

Nepal Engineers' Day 2011

Nepal Engineers' Association Japan Center (NEA-JC) Symposium "Utilizing Lessons Learnt from the Study of Japanese Technologies for the Development of Nepal"

Institute of Industrial Sciences (IIS), The University of Tokyo, Komaba Campus, 17 July 2011, Tokyo

PROGRAM OUTLINE IN TOKYO

To commemorate the establishment of the Nepal Engineers Association (NEA) 49 years ago, the Event Management Committee (EMC) of NEA-JC 6th Executive Committee is celebrating the "NEA Day" by organizing a one-day symposium on "Utilizing Lessons Learnt from the Study of Japanese Technologies for the Development of Nepal" in Tokyo and Kyoto on 17 July, 2011 (Sunday). Nepalese (and non-Nepalese) academics, researchers, experts and students from various engineering, natural science and social science disciplines are cordially invited to participate in the program. The program outline in TOKYO is available hereunder;

10:00 – 10:40 Opening Plenary; MC: Priza Kayestha

- 10:00 – 10:05 Welcome and opening address by *Dr. Vishnu Prasad Pandey*, President, NEA-JC
10:05 – 10:15 Inaugural address by chief guest *Dr. Durga B. Subedi, Chhetri*, Deputy Chief of Mission, Embassy of Nepal to Japan
10:15 – 10:25 Remarks by *Dr. Rajendra P. Parajuli*, Spokesperson, Non-Resident Nepali Association (NRNA), Japan
10:25 – 10:35 Remarks by *Jiwak Raj Bajracharya*, Vice-president (Kanto Region), Nepalese Students' Association in Japan (NESAJ)
10:35 – 10:40 Vote of thanks by *Shaphal Subedi*, Coordinator, Symposium Organizing Committee

10:40 – 11:25 Keynote Lecture: Water and Environment Management in Nepal; Chair: Dr. Netra P. Bhandary

- 10:40 – 11:15 **Keynote Speaker:** *Futaba Kazama (Professor, University of Yamanashi)*
Title: Potentials of transferring Japanese experience in water and environment management for the development of Nepal
11:15—11:25 Q&A

11:25 – 11:40 Break

11:40 – 12:35 Session I: Earthquake Disaster Risk Reduction in Nepal; Chair: Dr. Ved P. Kafle

- 11:40 – 12:05 **Speaker:** *Ramesh Guragain (Director, EERT Division in NSET)*
Title: Earthquake risk management in Nepal 10 years back and now: lessons that we can learn from experiences of recent Japan earthquake
12:05 – 12:15 Q&A
12:15 – 12:30 **Speaker:** *Hari Ram Parajuli (Post Doctoral Fellow, RGIRO, Ritsumeikan University)*
Title: Disaster mitigation strategies for Kathmandu world heritage properties
12:30 – 12:35 Q&A

12:35 – 14:55 Lunch Break

13:55-15:30 Session II: Channelizing Nepalese Scholars' Expertise for National Development: Possibilities and Challenges; Chair: Dr. Durga B. Subedi Chhetri

- 13:55 – 14:20 **Speaker:** *Netra Prakash Bhandary (Asst. Prof., Ehime University)*
14:20 – 15:30 Group discussion

15:30 – 15:45 Break

15:45 – 16:45 Session III: Research Presentations; Chair: Dr. Jhabindra P. Ghimire

- 15:45 – 16:00 **Speaker:** *Rama Mohan Pokhrel (Doctoral student, Saitama University)*
Title: Study on continuous mapping of liquefaction potential in sedimentary deposits
16:00—16:05 Q&A

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- 16:05 – 16:20 **Speaker:** *Mahendra B. Baniya (Master student, Saitama University)*
Title: A numerical simulation of effects of floods in the growth of *Phragmites japonica* on flood plain: a tool for management of flood plain
- 16:20 – 16:25 Q&A
- 16:25 – 16:40 **Speaker:** *Tilak Pokharel (Master student, The University of Tokyo)*
Title: Sloshing analysis of oil-tank under earthquake excitation based on fault-structure system
- 16:40 – 16:45 Q&A
- 16:45 – 16:50 Concluding Remarks:** by *Maheswor Shrestha*, Vice-President, NEA-JC

