



**15<sup>th</sup> Annual Day of ORSN**

**13<sup>th</sup> ORSN INTERNATIONAL CONFERENCE**

(Online Mode)

**February 1-2, 2022**

**Kathmandu**

**Conference Theme**

**“Operations Research: Sustainable Development”**

**Organized by  
Operational Research Society of Nepal (ORSN)**



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## Message from President

### **Govinda Tamang, Ph.D.**

President, ORSN

Associate Professor, Tribhuvan University

Acting Director: School of Management, TU



Operational Research Society of Nepal (ORSN) has been in the journey of creating awareness regarding Operations Research and its application in Nepal since 2007. During the journey, ORSN has organized workshops, seminars, conferences, talk programs, business simulation competitions and many more. This 13<sup>th</sup> International Conference is one of the activities that ORSN undertakes on the occasion of annual day. This time the conference is being organized on the occasion of 15<sup>th</sup> annual day.

The COVID-19 pandemic has brought a lot of challenges and opportunities to every sector in the world. ORSN had been looking for organizing the physical mode of the conference. However, due to third wave of COVID-19, we were forced to announce this conference in virtual mode. We are thankful to all Keynote speakers, paper presenters who believed us for our initiatives as usual. We believe that this two days conference will add a stepping stone towards the efforts of ORSN in strengthening the operations research and its application not only in Nepal, but also to the global context.

ORSN has collaborated with other OR societies in the Asia Pacific Region and also in global context. We feel proud to be one of the members of Asian- Pacific Operational Research Societies (APORS) and member society of International Federation of Operational Research Societies (IFORS). We would like to contribute a lot in the field of operations research by collaborating with other OR societies and other institutions in the days to come.

## Message from Conference Chair

### **Sunity Shrestha Hada, Ph.D.**

Professor

Founder President, ORSN

Conference Chair, OIC-2022



It is my pleasure to chair the 13<sup>th</sup> international conference of ORSN at the auspicious occasion of its 15<sup>th</sup> annual day with a theme of “Operations Research: Sustainable Development”. We are crossing another milestone to reach our destination of networking with individual personalities in OR community and institutional association with national, regional, and global organizations related with operations research theory and applications.

During my tenure as VP to IFORS representing APORS (2019-2021) I tried my best to link the ORSN activities with regional member societies and make a significant space in the global OR community.

We are honored to have the VP to IFORS representing APORS and other officials of APORS and OR experts from various countries as the keynote speakers in this conference. The participation of significant number of technical papers adds gems to this event.

We are organizing the ORSN conferences in virtual mode that is the need of the COVID era at present. The COVID made the whole world physically apart, but virtually it made the whole world smaller with the technical digital support.

I believe that everybody involved in this event will be benefited from this conference with the contents, renew the friendship, have new networks and above all will have strong experience to take back home.

As a founder president of ORSN and the conference chair of the 13<sup>th</sup> ORSN conference I extend my warm welcome to all the guests, paper presenters and participants. I want to thank the whole organizing team, Dr. Govinda Tamang, Ms. Sunil Amatya, Dr. Bijay Pradhan, Mr. Satya Bahadur Shrestha, and all active members of the organizing committee.

**Take care and stay safe.**

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### **Links**

Link for Submission of abstract: <https://bit.ly/orsnconfabstract>

Link for Registration for the Conference: [https://bit.ly/reqd\\_conference](https://bit.ly/reqd_conference)

Link for Zoom Registration: <https://bit.ly/orsnzoom>

### **Zoom ID and Password**

Meeting ID 624 7470 2138 Passcode: ORSN (Inaugural, Keynote, Valedictory & Technical Session I, III)

Meeting ID 642 2118 1584 Passcode: ORSN (Technical Session II, IV)

Live Youtube at: [13th International conference of ORSN - YouTube](#)

## Program Schedule

<b>February 1</b>	<b>Day I Program</b>	<b>Presenters</b>
10:30 AM	Zoom opens	
11:00 -11:20	Inaugural function	MC: Dr. Bijay Lal Pradhan
<b>Keynote Session: Session Chair: Prof. Dr. Sunity Shrestha Hada</b>		<b>Facilitator: Dr. BL Pradhan</b>
11:20 - 11:50	<b>Keynote I: Proposed Operations Research “School” in Asia Pacific with Focus on Sustainability</b>	<b>Francis Miranda President, APORS President, ORSOP</b>
11:50 - 12:20	<b>Keynote II: Operating challenges facing in business continuity and public activities due to the Covid-19 pandemic</b>	<b>Prof. Dr. Alberto Lanzavecchia University of Padova, Italy</b>
12:20 - 12:50	<b>Keynote III: An exact penalty approach for solving constrained nonlinear least squares problems using a structured projected active set strategy</b>	<b>Prof. Dr. Mahdavi-Amiri Vice President, APORS</b>
12:50 - 14:30	Technical Session I & II (Parallel)	Presenters
<b>February 2</b>	<b>Day II Program</b>	
10:30 AM	Zoom opens	
<b>Keynote Session: Session Chair: Prof. Dr. Sunity Shrestha Hada</b>		<b>Facilitator: Dr. BL Pradhan</b>
11:00 - 11:30	<b>Key note IV:Mathematical Programming Models for Workforce Shift Scheduling Problems in Service Industries</b>	<b>Adibah Shuib General Secretary, APORS</b>
11:30 - 12:00	<b>Key note V: Cyberloafing: Deriving weights of its antecedents using MADM</b>	<b>Prof. Dr. Gokulnanda Patel Birla Institute of Management Technology, New Delhi, India</b>
12:00 - 12:30	<b>Keynote VI: Comparison between Business Decision Making in Municipal Solid Waste Power Plant Project and Theoretical Process</b>	<b>Dr. Kuaanan Techato Dean, Faculty of Environmental Management, Prince of Songkla University, Thailand</b>
12:30 - 14:10	Technical Session III & IV (Parallel)	Presenters
14:10 - 14:30	<b>Keynote VII: On the evaluation method in the decision simulation iBizSim software.</b>	<b>Prof. Dr. Nan Zhu Southwestern University of Finance and Economics, China</b>
14:30 - 14:45	Valedictory	MC: Dr. Bijay Lal Pradhan

## Brief profile of Keynote Speaker

### Keynote Speaker

#### **Francis Miranda, Ph.D.**

**President**, APORS

**Vice President**, Representing APORS

**President**, Operations Research Society of the Philippines

**E-mail:** franzmiranda@yahoo.com



Francis is the Asia Pacific Director for Data Science and Quality at GfK ([www.gfk.com](http://www.gfk.com)), a global analytics company, where he has worked for the past 6 years. He has 25 years' experience in operations research and data science from various companies. He started the first 4 years of his career in Coca Cola Philippines doing facilities location optimization. Then, he moved to Zuellig Pharma doing supply chain and inventory optimization, where he worked for 10 years. He spent another 4 years at Nielsen Philippines as Data Science Director doing retail measurement, media measurement and consumer panel analytics.

He has a BS degree in Industrial Engineering from De La Salle University-Manila, and a MS degree in Industrial Engineering from Purdue University. He is currently completing the Advanced Management and Leadership Program (AMLMP) at Oxford University. He is the Immediate Past President of the Association of Asia Pacific Operational Research Societies (APORS), and Immediate Past President of the Operations Research Society of the Philippines (ORSP).

He is currently the Vice President representing APORS of the International Federation of Operational Research Societies (IFORS).

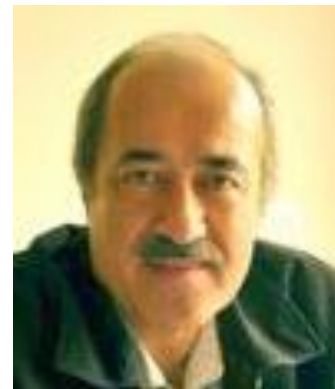
## Keynote Speaker

### **Nezam Mahdavi-Amiri, Ph.D.**

**Vice President, APORS**

Distinguished Professor,  
Sharif University of Technology,  
Faculty of Mathematical Sciences,  
Tehran, Iran

**E-mail:** [nezamm@sharif.edu](mailto:nezamm@sharif.edu)



Nezam Mahdavi-Amiri is a distinguished professor of Mathematical Sciences at Sharif University of Technology. He has been selected as Iranian national exemplary faculty member. He received his Ph.D. degree in Mathematical Sciences from Johns Hopkins University in 1981. He has been on the editorial board of several mathematical and computing journals in Iran including Bulletin of the Iranian Mathematical Society (Style-Language Editor), the Iranian Journal of Operations Research (Editor-in-Chief) and the CSI Journal of Computer Science and Engineering. He was also the Editor-in-Chief of Mathematical Thought and Culture (in Persian), a journal of Iranian Mathematical Society. He has been elected to be on the Executive Councils of the Iranian Mathematical Society, the Computer Society of Iran, and the Iranian Operations Research Society (IORS), and served as President of IORS. He is currently the representative of IORS to the International Federation of Operational Research Societies (IFORS), and has been elected as vice-president of the Association of Asia-Pacific Operational Research Societies (APORS). His research interests include computational optimization, linear Diophantine systems, matrix computations, scientific computing, and fuzzy optimization.



