways with empirical evidence. It also contributes to a process of policy implementation. It also offers insight for strengthening policy effectiveness at large.

Keywords: Policies, shortfall, implementation, gaps, structure

O122 Nepal's Strategic Hedging Between India and China: Navigating Asymmetric Power Relations in South Asia

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This paper examines Nepal's strategy of strategic hedging in navigating its complex geopolitical position between India and China two asymmetric global powers competing for regional dominance. Drawing on theoretical frameworks distinguishing hedging from traditional balancing and band wagoning approaches, the paper argues that Nepal employs strategic hedging as a pragmatic middle-ground strategy to offset risks associated with overwhelming dependence on any single power while maximizing benefits from engagement with multiple partners. The paper traces the historical foundations of Nepal's hedging approach, situating it within the 1950 Treaty of Peace and Friendship with India and the subsequent 1989-1990 and 2015-2016 blockades that crystallized Nepal's vulnerability to Indian coercion. The 2015 blockade following Nepal's constitutional adoption particularly catalysed diversification efforts, as India accounts for approximately 70 percent of Nepal's total trade and serves as its sole petroleum supplier. The analysis examines India-Nepal relations, characterized by deep historical, cultural, and economic interdependencies through their open 1,751-kilometer border, while highlighting periodic tensions including territorial disputes over the Lipulekh-Kalapani-Limpiyadhura region. The paper evaluates China's intensifying engagement through the Belt and Road Initiative (BRI), with Nepal signing the BRI Memorandum of Understanding in 2017, though concrete project implementation remained glacial until December 2024 when Prime Minister Oli signed a framework identifying ten priority projects. The Tibet factor remains central to China-Nepal relations, with Nepal consistently upholding non-negotiable political alignment on the One-China policy. The paper identifies multiple manifestations of Nepal's hedging strategy across economic diversification (the 2016 Nepal-China Transit Transport Agreement), infrastructure competition (accepting both Indian and Chinese investments), diplomatic calculated ambiguity (maintaining "equidistance" rhetoric), and balanced security cooperation (joint exercises with both neighbours). However, the paper demonstrates that hedging faces substantial structural constraints: domestic political polarization between pro-China communist and pro-India congress factions, geopolitical limitations where India's security concerns restrict Chinese infrastructure projects, implementation gaps evident in seven-year BRI delays, and economic realities of landlocked geography and mountainous terrain limiting trade route diversification through China. The paper concludes that while Nepal's strategic hedging provides tactical flexibility and marginal bargaining power, it cannot fundamentally overcome structural vulnerabilities inherent in being, as King Prithvi Narayan Shah noted, "a yam between two boulders." Nepal's success in hedging ultimately depends not only on its diplomatic skill but also on the broader trajectory of India-China relations and both powers' willingness to respect Nepali sovereignty is a challenge as relevant today as in 1769.

Keywords: Asymmetric global powers, landlocked geography, Nepal, India

O123 Integrating Artificial Intelligence in Education to Sustain Cultural Heritage and Innovation

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The rapid growth of artificial intelligence has created new possibilities for transforming education while also offering meaningful ways to sustain cultural heritage and encourage innovation. Educational systems today face the challenge of preserving cultural knowledge, traditions, and values in a digital age where learning practices are increasingly technology-driven. Integrating artificial intelligence into education provides an opportunity to address this challenge by making heritage learning more accessible, engaging, and adaptable. The first objective of this study is to examine how artificial intelligence can support the preservation and transmission of cultural heritage through educational practices. The second objective is to analyze the role of AI-enabled innovation in enhancing learning experiences while maintaining cultural relevance and authenticity. This study adopts a secondary data–based methodology, drawing on academic journals, policy reports, educational frameworks, and case studies related to AI in education and heritage learning. The collected data were analyzed using a qualitative and thematic approach to identify patterns, opportunities, and challenges in the integration of AI with culturally grounded education. The findings indicate that AI tools such as adaptive learning platforms, virtual heritage environments, language preservation systems, and intelligent content curation significantly improve learner engagement and understanding of cultural heritage. The study also finds that AI-driven innovation supports personalized learning, inclusive access, and interdisciplinary knowledge sharing, helping education systems remain relevant in a rapidly changing world. In conclusion, integrating artificial intelligence in education plays a vital role in sustaining cultural heritage while fostering innovation in teaching and learning processes. Rather than replacing traditional knowledge, AI enhances its reach and impact when used thoughtfully and ethically. Future implications of this research highlight the need for culturally sensitive AI design, capacity building for educators, and policy frameworks that encourage responsible use of technology in heritage education. The scope of the study extends to schools, higher education institutions, museums, digital learning platforms, and community-based education initiatives, offering insights for educators, policymakers, and researchers seeking to balance technological advancement with cultural sustainability.

Keywords: Artificial intelligence, cultural heritage, education, innovation, sustainability

O124 Waste Management Baseline Survey of Nepal

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This study examines the waste management landscape across metropolitan, sub-metropolitan, and local municipalities in Nepal, with emphasis on waste composition, infrastructure availability, institutional capacity, and financial constraints. Municipalities collect an average of 6.1 metric tons day^{-1} of municipal solid waste, of which organic fractions constitute 54%, followed by inorganic materials (33.3%) and other waste streams (12.7%). Households are the dominant source, contributing 38.6% of total waste generation. Waste management infrastructure is insufficient, with only 4.4% of municipalities operating transfer stations and 16 municipalities utilizing sanitary landfill facilities. Disposal practices are predominantly unsustainable, including landfill piling (48.6%), open burning (32.1%), and riverbank dumping (27.4%). Material recovery remains minimal, with only 4.1% of generated waste recycled. Institutional and financial limitations are pronounced. Dedicated waste management units exist in only 38% of municipalities, and there is a critical shortage of technically qualified personnel. Financial dependence on higher tiers of government is high, with 94.8% of municipalities relying on federal or provincial grants. The principal challenges identified include operational complexity (59.5%), low public awareness (49.4%), and the absence of designated landfill sites (45.8%). Overall, the findings underscore the urgent need for integrated municipal solid waste management frameworks, enhanced technical and institutional capacity, and increased investment in engineered disposal and recovery facilities to meet national sustainability targets and the Sustainable Development Goals.

Keywords: Institutional capacity, municipal solid waste, Nepal, waste composition, waste management infrastructure

O125 Formation of an Almost Abelian Semigroup Generated by a Pair of Transcendental Entire Functions under Given Condition(s)

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Primarily, we review the literature on conjugate and semiconjugate functions, commutator sets, conjugate semigroups, transcendental semigroups, the Fatou set, and almost abelian semigroups. Then, based on the dynamical behavior of the Fatou sets and the algebraic structure on functional composition, we prove that any pair of transcendental entire functions {g, h} ∈ S, where S is a semigroup given as S= <g, h> with g ≠ h satisfying g o ∅= g and ∅ o g = h under some conformal map □: ℂ→ ℂ defined by ∅ (z) = -z- c for some constant c∈ ℂ , admits an almost abelian semigroup ⟨g, h⟩. A generalized overview is that if all generator elements of set S catch up above condition, then the set S is an almost abelian semigroup.

Keywords: Conjugate map, commutator set, transcendental semigroup, almost abelian semigroup, Fatou set, escaping set.

O126 Microbiome and Resistome of Wastewater and Impacted Rivers

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The environmental antibiotic resistome is a pool of antibiotic-resistant bacteria and their determinant genes, including mobile genetic elements, in the environment. The wastewater poses a significant risk of transmission of antibiotic-resistant bacteria carrying resistance genes and mobile genetic elements to community and clinical settings. The source-tracking of antibiotic resistance from wastewater to discharged rivers is an important public health strategy to intervene and mitigate the global burden of antibiotic resistance. Our recent studies have revealed the high occurrence of Extended-Spectrum β-Lactamase (ESBL) and Carbapenemase-producing bacteria, associated genes, including the integrons and insertion sequences, in hospitals, pharmaceutical wastewater, municipal sewage, and in a discharging river in Kathmandu, Nepal. *Firmicutes*, *Bacteriodota,* and *Proteobacteria* dominated the bacterial diversity of wastewaters. Bacterial community assembly is driven by deterministic processes in hospital and pharmaceutical wastewater, while stochastic processes in sewage and rivers. Environmental variables played a significant role in bacterial community composition. Higher concentrations of pollutants increased antibiotic resistance in river waters. High-frequency ESBL and Carbapenemase-producing phenotype and genotype of *Escherichia coli*, *Klebsiella pnemoniae*, and other potential pathogens in hospital and municipal wastewaters and receiving rivers indicated significant health risks. Bacterial genome sequences of showed a linkage with the human pathogen. Our studies reveal that municipal sewage and hospital wastewater are the key reservoirs of antibiotic resistance, further disseminating to the discharging rivers. We also show that sewage treatment can reduce the burden of antibiotic-resistant bacteria and their genes. This implies a need for monitoring and control strategies to prevent the circulation of resistance in the environment and its potential consequences on human health.

Keywords: Wastewater, Bacterial diversity, Antibiotic-resistance, ESBL, Carbapenemase

O127 Screening of *VIP* gene in *Bacillus thuringiensis* Isolated from Different Geographical Areas of Nepal and a Preliminary Study of Vip Protein Effect on Fall Armyworm

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Impetuous use of chemical pesticides in the agricultural sector has led to the detriment of farming lands and a decline in soil fertility posing an environmental and health risk leading the urgent need for eco-friendly alternatives in agricultural practices. Biopesticides are naturally occurring biological compounds which harbor pesticidal effects on pests infesting plants. *Bacillus thuringiensis*, a spore forming soil bacterium that predominantly produces insecticidal proteins, is a promising solution for sustainable pest management in agriculture. Its unique activity makes it effective against resistant pests and a significant second-generation insecticidal protein. In this study, fifty *Bacillus thuringiensis* isolates along with two commercial strain *Bacillus thuriengiensis* subsp. *galleriae* HD8 (BGSC 4G1) and *Bacillus thuriengiensis* subsp. *morrisoni* HD12 (BGSC 4K1) were used for screening of Vegetative Insecticidal protein coding genes (*Vip* 1, *Vip* 2, and *Vip* 3) by conventional PCR and sequencing. Gram staining was performed for bacterial morphology and only bypiramidal shaped protein crystal was visualized during Coomassie Brilliant Blue staining. Among the 50 crystal-forming isolates, 90% *Bt* strains found to carry the *Vip 3* gene but none of the isolates were found to possess the *Vip* 1 and *Vip* 2 genes. However, the *Vip* 2 gene was detected in reference strain only BGSC 4G1 and BGSC 4K1. The pairwise comparisons and phylogenetic tree analysis of *Vip3* genes from five *Bt* isolates showed 100% sequence similarities with worldwide distributed *Bacillus thuringiensis Vip 3* gene. Ammonium sulfate precipitation was followed to partial purification of Vip 3 protein. SDS-PAGE analysis revealed the molecular weight of the Vip 3 protein around 90 KDa. From bioassay of Fall Armyworm, lethal concentration (LC_{50}) of Vip 3 protein of reference sample *Bt* subsp. *galleriae* HD8 (BGSC 4G1) was 16.2607±5.4239 µg/ml and isolate *Bt* Kasara, 19.1268±8.289 µg/ml at 7 days. Protein of BGSC 4G1 showed strong effectivity (needed 17.63% less protein) as compared to *Bt* Kasara Vip 3 protein. From the preliminary bioassay, Vip 3 protein showed a potential biopesticidal effect and it may be utilized as a sustainable pest management approach, contributing to reduced environmental impact and exploited as a safer alternative to chemical pesticides. Further study is ongoing to assess protein activity against Lepidopteran insects for validation.

Keywords: *Bacillus thuringiensis*, vegetative insecticidal protein, biopesticides, pest management

O128 Science, Society, and Sustainability in a Connected World

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Contemporary scientific progress is increasingly shaped by its ability to address interconnected global challenges rather than isolated disciplinary questions. Issues such as food security, public health, climate change, sustainable resource management, and economic development are deeply interwoven with social systems, governance structures, and cultural contexts. This keynote examines the dynamic relationship between science, society, and sustainability in an increasingly connected world, emphasizing the importance of interdisciplinary collaboration. Using examples from space science and Earth observation, the talk highlights how knowledge generated beyond our planet has significantly influenced life on Earth. Satellite technologies now play a vital role in precision agriculture, climate monitoring, disaster management, and disease surveillance, while space-based biomedical research has contributed to advances in human health and aging studies. These developments illustrate how scientific innovation can support sustainable development when integrated with policy, education, and societal needs. The keynote also underscores the critical role of education and governance in translating scientific evidence into effective action. Scientific knowledge alone is insufficient without ethical reflection, public engagement, and inclusive decision-making. As science increasingly drives innovation and economic growth, aligning technological progress with environmental stewardship and social equity becomes essential. Adopting a systems perspective that views Earth as an interconnected whole, this keynote calls for stronger dialogue across disciplines to address shared global challenges responsibly.

Keywords: Scientific progress, interdisciplinary, environmental stewardship

O129 Harnessing Microbes and Medicinal Plants for Sustainable Biotechnology and Therapeutic Discovery

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The association of microbes and medicinal plants is hot topic these days from pathogen colonization in host and urgent need to break down the colonization in tissues with search of novel compounds and phytochemical from plants and useful microbes. Exploring silent cluster in genomes of bacteria, bacteriophage and plants for expression of peptide or enzyme system can be made from bacteriophage, extremophiles, mesophiles and plants for production of desired compounds in heterologous system. This research focus on manipulation of different cluster of genes from bacteriophage, thermophiles from hot spring of Nepal. It focused microbial peptide production from bacteriophage isolated from waste water and dissecting enzyme system of deadliest microorganisms *Mycobacterium marinum* for production of bioactive compounds in cloning host *E. coli* and their modification for therapeutic important bioactive molecules using metabolomics approach. Additionally sustainable biotechnology direct exploration of signalling molecules or elicitors for future use in harboring desired compounds, production of functional food, therapeutic discovery along with sustainable biosynthesis for production of desired compounds of aesthetic value. We use genome, proteome and metabolome study of microbiota, plants to dissect the role of enzymes polyketide synthase, methyltransferase, sulfotransferase, cellulase, endolysin and carene synthase for the production of functional molecules in heterologous system by recombinant DNA technology to discover novel compounds. The result of the different studies done by our group in this decade indicate we can produce thermostable commercial polymerase using biotechnology tools, antimicrobial peptide from probiotics organism and bacteriophage, biofertilizer and biocontrol agent from rhizobacteria, druggable and aesthetic value compounds from aromatic plants and characterize high value medicinal plants for extraction of high value pure compounds of therapeutic implication from medicinal plants of upper Himalayas. The study and approach can be useful in commercial polymerase production within country, use technique for production of antibiotics alternative against multi-drug-resistant bacteria, devise system for large scale production of phytochemicals of wide perspective application. But the usefulness and further exploration can be revised to use preliminary data toward improvising technique for global economic benefits of people.