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PRESENTATION SUMMARIES AND SPEAKERS' PROFILES

Title: Potentials of transferring Japanese experience in water and environment management in the development of Nepal

Speaker: Prof. Futaba Kazama

Summary: Many developed countries like Japan have a long experience of technological application for water environment management. They are proven to be energy- and cost-intensive. As a result, several impacts on the environment are observed. Their focus these days is on developing energy- and cost-effective technologies as the old technologies are no-longer acceptable in the context of increasing impact lobby for environmental conservation and management. From this stand-point, many developing countries like Nepal, which has not yet applied those technologies, to a large extent, have an opportunity to save resources by directly jumping to the new-generations of technologies. This presentation covers a history of technological development (for water environment sector) in Japan and lesson learnt from them for the developing countries like Nepal.

Speaker's profile: Dr. Futaba Kazama is a Professor in International Research Center for River Basin Environment (ICRE), University of Yamanashi, Japan. She received D.Eng. in Environmental Chemistry from Hiroshima University, Japan. Her research interest resides in water quality management of river water, ground water, and lake water. Currently, she is sub-leader of 'Environmental Dynamics' Typology Group in Global Center of Excellence (GCOE) Program of University of Yamanashi. Prof. Kazama is very much familiar with the context of Nepal and Nepalese society through her continuous involvement in water environment management in Nepal, especially Kathmandu Valley, since last five years.

Title: Earthquake risk management in Nepal 10 years back and now: lessons that we can learn from experiences of recent Japan earthquake

Speaker: Ramesh Guragain

Summary: The country of Nepal, located between China to the North and India to the south is known for its majestic mountains and natural beauty. In other circles it is known for something less alluring, its position on the convergence zone between two active tectonic plates: the Indo-Australian plate and the Eurasian plate and the dangers that that entails with MMI IX or bigger earthquakes with 10% probability of exceedance in 50 years. On the other hand, high population growth, rapid urbanization, low level of earthquake awareness, and poor construction practices are the obvious characteristics of the urban settlements of Nepal. Most of these settlements face very high and increasing earthquake risk resulting from either lack of effective knowledge and perception of the risk for the new municipalities or from the lack of tools and capability to integrate mitigation measures in the urbanization process.

This decade, many initiatives in terms of earthquake risk assessment, mitigation and preparedness have been implemented by different Government/Non-government organizations. National Society for Earthquake Technology-Nepal (NSET) has been working in the field of earthquake risk management in Nepal since last 15 years.

This paper highlights the earthquake risk of Kathmandu Valley and Nepal, current ongoing activities and progress towards earthquake risk management in the country and some lessons that Nepal can learn from recent Japan Earthquake.

Speaker's profile: Ramesh Guragain, working as a Director for Earthquake Engineering Research and Training Division at National Society for Earthquake Technology-Nepal (NSET) has M.Sc. on Earthquake Engineering from The University of Tokyo. He joined NSET in 1999 and working in the field of earthquake risk management since then. The countries of working experience are mainly in Nepal, India, Pakistan, Bangladesh, Bhutan, Iran, and Afghanistan and shortly in other countries in South/south-east Asia. Earthquake risk assessment of buildings, infrastructures and urban/rural settlements in Nepal and the south Asian region is one of the major program areas that Ramesh is leading from NSET in recent years. Seismic vulnerability assessment of public school buildings in Kathmandu Valley; 20 major hospitals in Nepal; more than 100 office and private residences in Nepal; water supply system of Kathmandu valley; selected public and private buildings in Bhutan; development of fragility functions for non-engineered buildings in Bangladesh; earthquake risk assessment of five different cities in Nepal; three cities in Pakistan, and three cities in Bangladesh are some of the major activities related to this area that NSET implemented in

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his leadership. Currently, Ramesh is doing PhD under JSPS/RONPAKU program from The University of Tokyo and doing research in Nepal with 3-months yearly visit to the University in Japan.