## Keynote Speaker

### **Adibah Shuib, Ph.D.**

#### **Associate Professor**

Faculty of Computer and Mathematical Sciences,  
Universiti Teknologi MARA

**General Secretary, APORS**

**E-mail:** [adibah@tmsk.uitm.edu.my](mailto:adibah@tmsk.uitm.edu.my)



Assoc. Prof. Ts. Dr. Adibah Shuib is the President of the Management Science/ Operations Research Society of Malaysia (MSORSRM) and she is also the Secretary of Asia Pacific Operations Research Society (APORS). She is an Associate Professor of the Centre for Mathematics Studies of the Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA (UiTM), Shah Alam, Selangor, Malaysia. She is currently the Deputy Director (Research & Education) of Malaysia Institute of Transport (MITRANS), a centre of Excellence of UiTM. She attained her BSc. (Mathematics) in 1987 and MSc. (Computational & Applied Mathematics) in 1988 from the Old Dominion University, USA. She attained her PhD (Mathematics and Statistics) from the University of Birmingham, United Kingdom in 2007. Her PhD research specialized in the area of Management Mathematics in which the title of the thesis is The Multi-level and Threshold-based Heuristics for the Vehicle Routing Problem with Time Windows. She is a Fellow of the Institute of Mathematics and its Applications (IMA), United Kingdom, abbreviated as FIMA. She is also a Professional Technologist (Ts) recognized by the Malaysia Board of Technologists (MBOT). Besides that, she is a member of the Society for Industrial and Applied Mathematics (SIAM), Life Member of MSORSRM, Malaysian Mathematical Sciences Society (PERSAMA) and Malaysia Consumer and Family Economy Association (MACFEA) and few other professional societies. She had also been the Secretary for the Confederation of Science and Technological Association of Malaysia (COSTAM) from 2015 to 2018. During her career with the Universiti Teknologi MARA (UiTM), she has held various administrative post including Head of Mathematics Department and Coordinator of Quality and External Relations of the Centre of Preparatory Education of UiTM, Deputy Dean of Research and Quality and afterwards the Deputy Dean of Academic of the Faculty of Computer and Mathematical Sciences, UiTM, and she was also the Head of Strategic Planning (Performance Monitoring) at the Centre of Strategic Planning and Information (CSPI), UiTM. She has supervised many PhD and Master students, published in journals, proceedings and books, and also had won various innovation competitions locally and at international level. Her deep research interests are in mathematical programming or optimization modeling and decision-making models involving various areas of applications such as vehicle routing problems, transport scheduling and rescheduling, workforce scheduling, machines scheduling, diet planning problems, revenue management, budget planning, portfolio investments, warehouse and cross docking management, facility location and allocation, and network optimization. Currently, she is also involved in research concerning Halal supply chain traceability systems and the vehicle routing for the e-grocery delivery.

## Keynote Speaker

### **Alberto Lanzavecchia, Ph.D.**

Associate professor, “Marco Fanno”

Department of Economics and management,  
University of Padova (Italy).

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Alberto Lanzavecchia is associate professor of Banking & Finance at the University of Padova (Italy), School of Economics and Political Sciences. Associate Professor Alberto is coordinator of the International Winter School “Microfinance in Action” in Nepal, in collaboration with Apex College, Kathmandu (Nepal). His research topics are: microfinance, impact investing, Socially Responsible Investing. He is a freelance consultant as well the public auditor (Ministry of Justice's list n. 156933)

## Keynote Speaker

### **Kuaanan Techato, Ph.D.**

**Dean**, Research and Academic Service

Faculty of Environmental Management,

Prince of Songkla University, Hadyai, Songkhla

**E-mail:** uhugua@hotmail.com

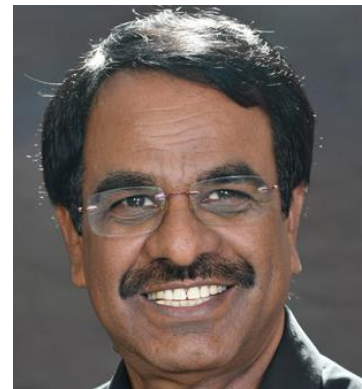


**Assoc. Prof. Dr. Kuaanan Techato** received his B.Eng. (ME) Degree from Prince of Songkla University, Thailand, in 1995, M. Eng (IE) from Chulalongkorn University, in 1999, M.Sc.(EBM) from Warwick University in 1999, and Ph.D. Degrees from Chulalongkorn University in 2008. At present, he is working as an Associate Professor at Prince of Songkla University, at Hadyai campus of Thailand. He is also serving as the Dean of the Faculty of Environmental Management, Prince of Songkla University. His research interests are renewable energy, heat-pump, power system and control. He has been a keynote speaker and an invited speaker at many international conferences. He has published many technical articles to various journals and international conferences. He is also involved with many Journals as Editor or Associate Editor and a successful organizer for many international conferences

## Keynote Speaker

### **Gokulnanda Patel, Ph.D.**

**Professor**, Operations & Decision Science  
Birla Institute of Management & Technology,  
Knowledge-Park 2, Greater Noida  
**E-mail:** [gn.patel@bimtech.ac.in](mailto:gn.patel@bimtech.ac.in)



Gokulananda Patel is a Professor in Decision Science and heading the area of Operations, and Decision Sciences having 37 years of teaching and research experience. Before joining BIMTECH, he was professor in the PG Department of Business Administration, Sambalpur University. He started his career as a Lecturer of Mathematics in the PG Department of School of Mathematical Sciences, Samabalpur University. He is a PhD in Operations Research, M.Phil. and M.Sc. in Applied Mathematics. He is also an alumnus from IIM, Ahmedabad. His interest lies in Mathematical Programming, Performance Measurement, MCDM. He has more than 100 papers published in both International and National journals of repute and has successfully guided eighteen scholars for their Ph.D so far in Management, Mathematics, Statistics, Insurance Management and Economics.

He continuously improves the courses he teaches in content as well as in pedagogy and enjoys integrating his research into his teaching.

## Keynote Speaker

### **Nan Zhu, Ph.D.**

**Professor, Management**

Southwestern University of Finance & Economics

China

**E-mail:** [zhunan@swufe.edu.cn](mailto:zhunan@swufe.edu.cn)



Nan Zhu, Ph.D, Waikato, New Zealand, 1997. Professor of Management, The Western Business School, Southwestern University of Finance and Economics, Chengdu, China. Teaching and research interests: Business competition simulation; Management Science with applications in finance and economics.

## Day-1 Technical Sessions I and II (Feb 1, 2022)

Technical Session I : Session Chair: Asso. Prof. Dr. Binod Bania    Facilitator: Dr. Bijay L. Pradhan

SN	Title	Presenter
1	Community Energy Consumption Practices and Role of Local Government in a Municipality of Arghakhanchi District of Nepal	Min Raj Gyawali
2	Exponentiated Exponential Poisson Inverse Distribution: Model, Properties and Applications	Lal Babu Sah Telee
3	Integrating Antecedents of Cyberloafing: utilizing AHP approach	Nivedita Jha
4	Making decisions from a citizen's perspective: a case study on the importance-performance analysis of smart city indicators	Amrit Dhakal
5	Effect of COVID-19 Pandemic on Healthcare Waste Management - A Systematic Review	Basant Thapa
6	Impacts of hydropower development on communities' livelihood in Nepal: A capability perspective.	Chhatra Karki
7	The wild mega grazers maintain vegetation assemblage in grassland but under threats: A case from grassland ecosystems across the globe	Dipesh Raj Pant
8	Ethnographic notes on Practice of Chhaupadi in Tanjakot Rural Municipality, Humla district.	Ganga Laxmi Awal

Technical Session II : Session Chair: Asso. Prof. Dr. Jeetendra Dangol    Facilitator: Raju Manandhar

