In Memoriam: Urmila Pyakurel (1980 - 2023)

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Abstract

This article is dedicated to the memory of Professor Urmila Pyakurel who passed away at an early age. It includes her short biography and also several testimonials from collaborators, sponsors, scholars and well-wishers whose involvements with her inspired and enriched both them and her and the story of her success. The description of the major scientific work of her research group is included in the scientific part of this paper. This heartfelt tribute to her highlights not only her exceptional academic career as a role model Nepalese young female mathematician but also the steadfastness and integrity of her extreme willingness to encourage young researchers and scientists.

Keywords: Discrete Optimization, Operations Research, Networks, Evacuation Planning, Contraflow, Intermediate Storage, Obituary

1 Personal and Academic Biography

It is with deep sadness that we share that Urmila Pyakurel, PhD, Professor of Mathematics at Tribhuvan University in Nepal, passed away on April 12, 2023 at the age of 42. Urmila was born on June 19, 1980 in Sunkoshi Gaupalika-3, Sindhupalchowk, Nepal. She was the youngest of twelve children (six daughters and six sons) of her late father Debi Nath Pyakurel and her late mother Mana Maya Pyakurel. Urmila leaves

a tremendous legacy through her creative scientific and literary work and through the thriving academic network that she forged and nurtured plus the many relatives in her extended family as well as friends.

Urmila began her schooling at the Kalika Primary School when she was nine years old. She then completed her secondary level schooling of grade ten from Baghbhairab High School. Both these schools were located in remote villages of the Sindhupal-chowk district in Nepal. In an essay for the Alexander von Humboldt Stiftung [1], Urmila spoke about the immense challenges that she had to overcome. Where her family lived, she said was *completely cut off from the outside world. There was no electricity and no transport connections.* And, according to her, no-one could ever have predicted that she would end up pursuing a career in academia. Urmila, after high school, moved to Kathmandu for her university education, where she achieved the intermediate level from the Patan Multiple Campus and the Bachelor's degree in Science from the Tri-Chandra College. She then earned the Master's degree in Mathematics from the Central Department of Mathematics (CDM) at Tribhuvan University (TU). Urmila was supervised for her Master's degree and her PhD thesis by her doctor father Professor Tanka Nath Dhamala at CDM, TU. Urmila was one of the top and brightest students in all levels of studies. The theme of her PhD dissertation was: "Network Optimization" and her central problem of research was to investigate network flow models and algorithms, focused on contraflow techniques with possible applications to the metropolitan capital city Kathmandu.

A path to the Humboldt Foundation.

After completion of her M.Sc. degree in Mathematics, Urmila joined CDM, TU as an Assistant Professor on December 5, 2011. During her PhD research, she took part in seminars, workshops and conferences, including emergency management workshops conducted by Professor Horst W. Hamacher organized in Kathmandu. She visited the University of Kaiserslautern, Germany as a PhD scholar in 2014. Just after she was awarded a PhD degree in 2016, Urmila attended a Humboldt Kolleg in Kathmandu, and was awarded a Post Doctoral Fellowship - the Georg Forster Fellowship of the Alexander von Humboldt Foundation (AvH) for the years 2017-2019 at TU Bergakademie Freiberg, Germany. Professor Stephan Dempe, who is one of the co-authors of her many scientific publications, invited her as a Humboldtian at Freiberg. Prior to this, Urmila had visited Freiberg as a research scientist under the Research Group Linkage Program of the AvH Foundation, which was established by Professors Dhamala and Dempe between CDM and TU Bergakademie.

Professorship with outstanding career.

During the period of her post-doctoral stay in Freiberg, Urmila became an Associate Professor of Mathematics at TU in September 2019. She assumed the position of Full Professor on December 31, 2021, becoming the youngest Full Professor in Mathematics in Nepal. All of her positions at TU were achieved from open competitions. Her academic career, as a young female professor in Mathematics in Nepal, ranks at the top. Urmila's contributions to teaching and research were remarkable. At the time of her

untimely passing, she was supervising six PhD students and additional research scholars pursuing the MPhil and Master's degrees in network optimization. Urmila was an open-minded and very courageous role model female scientist in Nepal. The number and quality of her scientific publications in high impact journals have contributed not only to TU but also to the global scientific community.