Keywords: Novel, genome, proteome, metabolome, antibiotics, alternative

O130 Molecular Docking and Pharmacokinetics Evaluation of Quinazolinone Derivatives of Potential Therapeutic Colorectal Cancer

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Colorectal cancer (CRC) continues to be a major global health concern, highlighting the urgent need for novel therapies that are both safe and effective. Mitogen-activated protein kinase 14 (MAPK14/p38α) is a key player in CRC progression, influencing processes such as inflammation, tumor cell growth, angiogenesis, epithelial–mesenchymal transition, and therapy resistance, making it a promising target for drug development. In this study, an in silico screening strategy was employed to evaluate quinazolinone derivatives as potential MAPK14 inhibitors. A total of 99 quinazolinone compounds were obtained from the ZINC15 database and docked into the active site of MAPK14 (PDB ID: 1OUY) using PyRx with Auto Dock. For benchmarking purposes, Fruquintinib, an FDA-approved drug for CRC, was included as a reference compound The docking results highlighted several quinazolinone derivatives with strong affinity for MAPK14, showing scores from −6.4 to −8.6 kcal/mol. Among these, J20 and J86 displayed the most favorable binding energies (−8.6 and −8.3 kcal/mol, respectively), closely matching that of the reference drug fruquintinib (−8.4 kcal/mol), and formed stable interactions with crucial active-site residues. The top twelve compounds were subjected to further evaluation of their pharmacokinetic behavior, drug-likeness, and toxicity using SwissADME and pkCSM. All candidates showed good oral bioavailability, satisfied Lipinski's rule of five, and displayed acceptable safety profiles. Overall, the study suggests that J20 and J86 among the quinazolinone derivatives could serve as effective lead candidates for MAPK14-directed colorectal cancer therapy, deserving further laboratory validation

Keywords: Colorectal cancer; MAPK14; quinazolinone derivatives; molecular docking; In-silico drug design; ADMET analysis

O131 Isolation and Characterization of Rhizobacteria from Vegetation of Diudapatan Bajura as PGPR Candidates

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Rhizobacteria are root-associated bacteria that play crucial roles in plant growth promotion, nutrient cycling, and disease suppression. This study aims to isolate and characterize rhizobacteria from rhizospheric soils of medicinal plants and surrounding vegetation collected from Diudapatan, Bajura district, Sudurpaschim Province, Nepal, with emphasis on enzymatic and antimicrobial activities. Thirty rhizospheric soil samples were processed using serial dilution followed by Pour Plate and Spread Plate techniques. Isolation was performed on selective and differential media including Starch Casein Agar and Skim Milk Agar. Distinct colonies were observed after incubation at 30 °C for one to seven days and were repeatedly sub-cultured on Carboxymethyl Cellulose (CMC) agar and Pikovskaya's (PVK) agar to obtain pure isolates. A total of forty-seven bacterial isolates were recovered. Isolates showing activity on both CMC and PVK media were further screened for antimicrobial potential using the Kirby–Bauer disc diffusion method against *Klebsiella* spp. and *Bacillus subtilis*. Among these, isolates seven and eleven exhibited significant inhibitory activity against the tested pathogens. Overall, eleven isolates demonstrated cellulolytic activity, indicated by clear hydrolysis zones on CMC agar, while four isolates showed protease activity on skim milk agar. Based on functional bioactivity, selected potent isolates were subjected to genomic DNA extraction and 16S rRNA gene sequencing for molecular identification. The study is ongoing, with planned evaluation of plant growth-promoting traits, antioxidant activity, and metabolite profiling using GC–MS and LC–MS. These findings highlight the potential of medicinal plant-associated rhizobacteria as plant growth-promoting rhizobacteria, biocontrol agents, and sources of bioactive compounds for sustainable agriculture.

Keywords: Rhizobacteria, antimicrobial, enzymatic, 16S rRNA sequencing, biocontrol, Sustainable agriculture

O132 Exploring Hidden Gems in Nepalese Soil: Actinomycetes from Kanchanpur Combatting Antimicrobial Resistance

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Antimicrobial resistance (AMR) is a critical global health threat. It causes 1.27 million deaths annually. This number could rise to 10 million by 2050. In Nepal, over 60% of *Staphylococcus aureus* infections are methicillin resistant. Resistance in *Escherichia coli* and *Klebsiella pneumoniae* is also increasing. As a result, hospital stays are longer, and costs are higher. Hope lies in the soil beneath our feet. For decades, Actinomycetes, which are known for producing antibiotics, have supplied essential medicines. The soil of Kanchanpur district remains unexplored. This study aimed to isolate novel Actinomycetes producing bioactive compounds from soil in Kanchanpur district. The soil of Kanchanpur District remains unexplored despite global concerns about AMR. This study attempted to isolate actinomycetes using morphological and biochemical characterization, and to evaluate their antimicrobial activities against some important human pathogens. The objective of this study is to isolate actinomycetes from Kanchanpur soil, characterize them morphologically and biochemically, and test their antibacterial activity against *Staphylococcus aureus, Enterococcus,* and *Pseudomonas*. Thirty soil samples collected from Kanchanpur (pH 5.1–8.4) were cultured on starch-casein agar at 28 ^{0}C for 7 days. The isolates were identified based on Gram reaction, pigmentation, and enzymatic activities (catalase, starch, and gelatin hydrolysis). Antimicrobial activity was tested using agar diffusion against the target pathogens. The study result shows that twenty-one actinomycete colonies were isolated from starch casein agar from neutral to alkaline soils. All were Gram-positive, filamentous, and showed diverse pigmentation. Biochemical tests showed that all were catalase-positive and indole-negative, and they hydrolyzed starch and gelatin. Most used citrate and were urease-positive; only one was Voges-Proskauer-positive. Many isolates, such as sample S25, demonstrated strong antimicrobial activity against *S. aureus*, *Enterococcus*, and *Pseudomonas*. The Actinomycetes isolates was identified as *Streptomyces* species by morphological and biochemical tests. In conclusion, the Actinomycetes isolates from Kanchanpur soil are important sources of bioactive compounds against Gram-positive pathogens. Further studies will be conducted to identify Actinomycetes isolates and detect compounds.

Keywords: Actinomycetes; bioactive compounds; antimicrobial resistance (AMR); Streptomyces; Nepal; Sudurpaschim region

O133 Potential of Nepalese Wild Food Plants as Nutraceuticals and Functional Foods

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Wild edible plants (WEPs), naturally occurring uncultivated plant species are largely underexplored but promising sources of nutraceuticals and functional foods. WEPs have been used by rural and forest dependent communities for food, medicine, and cultural practices for centuries, particularly in regions with rich biodiversity such as Nepal. Besides macro and micronutrients, they contain several bioactive constituents that play important role in health promotion and disease prevention. They often contain higher amount of nutrients such as vitamins, minerals, and antioxidants than that of cultivated ones. There is huge opportunity for research and development of wild food plants due to the growing demand for natural and health-promoting foods worldwide. WFPs not only have health and functional food potential, but also have prospect for commercialization and entrepreneurship development. In Nepal, a wide range of wild edible species such as *Aegle marmelos* (Bel), *Diploknema butyracea* (Chiuri), *Berberis asiatica* (Chutro), *Myrica esculenta* (Kaphal), *Phyllanthus emblica* (Amla), *Rubus ellipticus* (Ainselu), *Hippophae sps* (Dalechuk), *Morchella sps.* (Guchhi chyau), *Deparia boryana* (Kalo niuro), *Urtica dioica L.* (Sisnu) are popularly consumed and possess nutraceutical and several pharmacological properties. Despite their potential, there is limited scientific research, product development and marketing and less government priority in this sector that hinders their full utilization potential. This paper highlights the physicochemical properties, proximate composition, phytochemical content, antioxidant activity, antinutritional factors, and sensory attributes of some commercially important WFPs, along with their nutraceutical potential, policy relevance, their role in food and nutritional security, and opportunities for value addition and enterprise development.

Keywords: Wild food plants, proximate composition, nutraceuticals, functional foods, phytochemicals, antioxidants, Nepal

O134 Preclinical Nanoparticle Platforms for Advanced Biomedical Imaging and Cancer Therapy

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This work presents two preclinical nanoparticle platforms developed for diagnostic and therapeutic biomedical applications. First, we report a simple synthesis of D-glucuronic acid-coated ultrasmall lanthanide oxide (Ln_2O_3; Ln = Eu, Gd, Dy, Ho, Er) nanoparticles and evaluate their water proton relaxivities for MRI contrast enhancement. Among them, Dy_2O_3 nanoparticles exhibited the highest r_2 relaxivity and were successfully demonstrated, for the first time, as an in vivo T_2 MRI contrast agent using 3 T imaging in mice, highlighting their potential for high-field MRI applications. Second, we describe polymeric nanoparticles designed for improved delivery of the anticancer drug gemcitabine (GEM). To overcome rapid enzymatic degradation of GEM in vivo, the drug was covalently conjugated to PEG-PCC block copolymers that self-assembled into ~24 nm micelles. These micelles protected GEM from plasma metabolism and enabled controlled enzymatic release. In pancreatic tumor bearing mouse models, the conjugated formulation showed enhanced pharmacokinetics, increased tumor accumulation, and prolonged circulation compared with free GEM, while exhibiting minimal systemic toxicity. Overall, the polymeric GEM micelle system significantly improved drug delivery and therapeutic efficacy, demonstrating strong potential for pancreatic cancer treatment.

Keywords: Nanoparticles, MRI contrast, gemcitabine, polymeric micelles, pancreatic cancer

O135 A Challenge of Emerging of the Multi-drug Resistance Gram Negative Bacteria in Urinary Tract Infections

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Urinary Tract infections (UTIs) persist major health problem worldwide. Gram negative bacteria are predominant pathogens responsible for UTIs. The simultaneous rise in antimicrobial resistance (AMR) and emergence of multi-drug resistant (MDR) stains pose significant challenges to effective treatment and of disease management. The purpose of this study was to identify the bacterial pathogens and evaluate their AMR pattern. A cross-sectional study was conducted at Mahakali Provincial Hospital, Mahendrangar, Nepal between the November 2024 to July 2025. A total of 1225 clean catch mid-stream urine samples were collected from UTIs suspected patients at attending the hospital. Of 1225 urine samples, 363 (29.63%) were culture positive. Out of 363 UTIs patients, a higher infection was found in female 282(77.7%) than male 81 (22.3%). UTIs was common in productive age group 230 (63.4%) compared to children and old people. The most common isolates were *E. coli* 285 (78.5%), *Klebsiella pneumoniae* 55 (15.27%), *Pseudomonas aeruginosa* 9 (2.5%). The lesser frequencies of pathogens such as *Klebsiella oxytoca*, *Morganella sp., Proteus mirabilis, Serratia sp., and Salmonella* Typhi were also reported. Of 363 isolates, 169 (46.6%) were MDR, 101 (27.8%) extended spectrum beta-lactamase (ESBL), 25(6.9%) were carbapenem resistant Enterobacteriaceae (CRE), and 10 (2.8%) were metallo-beta-lactamase (MBL) stains. Most of the isolates were less sensitive to cephalosporins but high to meropenem and imipenem. UTIs remains a significant public health issue, with female people were more frequently affected than males. It is more common in productive age group relatively. *E. coli* and *Klebsiella pneumoniae* were identified as the predominant pathogen. The high rates of emergence of MDR and ESBL stains highlight the growing challenges in effective treatment and management of UTIs. Continuous surveillance of antimicrobial resistance and rational use of antibiotics is essential to guide appropriate treatment of disease.

***Keywords**:* Urinary tract infections, antimicrobial resistance, multi-drug resistance, urine

O136 Synergistic Co–N–Doped Carbon Nanotube/MoS_2 Hybrids Enable Efficient and Durable Oxygen Evolution Electrocatalysis

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Developing efficient and earth-abundant electrocatalysts for the oxygen evolution reaction (OER) is critical for advancing sustainable water-splitting technologies. Herein, we report the rational synthesis of a hybrid Co–N-doped carbon nanotube/MoS_2 (Co–N@CNT/MoS_2) electrocatalyst via controlled carbonization of ZIF-67@PAN nanofibers followed by hydrothermal growth of MoS_2 nanosheets. Systematic modulation of the carbonization temperature reveals its decisive role in governing the structural, electronic, and electrochemical properties of the catalyst, with lower yields at higher temperatures attributed to enhanced carbonization efficiency and volatile loss. The optimized Co–N@CNT framework exhibits a three-dimensional porous CNT network decorated with uniformly dispersed cobalt nanoparticles and abundant defect-rich sites arising from Co and N incorporation. Subsequent integration of ultrathin MoS_2 nanosheets across the CNT scaffold significantly enlarges the electrochemically active surface area and introduces catalytically active edge sites. The optimized Co–N@CNT700/MoS_2 catalyst delivers outstanding OER activity, requiring an overpotential of only 306.99 mV to reach 50 mA cm^{-2}, along with a low Tafel slope of 61.88 mV dec^{-1} and a minimal charge-transfer resistance of ~1.2 Ω. Moreover, the catalyst exhibits excellent operational durability, retaining 99.35% of its initial current density after 21 h of continuous electrolysis. This work highlights the synergistic interplay between metal–nitrogen–carbon architectures and layered transition-metal dichalcogenides, providing a viable strategy for designing high-performance, cost-effective OER electrocatalysts for renewable energy conversion.

Keywords: Co–N@CNT/MoS_2; oxygen evolution reaction; electrocatalysis; water splitting; carbonization; sustainable energy

O137 Optimizing Power Conversion Efficiency of Lead free $CH_3NH_3SnI_3$ Perovskite Solar Cells: A Numerical Simulation Approach

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In modern day's society, energy has become one of the basic needs. However, heavy reliance on non-renewable sources of energy is causing an energy crisis in days to come. To mitigate the energy challenges, several renewable source-based energy technologies have been explored. In this regard, solar energy can be a promising source of energy because of its abundance. From the commercial perspective, silicon-based solar photovoltaic technology has been dominating the market. However, high-cost, complex fabrication processes, and toxic by-products have been key issues with regard to silicon-solar cells. In light of this, perovskite solar cells can be the best alternative to overcome the challenges associated with silicon solar cells. In this regard, lead-based perovskite solar cells have shown promising power conversion efficiency (PCE). However, toxicity has been a serious concern, so there is a need to explore lead-free alternatives. Among many possibilities, methylammonium tin iodide ($CH_3NH_3SnI_3$) has emerged as a potential absorber material due to suitable band gap, high mobility of charge carriers, and strong optical absorption. In this research work, a numerical study was carried out using SCAPS-1D simulation by taking $CH_3NH_3SnI_3$ as an absorbing layer. The performance of perovskite solar cells with structure FTO/CuO/ $CH_3NH_3SnI_3$/TiO2/Ag was investigated precisely by varying thickness of absorber layer. The simulation results revealed that the intermediate thickness of absorbing layer gives optimized value of PCE, open-circuit voltage, fill factor, and short-circuit current density. Additionally, this study also presents a comparison of the electrical performance of lead-based and tin-based perovskite solar cells.