SN	Title	Presenter
1	Renewable Energy Investment Risk	Dansi Ram Bhandari
2	Disaster Governance and its policy contextualization in Nepal	Jaya N. Acharya
3	Sustainability in Nepalese Tourism Industry	Nusrat Jahan
4	An overview of the challenges in Nepal's adventure sports tourism industry after COVID-19	Om Krishna Prasain
5	ICS as Renewable Technology and its contribution in Energy Security in Rural Nepal: a case study of Bajura District	Amir Budhathoki
6	Bank Financing for Fossil Fuel Consumption in Nepal: A Literature Survey	Basu Dev Upadhyay
7	The Impact of Quality Education on Social Transformation Reduction of Youth Alienation and Economically sustainable life in Western Nepal.	Bharat Khatri
8	Sustainable financial management in an entrepreneurial investment environment.	Chhabilal Kandel

## Day-2 Technical Sessions III & IV (Feb 2, 2022)

Technical Session III : Session Chair: Asso. Prof. Dr. Binod Bania Facilitator: Dr. Bijay L. Pradhan

SN	Title	Presenter
1	Ecological and Socio-economic Implications of Relocation of Settlements from Protected Areas in Terai, Nepal.	Lalbabu Lalkarna
2	A Review of Environmental Policies and Otter Conservation in Nepal	Paras Mani Acharya
3	Value chain analysis of Backyard Poultry in Nuwakot district of Nepal	Pratistha Joshi
4	Sustainable Measures to Mitigate the Impact of linear infrastructure Development on Wild Life Conservation Area	Pravakar Thapa
5	Planning the Climate Resilient Urban Infrastructures in Nepal: Review	Prithbi Man Thapa
6	Climate Smart Agriculture Concept; Policies, plans and Practices in Nepal	Tulsi Ram Bhusal
7	Sustainable Development: Post- COVID Relief	Hari Bahadur Khatri
8	How Nepal Can Have A Feasible Energy Policy: Review Of Nepalese Energy Policy In Comparison To SAARC Nations	Shanker Bhattarai

Technical Session IV : Session Chair: Prof. Mahananda Chalise Facilitator: Raju Manandhar

SN	Title	Presenter
1	The impact of green marketing promotion on the firm’s performance Cement industry in Nepal	Jagat Timilsina
2	Hydropower Generation: Key for Sustainable Development in Nepal	Jhank N. Shrestha
3	Impact of Micro loan for the development of Micro-Hydropower development In Nepal	Hari Prasad Joshi
4	Environmental Policies to Address Air Pollution Issues in Kathmandu Valley	Sandesh Acharya
5	Financial Sustainability of Renewable Energy Technologies with the End use promotion: A case of Nepal	Sundar Bdr. Khadka
6	The probability and challenge of Green Nanotechnology in developing nations: A Case Reality in Nepal	Medan K Gauli
7	Investment risk analysis of small hydropower for sustainable development in nepal	Sagar Adhikari
8	Smart City Project by Citizen Perspective in Connection to Spirit of Place: A Case-Based Study	Shailee Singh

## Abstract of Keynote Sessions

### Proposed Operations Research “School” in Asia Pacific with Focus on Sustainability

*Francis Miranda*

*President*

*Operations Research Society of the Philippines*

*E-mail: [franzmiranda@yahoo.com](mailto:franzmiranda@yahoo.com)*

#### Abstract

Francis will talk about the current initiative between the South-East Asia Regional Office of the World Health Organization (WHO-SEARO), the Global Outbreak Alert and Response Network (GOARN), the Association of European Operational Research Societies (EURO and ORAHS), and the Association of Asia-Pacific Operational Research Societies (APORS), with the support of the International Federation of Operational Research Societies (IFORS). Last January 10, 2022, the Winter School of Operational Research in Public Health EmergencieS (ORPHES) was started. ORPHES is taking place online from January 10 to February 25, 2022.

ORPHES seeks to develop a community of people interested in the application of OR to PHEs, connecting public health practitioners with OR professionals. The participants include a mix of public health officials, and OR experts (graduate and PhD students, and practitioners with an Operations Research background).

Using the same framework as ORPHES, a similar school called Operational Research for Sustainability (ORSUS) in the Asia Pacific region is currently being proposed by the speaker. ORSUS aims to develop a community of people interested in the application of OR to Sustainable Development, connecting interested parties and companies with OR researchers and professionals. The speakers and mentors in the ORSUS School may not only come from Asia but from the other IFORS regional groupings. Afterwards, a Special Interest Group may also be set up. This idea will still need to be approved by the IFORS Administrative Committee.

**Keywords:** public health, community, OR experts, sustainable development.



# **An exact penalty approach for solving constrained nonlinear least squares problems using a structured projected active set strategy**

*Nezam Mahdavi-Amiri*  
*Faculty of Mathematical Sciences*  
*Sharif University of Technology*  
*Tehran, Iran*

## **Abstract**

We discuss an adaptive exact penalty approach for solving constrained nonlinear least squares problems using a structured projected scheme. An active set strategy is adapted along with structured projected quadratic approximations. A combination of trust region and line search techniques is employed to speed up the global convergence. A structured projected Hessian BFGS updating scheme is used to establish a local two-step superlinear convergence rate. Comparative results of an implementation of the approach with three competitive general nonlinear programming codes on both small and large residual least squares test problems confirm the established theoretical results and show the special considerations for the projected least squares structure of the Hessian in the employed secant updates to be efficiently effective.

**Keywords:** non linear, least square, penalty approach.

# Mathematical Programming Models for Workforce Shift Scheduling

## Problems in Service Industries

*Adibah Shuib*

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<sup>2</sup>*Faculty of Computer and Mathematical Sciences,  
Universiti Teknologi MARA (UiTM), Shah Alam, Selangor, Malaysia*

*\*adibah@fskm.uitm.edu.my, adibah253@uitm.edu.my*

### Abstract

Effective personnel scheduling is vital for service organizations to remain competitive. Unlike manufacturing, where standard shifts and days off are the rule, the service industry often operates 24 hours a day, 7 days a week and encounters fluctuating demand. Workforce scheduling of service industries such as hospitals, police stations, call centers, power plants and distribution centers that operate seven days a week has received considerable attention by researchers for decades. The objective of workforce scheduling is to meet daily staffing requirements at minimum cost without violating government and labour regulations.

This paper presents the mathematical programming models and solution approaches for finding weekly or monthly schedules for employees in given skills or ranks category based on tour and cyclic scheduling approaches. In tour scheduling method, the projected workload assignment is converted into a schedule that specifies what shifts are to be staffed per day by each employee over the planning period to meet the demand requirements at minimum cost. Cyclic schedules are schedules (rosters) that are repeatable periodically provided demand per shift remains relatively constant from one planning period to the next. The first part of workforce scheduling for service industry is shift scheduling where objective of the optimization model is to determine the optimal crew size per shift and daily work assignment according to shifts for each member of the crew each day of the week. The second part is that the weekly schedule requires specification of days off of workers. The number and characteristics of working days and days off vary according to organization and type of industry in which the shift scheduling problem considers these requirements when determining the optimal workforce size. Satisfaction to shift and days-off preferences is often the priority to ensure high workers satisfaction and service quality for the organization.

**Keywords:** workforce shift scheduling, tour scheduling, cyclic scheduling, integer programming model, days-off, preferences,

## **Comparison between Business Decision Making in Municipal Solid Waste Power Plant Project and Theoretical Process**

*Kuaanan Techato*

*Faculty of Environmental Management, Prince of Songkla University, kuaanan.t@psu.ac.th*

### **Abstract**

Municipal solid waste (MSW) production grew considerably during the Covid-19 epidemic, resulting in a slew of environmental effects. Additionally, container consumption emphasized the pandemic problem. To preserve MSW, upstream and downstream policies must be addressed. A few simple procedures may contribute to proper waste management. To begin, awareness on reuse, recycling, and disposal is necessary at the manufacturer, supplier, and consumer levels. Second, another waste management strategy is door-to-door rubbish collection, and finally, waste treatment and disposal. In the practical field, each mechanism has a problem. The result or problem becomes a pain point, and the budget from either government or other sources is brought to solve the problem. The implementation is, however, misleading or proceeding in the wrong sequence. The site selection by multi criteria decision making will help avoid the protest from the community regarding physical problems. The strategic environmental impact assessment is a good tool at the beginning to get involvement from people in the area. The solution for the community can be vast, starting from only management, buying some treatment technology, or ultimate disposal technology like a waste to energy by the incinerator. The investors, however, see some processes as the cost of the project. The exemption or skipping of the process may make the project run to failure.