Fig. 1 Professor Dr. Urmila Pyakurel, Humboldtian

Urmila Pyakurel received the Young Scientist Award from the Nepal Academy of Science and Technology in 2016. She was the Treasurer and a Life Member of the Nepal Mathematical Society, an Executive Member of the Nepal German Academic Association, and a member of the Humboldt Club Nepal and the American Mathematical Society. She also held positions in different academic organizations, was engaged in reviewing research papers and served as a member of editorial boards including of the journals: *The Nepali Mathematical Sciences Report* and *Journal of Institute of Science and Technology, Tribhuvan University*. Her academic visits to Japan, Germany, Philippines and Greece left lasting impressions on her and on all those who were lucky to have interacted with her. She was one of the active co-organizers of several series of virtual events, including *Women in Science* and *Managing Disaster Risk: a Way to Sustainability* organized by the Nepal German Academic Association in 2021.

Madhushree.

A very interesting feature of Urmila's talents and creativity, which some may not be aware of, was that she was engaged in writing many impressive poems as well as fiction under the name of "Madhushree". The poems were published and broadcast quite often by Nepali social media in the name of "Madhushree." Since Urmila's passing, it is planned to further publicize her contributions to Nepali literature.

The Academy

To honor Urmila Pyakurel's scientific contributions, activities and her wishes, together with her doctoral father, has announced the founding of the *Professor Dr. Urmila Pyakurel Madhushree Academy* in her memory. The academy's purpose includes supporting and recognizing young scientists and talented students in mathematics and also in literature. The academy is currently chaired by her doctoral father with team members consisting of her students, well-wishers and family members. All who strongly supported this effort financially, thereby providing the seed funding to establish the academy are acknowledged.

2 Scientific Contributions

Urmila was always eager to conduct research associated with investigations of new and emerging directions for the betterment of society. The focus of her research was to model and solve evacuation planning problems for realistic implementation. Jointly working with Professors Goerigk, Dhamala and Hamacher in 2016, she carried out an interesting case study of bus-based evacuation planning of the core part of the metropolitan city Kathmandu. This was the first and very important step in bringing awareness and evidence of the potential of mathematical modeling in reducing traffic congestion, especially at the time of disasters, commuting periods, and during unplanned events in the densely populated Kathmandu Valley. The ideas generated continued to be investigated by her. During the middle period of her PhD work in 2014-2015, Urmila published excellent contributions on the modeling of contraflow issues, and also on globally optimal solutions and minimal losses of commodities during their transportation [4, 21, 22]. The contraflow issues, whose fundamental mathematical models were initiated by the groups of Professors Shekhar [12] and Pardalos [24], had been extensively researched by Urmila as a co-leader of her research group guided by Dhamala.

The contraflow techniques remain valid if the flow models are considered in the framework of abstract networks [13, 20]. Approaches to abstract networks are quite relevant in optimizing crossing and merging conflicts at road intersections, where paths crossing at a point are switched to the non-crossing sides using traffic diversions, barricades or some signals. Urmila and her co-authors Dhungana, Dhamala and Dempe obtained strong results in the domain of abstract flows, publishing the results in international journals. Her other main contribution was the consideration of flow-dependent network attributes in which more realistic transit time functions with inflow-dependent or load-dependent scenarios are considered instead of fixed transit times.

Similarly, partial lane reversals are highly applicable in times of evacuation where unused arcs on a contraflow configuration are saved for the purpose of emergency services and location planning supports. These ideas co-authored by Urmila were published in journals [16, 17]. Although Urmila's health was declining, she continued her research - to further extend results for multi-commodity flows considering transshipment of more than one commodity from respective sources to corresponding sinks without violating the capacity on bundle arcs, generalized lossy flows which consider losses or gain of the flows while transmission at arcs, and non-symmetric transit time

4

networks in which unequal transit times on anti-parallel arcs are considered, with contributing co-authors Gupta, Khanal, Nath and Dhamala [4, 6, 11]. Her continued research and co-authorship with Nath, Dhamala and Dempe on network reconfiguration for bilevel planning strategy [9] and also for the quickest location planning [10, 18] are of significant importance.