Keywords: Solar Cell, Perovskite, SCAPS, Lead free

O138 Early Prediction of Diabetes Using Ensemble Based Machine Learning Model

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One of the most common health problems affecting millions of people worldwide is diabetes. Effective action must be taken in the early stages of the disease. This requires early diagnosis of diabetes. To assist healthcare professionals in making effective diagnoses and predictions about diseases., Ensemble machine learning has been applied in the healthcare sector in recent years. In order to predict diabetes, the study have been conducted on boosting algorithms using a Pima diabetes dataset. The dataset was collected from the University of California, Irvine, which has various significant clinical variables. An exploratory data analysis was conducted to understand the characteristics of the data. In addition, upsampling, normalization, feature selection, and tuning were carried out for predictive analytics. The results were evaluated by performance matrix and k-fold cross-validation approaches. The gradient boosting approach obtained the greatest accuracy of among the studied classification models. The finding of study reveals the ensemble methods outperform traditional single model methods. Ensemble learning helps to improve the prediction of diabetes at early stages. This study provides a foundation for future research and development of robust predictive models in diabetes care and prevent from diabetic complications.

Keywords: Diabetes, accuracy, prediction, XGBoost, machine learning, ensemble learning

O139 Transition Metal Tungsten-Infused Metal Oxyhydroxide Hybrid Nanomaterial for Green Hydrogen Production

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Transition metal-based nanomaterials are widely known for their electrochemical applications. Water electrolysis is an essential alternative technology for large-scale hydrogen production to facilitate the development of green energy technology. This study aims to investigate the synthesis and electrochemical application of metal tungstate-infused metal oxyhydroxide hybrid nanomaterials as an advanced electrocatalyst for green hydrogen production using green energy approaches to minimize environmental impact and promote sustainability. The synthesis process involves hydrothermal and co-precipitation methods. Transition metal tungstate-infused metal oxyhydroxide hybrid nanomaterial $FeWO_4$/Fe-OOH(H) exhibits excellent outcomes for both hydrogen evolution reaction (HER) and oxygen evolution reaction (OER). The overpotentials of the FeWO4/Fe-OOH(H) electrocatalyst at a 10 mA cm-2 current density are 148 mV for HER and 120 mV for OER. Similarly, a Tafel slope of 93.59 mV dec^{-1} for HER kinetics and 79.33 mV dec^{-1} for OER kinetics. The device $FeWO_4$/Fe-OOH@CC (+ -) exhibits complete water splitting with a cell potential of 1.56 V at a current density of 10 mA cm^{-2}, and over 20 hours of chronopotentiometry stability. Therefore, the $FeWO_4$/Fe-OOH(H) catalysts exhibit outstanding electrochemical performance, and they are efficient and affordable for green hydrogen production.

***Keywords**:* HER, OER, Green Hydrogen, Electrocatalyst, Nanomaterials, Water Splitting

O140 Detection of class A *bla-CTX-M*, *bla-TEM*, *bla-SHV* and class B *bla-VIM*, *bla-IMP* genes in β- lactamase producing Gram negative clinical isolates

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Resistant bacteria are emerging worldwide as a threat to the favourable outcome of common infection in community and hospital settings. Extended spectrum β-lactamase and metallo β- lactamase are two key mechanisms of bacterial resistance. The aim of this study was to screen the co-production of extended spectrum β lactamase and metallo β lactamase and the existence of Class A and Class B genes. Gram negative bacteria were isolated from clinical specimens (sputum, urine, pus, swab, and csf) collected from the patients of Annapurna Neurological Institute and Allied Science Hospital. It was a cross sectional study carried out from June to Dec 2022. A total 1486 clinical specimens were collected and tested by using Gram staining, culture and biochemical test. Out of total growth, 144(41.1%) were Gram negative bacteria.The antibiotic susceptibility test were performed by modified Kirby- Bauer disc diffusion method following CLSI guideline.ESBL and MBL were performed by combined disc diffusion method. Out of these 79(54.9%) were found to be ESBL whereas 50(34.7%) of the isolates were MBL producer. Among them 28 were both ESBL and MBL producer. The PCR was done for 28 clinical isolates to detect the co-production of ESBL and MBL gene. Among them 60% *bla-CTX-M*, 29% bla-*TEM*,4%*bla-SHV*,7%*bla-IMP* and absence of *bla-VIM* gene.The strategy is required to stop the spread of bacterial with antimicrobial resistance carrying genes. The result highlighted co-production of ESBL and MBL. This study showed MDR, ESBL and MBL production among clinical specimen.

***Keywords**:* MDR, ESBL, MBL, Antibiotic, Gram negative

O141 Critical Consciousness of *Ḍeuḍā* in the Folkloristic Practice towards Nepalese Education

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Folklore is a treasure trove of knowledge about culture and tradition. In Nepal, the folk tradition of *Ḍeuḍā* serves as a lively teaching tool. This study employs Paulo Freire's (1970) conscientization, critical awareness of socio-cultural oppression through reflective praxis to position *Ḍeuḍā* folk songs and dance as a transformative educational tool. Although *Ḍeuḍā*'s potential in Nepali critical pedagogy remains unexplored, framing within a social interpretive lens, this thematic analysis of empirical observations and insights from earlier research from Karnali and Sudurpaschim provinces identifies *Ḍeuḍā* as both an educational method and a moral guide that nurtures critical thinking, creativity, psychosocial well-being, and social adaptability among students and educators from diverse backgrounds. The research suggests that *Ḍeuḍā* as a learner-centered method that helps with knowledge retention, self-regulation, and deep reflection on personal and societal issues by blending cultural expressions with modern pedagogy. Through both conscious and subconscious experiences of learners and teachers, the study reimagines *Ḍeuḍā*'s linguistic and cultural potential as a valuable resource for contextual and transformative teaching. This study reveals the educational benefits of *Ḍeuḍā* for boosting academic skills and performance, while also fostering a deeper sense of positivity in the minds and behaviors of both learners and instructors.

Keywords: *Ḍeuḍā*, critical pedagogy, folk songs, learner-centered education, Nepali folklore

O142 नेपालको सङ्घीय संरचनामा डोटेली भाषाको स्थान

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यस अनुसन्धानमूलक लेखमा नेपालको सङ्घीय संरचनामा डोटेली भाषाको स्थानको विश्लेषण गरिएको छ । प्रादेशिक भाषाका रूपमा डोटेली भाषाको स्थान पत्ता लगाउनु र डोटेली भाषालाई प्रादेशिक भाषा मान्न सकिने आधार पहिल्याउनु यस अनुसन्धानको मुख्य उद्वेश्य हो । प्रस्तुत अध्ययन गुणात्मक ढाँचा,व्याख्यावादी दर्शन र निगमनात्मक विधिमा आधारित भएकाले पुस्तकालयीय कार्यमा केन्द्रित भइ प्राथमिक र द्वितीयक स्रोतका सामग्री सङ्कलन गरी डोटेली प्रादेशिक भाषिक स्वरूपको विश्लेषण गरिएको छ । डोटेली भाषी वक्तासँग अर्न्तक्रिया, छलफल, प्रश्नोत्तर आदिद्धारा सामग्री सङ्कलन गरी आलेख तयार गरिएको छ । तथ्याङ्कको विश्लेषणका आधारमा सुदूरपश्चिम प्रदेशमा अन्य मातृभाषाका तुलनामा डोटेली भाषालाई प्रादेशिक भाषा मान्न सकिने प्रशस्त आधार तयार हुनाले संविधानको यो निर्णय उपयुक्त देखिन्छ । नेपालको संविधान २०७२ का अनुसार नेपालले संघीय संरचना अंगीकार गरेको छ । जसमा नेपाललाई केन्द्र, प्रदेश र स्थानीय सरकारको व्यवस्था गरी विभाजन गरिएको छ । संघीय संरचनामा स्थानीय भाषाको संरक्षण सम्वर्द्धन र प्रयोगको अधिकार पनि सुनिश्चित गरेको छ । यस किसिमले हेर्दा नेपालका विद्यमान भाषाहरूको संरक्षण, विकास र सम्वर्द्धनको नीतिगत प्रयास गर्नुपर्ने देखिन्छ । डोटेली भाषापनि सुदूरपश्चिम प्रदेशमा बोलिने प्रमुख मातृभाषा हो । विशेषगरी यस क्षेत्रको सामाजिक सांस्कृतिक र ऐतिहासिक महत्व बोकेको यस भाषालाई प्रादेशिक भाषा मानेपनि सरकारी कामकाज शिक्षा स्वास्थ्य र अन्य सार्वजनिक क्षेत्रमा अझैपनि प्रयोग स्पष्ट गरिएको छैन । यसको विद्यालय स्तरमा समेत पठन पाठन हुने गरेको देखिदैन् । यसबाट डोटेली भाषाको संरक्षण र विकासगरी प्रदेशमा सरकारी कामकाजको भाषाका रूपमा अगाडि सार्नुपर्ने आवश्यकता रहेको निष्कर्ष निकालिएको छ । यिनै क्षेत्र र कार्यमा केन्द्रित भई यस लेखलाई पूर्णता प्रदान गरिएको छ ।

मुख्य शब्दावली : डोटेली, तथ्याङ्क, विद्यमान, संघीयता, सम्वर्द्धन

O143 Changing Aesthetics in the Performance Patterns of *Deudā*

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Overriding in the remote hills of Sudurpaschim and Karnali provinces of Nepal, the timeless performance artistry of *deudā* has set off paradigmatic changes and created new iterations in terms of purpose, performance aesthetics, and cultural significance in the recent practices. The folk genre *deudā*, its performance context, and ritual cannons of performance have come up with new context and plethora with the advent of technology, by the impact of globalization, and trans-national mobility. The purpose of this study is to investigate the non-linear relationship between the indigenous folk performance and the cross-culture performance of *deudā*. To compare and contrast the assonances and dissonances between the indigenous folk performance and the cross-culture performance, relevant textual analysis of the lyrics, fieldwork, attending local performances, observation of festive celebrations, informal gatherings, interviews, and online videos are major methodological procedures of this study. Adhering to the qualitative approach and focusing on the gaps, this study employs Arjun Appadurai's concept of the "five scapes" to investigate fundamental changes in the folk performance aesthetics *deudā*. In line with it, Herman Bausinger's theoretical concepts, and Nestor Garcia Canclini's notion of cultural hybridity befit for the further inspection in this study. Discerning through the methodological procedures and theoretical reflections, the findings situate that fundamental performance patterns of *deudā*, practiced in the trans-culture, reveal point of departure, compared to the performance aesthetics in its host culture. The study concludes that *deudā* has lost flavor of rustic impulses as it has entered into realm of trans-culture performance and become local to global. However, the performance practice of *deudā* has gained acclaimed popularity; significant stylistic and performance patterns have transgressed as it has crossed sire cultural boundaries.

Keywords: Performance, aesthetics, Deudā, scapes, expansion,

O144 Evolution of the Legal Order in Nepal: From Dharma to the *Muluki Ain* (1854)

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The evolution of Nepal's legal tradition reflects a long and layered history in which indigenous norms, religious doctrines, and political authority converged to shape a distinctive jurisprudential culture. The genesis of Nepal's ancient jurisprudence can be traced to the early Himalayan polities, where law was not codified in a modern sense but embedded in social customs, religious prescriptions, and royal edicts. In these early societies, *dharma, as* articulated in Hindu and Buddhist traditions, served as the normative foundation of justice. Legal principles were derived from sacred texts such as the *Dharmashastras*, Buddhist monastic codes, and customary practices (*achars*) that regulated family life, property relations, caste hierarchy, and dispute resolution. Kings were regarded as the custodians of *dharma*, entrusted with maintaining social order and moral balance rather than acting as autonomous law-makers. During the Licchavi period (c. 5th-8th centuries), Nepal witnessed a more structured articulation of legal authority. Inscriptions from this era reveal the presence of judicial officials, land grants with legal stipulations, and references to fines and punishments, indicating an emerging institutional framework. Law functioned as an extension of royal power, but it remained closely tied to religious legitimacy and local customs. The Malla period (12th-18th centuries) further consolidated this tradition. Malla rulers issued royal orders (*lalmohars*), temple regulations, and city laws that governed trade, urban administration, and social conduct. Despite greater administrative sophistication, jurisprudence remained pluralistic, varying across regions and communities, and was enforced through a combination of royal courts, local councils, and caste-based mechanisms. The political unification of Nepal in the mid-eighteenth century under the Shah dynasty marked a decisive turning point. The expansion of a centralised state over diverse ethnic, linguistic, and cultural regions exposed the limitations of customary and fragmented legal practices. While early Shah rulers relied on existing local norms to maintain stability, the need for a uniform legal framework became increasingly apparent. This culminated in the promulgation of the *Muluki Ain* (National Code) in 1854 during the reign of Jung Bahadur Rana. The *Muluki Ain* represented the first comprehensive codification of Nepalese law, systematically integrating Hindu legal principles with state authority. It standardised criminal and civil law, formalised caste-based hierarchies, and defined rights and punishments across the kingdom. Thus, the *Muluki Ain* of 1854 did not emerge in isolation but was the culmination of centuries of evolving jurisprudence. It synthesised ancient religious norms, medieval customary practices, and the imperatives of a modernising, centralised state. The code symbolised both continuity and transformation: continuity in its reliance on traditional social order and *dharma*, and transformation in its assertion of uniform, state-enforced legality. Understanding this historical trajectory is essential for appreciating the foundations of Nepal's modern legal system and the enduring influence of its ancient jurisprudential heritage.