Title: Disaster mitigation strategies for Kathmandu world heritage properties

Speaker: Dr. Hari Ram Parajuli

Summary: Kathmandu, the capital city of Himalayan nation is rich of cultural heritages. Seven monuments have been registered as World Heritage properties. World Heritage properties are important for national and community pride and for social integrity. Under the World Heritage Convention, the States Parties sign up to the obligation of preserving World Heritage properties for future generations. Cultural and natural heritage can itself contribute towards reducing the effects of disasters through the traditional knowledge systems embodied in physical planning and construction. Local management systems can not only prevent or mitigate the impact of disasters but also provide sufficient coping mechanisms to deal with post-disaster situations. Cultural properties can serve as safe havens for surrounding communities for their temporary relocation during emergencies. Disasters can have great financial consequences. It is much more cost-effective to invest in preventive risk management planning before disaster than to spend large amounts in post-disaster recovery and rehabilitation. Reducing the risk is the most effective management approach. Therefore disaster mitigation of these properties is very important which helps protecting their outstanding universal value.

Speaker's profile: Dr. Parajuli is currently Post Doctoral Fellow at Research Centre of Disaster Mitigation of Urban Cultural Heritage, Ritsumeikan University (Rits-DMUCH) affiliated to Ritsumeikan Global Research Organization (RGIRO). He is a life member of NEA. He completed his Bachelor in Civil Engineering and Master of Science in Structural Engineering from Institute of Engineering (IOE), Pulchowk Campus, Tribhuvan University, Nepal. He received Doctor of Engineering from Kyoto University, Japan. His research areas are earthquake engineering, structural engineering and lifeline risk management. His current research is focused on preservation of cultural heritages. He has also engaged in design, construction and supervision of numerous construction projects. He has worked for various organizations and gained wide experiences. He taught three years at IOE, Pulchowk.

Title: Channelizing Nepalese Scholars' Expertise for National Development: Possibilities and Challenges

Speaker: Dr. Netra Prakash Bhandary

Summary: Thousands of Nepalese youths go abroad for higher education every year; tens of thousands Nepalese nationals have already changed their citizenship status, and hundreds of thousands unskilled fellow Nepalese join overseas companies for temporary jobs every year. All this indicates that a large number of Nepalese people, which can be estimated at around 10% of Nepal's total population, are currently residing abroad. The situation has taken a worse stage recently because one section of the experts argues that the nation has suffered a great loss in brain-drain while the other section argues that it is not a brain-drain but a chance to exploit the drained brain. The former argument is no doubt true while the latter may sound like a way to get convinced over the former situation. There is no doubt the development is possible even without the support or help of the drained brains, but it is time to think what level of development will make Nepal a developed state and when. The recent worries and brainstorming activities of NRN community, or rather the NRN leaders, clearly indicate that most Nepalese residing overseas, either as a non-resident Nepalese or non-resident foreigners are in an identity crisis especially when they think of what exactly they have been able to do for the nation, which has at least raised them and made a capable and well-educated person up until the age of 16 to 25 years. A very few of them might have felt that they have not done anything for the nation before flying abroad, but most of them will start feeling that it's time to do something for the nation after they spend some good 5-10 years out of Nepal. In Japan too, there is a good number of well-trained Nepalese community and many of them hold the capacity of leading any sector in nation building agenda. In the name of different organizations, many fellow Nepalese are involved in contributing to community as well as national development issues starting from support to the school students to establishing multi-billion rupees industries. A good number of research scholars are also involved in contributing to the national efforts to deal with various problems and issues, but an integrated approach is yet to be realized and established. Despite our knowledge that the individual efforts compared to the integrated efforts most often remain ineffective, we somehow wish to move individually, probably because we are trained to differ in opinions and ideas with others. All this necessitates that we all come together and integrate our efforts for an accelerated development of Nepal. For this, we must channelize our expertise and establish a

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mechanism to contribute to nation building efforts. This presentation will talk about possibilities and challenges towards this effort.