Urmila's excellent innovation for flow models, in which intermediate storage of excess flow is allowed, was initiated in 2012, in the first year of her PhD matriculation. While presenting her PhD proposal at the University Grants Commission, Nepal, she announced that the *presentation discusses possibility of intermediate storage to reduce the evacuation time.* A variant of the concept was established in 2019, when she co-authored a paper with Stephan Dempe, "Network Flow with Intermediate Storage: Models and Algorithms," preprint, 01/2019, TU Bergakademie Freiberg. Afterwards, its full version was published in *SN Operations Research Forum* [14]. The novel technique of flow maximization therein significantly improves the flow out from the source which is sent not only to the sink but also to appropriate intermediate shelters, and, hence, is very relevant for evacuation planning and emergency supply chain management.

In the stream of her intermediate storage research, Urmila also presented a paper entitled, "Universal Maximum Flow with Intermediate Storage for Evacuation Planning," at the *4th International Conference on Dynamics of Disasters, July 1-4, 2019, Kalamata, Greece* [15]. Extending the approach, other five significant papers were published with co-authors: Khanal, Wagle, Dempe and Dhamala [2, 5, 6, 13, 14]. All of these works have an objective of maximizing flows from the danger zones to the safer locations, where intermediate storage of excess flow is allowed and also maximized with given priority of the intermediate nodes. An objective in [13] is to maximize the source-sink flow also by maximizing the stored excess flow in abstract network with node priority. An objective in [2] is to keep the least reduction on the maximum flow by optimizing facility locations on arcs and then maximizing the excess flow at prioritized intermediate nodes.

Urmila was a lover of science and innovation. She alway spoke about research and development, and encouraged young scholars to come up with original, exciting ideas. Even when she was ill, she felt happy about teaching and guiding research scholars actively. She adopted research as a hobby even during her treatment. Her research was continuously supported by the AvH Foundation, which she gratefully acknowledged. She delivered an oustanding speech during the Humboldt Kolleg, a large scientific gathering, on October 19, 2022 in Kathmandu. Her last wishes were motivating researchers to continue investigating the implementation of an effective evacuation plan for the management of complex traffic dynamics in Kathmandu. In addition to her research activities, she enjoyed music, practiced yoga and appreciated nature very much. Her enthusiasm in building and nurturing academic and social networks with national and international communities continued to almost her last breath.

Urmila's research contributions live on and are supported by her research group members, co-authors and doctor father, all of whom remain active and involved in evacuation planning research. A paper that she co-authored [2]

was published after her passing and several others are under review. Her main papers are listed below, with a full list of her publications available at **http://urmila.cdmathtu.edu.np/publications.html**.

3 Some Testimonials

3.1 Dr. Enno Aufderheide, Secretary General, Alexander von Humboldt Foundation

Memory is a window
through which we can see you
whenever we wish.

Urmila Pyakurel embarked on her academic career at Tribhuvan University in Kathmandu where she was awarded a Bachelor's degree in 2002 and a doctorate in mathematics in 2016. From 2017 to 2019, she spent two years in Germany supported by one of the Alexander von Humboldt Foundation's Georg Forster Fellowships which took her to TU Freiberg to work on "Integrated Transportation Network Optimization for Emergency Planning." She was subsequently granted a return fellowship for a year. Her special achievements are also reflected by the fact that she continued to apply successfully for funding from the Alexander von Humboldt Foundation: for example, the Foundation sponsored a six-month digital collaboration between her and her German colleagues. In December 2021, Urmila Pyakurel became the youngest Professor of Mathematics at Tribhuvan University.

In her research, Urmila Pyakurel focused on potential disaster scenarios that could affect her country. With great mathematical depth she developed plans to effectively evacuate people in disaster situations. Her work was also highly relevant and important with regard to Nepal's fragile climate: today already, the country is confronted with thawing glaciers, extended rainy seasons and the concomitant soil erosion which all pose a threat to the population. As a scientist, Urmila Pyakurel untiringly campaigned to bring about positive changes for the people of her country through her research results.

In October 2022, Urmila Pyakurel was a dedicated member of the committee organising the interdisciplinary, international Humboldt Kolleg "lnterdisciplinary Collaboration for Strengthening Science and Culture" in Kathmandu. Together with the Humboldt Club Nepal, she made a very special contribution to strengthening regional and subject-related networking amongst Humboldtians in Nepal, Bangladesh and India as well as many other established and young researchers from Southeast Asia and Germany.

We got to know and appreciate Urmila Pyakurel as an impressive researcher with a strong personal presence. She was a warm-hearted and committed host and guide who always welcomed international guests to her country. For her students she was a dedicated teacher and multiplier, especially when the Humboldtian brought together the young generation of scientists at poster sessions with the audience from Germany. Urmila Pyakurel imbued every space with her great and caring presence.