**Keywords:** waste management, environment impact, community, incinerator, project.

## **Cyberloafing: Deriving weights of its antecedents using MADM**

*Gokulananda Patel*

*Birla Institute of Management Technology*

*New Delhi, India*

*Email: gn.patel@bimtech.ac.in*

### **Abstract**

In advent of internet services, possession and usage of data-enabled smart phones added the issue of cyberloafing behaviour raising new ethical concerns. Weights of three antecedents (organizational, interpersonal and individual) with their sub-criteria are determined using AHP to know the significant roles of these to workplace deviance.

**Keywords:** Cyberloafing, Workplace Deviance, AHP

## **On the evaluation method in the decision simulation iBizSim Software**

*Nan Zhu<sup>1</sup>, Govinda Tamang, Wasi*

*Western Business School, Southwestern University of Finance and Economics, China*

### **Abstract**

iBizSim is decision simulation software that is mainly used in teaching for students who are interested in business administration at higher educational institutions. Participants are consisted of some virtual companies, compete each other in a simulated market environment. In this talk, a data envelopment analysis (DEA) is used for evaluating the performance of each company. The DEA method is discussed and compared with the evaluation method that has been designed in iBizSim software.

**Keywords:** iBizSim software, data envelopment analysis, business administration

## Abstract of Technical Sessions

### ICS as Renewable Technology and its contribution in Energy Security in Rural Nepal: a case study of Bajura District

*Amir Budhathoki\**

*Prince of Songkla University*

\* Correspondence: [amir.budhathoki33@gmail.com](mailto:amir.budhathoki33@gmail.com)

#### Abstract

Improved Cooking Stoves have been helpful in renewable technology in developing countries to save energy as well as reducing household air pollution. This technology has helped to save time that is required to collect fuel woods, surplus time is used in social engagement and agro activities that's helping to increase the income to some extent. This study applied sequential explanatory research methodology and cross sectional approach. First quantitative survey was conducted in the field (Budhinanda and Badimalika Municipalities of Bajura District) through enumerators then based on the result of quantitative survey Focus Group Discussion were conducted with 3 Forest User Groups out of 14 forest user's group in those municipalities and one in depth interview with Municipality Chairperson in Badimalika Municipality. This study t was conducted among 446 households (6%) out of 6898 total households in which 83 households were found using ICS. This study has found that ICS has really helped to save the consumption of fuel woods by 50 percent. Users of ICS have reported that comparatively cooking time is less than in traditional cooking stoves. 55 households have reported that ICS requires only 5 carts (bhari) of fuel woods whereas traditional stoves had required 10 carts before installing ICS. Therefore ICS is playing a vital role in energy security in Nepal.

**Keywords:** ICS, Renewable Technology, Energy Security

## **Making decisions from a citizen's perspective: a case study on the importance-performance analysis of smart city indicators**

*Amrit Dhakal\**

*Prince of Songkla University*

*\*Correspondence: [amrit\\_su@hotmail.com](mailto:amrit_su@hotmail.com)*

### **Abstract**

The smart city viewpoint evolved to ensure the citizen's quality of life. As a result, this study examined the most significant smart city qualities from the perspective of citizens. An online questionnaire was used to find information from a sample of 385 Kathmandu city residents. The Importance Performance Analysis (IPA) matrix was used to verify the happiness of city residents with 32 variables dispersed across 12 dimensions of a smart city. The findings revealed gaps in resident satisfaction with the objects which designated the smart city, resulting in sixteen critical issues for decision-makers to prioritize activities. We also discovered eight high-priority factors and eight low-priority factors. These findings point to the public sector in the right way for improving its rating and citizen happiness. It verifies the theoretical assumptions about the value of the items used to evaluate the smart city process.

**Keywords:** citizen participation, importance-performance analysis, IPA, Nepal, smart city

## **Effect of COVID-19 Pandemic on Healthcare Waste Management - A Systematic Review**

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### **Abstract**

Healthcare waste management is crucial to health outcomes, especially during any public health emergencies including the COVID-19 pandemic. Globally, there is a huge concern about the adverse effects of hazardous healthcare waste produced during the COVID-19 pandemic and their possible contamination risks to the health and environment. Proper segregation of COVID-19 wastes from general healthcare waste and regular disinfection of COVID-19 generated at the healthcare settings reduces such possible contamination risks to the health and environment. This review paper analyses the effect of the COVID-19 pandemic on healthcare waste generation, composition, and management patterns including implications to the health and environment particularly in developing economies. We collect the information from the recent original articles published in 2020 and 2021 through a vigorous internet search using the keywords “COVID-19”, “Pandemic”, “Healthcare Waste”, and “Hazardous Waste”. The results clearly indicate that an increase in the ratio of hazardous waste in the healthcare waste mass due to intensification of single-use plastic products including panic buying during the COVID-19 pandemic which also affects the safe handling practices leading to potential contamination risks to the health and environment. It also highlights the need for proper management and disposal of the amounts of healthcare waste generated to minimize the possible threats to the health and environment, especially during the pandemic. We conclude that considerable actions are required to streamline plans and management measures to reduce potential risks from the increased amount of hazardous waste and escalate the spread of COVID-19, especially in developing economies.

**Keywords:** COVID-19, Pandemic, Healthcare waste, hazardous waste



## **Bank Financing for Fossil Fuel Consumption in Nepal: A Literature Survey**

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### **Abstract**

Environmental degradation has created serious concerns in recent years, and attracted the attention of local and global academicians, practitioners, and policy makers. Bank financing is an important element of financial development and it results in both positive and negative outcomes from the viewpoint of energy consumption. The main aim of this paper is to search bank financing related literature and provide insights into how the financing used towards the use of fossil fuels. This paper is a theme-based normal literature survey paper that mainly uses published articles in the renowned database. Based on the survey, it reveals that using fossil fuel through bank financing has a negative effect on environmental quality despite the development odyssey while others say that it has a positive effect on income. It is anticipated that an in-depth study based on the bank financing nexus fossil fuels and the measurement approaches that have been used in other research will be developed and conducted from the Nepalese perspective as future work.

**Keywords:** Bank financing, fossil fuel consumption, environmental degradation, Nepal.

## **The Impact of Quality Education on Social Transformation : Reduction of youth Alienation and Economically sustainable life in Western Nepal.**

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### **Abstract**

This article depicts the reality of youths' problem in western development Nepal .The lack of quality education ,unemployment problem and alienation of youths have been the burning problem of western Nepal.Spending the slavery life and appointing in the foreign soldiers is the historical train of the western Nepal . They do not know the importance of nation and the nationality .It is the obligation of them due to the poverty .They are being killed day by day in the foreign land but never to be martyrs there because they fight for the freedom of other the people of overseas .They have to sell their powerful muscles for little money in gulf Countries . There is nobody to support their parents at the time of old age. The women in the western Nepal have to run their family in the absence of male . Mainly the life of women is very difficult and they are unsafe .Due to the quality education and good information there is the starvation in the village .Because of the lack of vocational and technical education the youth in the village are jobless and obliged to leave the motherland in early age .The do not complete the higher education and go gulf country .The main aim of this article paper is to provide the quality education using renewable energy and to establish the sustainable development in the western Nepal .Another main aim of this article is to make the youth economically sustainable and reduce the poverty rate in the mountain and hilly reasons . To complete the study the qualitative and mixed method will be used .Survey method ,field visit ,interview and secondary sources of study will be the means of study. The study area will be the mountain and hilly areas and the people there will be the focus group of my research articles.

**Keywords:** Quality Education ,Social Transformation, Reduction, Alienation, Sustainable Life.

## **Sustainable financial management in an entrepreneurial investment environment.**

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### **Abstract**

Financial management is the process of collecting funds from different funding sources and investment into highly potential profitability investment zones. Financial management is a crucial part of any kind of business either manufacturing or service related venture. Efficient financial management is considered the critical component of business economic growth and development. Entrepreneurs in the contemporary competitive business environment need to focus their ideas on sustainable business practices through good financial management. Financial management in entrepreneurship entails planning, organizing, controlling, and directing all financial activities, such as the utilization of funds and procurement of funds of the enterprise in a way that supports the growth of a business (Juneja, n.d.). Financial decisions of organizations are based on corporate sustainability and are related to the measurement and mitigation of sustainability risks (Alkaabi & Nobanee, 2019). Exploration and discussion of the role of financial management in promoting sustainable business practices and development and how sustainability impacts the firm's performance will shed light on the integral importance of effective financial management in a business. The discussion will focus on sustainable capital budgeting, entrepreneurship and sustainable financial management, and the mitigation of sustainability risks in organizations.