Speaker's profile: Dr. Bhandary is a life member of NEA as well as Member, Japanese Geotechnical Society (Currently Vice President), Member, Japan Society of Civil Engineers, Member, Nepal Geotechnical Society, Member, International Society of Soil Mechanics and Geotechnical Engineering and Alternate Representative (Ehime University), Board of Representative for International Consortium on Landslides. He holds PhD in Engineering (Landslides); 2003 as well as MSc. in Geotechnical Engineering; 2000 from the Ehime University, Japan and B.Sc. in Civil Engineering from Aligarh Muslim University, India. He is presently the Assistant Professor in Graduate School of Science and Engineering, Ehime University, Japan.

Title: Study on continuous mapping of liquefaction potential in sedimentary deposits

Speaker: Rama Mohan Pokhrel

Summary: The conventional approach to evaluate liquefaction potential (PL) at any point is use of borehole. The PL within the sedimentary basin is variable within short distances therefore visiting and studying geotechnical data in borehole at every location in a study area to measure the PL is usually difficult or expensive. If PL does not exist quantitatively at a location of interest then a data collected at other locations must be used to estimate the value for the desire locations. The aim of this study is to estimate the PL value at an area where no measured data are available by using randomly distributed measured PL data and preparation of the continuous map. For this purpose a kriging method of interpolation in geostatistical analyst in GIS is used.

Speaker's profile: Mr. Rama Mohan Pokhrel, currently a PhD student at Geosphere Research Institute (GRIS), Department of Civil and Environmental Engineering Saitama University. He has a master's degree from Central Department of Geology, Tribhuvan University, Kathmandu, Nepal. He has over 4 years of professional experience which includes as an assistant lecturer in the Central department of Geology, Tribhuvan University, as a lecturer in Kantipur Engineering College, Lalitpur, and a consultant Engineering Geologist at Glory Tech. Consultancy Pvt. Ltd. Kathmandu. His research interests primarily in the field of earthquake related liquefaction, geotechnical problems in sedimentary deposits and in GIS. Mr. Pokhrel has several scholarly publications to his credit.

Title: A numerical simulation of effects of floods in the growth of *Phragmites japonica* on flood plain: a tool for management of flood plain

Speaker: Mahendra B. Baniya

Summary: *Phragmites japonica* (*P. japonica*) is a dominant species of biomass found above- and below-ground on the inundated flood plains in Japan. Its growth is influenced by particle sizes of soil habitats; the growth decreases with increase in habitat particle size. This study modified the organ-specific growth model to predict the annual growth of *P. japonica* in different habitats. The modified-model showed that photosynthesis rate, translocation rate from rhizome are decreasing function of habitat particle size while growth rate of roots, half saturation constant of age for root growth and downward translocation parameters are increasing functions of the habitat particle size. Using these functional relations and observed data, the growth of *P. japonica* at different habitats of flood plains are simulated. The model has implication on river flood plain management and restoration of aquatic ecosystem.

Speaker's profile: Mr Mahendra Bahadur Baniya is a Master's second year student at Saitama University, Japan. He is a Civil Engineer of Government of Nepal, Ministry of Local Development, DoLIDAR since 2005. He has 4 years teaching experience in Solid Waste Management as a Lecturer in I.O.E. Western Region Campus, Tribhuvan University, Nepal. He is interested in the field of environment change after construction of local infrastructure.

Title: Sloshing analysis of oil-tank under earthquake excitation based on fault-structure system

Speaker: Tilak Pokharel

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Summary: The author purpose method for sloshing analysis of oil-storage tanks with higher accuracy based on Fault Structure System. The Fault Structure System (FSS) is a full three dimensional model in which the causative fault and target structure is modeled in a single system so that the fault mechanism, wave propagation through the crust, amplification near the surface and the resulting seismic response analysis can be done. To solve the FSS, the multiscale method called Macro-Micro Analysis Method (MMAM) purposed by Ichimura at al (2006), is used for the sake of reducing the large computational cost. The dynamic response analysis of oil-storage tank, SSSolver, Nagashima (2010), a fluid structure interaction system, is used which uses the solid FEM and Lagrangian fluid finite element. Some numerical experiments were done and compared with other methods.