Through her expertise and commitment, she enriched networking events and the network in Nepal. Urmila Pyakurel was and remains a highly valued member of our worldwide Humboldt Network.

We will remember Urmila Pyakurel as an outstanding representative of her mathematical community and as a Humboldtian who was committed throughout her life to fostering and improving academic relations between her own country and Germany.

3.2 Professor Stephan Dempe, TU Bergakademie Freiberg

Urmila Pyakurel came to my university for the first time in 2016 under the Alexander von Humboldt Foundation Research Group Linkage Program. I was very pleased that she used the Georg-Foster-Fellowship from the Alexander von Humboldt-Foundation for research in Freiberg from November 2017 to October 2019. Working with Urmila was very interesting, challenging and fruitful. She produced many new ideas improving the solution of various network optimization problems related to evacuation problems which are especially important in her home country Nepal with many natural disasters like earthquakes, flooding or heavy rains. Examples are contraflow techniques, intermediate storage of flow or finding best places for locating facilities in static and dynamic networks.

Unfortunately, she became seriously ill in spring 2018. Fighting against the disease she never lost courage to beat it. And she never stopped producing new publications, organizing conferences, supervising students. The last virtual conference she organized in January 2022, her last PhD student finished working on his thesis at my university in September 2023. In April 12, 2023 I received the very sad news that Urmila passed away. We lost an young and outstanding researcher, a recognized member of the scientific community. Urmila was always eager, curious and successful in solving various mathematical real-world problems. We will miss her.

3.3 Dr. Hari Nandan Nath, Tribhuvan University

I met Professor Pyakurel in 2016, when she was about to complete her PhD and I was about to begin my PhD under the supervision of Professor Tanka Nath Dhamala. Along with Professor Dhamala, she helped me finalize the title of my PhD proposal which is also the title of my PhD thesis. When there were very few students doing research work at Tribhuvan University, I found her persuading and encouraging everyone to carry out research. She was ever-ready to share her findings and to discuss new research ideas. She did not hesitate to collaborate with anyone who has a willingness for research. Soon, I was lucky to have joint works with her: a review of OR (operations research) models and solution strategies useful in evacuation planning [3], and contraflow algorithms for quickest flow with constant as well as load dependent transit times on arcs [18].

In the meantime, she was selected for the Alexander von Humboldt Georg Forster Research Fellowship for postdoctoral researchers at Technische Universität Bergakademie Freiberg, Germany. Because of the efforts of Professor Dhamala and her, two Masters students and I got the opportunity to carry out research work at

TU Bergakademie Freiberg. Additionally, I had Professor Stephan Dempe as a co-supervisor for my PhD study. Unfortunately, Professor Pyakurel had to fight with illness during the period. However, the disease would not be an impediment in her research journey. She was so dedicated to her work that she discussed research works even when she was in a hospital bed. Some of the research works during the period in which I was also involved are: partial contraflow approach in classical networks [17], partial contraflow in abstract networks [23], flow location modeling to minimize the time horizon of the dynamic flow (quickest FlowLoc) [10], and contraflow with transit time depending on the orientation of the arcs [11].

Professor Pyakurel had a a fighting spirit and a strong passion for research publications because of which she was able to be appointed as a Full Professor by Tribhuvan University at a young age. Her sad demise is an immense loss for the research community.

3.4 Mr. Durga Prasad Khanal, Tribhuvan University

My first meeting with Professor Pyakurel, as I remember vividly, was as a student of the Master of Philosophy (MPhil) in the Central Department of Mathematics, Tribhuvan University, Nepal in 2017. Her groundbreaking achievements in the research of Network Optimization and its application to real world problems, even though she was struggling with illness, motivated me to be a part of the 'Research Group of Optimization, Nepal'. As a principal supervisor, I am the first PhD scholar of Professor Pyakurel and, unfortunately, became the last one. She has supervised twelve students in the Masters and MPhil degrees, and, as a co-supervisor, she has guided one PhD scholar. Other five PhD colleagues were continuing their research under her supervision at the time of her last breath. Professor Pyakurel was a dedicated researcher and supervisor. She used to encourage each and every student/researcher with proper guidance and discussion of research problems almost every day. She was a pillar of empathy and compassion. She showed genuine concern for the well-being of students/researchers, offering solace during moments of doubt. Two years ago, when she had an operation, I went to meet her at the hospital as I was curious to know about her health progress. In such a situation, her interest was to talk more about research activities and less about her health problems. She said, 'If we talk more about my health issues, it gets more priority and dominates my willingness to win the battle with illness. To think about my health is the concern of doctors and my concentration is on research'. I feel proud to be a research scholar of such a dedicated researcher.