**Keywords:** financial management, sustainability, investment decision, Nepal, financial statement

## **Impacts of hydropower development on communities' livelihood in Nepal: A capability perspective.**

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### **Abstract**

Many developing and the least developed countries are facing energy crisis although they have high potential for energy generation. The same philosophy is also applied in Nepal. In case of Nepal there is high potential for energy degeneration but it is believed that due to geographical difficulties, lack of capital and skilled manpower Nepal is not able to generate sufficient amounts of energy demanded within the country. Rural electrification is vital for the development of the nation from a macroeconomics point of view. The uneven distribution of accessibility of hydroelectricity is also one of the problems of improving the living standard of countries. Many studies have shown that there is significant impact of rural electrification and economic, social and cultural, natural assets of rural people. Empirical study found that there is significant improvement in the health of women, access to education and economic activities of rural people. The paper concentrated on the impact of hydropower on the livelihood of rural people on the basis of reviewing the research papers which examined the capability approach.

**Keywords:** Hydropower, Sustainable Development, Rural Livelihood, Capability

## Renewable Energy Investment Risk

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### Abstract

The aim of this paper is to identify risks associated with renewable energy such as hydropower, biomass, solar and wind energy investments after systematically reviewing the literature in the past 12 years. In this study determinants of risks include the political system of the nation, ideology of the government, resources, technology change and pricing policy. Systematic literature review method is applied in this study. This paper is reviewed by studying the year of publication, types of database, types of statistical techniques, citation analysis and types of research. The study is based on 35 selected articles published in peer review journals from 2010 to 2021. Most of the literature evidence showed that the political system of a country, ideology of the government and resources risks become relatively more important in renewable energy investment. While technology change and price risks have become relatively less important in renewable energy investment. Recommendations to policy makers and other interest groups that are more concerned towards the political system, ideology of the government and resources risk to raise investment in the renewable energy sector. This paper will be helpful to researchers, academicians and those working in the area of investment risk.

**Keywords:** Renewable Energy, Investment, Risks, Systematic Review.

## The wild mega grazers maintain vegetation assemblage in grassland but under threats: A case from grassland ecosystems across the globe

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### Abstract

Grasslands cover a major part of the terrestrial world is considered to be maintained by the mega wild grazers but over grazing also results in the degradation of grassland habitat while they are also under threats due to anthropogenic activities like cutting of grass and trees, entering of livestock to graze in the protected grassland causing genetic erosion to wild mega grazers and natural hazards such as floods, climate change, and grassland fire. The foraging preferences of mega wild herbivores such as wild water buffaloes in Koshi Tappu Wildlife Reserve, Nepal is seen to be dominated by various tall grasses like *Saccharum spontaneum* followed by *Imperata cylindrica* and the presence of other wide variety of grasses such as *Cynodon dactylon*, *Typha elephantine*, *Arundinella species*, and *Dichanthium annulatum* in the tropical grassland. The grassland vegetation composition such as of species diversity, species richness, species composition and abundance may have assisted favorable habitat for wild grazers as their habitat in grassland ecosystem. Besides, the tall and small forage grass patches including Khair-Sisoo forests together with deciduous mixed riverine forests could have indicated favorable habitat for large herbivores as their habitat too. Therefore, the grassland ecosystem is considered to be the critical habitat for survival of mega herbivores unless proper grassland management is done due to various undergoing threats such as recurring floods, intrusion of invasive plant species, genetic erosion, climate change, reduction in land coverage, and illegal cutting of grass. The habitat preferences and the grassland management by the mega herbivores could be understood only after knowing the physical carrying capacity and the types of grassland vegetation composition as the preferable foraging food plants in the grassland ecosystem as well as grassland management issues and challenges.

**Keywords:** Grassland vegetation, mega herbivores, threats, grassland management

## **Ethnographic notes on Practice of Chhaupadi in Tanjakot Rural Municipality, Humla district.**

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### **Abstract**

*Chhaupadi* system is one of the cultural traditions especially predominantly practiced in mid and far west Nepal, in which women and girls are forbidden to touch anything and have to live in a cowshed during menstruation. In this research paper it is mentioned about the various dimensions of *Chhaupadi*; social, cultural, religious, health and hygiene but there is a wide gap in the research resources that inter relationship and reciprocal relationship between *Chhaupadi* and ecology especially the environmental factors. So I would like to study the *Chhaupadi* system with symbolic or interpretative perspective blending the perspective of cultural ecology to explore the previous research in such cultural traditions or taboo in their own symbolic orientation associated with the environmental understanding and to analyze the overall aspects of *Chhaupadi* in Humla using ethnographic description. The research methods applied to generate data were observation, interview and ethnographic field survey or study in Tanjakot Rural Municipality of Humla district. It is found from the study that, practice of *Chhaupadi* is not only to follow or obey the cultural-religious rules and regulation that is enforced by the Hindu cultural customs and taboos, but it is found that from the study by using Geertz's thick description blending with the various ecological theoretical paradigm that practice of *Chhaupadi* is to cope with environment by isolation from the home and enjoying freedom from the patriarchy for few days i.e. 4 to 6 days.

**Keywords:** Menstruation, Intra- Gender Discrimination, Chhaupadi practice, Humla district, Women, Security.

## Sustainable Development: Post- COVID Relief

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### Abstract

Sustainable development is necessary for the betterment of the people who are extremely in mental pressure because of pandemic like COVID-19. People are in traumatic situation and still confuse about the upcoming situation and its bitter consequences. The situation now is out of control and people who are under the line of poverty are much in difficult situation where they have no alternatives to combat with this pandemic. In such problematic situation government should understand and analyses how to handle this critical problem in a best way. Their economic development as well as mental health should be study carefully and go accordingly. For that economic development of poor and needy people in its operational area through education, training and capacity building is necessary. Government should strongly have motivated in building strong relationship and partnership with donor and like-minded individuals and also with helping hands. Give much priority on social and economic development to socially and economically disadvantages people. We can organize training for farmers, give maximum loan as well as holistic development is must. So sustainable developments help people and the society to move towards prosperity and economically sound country. In the context of Nepal vision and planning should be prepare strategically to cope with this destructive pandemic. Here both qualitative and quantitative study will be done so as to find the present scenario of post-COVID situation.

**Keywords:** Sustainable development, post-COVID ,relief, pandemic, social economic problems, traumatic feeling



## **Impact of Micro loan for the development of Micro-Hydropower development In Nepal**

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### **Abstract**

Hydropower is the only inner supply of strength in Nepal. Climate change provides dangers to the worldwide economic system and the property of buyers worldwide, however efforts to address weather change can also additionally create possibilities for buyers to beautify the overall performance in their portfolios through funding in easy power solutions. This paper analyses the impact of micro loans provided by Commercial banks for the development of micro- hydropower in Nepal. For project finance the right allocation of dangers among the shareholder is essential to make the tasks bankable. Findings from this have a look at imply no hazard ought to be left out and relative significance of dangers is crucial in allocating dangers amongst stakeholders. For the analysis of data secondary data from commercial banks are used. The main goal of this paper is knowing the impact of bank loan for the development of micro-hydropower in Nepal.

**Keywords:** Micro loan, Micro-Hydropower Development

## **The impact of green marketing promotion on the firm’s performance Cement industry in Nepal**

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### **Abstract**

Green marketing is the process of promoting products or services based on their environmental benefits. These products or services may be environmentally friendly in them or produced in an environmentally friendly way. The aim of this study has measured the significance of green marketing promotion on the firm’s performance. This study has been carried out to examine the impact of green marketing promotion on financial performance in the cement industry in Nepal. The variables taken into consideration are green brand awareness and green advertisement. A total of 400 respondents’ opinions were collected out of which 406 were found usable. Correlation and multiple regressions have been used to test the hypotheses and to analyze the data. Green brand awareness turned out to have a significant impact on financial performance. In contrast, green advertisement was found to have an insignificant impact on financial performance in the cement industry in Nepal. This study will contribute to the literature in a number of ways as no such study has been carried out in Nepalese context. This study will also help marketers and managers to get an insight of the impact of green marketing on financial performance which has been inconclusive for a longer period of time. This could help them to improve their companies financially by including strategies related to green marketing and promotional activities in Nepal.