Speaker's profile: Er. Tilak Pokharel is currently a graduate student at Earthquake Research Institute of Department of Civil Engineering, The University of Tokyo. He received the B.E. in Civil Engineering from Institute of Engineering, Pulchowk Campus, Tribhuvan University, Nepal. His research areas are earthquake simulation, structural response and large-scale computation. He has got some experience of working as a structural design engineer of different civil engineering projects. He has also worked for various organizations and gained wide experiences. He was a faculty member at Institute of Engineering, Pulchowk Campus before joining The University of Tokyo.

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PROGRAM VENUE

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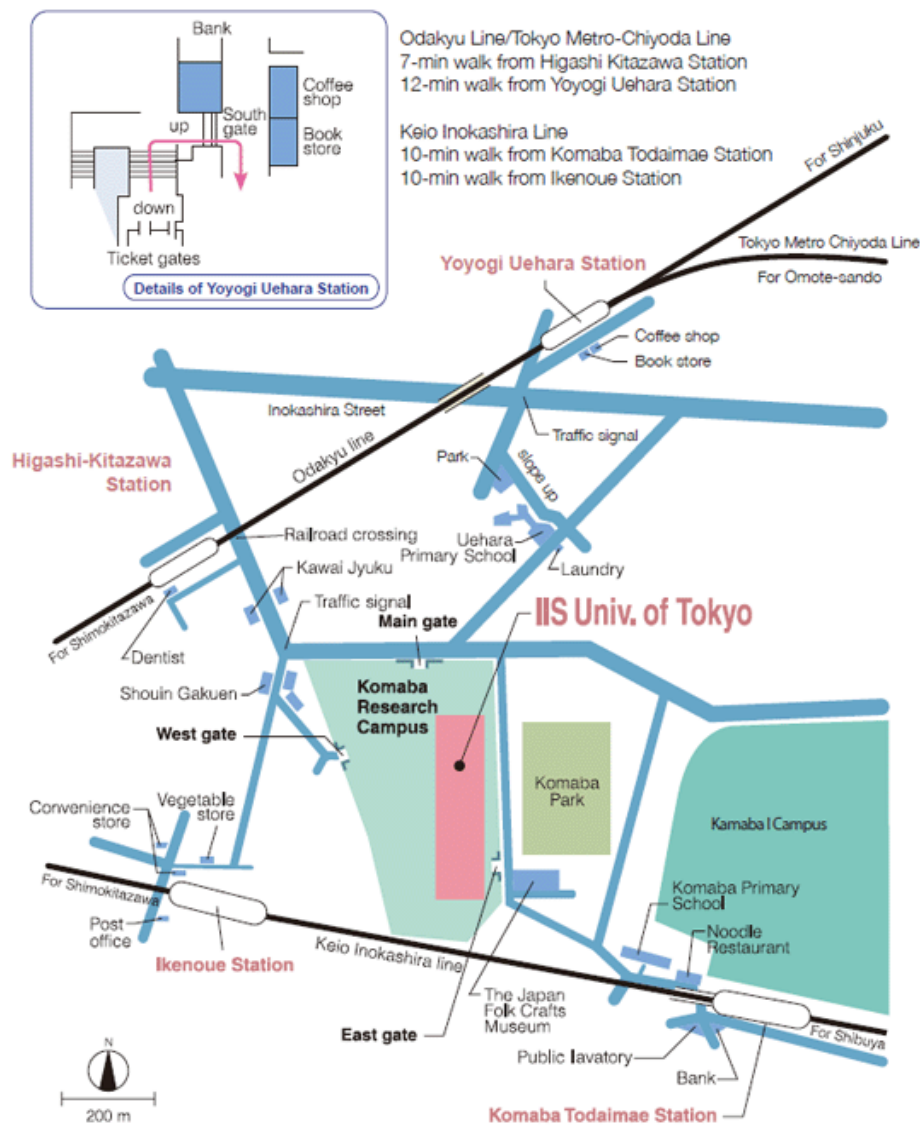
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Access: The most convenience station: YOYOGIUEHARA station (Chiyoda /odakyu line); other nearest station are IKENOUE station, KOMABATODAIMAE station and HIGASIKITAZAWA station.

Visit: http://www.iis.u-tokyo.ac.jp/access_e/access_e.html (for more details about the access to venue).



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