3.5 Professor Anna Nagurney, University of Massachusetts Amherst

I had the pleasure of meeting Professor Urmila Pyakurel in person at the *4th International Conference on Dynamics of Disasters*, Kalamata, Greece, July 1-5, 2019, which I had co-organized with Professor Ilias S. Kotsireas of Wilfrid Laurier University in Canada and Professor Panos M. Pardalos of the University of Florida. I was very impressed that she had traveled all the way from Nepal to present her paper with Dempe [14], which was subsequently published in the conference proceedings

8

volume. The conference brought together researchers and practitioners focusing on disaster management. Urmila, throughout the conference, which included presentations, social gatherings and a banquet, was very engaged and enthusiastic. From this conference onwards, we became friends, communicating often, whether through email, social media or direct messaging.

Fig. 2 2019 Dynamics of Disasters Conferees in Kalamata, Greece

I was well aware of Urmila's research because of overlapping interests in network optimization to address various societal problems. In 2018, she had co-authored an article with Dhamala for *ORMS Today*, a magazine of the professional society INFORMS (Institute for Operations Research and the Management Sciences). In the article, they emphasized the relevance and importance of Operations Research models aiming to save lives and property in the landlocked country of Nepal, which is regularly threatened by earthquakes and other disasters [19]. In this article, the authors conveyed their research on emergency management in Nepal to a broader professional audience, recognizing the necessaity of getting research results in front of policy-makers, decision-makers as well as the public.

In July 2021, at the height of the COVID-19 pandemic, the *5th International Conference on Dynamics of Disasters* took place in a virtual format and Urmila, again participated. At our 6th Dynamics of Disasters conference, which took place in person, July 3-6, 2023 in Piraeus, Greece, although Urmila had passed away, her PhD student, Durga Prasad Khanal, took part and presented a paper co-authored with her and others [7]. At this conference, we also celebrated Urmila's memory with several reflections and minutes of silence.

Urmila was very dynamic and proactive in working towards bringing researchers and scholars together. I had the honor and great pleasure of taking part in the *Managing Disaster Risk: A Way to Sustainability Workshop* organized by Tanka Nath Dhamala and Urmila Pyakurel as well as by Er. Ravi Khanal and the NEGAAS (Nepal Germany Academic Association) through its program on Migration and Diaspora.

9

This very well-organized and well-publicized workshop took place November 21-22, 2021. I wrote a post on this workshop in which I also included a screen shot of the participants [8].

Urmila was a true friend - always supportive and sharing news about herself and others. On January 4, 2022, she sent me an email message stating: *I wish you a very happy new year 2022! I am now good! I would like to share a good news with you. I became Full Professor of Mathematics in Tribhuvan University from open Competition! I got the result on the last evening of 2021 ...! I became the youngest Professor of Mathematics in Nepal. Now I am very happy. I fulfilled my aim.* She followed her message with two smiling face emoticons.

We corresponded throughout her treatments for her illness and she never gave up hope. Knowing that I am Ukrainian, she sent me messages of concern and support. I always looked forward to her messages.

On April 9, 2023, just three days before she passed away, Urmila sent me a direct message saying, *Dear ANNA, I am in complete rest now, I will write you soon. I am fighting nicely. Thank you so much. Urmila.* Urmila interspersed multiple heart emoticons in this message.

In [1], Urmila stated: *Today, maths is my life. It could not have worked out better.*

Urmila, we will continue to honor your wonderful character, your integrity, your creativity and your friendship. Books, I believe, will be and should be written for readers of different ages on the remarkable Professor Urmila Pyakurel who left us much too soon.