Keywords: Evolution, Legal Order, jurisprudential heritage, institutional framework

O145 Integrating Heritage Learning and Artificial Intelligence for Educational Transformation and Cultural Revitalization

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The concepts of integrating heritage learning and artificial intelligence to enhance educational transformations and cultural revitalization have become a vital theme in the modern educational environment. Digital technologies are becoming more and more influential in global education systems, but such development often increases the gap between the modern practice of pedagogy and the traditional culture. Learning of heritage - history, language, and arts, customs, and native knowledge gives the learner a sense of their cultural background and therefore identity, values and social responsibility. At the same time, artificial intelligence provides powerful tools able to increase the availability of education, customize the learning process, and make education more entertaining and inclusive. The combination of these two areas introduces a significant possibility to reform education in the equalizing way, where the technological innovation should complement but not replace the understanding of the culture. The main aims of the research are to identify the importance of heritage learning in modern day education, explore how artificial intelligence can support the protection and education of cultural heritage, and understand how the combination of the two can achieve a meaningful educational change. For this study, the data are taken from secondary sources. The results show that AI has a significant potential to enhance the learning process of heritage by making it more interactive and accessible. Moreover, AI can document and preserve endangered languages, traditions and historical archives and, therefore, cultural knowledge is not lost over time. As the heritage content gets integrated into the AI-powered learning platforms, education also becomes more meaningful, as students are able to conceal modern information with cultural ethics and real-life situations. However, there are a number of issues such as the possible misrepresentation of cultures, overdependence on technology, and ethical issues on data use and cultural ownership. The above concerns highlight why the use of AI in heritage education needs careful consideration and human intervention. Technology and tradition need not be considered as opposing elements but as complementary elements that when used wisely may strengthen each other. Future directions must focus on the implementation of whole policy, educator professional growth and promotion of partnerships between technologists, instructional designers and cultural communities

Keywords: Artificial Intelligence, cultural revitalization, educational transformation, heritage learning, technology enhanced education

O146 Cultural Heritage as a Driver of Sustainable Development and Social Change

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Cultural heritage has become an important but under-explored factor in sustainable growth and social transformation in the fast globalizing world. In addition to being a symbol and the historical importance of heritage, both tangible and intangible heritage is crucial in developing a sense of collective identity, enhancing social cohesion, boosting the local economy, and ensuring inclusive development. The research aims are to investigate the complex nature of cultural heritage in promotion of sustainable development in economic, social and environmental levels. Also, it seeks to examine how cultural heritage projects can help bring a social change through community engagement, cultural sustainability, social integration, and resilience amidst the forces of modernization and globalization. The study takes a qualitative approach that is based on secondary data. Peer-reviewed journals, policy documentations, different reports, government publications, and institutional studies were systematically reviewed regarding heritage-based development and social change. The findings demonstrate that cultural heritage is a strong driver of sustainable development as it creates livelihoods via heritage tourism, creative industries, and local entrepreneurship, and also strengthens the social capital and community ownership. Heritage-based projects can promote social inclusion through empowerment of the marginalized groups, maintenance of the indigenous knowledge systems as well as intercultural communication. Also, the inclusion of heritage in the development planning leads to the environmental sustainability, by promoting the traditional ecological practice and sustainable use of resources. Nevertheless, the results also introduce such issues as the risk of commercialization, disparate policy application, and silence of local voices in case heritage is managed top-down. Cultural heritage when intertwined with the systems of inclusive and participatory development can serve as a driver of a sustainable development and social transformation. Further, digital technologies, innovative financing models, and heritage education can be employed as the main means to scale the impact. When heritage preservation is connected with development agendas, the societies will be well placed to create sustainable futures that are culturally based, socially appropriate and intergenerational.

Keywords: Culture, development, heritage, inclusion, sustainability

O147 Cultural Diplomacy and People-to-People Connectivity in India–Nepal Relations: Pilgrimage and Tourism as Soft Power Instruments

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This study examines the role of cultural diplomacy and people-to-people connectivity in shaping contemporary relations between India and Nepal with a particular focus on pilgrimage and tourism as instruments of soft power. The purpose and rationale of the study are grounded in the recognition that despite the periodic political frictions between India–Nepal relations. It continue to be sustained by deep civilizational, religious and socio-cultural linkages. Pilgrimage routes and tourism flows provide a relatively non-controversial and resilient domain through which bilateral ties are reinforced at the societal level. The study is guided by the following research objectives: (i) to analyse how pilgrimage and tourism function as tools of cultural diplomacy in India–Nepal relations (ii) to assess their contribution to mutual perceptions, trust-building and diplomatic stability and (iii) to evaluate their policy relevance in strengthening bilateral relations beyond formal state-centric diplomacy. The central research question asks how people-to-people interactions mediated through religious and cultural tourism enhance soft power and mitigate political tensions. The paper adopts a theoretical framework drawing on Joseph Nye's concept of soft power which is supplemented by constructivist approaches that emphasize identity, shared norms and cultural narratives in international relations. Methodologically, the study employs qualitative analysis based on official policy documents, tourism and pilgrimage data, secondary literature and select case studies of major pilgrimage circuits and cultural exchanges. The core argument advanced is that pilgrimage and tourism serve as enduring soft power resources that institutionalize connectivity, normalize cooperation and generate economic and symbolic benefits for both countries. Key findings suggest that such forms of cultural diplomacy enhance societal goodwill, provide diplomatic cushioning during political disputes and offer Nepal significant economic and cultural gains while reinforcing India's normative influence.The study concludes that strengthening pilgrimage infrastructure, cultural exchanges and tourism cooperation can play a strategic role in sustaining stable and mutually beneficial India–Nepal relations by complementing formal diplomatic and economic engagements.

Keywords: Cultural diplomacy, diplomacy, Pilgrimage, institutionalize

O148 Diversity and Stratification Among Dalit (A Sociological Study of Dhangadhi Municipality -13 Shreelanka)

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Caste based stratification is widen not only in broaden social structure, it is still practicing within Dalit only too. The study examines educational, occupational, gender Status of Dalit comparing themselves in the study area. Using a mixed method research design, quantitative and qualitative data were collected through sampling survey and interview with well-known personnel's in and out of the group. The finding revels the background of Dalit in the area and concludes different types of groups were manufactured on the basis of occupation, gender, education, politics, land distribution and so on. The study explains social values, norms and practices which are the means of discrimination and stratification in the study area.

Keywords*:* Caste, dalit, stratification, diversity and discrimination

O149 From (de) Sanskritisation to Ethnicisation: Brahman Identity in Central West Nepal

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This paper interrogates the conventional narrative of Sanskritization and cultural colonization, which portrays Nepal's Bahun (Brahman) community as unilateral agents of Hindu orthodoxy and high-caste hegemony. Contrary to this top-down model, I propose a complex, reciprocal process in which Bahuns themselves have engaged in ethnocising practices—adopting, internalizing, and even transforming aspects of the cultural, linguistic, and ritual life of various indigenous ethnic communities. Drawing (longitudinal) ethnographic evidence and historical accounts in Bahun villages of Central-Western Nepal in Kaski and on a review of literature, this paper explores how Bahuns have participated in a dynamic cultural give-and-take, negotiating identity and belonging within a pluralistic sociocultural landscape. The paper aims to challenge the dominant discourse of homogenization as a straightforward idea in Nepal's social context. It suggests that Bahun identity in Nepal has been shaped not only through the imposition of, strict adherence to, Brahmanical Hindu norms but also through the selective incorporation of *laukik* (folk) and *raithane* (local and indigenous) practices have their source in ethnic cultures, beliefs, and aesthetics. These findings aim to contribute to a more nuanced understanding of cultural interaction, identity formation, and power relations in multiethnic societies like Nepal.

Keywords: Sanskritisation, Ethnicisation, Bahun, Caste, Identity

O150 Exploring Indigenous Mathematical Knowledge of *Byansi Sauka* Community in Darchula District of Nepal

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The purpose of this study is to explore indigenous mathematical knowledge of Byansi Sauka ethnic group in Nepal. It seeks to examine indigenous mathematical knowledge and practice of measurement in Byansi Sauka community. This study utilized interpretative paradigm followed by qualitative research method and ethnographic design. A sample of three persons from Byansi Sauka Community was taken by purposive sampling method. The methodological procedure included in-depth interviews and observation of everyday activities of Byansi Sauka people. The result of the study showed that the mathematical ideas are inherent in day to day activities of counting, measuring, locating, and designing, playing and dancing. Byansi Sauka possess unique base-20 counting number system based on twenty core words. The indigenous knowledge of ratio and fraction is inherent in everyday activities of Byansi Sauka community. Indigenous method of measurement developed across the Byansi Sauka culture and society. Bynsi Sauka people practices natural elements and human body parts to measure length, area, weight, volume, and time. They uses Bwala (Thumb), Pibam (Four finger), Gurdakhu (for arm), Tichya (Hand), Liki (Foot) to measure length of solid materials. In addition, they uses Chappya (Mana) and Kharyang (Kachaura), instruments of specific shapes and sizes to measure volume of salt, Geda (grains) and liquid. Sauka people estimates the time (Baktar) through astronomical method based on predictable motion of Star (Dhalokarma), Sun (Ni) position, and direction and length of shadows (Selo). Byansi Sauka people observe natural elements for seasonal clues: vegetation, animal behavior, snow and ice, weather patterns. Indigenous mathematical knowledge of counting, ideas of addition and subtraction, and geometrical concepts are inherent in cultural games of Byansi Sauka community.

Keywords: *Byansi Sauka,* indigenous, ethnographic, astronomical method

O151 Imposed Identity and Claimed Identity: An Analysis of the Creation of Anxiety in Percival Everett's *James*

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The Pulitzer Prize winning novel *James* by Percival Everett is a recreation of Mark Twain's *The Adventures of Huckleberry Finn* focusing on exploring the protagonist James's tension for claiming identity. The quest for identity, an inseparable element of emancipation or freedom to a slave, has defined and shaped the persona of James. Initially introduced as Jim, James lives in 19th-century Missouri under the dichotomy of slavery who is owned by Miss Watson and there he has his own sense of freedom as he is living with his family members named Sadie, his wife and Lizzie, his daughter. But the short-lived happiness of together living is going to an end when he, with the help of his native intelligence and communicative ability, happens to know that he is about to be sold and transported to New Orleans. Instantly, a new sense of anxiety of being separated from his family for forever engulfs his total existence and he decides to escape the fate. This escapade turns for him into a journey meant for reclaiming freedom in conjunction with his friend Huck. This article attempts to trace out how James encounters racism being a slave and overcome the feeling of being 'the other.'

Keywords: Imposed identity, claimed identity, anxiety, slavery, racism, 'the other'

O152 Nature as Kin: Deep Ecological Consciousness in Deuda

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This study examines Deuda folk poetry of Far-Western Nepal through the theoretical lens of deep ecology to explore how nature is conceptualized as kin rather than as a mere resource. Drawing on eco-criticism and deep ecological philosophy as articulated by Arne Næss and further developed by later theorists such as Bill Devall, George Sessions, and Warwick Fox, the research analyzes selected Deuda songs to identify representations of ecological interconnectedness, the intrinsic value of non-human life, and indigenous environmental ethics. Employing qualitative textual and thematic analysis, the study reveals that Deuda poetry encodes an ecocentric worldview in which land, rivers, forests, seasons, and non-human beings are portrayed as active participants in social, emotional, and moral life. These findings suggest that Deuda functions as an oral archive of deep ecological consciousness, foregrounding relational ethics, ecological identity, and place-based belonging. By situating indigenous folk traditions within contemporary deep ecological and eco-critical discourse, the study contributes to environmental humanities by demonstrating how localized oral cultures articulate philosophies of sustainability and coexistence that resonate with current ecological thought.

Keywords: Deep ecology, eco-criticism, Deuda, folk poetry, indigenous ecology, ecological consciousness

O153 Dharma as the Rule of Law: Vedic and Gita Foundations for Ethical Governance and Sustainable Peace

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In Nepal and in most countries of the world, the primary cause of unrest is the absence of the ethical governance and concept of sustainable peace. The lack of the ethical rule of law has allowed corruption to take deep root. Such multiple factors give rise to public dissatisfaction, which in turn generates unrest within families, society, the nation, and ultimately the world. Modern scholars have propounded numerous theories concerning the rule of law, the causes of unrest, and good governance. However, unless the knowledge of the Vedas and the Bhagavad Gita is applied to the rule of law, sustainable peace, and good governance, unrest will continue to persist in the world. The main objective of this study is to conduct a comparative analysis of the obstacles observed in the contemporary context with reference to selected examples of the rule of law, good governance, and sustainable peace as envisioned in the Vedas and the Bhagavad Gita. For this purpose, a qualitative research methodology has been employed. The Vedas, and the Shrimad Bhagavad Gita have been used as primary sources, while other relevant scholarly literature has been cited as secondary sources as required. The findings of the research indicate that the concept of *equanimity (samabhāva)* as described in the Bhagavad Gita is far more comprehensive and universal than the notion of equality currently practiced in the contemporary world order. The conclusion of this research paper is that if state governance were conducted based on the principles of the Vedas and the Bhagavad Gita, many of the problems currently faced by the world could be effectively resolved.

Keywords: Dharma, rule of law, Vedas, Bhagavad Gita, ethical governance, sustainable peace

O154 Reviewing the Role of English in Business Communication

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This paper looks at business communication around the world, especially how English is becoming the go-to language, how people use different languages, and how important it is to understand other cultures at work internationally. This paper aims to examine the role of English in business communication and explore how English language proficiency supports business professionals in expanding their operations into international markets. It also seeks to identify challenges faced by local entrepreneurs in using English effectively in global business contexts. The paper takes a qualitative approach, employing semi-structured interviews and questionnaires with professionals, managers, and business owners. This paper will be using recent studies from language, business communication, and globalization research to see how the words we choose, our cultural backgrounds, and online tools affect how we interact professionally in different economic and cultural places. This paper points out problems like misunderstandings and nervousness about speaking other languages, but also the good things that come from using multiple languages and making communication open to everyone. It also stresses how crucial it is to be good at using language in real-life situations, understanding different types of communication, and being flexible to figure things out together in global business. By mixing ideas with real-world advice, this paper helps us get a better handle on how good communication builds trust, teamwork, and better results for companies in global markets. The takeaway is that succeeding in global business communication isn't just about knowing languages; it's also about being aware of other cultures, thinking strategically, and acting responsibly. This talk should give useful ideas to academics, teachers, and people working in the field who want to create communication strategies that help international business be sustainable and fair. This sdiscussion advances our knowledge of how English serves as a strategic tool for company expansion in non-native English-speaking environments. For business professionals, educators, and policymakers looking to improve communication skills and international competitiveness in business sector, it offers useful insights.