**Keywords:** Green Marketing, Firm Promotion, Cement Factory, Nepal

## **Disaster Governance and its policy contextualization in Nepal**

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### **Abstract**

Disaster governance activities and challenges are designed by different forces like; government systems, political and socio-economic systems, social patterns, globalization, world-system, social situations, and socio-demographic trends. Disaster Governance and management is a multidimensional concept, which shows common actions and efforts of governance management and its disparity across the risks. Disaster governance is nested in and influenced by overarching social governance systems which are integrated and articulated in reaction to specific large-scale disaster events. To respond to disasters, as the government tiers formed on the basis of the constitution of Nepal, different agencies are formed from the centre to the local level governments including autonomous authorities. But, actions of multi-institution and relation between them are not well demarcated. Disaster governance is considered different from other governance activities due to its urgency, actions, and chain of command. It is said that Nepal is always at risk of all kinds of natural and manmade disasters. It demands prompt response and actions. The governance system is expected to be effective but the multi and polycentric management system may have a governance trap. Government will not be able to make the desired governance results without its governability. Studying a governance system through a systematic research method with in-depth study and perception mapping of stakeholders will take out a picture of disaster governance and all kinds of governance affairs.

**Keywords:** Disaster governance, disaster management, governance trap, governability

## Hydropower Generation: Key for Sustainable Development in Nepal

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### Abstract

Water resource endowment provides ample opportunity for hydropower generation in Nepal. Hydropower, the key for sustainable energy in the country that triggers the development of other sectors. Despite enormous potential - over 42,000 MW commercial production of hydroelectricity, the country is moving at a sluggish pace. The review explores the policy provisions, current status and investment needs to harness fully the hydroelectricity generation potential. This paper is based on the review of the literature and secondary data sources on hydropower development, energy needs for sustainable development, policy environment, potential, and privatization options. Opportunities for private and foreign investment for a large-scale hydropower generation to meet ever increasing domestic demand and export. Moreover, hydropower development has multifaceted effects and plays a vital role in socio-economic development through the development of agriculture, health, education, tourism, mining, and industries. Use of hydroelectricity helps conserve the environment, reduces biofuel use for cooking-heating and petroleum use in transportation and industries. Exporting hydroelectricity to the neighboring energy-hungry countries (i.e., India and Bangladesh) generates revenue, reduces the trade deficit, and leverages development financing. There is a need to study further on the energy market, assess potentials and opportunities associated with hydropower generation to inform investors and attract private investment.

**Keywords:** Hydropower generation, private investment, conservation, sustainable development

## **Ecological and Socio-economic Implications of Relocation of Settlements from Protected Areas in Terai, Nepal.**

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### **Abstract**

Part of some protected areas in Nepal was extended by relocating people from their original habitation with certain compensations. The displacement of people to a new place from the previous dwelling has forced people to lose, partly or in a whole, ethnic and ancestral property without any future enhancement plans. Studies have reflected that relocation puts ecological and socio-economic pressure to the livelihood of rural households. Little is known about this issue. In this context, this study aims to determine the socio-economic and ecological implications of relocations of people from the protected areas of the Terai region of Nepal. For the study; systematic review approach was adopted using the keywords: protected areas, relocation and ecological implications, for assessing and understanding practices of relocation at the global and national levels. Further, the search was directed with PRISMA flow chart to analyze the relevant articles. Most of the studies were found discussing the consequences of relocation and the appropriate ways to mitigate the negativities. Some studies showed that relocation interventions were carried out without sufficient consultation and discussion with local people. Most of the studies reviewed were based on discoursing social spectra and socio-economical status of people after relocation. Hence, more empirical studies need to be conducted for assessing the ecological impacts of relocation inside and outside protected areas. Sustainable management of protected areas can only be achieved by harmonizing protected area management goals with aspirations of people who will be relocated from the protected areas.

**Keywords:** Ecological Implications, Protected Areas, Relocation, Socio-economic Impacts, Terai

## Exponentiated Exponential Poisson Inverse Distribution: Model, Properties and Applications

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### Abstract

In this paper we have introduced a new extension of the exponential distribution named “Exponentiated Exponential Poisson Inverse (IEEP) Distributions with theory and Applications”. The distribution is based on lifetime issues containing three parameters. Likelihood method is used to estimate the parameters of the distribution. Explicit expressions for reliability/survival function, the hazard rate function, reversed hazard rate, the quantile function and mode are introduced. Maximum Likelihood estimates as well as asymptotic confidence intervals are obtained using theory of the Maximum likelihood. For illustration and application, a real data set is analyzed and compared to some competing distributions. It is observed that the proposed model fits the data well and is more flexible as compared to some other models. We have used R programming and analytical methods for data analysis & summaries.

**Keywords:** Exponentiated exponential poisson inverse, Exponential distribution, Maximum Likelihood estimation, quantile, hazard rate.

## **The probability and challenge of Green Nanotechnology in developing nations: A Case Reality in Nepal**

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### **Abstract**

The potential performance of Nanotechnology is really significant and better match the expectations of people of developing countries in poverty reduction. The diligences of Nanotechnology in developing nations need to focus on clean water and energy for facilitating deep-rooted changes in the lifestyles of target populations in emerging nations. Considering two major focus of developing nations in human health and clean environment, green nanotechnology may appear as a cornerstone for sustainable growth. In present status quo the ground reality is that only a change in human values and behavior can proceed towards to true sustainability however, Green Nanotechnology is a powerful step in the right direction to open generous possibility. Green nanotechnology consist of sympathetic efforts targeted at developing meaningful and reasonable procedures and practices for generating products and their associated production processes in a mellow mode. The targeted aim is an alert for curtail of risks associated with the products of nanoscience.

Developing Country like Nepal can be benefited with nanotechnology all the way through either direct or indirect environmental applications. The best use of direct environmental applications in medication of threatening waste sites with nanomaterials, or treatment of wastewater and drinking water with nanomaterials however indirect environmental applications can be used in energy associated with either lighter nanocomposite materials in transport vehicles or reduced waste from smaller products. In present context, treatment of drinking water in urban areas and alternative solution for energy associated issues are in national priorities of Nepal however the challenges are creating awareness about green nanotechnology at community level, cost effectiveness and find legal compliance. The paper also discuss the opportunities and challenges for green technology for agriculture, green technology for food & processing. We cannot deny the fact that economic sustainability is only possible through agriculture revolution. At the same time, we have to accept a nasty ground reality of our grief with food adulterations.

**Keywords:** Green Nanotechnology, Economic Sustainability, Nanomaterials, Environmental Application

## **Community Energy Consumption Practices and Role of Local Government in a Municipality of Arghakhanchi District of Nepal**

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### **Abstract**

The energy (electricity) consumption at individual level in the developed countries in a day was equal to 36 days in pre-developing countries. Developed countries are highly sensitive in terms of using new technologies that need electricity/energy. Local governments have provision of subsidies targeting the poor and marginalized people. Advancing better health is possible with clean energy as an efficient source. The paper is based on a qualitative cross-sectional study conducted in a rural municipality of Arghakhanchi district in Lumbini Province of Nepal by using in-depth interview and observation for use, patterns and outcomes of the energy consumption. The qualitative data collection was conducted with some key informants and household representatives and local level representatives using semi-structured guidelines. The qualitative data has been analyzed by using a content analysis method. The household energy consumption patterns, its effect on health and livelihood was analyzed based on the interaction with household heads and key informants to assess the level of satisfaction and expected support from the local government. Almost all the participants are using the firewood and LP gas for the cooking and electricity for the lighting purpose. They have some expectation from the local government in providing the subsidy and regular follow up and monitoring of the support. Most of the respondents have been found satisfactory with their current use of energy at household level that has a positive impact on their health.

**Keywords:** household, household energy consumption, local level government, community



## **Integrating Antecedents of Cyberloafing: utilizing AHP approach**

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### **Abstract**

The use of the internet at the workplace for personal purpose (facebook, whatsapp, personal emails, etc.) is known as cyberloafing. The aim of this study is to propose a conceptual framework representing all the antecedents or predictors of cyberloafing and to rank these antecedents according to their impact on cyberloafing. A systematic literature review is conducted for identifying the antecedents of cyberloafing. Analytical hierarchy process (AHP) has been used to rank these antecedents. For AHP, data are collected from experts from different Indian organizations. This study finds three main categories for antecedents of cyberloadfing, namely, organizational, job-related, and individual antecedents. The findings of this study shows that job-related antecedents have the most significant impact on cyberloafing which is followed by individual and organizational level antecedents. Implications for both practical as well as theoretical implications have been discussed.