3.6 Dr. Naba Raj Lamsal, Former-Director Radio Nepal, Correspondent BBC, Winner of Madan Prize 2022 for Agni Epic

Original and Profound Artistic Creator: Madhushri

Madhushree has two dimensions to her writing – poetry and fiction. Alongside her poetry, she also possessed a strong proficiency in song writing. Her works, whether in song or verse, were imbued with a deep understanding of the human condition. They not only carried a distinct genre but also conveyed a profound personal sentiment within the narrative. Her literary contributions stood out not just for their thematic diversity, but also for the finesse with which she conveyed her messages. Apart from her role as a communicator, Madhushree's unique ability to delve into the realms of literature as a student set her writing apart, earning her admiration for her skillful poetic craft, the originality of her themes, and her personal expression.

Around two and a half decades ago, as Madhushri was striving to gain public recognition through her writing, I was working at Radio Nepal, where we emphasized literary content alongside other materials. I hosted programs that revolved around promoting youth writing, and it was during one of these encounters that I first met her. Her writing exhibited an exceptional pace of imagination. She would write fervently and, with the hope of airing high-quality content, her creations found a more prominent place in our broadcasts.

Her writings were deeply rooted in themes of rebellion against the status quo, cultural transformation, equality, and social justice. Her work was characterized by the

authenticity of language and a rustic flair that left a strong impression. She painted a vivid cultural landscape through the use of folk idioms and words, offering a glimpse into the essence of local life. Her works traversed the complex terrain between a language steeped in Sanskrit or intertwined with English, preferred by the urban elite, and the simpler, more authentic language used by the rural population. Amid the hustle and bustle of the city, her narratives overflowed with images of village life, portraying scenes like 'pandheri (A place from where usually the women used to fetch water) ,' 'melapat, (a word to attribute cooperation between two or more householders to undertake agricultural activities)' 'lekbesi, Lake denote to the high hills and Besi is the agricultural land at temperate area ' 'lippot,(extremely traditional chores of cleaning house) ' 'gharangan, (home and small compound adjoined to home) underprivileged schools, festivals, and the holistic development, preservation, and growth of those cultural traditions. Alongside these, she captured the aspirations and emotions of the young individuals who had migrated from villages to urban centers in search of a brighter future. Her work resonated with a deep understanding of the essence of her contemporary society.

In the realm of literature, a harmonious blend of subject matter, artistic craftsmanship, and structural composition is essential for creating beautiful prose. Madhushree seemed to be keenly aware of this, and in all her works, one can discern the hallmark of her distinctive style. She had the ability to be a writer and to remain one consistently. During my tenure with BBC, in addition to my stint at Radio Nepal, I remember incorporating her insights and perspectives in our programs. Her commentary often revealed her incisive and critical eye. A writer who lacks an original viewpoint cannot be a critical thinker.

Madhushree's outlook on life, her social awareness, her ability to sync with the times, and her knack for aligning her personal experiences with her literary vision were truly remarkable. Her writing demonstrated the strength to remain undeterred even in the face of life's complexities. She advocated for a love of life and the enduring power of love throughout her life, even during times of adversity. This enduring belief is a testament to her literary prowess. It is fair to say that her creations are a reflection of her era, interwoven with a vision that transcends conventional notions of patriotism, love of nature, personal emotions, and diversity.

After a prolonged period of ill health, I had the privilege of conducting an extensive live interview with Madhushree on Radio Nepal, reminiscing about the good old days. She recited both new and old compositions. Upon a comparative analysis of her works, I couldn't help but notice the consistency in her literary ideology. An unstable ideology cannot nurture a writer. This, indeed, is her defining characteristic. As a mathematics student, she saw equality between mathematical formulas and literary texts, showcasing her drive towards innovation and her quest to provide a fresh perspective on mathematical literature.

Time, in its inexorable march, caught up with Madhushree, who wrote about timelessness. Her departure marked the silencing of a distinctive and fertile voice in Nepali literature, akin to the drying up of the flowing Kanchan river.

4 Concluding Remarks

In a similar sentiment as her own parental and research family members, and all well-wishers, the scientific community is devastated that Urmila passed away at such a young age. She would have continued to contribute significantly to science, especially in the application of mathematics to emergency planning, as initiated in Nepal, with energy and enthusiasm for also building a strong network of optimizers and policy-makers. The untimely demise of this mathematician is truly a huge loss. Urmila's last minute expressions, which will be published later, towards her supporters are unforgettable. We, the colleagues and friends of Professor Pyakurel, are very hopeful that the Academy, which is being established in her name, will be a historic one in encouraging young talented scientists in Nepal and that it will play an important role in advancing her research area in Nepal and abroad. With deep sadness, we express our heartfelt tribute to Urmila.

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