Keywords: Business communication, qualitative approach, communication skill

O155 Role of Artificial Intelligence in Documenting and Conserving Cultural Heritage

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Cultural heritage is a traditions and identity of communities, but it is severely threatened by the destruction of the environment, urbanization, conflict, abandonment, etc. Artificial intelligence (AI) has become one of the most potent tools to aid the documentation and preservation of cultural heritage in recent years through more scalable and faster and more accurate solutions. This paper review the role of artificial intelligence in recording cultural heritage sites including monuments, artifacts, manuscripts, and intangible traditions, and evaluate how AI-driven technologies will help conserve and manage heritage resources on a long-term basis. The research has a secondary data-based approach, which relies on peer-reviewed journals, articles, books, institutional reports and case studies regarding the use of AI in heritage preservation. The data were analyzed in a thematic and comparative approach to know the existing practice, technological potentials, and the new trends. The results show that AI applications like machine learning, computer vision, and natural language processing can improve the heritage documentation through providing the capability of automated image processing, generation of digital works, language translation, and pattern detection of historical documents. The research concludes that AI-based conservation strategies are beneficial in predicting structural decay, tracking environmental hazards, and assisting in their preventive preservation efforts, which save manpower and resource expenditure. Artificial intelligence may prove a game changer in recording and preserving cultural heritage through harmonizing the conventional preservation methods with the current digital innovation. It is also found that AI does not only enhance efficiency and accuracy but also increases the access to heritage knowledge by researchers, policymakers, and other people. The prospective of this study implies the prevalence of AI-based heritage systems, the multi-correlational interaction between technologists and historians, and the creation of moral and inclusive AI systems to safeguard cultural authenticity. The research can also be applicable to museums, archives, heritage sites, and educational platforms, with a focus on the use of AI to make cultural heritage meaningful and preserved to the future generations.

Keywords: Artificial intelligence, cultural heritage, digital preservation, innovation, transformation

O156 Reconstructing the Past: Memory and War in the novels When We Were Orphans And The Remains of the Day by Kazuo Ishiguro

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Kazuo Ishiguro, the British-Japanese novelist applies some specific and selected topics for his novels. Among them, memory comes first as his personal sentiment and emotion are combinedly found in memory. In most of his novels, he brings memory through the characters and plots. He deals with a plentiful touch of memory with specific signs; such as human feelings, emotions, trauma, love, attraction, forgetting, rewriting memory and anomaly of the story or narrator and many more. Through memory, a bridge or connection is made between the past and present life of a man. Like memory, another unavoidable topic of Ishiguro is war. He writes about the occurrences of war which keeps an unforgettable connection with the characters of his novels. In the novels *When We Were Orphans* and *The Remains of the Day,* the Second Sino Japanese War, Opium War and the Second World War are described through which both the protagonists gain a lot of memory. The most important fact of these novels is that, memory and war are intertwined here. This article tries to explore how the wars make a deep impact on the characters by persuading their memories in the novels *When We Were Orphans* and *The Remains of the Day.*

Keywords: War, memory, reconstruct, emotion, childhood, trauma, personal.

O157 Aging and Livelihoods in a Changing Urban Periphery: From Traditional Support Systems to Adaptive Strategies Among Senior Citizens in Dhangadhi

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Rapid urban growth and socio-economic transformation are reshaping the livelihoods of older people in many emerging towns of Nepal. Dhangadhi, a fast-growing urban periphery, provides an important context for understanding how ageing populations experience and respond to these changes. Traditionally, senior citizens in Dhangadhi relied on family support, community networks, and customary livelihood practices. However, processes such as labor migration, urban expansion, and changing family structures appear to be weakening these traditional systems, creating new forms of vulnerability for older people. This study aims to explore the livelihood experiences of senior citizens in Dhangadhi and to examine how they adapt to the shift from traditional support mechanisms to emerging livelihood strategies in a rapidly changing urban setting. The research is designed as a mixed-methods study, combining quantitative surveys with qualitative, in-depth interviews. Data will be collected from forty senior citizens residing in selected wards of Dhangadhi Sub-Metropolitan City. The survey component will gather information on income sources, health status, living arrangements, and access to social and public services, while interviews will focus on personal narratives, perceptions of urban change, and everyday coping practices. By focusing on the voices and lived experiences of older people, the study seeks to generate new empirical insights into ageing and livelihood dynamics in urban peripheral areas. It is expected that the research will highlight both the continued importance of family and community support and the growing challenges related to health, income insecurity, and limited institutional assistance. The study aims to inform policymakers, local governments, and development practitioners by providing evidence-based recommendations for designing inclusive and responsive support systems. Ultimately, the research intends to contribute to broader discussions on ageing, urbanization, and social protection by emphasizing the need to integrate traditional values with innovative and sustainable approaches to improve the well-being, dignity, and social inclusion of senior citizens.

Keywords: Aging, livelihoods, urban periphery, adaptive strategies, senior citizens, socio-economic transformation

O158 Living with the River: Indigenous Life, Water Wisdom and Living Heritage Along the Karnali

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Heritages are often defined and understood as tangible built forms and artifacts, however very little attention has been paid to another dimension of heritage which includes living practices, knowledge systems and cultural relations. As a response, this paper is an attempt to shed light upon the indigenous living practices of tharu communities across the flood prone, lower belt of the mighty Karnali River, which is surprisingly and evidently attuned with nature's way of being. This paper revolves around the local knowledge deployed by the tribal tharu community on observing environmental indicators, anticipating flood, communicating the risk and coping the hazards with the local resources and techniques. Socio-cultural response to the potential risks in forms of certain festivals, ritualistic practices formed around the seasonal calendar and folk songs are used as a tool to document the local science. This paper relies on qualitative tools, including semi-structured interviews, informal conversations, participant observation, and community walkthroughs. With the proliferation of scientific literatures and practices on disaster management, the contextually evolved indigenous knowledge and lived experiences should now be given a due recognition on the heritage domain. This exercise not only ensures the passing of cultural expressions and sentiments to future generation, but also helps to counterbalance the pitfalls of heavily scientific and mechanized solutions to disaster related predicaments.

Keywords: Intangible heritage, indigenous knowledge, local science, lived experiences, disaster risk management

O159 Rethinking Institutionalisation of Soft Power: A Case Study of Nepal

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This paper addresses a central but underexplored puzzle in soft power scholarship, why some states possess recognisable soft power yet do not fully institutionalise it as a formal foreign policy instrument. Using Nepal as an illustrative case, the paper argues that soft power can function as an inherited civilizational resource rather than a consciously engineered diplomatic strategy. While existing literature identifies Nepal's cultural, religious, and normative soft power assets, it largely assumes that strategic institutionalisation is both necessary and desirable. This paper critically questions that assumption. The study adopts a constructivist and decolonial analytical framework, engaging with Joseph Nye's soft power theory, small-state foreign policy literature, and recent South Asian scholarship on cultural diplomacy and heritage. Methodologically, it employs qualitative analysis of foreign policy statements, diplomatic practices, and multilateral engagement, complemented by secondary literature on Nepal's peacekeeping contributions, Buddhist civilizational symbolism, environmental advocacy, and people-to-people diplomacy. The paper makes three key contributions. First, it conceptualises soft power as inheritance, distinguishing it from instrumental and policy-driven models dominant in Western International Relations theory. Second, it reframes Nepal's under-institutionalisation of soft power not as a policy limitation but as an analytically significant mode of influence shaped by various factors. Third, it contributes to broader debates on non-Western soft power by demonstrating that influence can remain effective without aggressive strategic design. The paper is structured in four sections: a critical review of soft power literature; a conceptual framework on inherited influence; an analysis of Nepal's foreign policy practices; and a concluding section outlining theoretical and policy implications for soft power in small states.

Keywords: Power, inherited civilization, institutionalisation

O160 Feminist Protest as Cultural Transformation: Gender, Law, and Dissent in Zia-era Pakistan

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This paper examines the feminist movement in Pakistan during General Zia-ul-Haq's Islamization regime (1977–1988) through the lens of cultural resistance and political transformation. It asks how women's groups such as the Women's Action Forum challenged state-imposed moral regulation and gendered legal restructuring, and how poetry, street protest, and symbolic performance became alternative archives of dissent. The study draws on feminist political theory and cultural studies to analyse the intersection of state power, religion, and gendered citizenship. Methodologically, the paper employs qualitative textual analysis of protest poetry, legal reforms under the Hudood Ordinances, and contemporary feminist writings, along with discourse analysis of speeches, pamphlets, and public statements from the period. It engages with scholarship on Islamization, authoritarianism, and feminist resistance in South Asia to situate the movement within broader debates on culture and state formation. The paper argues that feminist resistance in Zia-era Pakistan did not operate merely as reactive opposition but as a transformative cultural project. Through poetry, performative protest, and collective mobilisation, women redefined public space and challenged the moral authority of the state. These practices reimagined citizenship and produced alternative narratives of national belonging. By positioning feminist activism as a site of cultural innovation and historical transformation, this study contributes to understanding how dissent reshapes heritage, political memory, and democratic futures in South Asia.

Keywords: Cultural transformation, feminist resistance, Islamization in Pakistan, gendered citizenship, political protest culture

O161 Impact of Risk Management Practices on Financial Performance of Commercial Banks in Nepal

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The study has analyzed the impact of risk management practices, specifically risk identification, risk analysis, and risk management, on the financial performance of commercial banks in Nepal, while assessing the moderating role of corporate governance. It has employed a descriptive and analytical research design; the primary data were collected through a structured questionnaire from 395 employees of 20 Nepalese commercial banks using a five-point Likert scale. The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) to test the relationships and moderation effects. The findings indicate that risk identification ($\beta = 0.305$, $p < 0.001$) and risk management ($\beta = 0.478$, $p < 0.001$) have a significant positive effect on financial performance. In contrast, risk analysis exhibits a significant negative relationship with financial performance ($\beta = -0.196$, $p = 0.002$), reflecting inefficiencies in risk assessment processes that increase compliance costs and delay strategic decision-making. The corporate governance significantly moderates the relationships between risk management and financial performance ($\beta = -0.211$, $p < 0.001$) and between risk analysis and financial performance ($\beta = 0.158$, $p = 0.030$), while no moderating effect is observed for risk identification ($p = 0.588$). The study provides important implications for bank managers and policymakers by emphasizing the need for strengthened risk management systems and effective governance mechanisms to enhance the financial performance of commercial banks in Nepal.

Keywords: Commercial banks, corporate governance; financial performance; PLS-SEM; risk management practices

O162 City, River and Living Heritage: A Socio-Spatial Imageability of the Sadarghat Waterfront, Dhaka

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South Asian megacities now face a growing clash between better infrastructure and keeping cultural and social customs alive along their old waterfronts. The Sadarghat waterfront in Dhaka, once the city's main river entry point, is a complex urban landscape where living history, transport setup, and regular public life intersect. Even with its past and social importance, current growth plans stress logistical speed and managing traffic, causing a bigger split between the Buriganga River and Dhaka's old urban heart. This study adopts a qualitative case study approach to examine the socio-spatial morphology of the Sadarghat waterfront strip, with a focus on heritage integration, spatial connection, and public-realm quality. The analysis comes from mixing three supporting theoretical frameworks: the Historic Urban Landscape (HUL) approach (UNESCO, 2011), observing different parts of tangible and intangible heritage; Kevin Lynch's theory of imageability (1960), judging how easy it is to grasp the river–ghat–street relationship through nodes, edges, paths, and landmarks; and Jan Gehl's public life and quality criteria (2011), to evaluate comfort, accessibility, and social usability of the waterfront environment. The primary data were collected from systematic indicator-based field observations and 12 Key Informant Interviews (KII) including urban planners, heritage experts, long-term boatmen, and local traders who act as daily caretakers of the area. Observation results turned into socio-spatial and configurational maps showing patterns of connectivity, enclosure, and visual consistency. The data suggest a stark contrast in ideals between stated planning approaches and actual heritage actions. Though stated rules consider Sadarghat largely a busy transit and service center, common cultural actions get more constrained by tangible barriers, visual divides, and declining pedestrian permeability. This has weakened the imageability of the waterfront and reduced its capacity to function as an inclusive public space. The study concludes by urging a full planning method that sees Sadarghat as a vibrant heritage spot instead of just a working infrastructure area. Aligning with SDG 11.4 (heritage protection) and SDG 11.7 (inclusive public spaces), it argues for restoring visual, physical, and social linkages between the river and the historic city to sustain Dhaka's distinctive river-oriented urban identity.

Keywords: Living Heritage, Urban Waterfronts, Imageability, public space, Historic Urban Landscape (HUL).

PO1 Host Preference Dynamics of Rice Weevil (*Sitophilus oryzae* L.) in Stored Cereals

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The study aimed to evaluate the host preference of *S. oryzae* among six different cereals viz., rice, maize, wheat, barley, sorghum, and oats and assess their resistance to infestation. The experiment was conducted at the Entomology laboratory of Rampur Campus, Chitwan, from May to August 2025 under both free-choice and no-choice conditions using Completely Randomized Design (CRD) with four replications. Each treatment consists of one hundred grains with fifteen pairs of newly emerged rice weevils from the stock culture, introduced under no-choice conditions and fifty pairs per replication under free-choice conditions. The assessed parameters were grain damage percentage, weight loss percentage, and germination percentage before and after the treatment. Under free-choice conditions, wheat recorded the highest grain damage (28.25%) and weight loss (20.01%), whereas oats showed the lowest damage (3.25%) and weight loss (1.52%); the greatest reduction in germination was also in wheat (20%) and the smallest in oats (3%). Under no-choice conditions, wheat again had the highest grain damage (14.50%) and weight loss (17.44%), both significantly greater at the 0.1% level, while oats had the lowest damage (4.75%) and weight loss (2.21%); correspondingly, the highest reduction in germination occurred in wheat (18%) and the lowest in oats (3%). This study suggests that wheat is a highly preferred host, while oats exhibit higher resistance against rice weevils. It also suggests that integrating resistant grains and targeted pest management strategies can reduce post-harvest loss. Further studies across the different storage systems and extensive long-term research can scale and validate these findings.

Keywords: Grain damage, free choice, no choice, *Sitophilus oryzae*, storage pest

PO2 IoT-Enabled Smart Agriculture Monitoring and Decision Support System

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Agriculture contributes to about one-third of gross domestic product (GDP) in Nepal and contributes to employment. However, in reality, farmers still struggle with old challenges such as erratic weather conditions, decreased productivity and increasing climate unpredictability. This can lead to poor choices and financial strain on farmers. This project proposes an IoT-Enabled Smart Agriculture Monitoring and Decision Support System designed to transition farming from intuition based to data-driven precision and provide smart assistance to farmers. The proposed system integrates a network of sensors monitoring soil moisture, pH, NPK levels, temperature, and humidity, interfaced with an ESP32 microcontroller for real-time data acquisition. This environmental data is transmitted to a cloud-based backend where it is processed using Machine Learning algorithms, specifically the Random Forest and TabNet classifier model, to analyze complex non-linear agricultural patterns and provide recommendations. The convergence of IoT, machine learning and web technology offers a transformative solution. The core output of the system is a user-friendly web dashboard that provides farmers with actionable insights, including suitable crop recommendations based on soil health, precise fertilizer requirements, and automated irrigation schedules. Low-cost sensors can continuously monitor soil and weather parameters, cloud platforms enable storage and real-time analytics, and machine learning models can predict optimal actions with high accuracy.