**Keywords:** Cyberloafing, Analytical hierarchy process, AHP

## Sustainability in Nepalese Tourism Industry

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### Abstract

Ecotourism, a burning issue and is a concern of Nepal. Nepal has attempted it in the industry for sustainability. UN Sustainable Development Goals focuses on sustained, inclusive and sustainable economic growth. The goal 12 focuses on sustainable consumption and production and specifically calls out a role for Travel & Tourism. In Nepalese perspective, increased graph of tourist arrival indicates that it is the right time to implement the principles of sustainability in the industry. Nepal Tourism Policy 2009, priorities tourism industry as an important tool for its socio-economic development. Direction of the policy is quality improvement, foreign reserve collection and creating employment opportunities to improve the living standard of Nepalese people. Effects of Covid-19 on Tourism Industry. Proper use of sustainable tourism principles in Nepalese tourism industry will be very beneficial for its sustainability. Sustainable tourism has been priorities by Nepal government since long and tried to implement its three major aspects but the outcome is not satisfactory. For its sustainability much more has to be done in coming days.

**Keywords:** Sustainable Tourism, Eco-Tourism, Tourism development.

## **An overview of the challenges in Nepal's adventure sports tourism industry**

### **(ASTI) after COVID-19**

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### **Abstract**

The research study emphasizes on the impact of COVID-19 on the Adventure Sports Tourism Industry in Nepal, as well as the challenges that must be overcome in the path of retrieval and to bring to elegant lessons experienced from COVID-19. Nepal is not far from the way the world has been affected by the dreaded epidemic known as novel corona-virus (COVID-19), which is sweeping the globe. The purpose of this study is to identify the challenges in the sports tourism industry and to make recommendations for the development of evidence-based policy and strategies for the further development of the adventure sports tourism industry in Nepal. This article is based on secondary data obtained from the ministry of tourism (MoT) of Nepal and other reliable web sources. The study focuses on the main issues addressed in the adventure sports tourism industry, which contributes significantly to Nepal's GDP (Gross Domestic Product). The conclusion is that the enormously promising adventure sports tourism industry (ASTI) has been overwhelmed by this epidemic.

**Keywords:** adventure sports, GDP, Nepal, pandemic, tourism industry

## **A Review of Environmental Policies and Otter Conservation in Nepal**

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### **Abstract**

Otter is one of the indicator species for assessing ecosystem integrity. Nepal has several policies and legal provisions for species conservation. However, there is no specific provision for otters in Nepal. Thus, this study aims to identify the legal provisions established in Nepal for riverine animals including otters. The study analyzed legal documents and retrieved publications describing the environmental policies that influence the conservation of riverine indicator species. The review suggests that the developmental projects are not following the provisions of environmental impact study during project formulation, implementation and monitoring. The policies are not reflective with the revisions of policies. Although Policies emphasize the conservation, restoration and effective management of wetlands for biodiversity and environment conservation. However, sustainable wise use and governance in wetland management has not been addressed on how to achieve the long-term conservation of key indicator species of river basins of Nepal. Minimal effective implementation, lack of unified wetland acts and regulation and lack of coordination among related inter agencies still exist as major gaps in otter conservation.

**Keywords:** Otters, Policies, Conservation, Nepal

## Value chain analysis of Backyard Poultry in Nuwakot district of Nepal

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### Abstract

Backyard poultry production can significantly improve the livelihood and nutrition of rural farmers. Despite the tremendous opportunity it represents, its potential has not been fully developed due to lack of prioritization. The objectives of the study were to 1) highlight the economic significance of backyard poultry production, and 2) prioritize the major constraints and opportunities in backyard poultry. Primary and secondary data were collected from 50 household surveys, 5 focus group discussions (FGDs), and 50 key informant interviews (KIIs) with farmers, from different actors and enablers as well as government and non-government publications. Data analysis was done using SPSS. Gross margins were calculated and a logit regression model was used to identify factors influencing farmer's decisions to rear backyard poultry. This study found that 72% of the farmers surveyed rear backyard poultry. The sources of chicks were nearby vendors and local community. Products were sold mainly to local buyers and collectors. The major constraints for backyard poultry production are an unstable market and lack of basic technical knowledge, which causes farmers to stick to traditional practices. The demand for backyard poultry is high, which could potentially provide a substantial and sustainable business opportunity for rural poor. However, the skills and capital required to raise backyard poultry are insufficient. In conclusion, consumption of backyard poultry products can be significantly improved by conducting awareness activities via various means and forums. Information generated via this study is helpful for farmers, traders, service providers, investors, development planners and policy makers, as it can ultimately contribute to increased production and consumption of backyard poultry. Approaches to improve research to extension linkages that will enhance backyard poultry production should be investigated. This should include farmer and extension worker-led, on-farm research and extension programs, short courses and field days practiced in a group setting as innovative approaches to bridge the research to extension gaps.

**Keywords:** Value chain, market, backyard poultry, rural farmers, livelihood, nutrition, extension

## **Sustainable Measures to Mitigate the Impact of linear infrastructure Development on Wild Life Conservation Area**

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### **Abstract**

Infrastructure development, which is one of the largest uses of energy and resources, threatens much of Nepal's great natural heritage. Over the course of an infrastructure's life cycle, material consumption and waste creation combine to cause environmental issues such as loss of agricultural/forest land and unsustainable extraction of construction resources. Linear infrastructures (LI) is crucial in boosting the country's economic growth, however, it brings with it a slew of environmental concerns. LI pose more complicated and potentially more severe environmental problems due of their vast global reach. The ongoing and planned expansion of linear infrastructure would further fragment key ecosystems, affect biodiversity, increase wildlife mortality, reduce carbon sinks, and increase emissions if sufficient safeguards are not in place. Increased human pressure from trade, tourism, and hunting, decreased animal health and reproduction owing to dust exposure, increased development, pollution, rubbish, and direct mortality caused by fences and automobiles are all concerns that are been generated. Principles of sustainable development must be integrated across the whole life-cycle of LI projects in response to the continued rise in resource consumption and the resulting deterioration of the physical and biotic environment. This article examines the environmental dangers posed by LI projects, both direct and indirect, and proposes mitigation techniques and regulations to mitigate them.

**Keywords:** Linear Infrastructure, mitigation, conservation, environment, sustainable measures

## **Planning the Climate Resilient Urban Infrastructures in Nepal: Review**

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### **Abstract**

Nepal is one of the fastest urbanizing countries in the world, with an urbanization growth rate of 5.3% for the period from 1981 to 2011. The number of municipalities has jumped to 293 from 58 from 2011 to 2017 with an increase of municipal population to 62.2 percent. Extremes of climate have been identified as the major factors that trigger natural disasters, such as floods, landslides, droughts, which consequently cause life and property loss, and deteriorate socioeconomic development. It is necessary to plan and design climate resilient infrastructure before confirming the investment in the infrastructure sector. This paper aims to identify the measures to be considered while planning and designing the climate resilient urban infrastructures in Nepalese context. Previous studies and government policies on infrastructure planning have been reviewed considering climate resilience. Located in a safe zone, special design consideration with changing material composition to resist high temperatures, floods, heat and cold waves or using permeable paving surfaces to reduce run-off during heavy rainfalls is considered as structural adaptation. The management adaptation measures cover changing the timing of maintenance to account for changing patterns of energy demand and supply, investment in early warning systems or purchasing insurance to address financial consequences of climate variability.

**Keywords:** Climate resilient, infrastructure, planning, flood, Nepal

## **Investment risk analysis of small hydropower for sustainable development in nepal**

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### **Abstract**

Hydropower is a long-term energy source that is generated solely by converting the energy stored in water. The energy produced by water is known as hydropower. This section briefly describes the history of hydropower, its investment in hydropower, and the risk analysis behind hydropower. This paper studies policy related to the current state of hydropower and attempts to identify key challenges, risk analysis of investment in the hydro sector, and development opportunities. Risk factors have been identified through risk factor analysis. As a result, there have been cost overruns and negative effects on the social and biological environment as a result of the development of hydropower. This work adds to the body of knowledge on the examination of risk variables in hydropower project costs.