Keywords: Internet of things (IoT), smart agriculture, machine learning, random forest, precision farming, decision support system.

PO3 *Ficus Infectoria* Bio-waste Derived Nanoporous Carbon for the Fabrication of Electrode for Sustainable Energy Storage Devices

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There is a growing need for low-cost and environmentally friendly materials for energy storage as global energy demand continues to rise. In this work, we present a sustainable approach to convert waste *Ficus infectoria* branch bark into functional fibrous carbon paper and nickel-doped carbon paper for supercapacitor applications. *a* bark is an abundant and underutilized agro-waste in Nepal, making it an attractive renewable resource for the development of advanced electrode materials.
Cellulosic fibers were extracted from the bark through alkaline pulping, followed by ball milling, bleaching, and ultrasonication to obtain a nano/microfibrous suspension. This suspension was processed into flexible paper sheets using a water-based paper-making method. Subsequent carbonization under a nitrogen atmosphere at 700, 800, and 900 °C produced nano/microfibrous carbon paper and nickel-embedded carbon paper.
The structure and properties of the fabricated materials were systematically studied using field-emission scanning electron microscopy (FESEM), transmission electron microscopy (TEM), and X-ray diffraction (XRD) to examine morphology, porosity, surface structure, and crystallinity. Electrochemical performance was evaluated using cyclic voltammetry and galvanostatic charge–discharge measurements, which revealed stable capacitive behavior and good charge–discharge reversibility. Samples carbonized at higher temperatures showed improved performance due to enhanced electrical conductivity and favorable structural development.
Overall, this work demonstrates a simple, green, and scalable route to transform agro-waste into binder-free, high-performance carbon electrodes. The bark-derived carbon paper shows strong potential for sustainable energy storage and broader environmental applications.

PO4 Estimation of Copper in Copper Ores Collected from Jangkot, Rolpa, Nepal

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Nepal is endowed with abundant natural resources, including documented occurrences of diverse mineral deposits. Despite the presence of such mineral resources, scientific research focused on their characterization and exploitation remains relatively scarce. Against this backdrop, comprehensive scientific study and research on Nepal's mineral resources are deemed necessary to facilitate their rational utilization. In this study, five samples of copper ores were collected from Jangkot Rolpa, and examined using both the Titrimetric and atomic absorption spectroscopy methods. The analytical results show that sample C1RJ has the highest copper concentration (2.20% by titration and 1.64% by AAS), indicating that the collected samples contain extractable amounts of copper in that location. Nevertheless, additional in-depth research is required to comprehensively evaluate the quality and economic feasibility of the copper deposits in this region, thereby providing ascientific basis for future exploration and exploitation endeavors.

Keywords: Jangkot, Copper Ore, estimation, Titration, AAS

PO5 Jacaranda Seed Waste-derived Activated Carbon as Negative Electrode for Energy Storage Applications

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The global energy crisis focuses on utilizing sustainable, eco-friendly, and cost-efficient alternatives to traditional energy storage systems. The tunable porosity, large surface area, and excellent cyclic stability have made biomass-derived activated carbon - a promising electrode material for supercapacitor applications. The work presents a novel approach in the synthesis of AC from Jacaranda Seed Pods (JSP) – a lignocellulosic biowaste- via phosphoric acid (H_3PO_4) activation followed by carbonization at 800 °C and 900 °C in an atmosphere of nitrogen.

As-prepared carbonaceous materials were characterized in terms of FTIR Spectroscopy, XRD, FESEM with EDX. FESEM analysis showed a porous framework with carbon as a chief element. Additionally, under electrochemical evaluation in a three-electrode system, the Cyclic Voltammetry (CV) curve displayed a quasi-rectangular shape which indicates the formation of the electric double-layer (EDLC) type supercapacitor for both ACJSP-800 and ACJSP-900. Similarly, Electrochemical Impedance Spectroscopy (EIS), and Galvanostatic charge-discharge (GCD) curves reflected the electrode behavior at different frequencies, and current densities, respectively. As-prepared ACJSP-900 demonstrated better performance with a specific capacitance of 182 F g^{-1} at 1 A g^{-1} compared to 120 F g^{-1} in ACJSP-800 at 1 A g^{-1}. The superior performance of ACJSP-900 was attributed to enhanced graphitization, higher diffusion rates, lower electrolyte resistance, and lower charge transfer resistance. The results highlight the viability of using AC from lignocellulosic biomass - JSP as a sustainable, economical, and efficient electrode material.

Keywords: Activated carbon, lignocellulosic biowaste, graphitization, chemical activation, energy storage

PO6 Vegetation Diversity and Its Utilization in Taranagar Community Forest Area, Dhangadhi, Kailali

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The current research is done and caarried out in kailali 'Taranagar' .There are various sites available for research work but I have chosen the "Taranagar Community Forest" due to availability of the various plant species including timber and non timber plants and species richness of plant species. The forest is situated at the boundary line two places Taranagar, Kailali .The SPC. consists various plants including timber and non timber plants. The timber plants are those which provides wood , fuel, raw materials vfor pulp industry. The timber plants are those which do not produces non toxic vapour when produced or harvested and the timber product are used for making long lasting products. The NTFPs are used for making thatching , wild grasses and vegetables, fibers. More than 65 plants species documented in the SPC . There is the Domination of the NTFPs in some patches of forest where in some patches there is the domination of the timber plants in other patches. There are the plants which are categorized into herbs shurbs and trees. Among them 40 families were recognized. They are used for various purpose including for food, fodders, religious, ornamental and medicinal and economic purpose. Among them most of the plants are used for medicinal purposes (40 species), food (25 species), fodder (12 species), Religious (7 species) , thatching (3 species), rope and basket making (3 species). The most of the plants are used for leaves are 27 species and least are used for for flower. Among 65 species of plants 15 species are used for fruits, whole plants 9 species, 5 species for roots.

Keywords: Species, community forest, non-timber forest products, important value index

PO7 Returnee Youths' Experience of Employment in India: A Case in Mahendranagar

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This study focuses on exploring factors that influences Nepalese people to migrate to India, and their experiences; both sections of the work have employed the use of qualitative interviews and quantitative questionnaires. The findings reveal that economic factors, particularly poverty and political instability, are primary motivations for migration among Nepali youths. This evidence shows that poverty and instabilities in political realms are fundamental economic factors driving Nepali youths into migration activities. Again, the quantitative findings provide evidence of the existence of these drivers as consensus among respondents, while the qualitative narratives provide first hand experiences of how economic realities force individuals to seek better economic prospects even in India despite job strain. The study also outlines major barriers observed in migrant's working conditions: insufficient labor rights, no health insurance and often employment through improvised means. These insights underscore the complex interplay of economic, social and geographic factors influencing migration decisions. Based on these findings, policy suggestions are made for improving labor relations, increasing social security for migrants and coordinating regional strategies to mitigate the causes of the Nepali citizens moving to India and ensuring their better quality of Life.

Keywords: Youth, experience, foreign employment, poverty, labor.

PO8 Azolla Derived Advanced Carbon Composite for Methylene Blue degradation in Wastewater

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Water is an essential resource for all living beings for their survival. Water resources in urban areas are increasingly overloaded with complex and lasting pollutants, including heavy metals, dyes, and solid waste. These threats pose a significant impact on human health as well as ecosystems. In this work, ZIF-8 and azolla biomass derived ZnO-carbon composite was synthesized via sustainable and economic routes. Physicochemical characterizations of as-prepared materials were carried out in terms of SEM, EDX, FTIR, UV-Vis. and adsorption test. As prepared material exhibited the photocatalytic degradation of Methylene Blue up to 92% at 120 min. Based on this remark, as prepared material is found to be a promising photocatalyst for the dye degradation in the purification of water.

Keywords: Azolla, metal organic, framework, nano carbon, photocatalyst, ZIF-8

PO9 Bimetallic MOF-Derived Carbon from Azolla Biomass for Photocatalytic Dye Degradation

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Industrial wastewater discharge has become a major environmental issue due to the release of toxic and persistent pollutants, especially synthetic dyes, into water bodies. These dyes are hard to remove by using conventional treatment methods due to their high chemical stability and resistance to degradation. This report presents the synthesis of a bimetallic MOF-derived carbon material from *Azolla* biomass for dye remediation. A bimetallic metal-organic framework was prepared using *Azolla* as a renewable biomass precursor and then carbonized to obtain a porous carbon material. The as-prepared materials were characterized using XRD, FTIR, FESEM, and EDX to study their structural, morphological, and surface properties. The photocatalytic dye degradation performance of the bimetallic MOF-derived carbon was evaluated from the degradation of methylene blue under UV irradiation. The results depict that the bimetallic MOF-derived carbon exhibits 93 % MB dye degradation in 120 minute which is attributed to its enhanced porosity, and high surface area. This study highlights the potential of biomass-derived bimetallic MOF-based carbon materials as effective and sustainable catalysts for wastewater treatment applications.

Keywords: Bimetallic, Azolla, Photocatalytic, MOFs, Porous Carbon

PO10 Engineering Asphaltum punjabianum (Shilajit) incorporated nanofibrous mats for biomedical applications

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Shilajit is a phyto-mineral complex that is formed by the long term humification of organic matter with diverse therapeutic applications in traditional medicine. The potential efficacy of shilajit may be enhanced by nanoengineering which has not been reported yet. In this study, nanoformulation of shilajit on polyurethane matrix has been carried out. Polyurethane (PU) nanofibers containing shilajit were fabricated using electrospinning technique for biomedical application. Pristine nanofibers were fabricated by electrospinning of 20 wt% PU solution using N, N-Dimethylformamide and methyl ethyl ketone solvent. Subsequently, PU/shilajit composites containing different amounts of shilajit (1%, 2%, and 3%) were prepared by electrospinning. The samples were characterized by field emission scanning electron microscope (FESEM) and energy dispersive X-ray (EDX) spectroscopy. Antibacterial performance was tested against gram positive bacteria, *Staphylococcus aureus* and gram-negative bacteria, *Escherichia coli*. EDX shows the presence of different metals. SEM analysis confirmed the formation of nanofibers with dispersion of the shilajit throughout the matrix. The results demonstrated that incorporation of shilajit into PU fibers enhanced cellular compatibility and exhibit effective antibacterial activity.

***Keywords*:** Shilajit, nanofiber, electrospinning, biomedical, antimicrobial

PO11 Outbreak investigation of cholera in Birgunj, Nepal: An Unmatched Case-Control Study

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Cholera remains a persistent global health threat. Although it is preventable and treatable, it has disproportionality affected vulnerable population lacking water and sanitation particularly among the low-middle income countries. The recent cholera outbreak was seen in Birgunj metropolitan city, Madhesh province, eastern part of Nepal in August 2025. Out of one thousand one hundred fourteen, hundreds of hospitalized within days, exposed critical gaps in water safety, sanitation and community awareness. The study aims to investigate cholera outbreak. The population-based unmatched case-control study with 1:1 ratio, 63 confirmed cholera cases and 63 community controls from the most affected wards of Birgunj were enrolled in the study. Data was collected though face-to-face interviews using a structured questionnaire on WHO guidelines, alongside secondary outbreak records. Statistical analysis with SPSS included descriptive measures, chi-square tests and binary logistic regression to identify significant risk factors for cholera. The study revealed that lack of knowledge on preventive measures (OR: 2.87, 95% CI: 1.23-6.73) significantly increased the risk of cholera among the participants. The cholera risk was strongly shaped by socio-demographic and behavioral factors. The participants aged 5-49 years (OR: 2.81, 95% CI: 1.45-6.92), individuals from Muslim ethnic groups (OR: 12.26, 95% CI: 4.98-30.14), and those without formal education (OR: 8.85, 95% CI: 2.57-30.46) were disproportionately affected. Household and community practices such as consuming street food (OR: 11.47, 95% CI: 4.86-27.07), relying on untreated public tap water (OR: 19.77, 95% CI: 4.40-88.76), unsafe stool disposal (OR: 17.95, 95% CI: 4.64-66.61), cross-connections (OR: 2.461, 95% CI: 1.49-4.04) significantly increased risk of cholera. The effective preventive measures improving sanitation and hygiene practices, strengthening community awareness through education and behavioral change and long-term measures like oral cholera vaccination, regular water chlorination and active surveillance. Cholera in Birgunj was influenced by social, behavioral and environmental factors, indicating the urgent need for stronger community awareness and behavioral change, safe water and sanitation practices.

Keywords: Cholera, acute watery diarrhea, outbreak investigation, unmatched case-control study

PO12 Household Willingness to Pay for Wetland Conservation in Nepal: Evidence from Ghodaghodi Lake Based on Perceived Ecosystem Services

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Wetlands deliver critical ecosystem services but are often undervalued in management and policy decisions, resulting in continued degradation. This study estimates the non-market economic value of Ghodaghodi Lake wetland in Nepal by analyzing household willingness to pay (WTP) for its conservation. Using the contingent valuation method, the study estimates that households are willing to contribute approximately USD 1.82 million per year for the conservation and sustainable management of the wetland. The analysis further examines how perceived ecosystem services (such as biodiversity conservation, water regulation, and cultural benefits) and ecosystem disservices (such as health risks and land-use restrictions) influence conservation preferences. The findings show that positive perceptions of ecosystem services significantly enhance WTP, while perceived disservices reduce conservation support. These results provide valuable evidence for environmental managers and Policymakers to design effective conservation financing mechanisms and integrate public preferences into wetland management strategies, ensuring long-term ecological sustainability and community-supported resource governance.

Keywords: Wetland conservation, Willingness to pay, Ecosystem services, Ecosystem disservices, Contingent valuation

PO13 Farmers Perception and Adaptation Strategies on Climate Change in Deukhuri, Dang

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A study on **"Farmers Perception and Adaptation Strategies on Climate Change in Deukhuri, Dang"** of Lumbini Province, Nepal was conducted to assess the perception and adaptation strategies on climate change adopted by farmers. A simple random sampling technique was used to collect the data. A semi-structured questionnaire technique was used to collect the data from the 120 respondents of Deukhuri valley. 30 samples were collected from each local level of Deukhuri Valley (Lamahi Municipality, Rapti Rural Municipality, Gadhawa Rural Municipality, Rajpur Rural Municipality). The results revealed that approximately 96.7% perceived a change in temperature, 100% of respondents perceived a change in the rainfall pattern in last two decades. In total, 88.3% stakeholders responded that climate change had a negative effect on the quality and quantity of crops, 95.8% of respondents believed that pest infestations had increased, 92.5% of respondents believed that there was an effect on flowering, fruiting and maturity of crops, 91.7% believed that diseases had increased in livestock, 37.5% of respondents believed there was change in breeding pattern of livestock due to Climate Change. The study found that there were 6 climate change adaptation strategies mainly adapted by farmers. Mainly, Farmers predominantly adopted crop diversifications and irrigation management, each accounting for 28.3% of the strategies. Only 10% of the participants had implemented agriculture insurance for their crops and 32.71% of the respondents had livestock insurance coverage. Although the Government of Nepal provides subsidies of up to 80% on crop and livestock insurance premiums, the effectiveness of this policy has been constrained by shortcomings in its implementation in the current context.

***Keywords**:* Climate change, farmer's perception, agriculture insurance, temperature variation, farmers' adaptation strategies

PO14 Harnessing Rhizosphere Phages of medicinal plants for Bioremediation of Multidrug-Resistant Environmental Pathogens

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Public health and environmental safety face significant challenges due to emergence of multi-drug resistant organisms (MDR) in biological waste and contaminated environments. The use of bacteriophage-based bioremediation offers a viable and environmentally sustainable alternative to traditional chemical disinfectants. In this study, a bacteriophage targeting muti-drug resistant *Staphylococcus* and *Klebsiella* spp was isolated from rhizosphere soil associated with medicinal plant of Maliban, Bajura which host diverse and physiologically active microbial communities. The isolation process involved enriching soil samples with a susceptible *Klebisella* species and *Staphylococcus* host strain, followed by purification of the phages through a plaque assay. The isolated phage exhibited strong bactericidal properties, as evidenced by the formation of distinct lytic plaque. Further in vitro testing confirmed the effective lysis of MDR *Staphylococcus* isolates commonly found in biological and biomedical waste. These results show that medicinal rhizosphere soil is an important but little-studied source of bacteriophages that may be used in the bioremediation of biologically contaminated trash. The research backs the creation of phage-based bio-disinfectants as a long-term method of reducing MDR bacterial contamination in environmental matrices. To evaluate environmental safety and large-scale viability, more characterization and application-based research are needed.

Keywords: Bioremediation, bacteriophage, rhizosphere, environmental safety

PO15 Outbreak Investigation of Cholera in Birgunj, Nepal: An Unmatched Case-Control Study

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Cholera remains a persistent global health threat. Although it is preventable and treatable, it has disproportionality affected vulnerable population lacking water and sanitation particularly among the low-middle income countries. The recent cholera outbreak was seen in Birgunj metropolitan city, Madhesh province, eastern part of Nepal in August 2025. Out of one thousand one hundred fourteen, hundreds of hospitalized within days, exposed critical gaps in water safety, sanitation and community awareness. The study aims to investigate cholera outbreak. The population-based unmatched case-control study with 1:1 ratio, 63 confirmed cholera cases and 63 community controls from the most affected wards of Birgunj were enrolled in the study. Data was collected though face-to-face interviews using a structured questionnaire on WHO guidelines, alongside secondary outbreak records. Statistical analysis with SPSS included descriptive measures, chi-square tests and binary logistic regression to identify significant risk factors for cholera. The study revealed that lack of knowledge on preventive measures (OR: 2.87, 95% CI: 1.23-6.73) significantly increased the risk of cholera among the participants. The cholera risk was strongly shaped by socio-demographic and behavioral factors. The participants aged 5-49 years (OR: 2.81, 95% CI: 1.45-6.92), individuals from Muslim ethnic groups (OR: 12.26, 95% CI: 4.98-30.14), and those without formal education (OR: 8.85, 95% CI: 2.57-30.46) were disproportionately affected. Household and community practices such as consuming street food (OR: 11.47, 95% CI: 4.86-27.07), relying on untreated public tap water (OR: 19.77, 95% CI: 4.40-88.76), unsafe stool disposal (OR: 17.95, 95% CI: 4.64-66.61), cross-connections (OR: 2.461, 95% CI: 1.49-4.04) significantly increased risk of cholera. The effective preventive measures improving sanitation and hygiene practices, strengthening community awareness through education and behavioral change and long-term measures like oral cholera vaccination, regular water chlorination and active surveillance. Cholera in Birgunj was influenced by social, behavioral and environmental factors, indicating the urgent need for stronger community awareness and behavioral change, safe water and sanitation practices.

Keywords: Cholera, acute watery diarrhea, outbreak investigation, unmatched case-control study

PO16 Brain Computer Interface-driven Neural Prosthetics for Lower Limb Rehabilitation: Current Progress and Challenges

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Brain Computer Interface (BCI) driven neural prosthetics have emerged as a promising paradigm for restoring motor function and improving rehabilitation outcomes in individuals with lower-limb impairments. BCI-based systems establish direct communication between neural activity and assistive devices which enables users to intuitively control prosthetic limbs, exoskeletons and rehabilitation robots. This review focuses on recent advancements in smart lower-limb assistive technologies which combine non-invasive BCI modalities and artificial intelligence (AI) techniques to restore mobility for people who have neuro motor impairments or amputations. This literature review identifies selected research articles which study electroencephalography (EEG) and functional near-infrared spectroscopy (fNIRS) signal acquisition methods, pattern recognition systems and deep learning systems which include Convolutional Neural Networks (CNNs) and Recurrent Neural Networks (RNNs). The reviewed studies primarily address Motor Imagery (mental image of specific movement without physical execution) based gait intention decoding and control strategies for lower-limb assistive systems. The analysis reveals that existing research largely focuses on foot-level motor tasks while the control of knee and hip joint movements are underexplored. Common challenges identified across studies include low signal-to-noise ratio (SNR) together with inter-subject variability and challenges regarding real-time control during dynamic locomotion and user cognitive workload management. The paper is organized to first present the physiological basis of lower-limb movement and gait, followed by neural signal processing pipelines (preprocessing, feature extraction and classification). The review then presents AI-driven decoding of sensorimotor rythms such as Mu and Beta rythms and control architectures. Finally, the paper concludes with current limitations (signal integrity, electromagnetic interference, anatomical complexity, technical limitations, clinical and ethical concerns) and future research directions (sensory feedback, autonomous locomotion, advanced adaptive AI learning, energy management) toward robust and clinically viable BCI-powered lower-limb neuroprosthetic systems.

PO17 Synthesis and Characterization of Cobalt–Cerium Co-Doped Zinc Oxide Nanoparticles for Photocatalytic Degradation of Methylene blue and Safranin O and Antimicrobial Applications

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This study explores the synthesis and functional enhancement of zinc oxide (ZnO) nanoparticles through cerium (Ce) and cobalt (Co) doping for photocatalytic and antimicrobial applications. Pure ZnO, Ce-doped, Co-doped, and Ce–Co co-doped ZnO nanoparticles were prepared using a chemical co-precipitation method, followed by calcination at 500 °C. The physicochemical properties of the nanoparticles were analyzed using multiple characterization techniques. UV–Vis spectroscopy was employed to examine optoelectronic properties, FESEM was used to assess surface morphology, and EDS confirmed successful incorporation of dopants and structural refinement. UV–Vis results indicated bandgap tuning with a slight red-shift in Ce-doped and Ce–Co co-doped samples, while FESEM images revealed reduced particle sizes and improved uniformity in the co-doped nanoparticles. Photocatalytic activity, assessed through the degradation of methylene blue and safranin under UV light, was highest in the co-doped ZnO, with the 0.25% Co + 1% Ce sample achieving ~99.8% degradation within 120 minutes. Antimicrobial tests against *Escherichia coli*, *Staphylococcus aureus*, and *Candida albicans* showed enhanced inhibition zones for doped samples, with Ce–Co co-doped ZnO exhibiting the strongest activity (up to 17 mm), comparable to standard antibiotics. Overall, Ce–Co co-doping proves to be an effective approach to enhance ZnO nanoparticles for multifunctional applications in environmental remediation and biomedical uses.

Keywords: ZnO nanoparticles, Co–Ce co-doping, photocatalysis, methylene blue, antimicrobial activity

PO18 Municipality-Level Spatial Clustering and Socio-Environmental Determinants of Tuberculosis in Nepal, 2019-2024

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Tuberculosis (TB) remains a major public health challenge in Nepal, marked by substantial geographic heterogeneity. Despite ongoing control efforts, spatial clustering patterns and socio-environmental determinants at the municipal level are not well understood. This study assessed spatial clustering of TB notification rates and their association with sociodemographic, housing, and environmental factors across all 753 municipalities of Nepal. Data of notified TB cases were extracted from National Tuberculosis Control Centre from FY 2019/20 to FY 2023/24. Spatial autocorrelation and clustering were examined using Global Moran's I, Getis-Ord Gi*, and Local Indicators of Spatial Association (LISA). Associations between TB notification rates and socio-demographic, housing, and environmental factors were evaluated using Ordinary Least Squares, Spatial Lag, and Spatial Error Models. A total of 172,155 TB cases were reported over the five-year period (FY 2019/20-2023/24), with national notification rates increasing from 92 to 139 per 100,000 population. Significant and persistent positive spatial autocorrelation was observed annually (Moran's I: 0.42-0.53; $p < 0.001$). High-High clusters were consistently concentrated in the densely populated Terai municipalities of Madhesh and Lumbini Provinces, whereas Low-Low clusters dominated the remote mountain regions of Karnali and Sudurpashchim. The Spatial Error Model (SEM) provided the best fit (Pseudo-$R^2 = 0.62$), revealing that population density ($\beta=0.008$, $p<0.001$), liquefied petroleum gas use ($\beta=60.85$, $p<0.001$), and nighttime land surface temperature ($\beta=1.69$, $p<0.05$) were significantly associated with higher TB notification rates. Traditional housing materials (mud walls: $\beta=-38.40$, $p<0.001$) and cow dung fuel use ($\beta=-48.43$, $p<0.05$) showed negative associations, likely reflecting diagnostic access barriers rather than lower disease incidence. Tuberculosis in Nepal demonstrates significant and persistent spatial clustering at the local municipal level, driven by population density, housing, energy access, and climatic conditions. These results emphasize the need for geographically targeted, municipality focused interventions to advance Nepal's progress toward the End TB Strategy and Sustainable Development Goal 3.3.

Keywords: Tuberculosis, spatial analysis, spatial autocorrelation, LISA, ecological study, GIS, environmental determinants, Nepal

PO19 Green Energy System for a Low-Carbon Future: Innovation and Transformation

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Green energy systems and renewable energy technologies play a vital role in addressing contemporary challenges related to climate change, energy security, and long-term sustainable development. This poster presents an overview of major renewable energy technologies—solar, wind, micro-hydropower, and biogas—and examines their potential in supporting a transition toward environmentally sustainable and low-carbon future energy systems. The study adopts a qualitative approach based on a review of existing literature, policy frameworks, and selected case examples, with particular emphasis on developing and mountainous regions such as Nepal. The findings highlight that renewable energy technologies not only reduce greenhouse gas emissions but also promote innovation, socio-economic transformation, and improved energy accessibility in remote areas. Furthermore, the integration of modern green energy systems with traditional and indigenous practices demonstrates how heritage-based knowledge can complement technological innovation. Despite challenges such as high initial investment costs, policy gaps, and technical limitations, renewable energy remains a transformative pathway toward resilient and sustainable energy futures. This poster aligns with the conference theme "Heritage, Innovation and Transformation" by illustrating how renewable energy technologies bridge traditional wisdom and modern innovation to drive sustainable transformation.

Keywords: Green energy systems, renewable energy technologies, climate change, sustainable development, energy security, heritage, innovation, Nepal

PO20 Bimetallic FeCu-LDH Derived Mixed Metal Oxide Nanostructures for Electrochemical Water Splitting

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Continuous extension of energy consumption can lead to critical situations. LDHs exhibit remarkable potential for advancing water-splitting applications, making them a compelling choice for sustainable energy solutions. It is estimated that combining refined electrical conduction properties with custom-designed features will result in enhanced catalytic performance. The main objective of this qualitative study is to explore the controlled synthesis methodology for bimetallic FeCu-LDH derived mixed metal oxide and evaluate its electrocatalytic performance to explore the improved structure, stability, and durability under electrolysis conditions. Hydrothermal and Coprecipitation synthetic methods were taken. Based on structural characterization, FeCu-LDH on FTIR analysis indicates the presence of free hydroxyl stretching vibrations, identifying isolated hydroxyl groups commonly found in alcohol and phenols, and XRD peaks revealed the presence of Tenorrite, Hematite, Goethite, Copper ferrite compounds, and UV-Visible spectra of the sample prepared from the coprecipitation method at room temperature spotted distinct. FESEM explored the sample prepared from the hydrothermal method with flower-like morphology, whereas from coprecipitaiton method a nanosheet was observed. Electrochemical characterization analysis explored that the catalyst FeCu-LDH (2:1)-H has excellent catalytic properties with Cdl and ECSA (lower) value, whereas FeCu-LDH (1:1)-C showed poor catalytic properties. The overall water splitting was found to have moderate stability.

Keywords: Bimetallic LDH, electrocatalysis, HER, OER, water splitting, green hydrogen

PO21 Synthesis Characterization and Electrochemical Application of Wolframite (CoWO4) Nanoparticles

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In this work, Wolframite-type crystalline structure cobalt tungstate ($CoWO_4$) nanoparticles were synthesized by hydrothermal treatment using two precursor sodium tungstate: cobalt nitrate molar ratios of 1:1 and 2:1. X ray diffraction (XRD) established the phase formation corresponding to JCPDS card No. 15-0867, and FTIR spectroscopy exhibited Co–O, W–O, and O–H vibration modes. UV–visible spectroscopy delivered absorption peaks between 200–450 nm, while Scanning Electron Microscopy (SEM) analyses gave very porous network-like nanostructures, and EDS also ensured evenly distributed Co, W, O, and Ni. Electrochemical characterization delivered enhanced bifunctional catalysis. For HER, onset potentials of –0.23 V and –0.37 V (at 10 and 50 mA cm^{-2}) with overpotentials of 370 mV and 420 mV were delivered. For oxygen evolution reaction (OER), onset potentials of 1.60 V and 1.65 V (at 10 mA cm^{-2} and 50 mA cm^{-2}, respectively) and overpotentials of 230 mV and 370 mV were achieved. Electrochemical impedance spectroscopy (EIS) also demonstrated low charge-transfer resistances of 1.60 Ω (HER) and 2.84 Ω (OER), that indication of fast electron transport. Tafel slope of 119.24 mV dec^{-1} for HER and 76.97 mV dec^{-1} for OER also confirmed the efficient electro catalytic kinetics. At last, as-prepared $CoWO_4$ nanoparticles exhibit excellent structure, optical, and electrochemical properties and are superior materials for energy storage and conversion, particularly bifunctional electrocatalysts for water splitting.