In the current energy landscape, producing the standard number of energy in a sustainable manner is a huge difficulty. The rapid depletion of fossil fuels, and environmental consequences, drive us to look into renewable energy sources in order to achieve long-term sustainability. Small hydropower is one of Nepal's most important sources of sustainable water and energy development, out of all renewable energy sources. Nepal's topography encourages the establishment of small hydropower facilities to boost output. Small hydropower development is also necessary for the efficient use of limited water resources. Investment risk analysis in Nepal's small hydropower potential has been added into this research study.

**Keywords:** Small Hydropower, Biological Environment, Investment Decision, Sustainable Water Energy



## **Environmental Policies to Address Air Pollution Issues in Kathmandu Valley**

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### **Abstract**

When the air contaminants thus deviate from its natural quality, it is referred to as air pollution. Air pollution can be caused due to indoor (household) and outdoor (ambient) conditions. Kathmandu is the capital of Nepal; the most densely populated city and hence the most polluted to say with great shame. No doubt that development leads to destruction. Migration of people from rural to urban in search of opportunities resulting in over population, unmanaged settlement, deforestation, pollution, etc. Likewise, industrialization, infrastructure development, and urbanization also result in air pollution. The severe consequence of air pollution on human health is yet another important aspect that has caused the policy makers to address this issue on an emergency basis. The government and the Kathmandu metropolis have been collectively preparing strategies for the same. Various awareness programs, constitutional provisions, action plans including the Clean Air Strategy, low tax on electric vehicles, are some to mention. Air pollution not just affects the respiratory, circulatory and cardiovascular system but causes preterm births, infertility, miscarriage and premature deaths, too. Organized development projects, effective implementation of policies, proper management of industrial, hospital and agricultural waste, proper sewage management and such can be adopted for a clean and healthy environment to live in for the citizens as assured by the constitution of Nepal.

**Keywords:** Climate change, Air pollution, Policy, BC Emission, Action plan, Health risk

## Smart City Project by Citizen Perspective in Connection to Spirit of Place: A Case-Based Study

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### Abstract

The author studied development projects from the perspective of local citizens to explore important outcomes of the project in connection to the spirit of place for achieving sustainable development. The study is exploratory in nature, so to capture the phenomenon, 16 respondents were interviewed. For analyzing data, study uses the combination of thematic analysis and sentiment analysis. This study explores the case of Varanasi smart city, where local people consider the most important aspect of their city is the pilgrim city status with employment generation and cleanliness which should be maintained & enhanced during the implementation of development projects. This study along with adopted methodology can be helpful to policy makers, urban planners, project managers & decision makers. By incorporating local population views along with international standards & best practices in development allows the project to achieve sustainability with subsequent increase in the citizen's liveability without losing the spirit of a place. This study is unique in suggesting that by retaining the spirit of the city and nurturing sociological, economical, historical and political diversity of a place can contribute towards sustainability.

**Keywords:** Smart City, Citizen perspective, Thematic analysis, Sentiment analysis

## **How Nepal Can Have A Feasible Energy Policy: Review Of Nepalese Energy Policy In Comparison To SAARC Nations**

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### **Abstract**

Different areas can be considered while formulating feasible energy policy for the country. In this connection the key feature, shortfalls and lesson learned can be referred in Nepalese policy. The paper will put an endeavor to look into various areas of policy such as cost-benefit analysis before developing any energy producing project. Likewise the role of government from issuing license to the private sectors to generation and transmission also need to be reviewed and are the areas of discussion. Another most crucial area of review and analysis is the export policy within energy policy and difficulties the country is facing. In this regard, lesson learnt from other SAARC nations will be strong guidelines. The article aims to review and discuss the dependency of smaller nations of the region with other nations for various energy related issues such as production, consumption and sales of surplus energy keeping in mind the surplus of energy production in the days to come. Policy related issues such as policy impacts, coherence and sustainability are the areas to be reviewed and analyzed from different avenues. Collection of energy policy of all the SAARC nations will be made and reviewed them under different headings such as sustainability, cost-benefit analysis, impact of energy policy to different stakeholders/environment, financing and subsidy policy, public-private-local people participation in energy sectors etc. Comparative chart will be developed reviewed and conclusion will be made.

**Keywords:** Energy Policy, Sustainability, Energy Export, Cost-benefit analysis, public-private-local people partnership

## **Financial Sustainability of Renewable Energy Technologies with the End use promotion: A case of Nepal**

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Nepal Electricity Authority, the national electricity utility, reported that approximately 86 percent of the total households have access to electricity from national grid in 2019 (DOED), 2020). This amounts to 3.93 million households, not including the 0.57 million consumers in rural areas under the Community Rural Electrification programme. As of July 2019, 9.75 percent of the total households have been electrified by Renewable Energy Technologies (RETs) that were disseminated and installed by Alternative Energy Promotion Center, ,AEPC. Despite the higher percentage of electricity access in Nepal, significant number of the households are still using low quality and unreliable electricity. Households with Tier 3 level of access make up the largest share of consumers nationwide at 31.7 percent, whereas 17.9 percent fall in Tier 4 and 17.3 percent in Tier 5 categories. Tiers 1 and 2 accounts for 23.2 percent of the households combined whereas 6.1 percent of households are in Tier 0. Lack of adequate electricity has been a major barrier to achieve economic growth for the rural population of Nepal. The off-grid electricity sector in Nepal is usually powered by isolated mini-grids and standalone systems that are often more practical and economic for households in remote areas than the national grid. Hydro and solar are the main sources of off-grid electricity in Nepal. Due to the high upfront cost of the technologies, the Government of Nepal provides subsidies up to 90 percentage. On the other hand the technologies are not sustainable itself financially. The major reason behind this is the households used the energy for the lighting purpose only. In some Micro-hydro projects the community used the energy at night time only. To make the technologies financially sustainable the end use promotions are needed. In which, the system can charge higher tariff rates too.

**Keywords:** electricity access, sustainability, electricity utility, End use promotion

## Climate Smart Agriculture Concept; Policies, plans and Practices in Nepal

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### Abstract

Climate Smart Agriculture (CSA) is a promising concept to deal with the impact of climate change in the agriculture sector. Climate change has been burning issues in Nepal's agriculture system. Nepal comes fourth most vulnerable country in the world because the majority of people in the country are directly involved in natural resources like agriculture, forestry, and fisheries for their livelihood. Therefore, increasing agricultural productivity, reducing greenhouse gas and improving climate resilience are very important. This study is focused on the Climate Smart Agriculture concept, policies and practices in Nepal's agriculture sector. This research is based on a review of published papers belonging to climate smart agriculture concept, practices and policies in ScienceDirect and Springer link for the period of 2005 until 2020. CSA practices help to reduce the rate of greenhouse gas emission from the agriculture sector along with quality production. Several national and international organizations with major programs are working in Nepal for CSA, adaptation practices and implement the policies to tackle all those concerns of CSA. However, it is found that this concept is not broadly extended to the commercial farming level in the country. This study will be helpful for further researchers, planning makers and farmers in regards to actual CSA policies, practices and its implementation in Nepal.

**Keywords:** Climate change, Climate smart agriculture, Nepal, Adaption, Policy.

## **Sustainability of green marketing in Nepal**

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### **Abstract**

The evolution of green marketing has evolved steadily over the period of time. Green marketing, also alternatively known as environmental marketing and sustainable marketing, refers to an organization's efforts at designing, promoting, pricing and distributing products that will not harm the environment. The concept of green products is not very old in Nepal. The purpose of this paper is to study sustainable marketing. Marketing is regarded as the over materialistic and overconsumption which results in the hazardous waste. In the current business world, sustainable green marketing plays a key role. In this paper discussion would be about recyclable and eco environment friendly products which are safe for consumers. The paper tries to explain that green marketing is an important aspect of life. This paper also describes recent trends in green marketing, and how green marketing can be a means for sustainable development.

**Keywords:** Sustainable Development, Sustainability, Green Marketing, Nepal

## The IJORN

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- [1] Ahuja, R.K., Magnati, T.L. and Orlin, J.B. , 1993, Network flows: theory, algorithms and applications, Prentice Hall, Englewood Cliffs, New Jersey.
- [2] Areibi, S. and Yang, Z., 2004, Effective memetic algorithms for VLSI design = Genetic algorithms + Local search + Multi-level clustering, Evolutionary Computation, 12, 327-353.
- [3] Baumann, N., 2007, Evacuation by earliest arrival flows, PhD thesis, Department of Mathematics, University of Dortmund, Germany.
- [4] Borah, M., Owens, R.M. and Irwin, M.J., 1995, Transistor sizing for minimizing power consumption of CMOS circuits under delay constraint, International Symposium on Low Power Design, 167 -172

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