Keywords: Hydrothermal, wolframite-type, morphology, nanoparticles, characterization

PO22 Bifunctional Electrocatalysis of CopperDoped Cerium Oxide Nanocage Networks Enabling HER and OER

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An advanced water electrolysis process that generates clean and sustainable hydrogen fuel offers a scalable solution for storing abundant but intermittent energy from renewable sources by converting water into hydrogen and oxygen using an electric current, facilitating the integration of renewable energy into practical applications. Moreover, synthesis of sustain able and environmentally friendly methods for synthesizing nanomaterials is correspondingly crucial for advancing water splitting technology. This study introduces a green synthesis approach for Cu-doped CeO_2 nanoparticles using plant extracts as reducing and stabilizing agents. A 3D nanocage network of Cu-CeO_2 electrocatalyst exhibits featured electrochemical performances for HER and arduous OER significantly lowering the overpotential due to the reduced reaction barrier, lower resistance, and accelerated charge transfer process. The Cu-doped CeO_2 exhibits lower overpotentials of 142 mV and 166 mV at current densities of 50 mA cm^{-2} and 100 mA cm^{-2} respectively, and a Tafel slope of 58.8 mV dec^{-2} indicating superior catalytic activity. Density functional theory (DFT) calculations reveal that the Cu doping on the CeO_2 matrix increases the rate of H_2O adsorption during water-splitting reaction due to the introduction of Cu-3d orbitals near the Fermi level (EF), which enhances charge carrier density. Overall, Cu-doped CeO_2 nanoparticles demonstrate enhanced performance for green hydrogen production as an energy vector, while the green synthesis method offers a sustainable, low-impact alternative for producing high-performance nanomaterials.

Keywords: Doping, green hydrogen, Cu-CeO2, electrocatalysis, green synthesis

PO23 Diet Quality and Its Associated Factors Among School-Going Adolescents of Thakurbaba Municipality, Bardiya.

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Diet quality is a fundamental determinant of health during adolescence, when rapid physical, cognitive, and psychological development occurs. This stage is critical for establishing lifelong eating habits that prevent malnutrition and the early onset of non-communicable diseases (NCDs). The Nepalese diet is undergoing a rapid transition, shifting from traditional staple agricultural foods toward modern, energy-dense items high in sugar and fats. Adolescents are particularly vulnerable to these changes as they face a double burden of malnutrition, where traditional nutrient deficiencies coexist with an increasing prevalence of overnutrition linked to the consumption of ultra-processed foods. Despite these shifts, there is a significant lack of localized research assessing diet quality among school-going adolescents in Thakurbaba Municipality, Bardiya. Most existing studies focus on diverse or urban contexts that may not reflect the specific environmental drivers in this region. Therefore, this study aims to assess diet quality and its associated factors in Thakurbaba municipality, Bardiya. A cross-sectional study involving 496 school-going adolescents aged 15–19 years was conducted between April and December 2025. Participants were selected from public schools using simple random sampling. Data was collected using self-administered survey. Diet quality was measured using the Global Dietary Recommendations (GDR) score, derived from the Diet Quality Questionnaire (DQQ), a validated tool that monitors adherence to WHO dietary guidelines by evaluating the consumption of 29 food groups over a 24-hour recall period. Statistical analysis was performed using SPSS v.25. A General Linear Model (GLM) with robust standard errors was applied to identify factors associated with diet quality. Ethical approval was obtained from the Institutional Review Committee of Pokhara University, and written informed consent was secured from all participants and their guardians. The median age was 17 years (IQR: 16 –18); 65.5% were female. The mean GDR score was 10.28 ± 2.08, with 67.3% meeting the threshold for adherence to ≥6 WHO dietary recommendations. Lower diet quality was associated with Janajati ethnicity (B = -0.84, p = 0.015), home availability of sugar-sweetened foods (B = -0.84, p = 0.008) and purchasing snacks inside school premises (B = -0.61, p = 0.043). Conversely, higher diet quality was observed with home availability of legumes, nuts, and seeds (B = 1.16, p = 0.012) and fruits and vegetables (B = 1.51, p = 0.027). Adolescent diet quality is driven by ethnicity and food availability within home and school food environments. Interventions must focus on strengthening culturally appropriate school-based nutrition programs, enforcing policies restricting unhealthy food sales in and around schools while promoting the availability of nutrient-dense foods at home and in schools.

PO24 Sexual and Reproductive Health Literacy and Its Associated Factors Among Undergraduate Students Studying in Dhangadhi Sub-Metropolitan City

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Sexual and reproductive health literacy (SRHL) encompasses the ability to access, understand, evaluate, and apply information to make informed decisions regarding sexual and reproductive health. University students represent a critical demographic as they transition to adulthood and assume greater responsibility for their health decisions. Despite the importance of SRHL, many undergraduate students enter higher education with inadequate knowledge and misconceptions about sexual and reproductive health. This study assessed the level of SRHL and identified associated factors among undergraduate students using a cross-sectional design with 480 participants. This study adopted a quantitative, cross-sectional design to assess sexual and reproductive health literacy among undergraduate students in Dhangadhi. A multistage cluster sampling technique was used, targeting a final sample size of 480 students. Self-administered questionnaire was used for data collection. Data was entered in Epi data version 4.6 and analyzed in IBM SPSS. Descriptive analysis and factors associated with limited SRHL was computed using chi-square test. Further, binary logistic regression was also applied to identify the strength of association between dependent and independent variables. Among 480 undergraduate students 276 (57.5%) demonstrated limited sexual and reproductive health literacy (SRHL). Multivariate logistic regression analysis identified several significant predictors of limited SRHL physical exercise, smoking status), poor knowledge about STIs and HIV and poor contraceptive knowledge were significantly associated with limited sexual and reproductive health literacy. More than half of undergraduate students had limited sexual and reproductive health literacy. Poor knowledge about STIs/HIV and contraceptives were the strongest predictors of limited SRHL. Strengthening college-based sexual health education with emphasis on STI/HIV prevention and contraceptive knowledge can significantly improve sexual and reproductive health literacy among undergraduate students.

Keywords: Sexual and reproductive health literacy, undergraduate students, health literacy

PO25 Synthesis, Characterization and Biological Activity of α- $SnWO_4$ Nanoparticles

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This article presents hydrothermal synthesis and characterization of α-$SnWO_4$ nanoparticles (NPs) and their antimicrobial activity. The NPs were synthesized from $SnCl_2$ and $Na_2WO_4 \cdot 2H_2O$ in a 1:1 molar ratio in an acetic acid buffer solution and hydrothermally treated of the resulting solution at 180°C for 10 hours. The material was annealed at 600°C for 2 hours after synthesis. X-ray diffraction (XRD) characterization confirmed crystalline character of α-$SnWO_4$ NPs, with peak count between 10°–70° (2θ). UV-visible spectrophotometry confirmed absorption peaks at 205–222.5 nm, whose optical behavior varies with composition. Antimicrobial activity of α-$SnWO_4$ NPs was tested against Gram-positive (Staphylococcus aureus), Gram-negative (Escherichia coli), and fungal (Candida albicans) microorganisms for the well diffusion method. Compositions 2:1 and 1:1 exhibited strong inhibitory zones with stronger activities against Gram-negative bacteria (1.4–1.5 cm) than against Gram-positive bacteria (1.2–1.3 cm) and fungi (1.3–1.4 cm). Positive controls (Kanamycin/Itraconazole) validated the sensitivity test. These results indicate that hydrothermally synthesized α-$SnWO_4$ NPs exhibit potential antimicrobial activity, that is, towards Gram-negative bacteria, and hold promise for biomedical application.

Keywords: Hydrothermal, morphology, nanoparticles, characterization.

PO26 Evaluation of Glycine max and Phaseolus vulgaris Methanol Extracts as Green Corrosion Inhibitors for Mild Steel Corrosion in 1 M HCl Solution via Gravimetric Method

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The application of green corrosion inhibitors has emerged as a contemporary and highly preferred strategy for mitigating mild steel corrosion during acid cleaning processes, aligning with the growing emphasis on environmental sustainability and industrial eco-friendliness in corrosion control. In this study, the corrosion inhibition performance of methanol extracts derived from *Glycine max* and *Phaseolus vulgaris* was systematically evaluated for mild steel in a 1 M HCl medium by the gravimetric method. Gravimetric experimental investigations were conducted to elucidate the effects of key influential factors, including inhibition concentration, temperature, and immersion duration, on the inhibition behavior of two plant extracts. The results demonstrated that maximum corrosion inhibition efficiencies of 94.59% and 97.65% were achieved with 1000 ppm of *Glycine max* and *Phaseolus vulgaris* methanol extracts, respectively, in a 1M HCl solution. Both plant extracts maintained effective corrosion inhibition activity for an immersion period of up to 9 hours, indicating their long-term stability under the test conditions. Gravimetric analysis, adsorption isotherm modeling, and thermodynamic parameter calculations collectively confirmed and underscored the excellent corrosion inhibition efficacy of the two extracts, providing fundamental insights into their inhibition mechanisms. Nevertheless, further verification and in-depth mechanistic investigation of the inhibition process require the employment of advanced electrochemical techniques and surface characterization methods, which will facilitate a comprehensive understanding of the interaction between the plant extracts and the mild steel surface.

Keywords: Corrosion, green inhibitor, *glycine max*, *phaseolus vulgaris*, weight loss

PO27 Promising realm for managing antimicrobial resistance against *Dam* gene of *Salmonella typhimurium* (LT2): An *In silico* approach

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The increasing prevalence of Multidrug-Resistant (MDR) pathogens has resulted in the failure of current antibiotics to effectively treat these infections. Computer-Aided Drug Discovery (CADD) has become a crucial tool in the drug discovery process recently. It has been demonstrated to be a successful method for screening lead compounds against target proteins within a short amount of time and with optimal resources. In the present study, a computational approach, CADD tools were employed to identify novel drug candidates against Salmonella enterica serovar Typhimurium LT2, targeting its essential gene, Dam. Virtual screening of various ligand libraries was conducted. From the initial library consisting of 21,000 compounds from natural products after ADME/Tox and druglikeness filters were narrowed down the number of compounds to 205 Natural Products. The final screening from molecular docking and binding energy resulted in the identification of two lead compounds, Antineoplaston A10 and Cardamonin. These compounds showed higher binding affinity with the target protein and lower binding efficiency for human hMAT1A protein compared to the reference compound S-Adenosyl methionine (SAM) and S-adenosyl homocysteine (SAH). The stability and strength of protein-ligand binding were observed through protein-ligand interactions, Density Functional Theory (DFT), analysis of frontier molecular orbitals and vibrational spectra. The results suggest that these compounds may be potential candidates for further exploration against other MDR pathogens prioritized by the World Health Organization (WHO).

Keywords: CADD, Multidrug-Resistant, *Dam*, essential gene, lead compounds

PO28 FePc Single-molecule Grafted Carbon Spheres for High ORR Catalytic Activity and Stability for Zn Air Battery

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Iron phthalocyanine (FePc) is a promising molecular precursor for oxygen reduction reaction (ORR) with Fe-N_4 active sites but its performance is limited by poor conductivity, molecular agglomeration and low stability. To overcome these challenges, we fabricated a single molecule catalyst by anchoring isolated FePc molecules directly into the lattice of elastic and porous carbon spheres. A scalable synthesis method enables the controllable preparation of this high-loading catalyst. Comprehensive characterization (TEM/XPS/XRD/Raman) confirms the uniform atomic dispersion and tweezer effect from the carbon lattice which immobilizes the Fe-N_4 sites while ensuring full exposure via open pores and strong electronic interaction. This unique architecture results in exceptional ORR performance in 0.1M KOH with superior half wave potential ($E_{1/2}$= 0.983V) and onset potential (1.098V vs RHE) compared to commercial Pt/C ($E_{1/2}$= 0.87V), the catalyst demonstrates remarkable stability, operating for over 300 hours with negligible voltage decay. This work offers a facile, scalable design method for high-performance and durable metal-air batteries.

Keywords: Iron phthalocyanine, single molecular catalyst, ORR, Zn air battery, tweezer effect

PO29 Mental Health Status and Associated Factors among Public School Teachers in Bardaghat Municipality, Nawalparasi

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Teachers often experience high mental pressure because of heavy workloads, complex responsibilities and job-related stress. This can lead to mental health problems such as depression, anxiety and stress. These problems can affect teacher's well-being, reduce their work performance and negatively influence student's learning. In Nepal, only a few studies have examined the mental health of public-school teachers while considering social, work-related and lifestyle factors. Therefore, this study aims to assess the mental health status of public-school teachers in Bardaghat Municipality and identify factors associated with these problems to support targeted interventions. A school-based cross-sectional study was conducted among all 182 permanent public school teachers in Bardaghat Municipality using complete enumeration. Data were collected through a self-administered structured questionnaire comprising validated tools: Depression Anxiety Stress Scale (DASS-21) for mental health status, Teacher's Job Satisfaction Scale, and Global Physical Activity Questionnaire (GPAQ). Descriptive statistics, chi-square tests, and logistic regression was used for analysis, with significance set at $p<0.05$. Ethical approval was obtained from Pokhara University's IRC, with informed consent from respondents. Depression, anxiety, and stress were present in 24.2%, 30.8%, and 20.3% of teachers, respectively. Teachers aged 50 years and above had higher odds of depression (aOR = 2.543, 95% CI: 1.034–6.256), and those unmarried/widowed were also more likely to be depressed (aOR = 4.087, 95% CI: 1.053–15.860). Anxiety was significantly higher among teachers with a bachelor-level education (aOR = 4.395, 95% CI: 2.057–9.394). Stress was more common among female teachers (aOR = 2.752, 95% CI: 1.135–6.671) and those with secondary level (aOR = 3.571, 95% CI: 1.249–10.210) and bachelor level education (aOR = 3.186, 95% CI: 1.151–8.816). The prevalence of depression, anxiety, and stress was found to be about one-fourth, one-third, and one-fifth of the teachers respectively. Age and marital status were significantly associated with depression. Educational level was significantly associated with anxiety. Similarly, sex and educational level were significantly associated with stress.

Keywords: Mental health, teachers, depression, anxiety, stress, Nepal

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