

## The 5<sup>th</sup> NEA-JC Workshop

on

### “Current and Future Technologies”

20 November 2011, The University of Tokyo, Hongo Campus, Tokyo

## PROGRAM OUTLINE

As an annual event of Nepal Engineers’ Association – Japan Center (NEA-JC), the Event Management Committee (EMC) of NEA-JC 6<sup>th</sup> Executive Committee is organizing a one-day workshop on “**Current and Future Technologies**” in Tokyo on 20 November, 2011. 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 final program is outlined hereunder;

### 10:00 – 10:25 Opening Plenary; MC: Keshab Sharma

10:00 – 10:05	Welcome and opening address by <i>Dr. Vishnu Prasad Pandey</i> , President, NEA-JC
10:05 – 10:10	Remarks by <i>Chiranjibi Thapa</i> , Vice-President, NRNA
10:10 – 10:15	Remarks by <i>Puskar Jung Thapa</i> , Member, NESAJ
10:15 – 10:20	Remarks by <i>Ramesh Pokharel</i> , Treasurer, TUNEF
10:20 – 10:25	Vote of thanks by <i>Shaphal Subedi</i> , Coordinator, Workshop Organizing Committee

### 10:25 – 11:45 Keynote Session; Chair: Dr. Surya Raj Acharya

10:25 – 10:55	<b>Keynote Speaker:</b> <i>Dr. Shinya Hanaoka</i> (Asso. Prof., Tokyo Institute of Technology) <b>Title:</b> Cross border transport in landlocked countries
10:55 – 11:05	Q&A
11:05 – 11:35	<b>Keynote Speaker:</b> <i>Dr. Shobhakar Dhakal</i> (Director, Global Carbon Project, NIES) <b>Title:</b> Global Climate change and climate vulnerability of Nepal.
11:35 – 11:45	Q&A

### 11:45 – 13:30 Lunch Break

### 13:30 – 15:10 Technical Presentations Session; Chair: Dr. Hari Ram Parajuli

13:30 – 13:45	<b>Speaker:</b> <i>Dr. Dinesh Manandhar</i> (Visiting Researcher, The University of Tokyo) <b>Title:</b> Bridging the Technological Development between Nepal and Japan in the field of Space Technology Applications and Research (STAR)
13:45 – 13:50	Q&A
13:50 – 14:05	<b>Speaker:</b> <i>Dhruba Panthi</i> (PhD Student, The University of Tokyo) <b>Title:</b> Emerging trends and the future of energy technologies
14:05 – 14:10	Q&A
14:10 – 14:25	<b>Speaker:</b> <i>Shaphal Subedi</i> (PhD Student, Saitama University) <b>Title:</b> Development of hydrophobic capillary barrier system for solid waste landfill capping
14:25 – 14:30	Q&A
14:30 – 14:45	<b>Speaker:</b> <i>Kabir Shakya</i> (PhD Student, Tokyo Institute of Technology) <b>Title:</b> Preliminary investigation of the damaged buildings in Bhaktapur and Eastern Nepal due to Nepal-Sikkim earthquake of September 18, 2011
14:45 – 14:50	Q&A
14:50 – 15:05	<b>Speaker:</b> <i>Keshab Sharma</i> (Master Student, The University of Tokyo) <b>Title:</b> Slacking effect on shear strength and creep deformation of crushed mud stone
14:05 – 15:10	Q&A

### 15:10 – 15:25 Break

### 15:25-16:40 Integrated discussion on the theme of the workshop;

<b>Panelists:</b>	<i>Dr. Shobhakar Dhakal</i> (NIES, Japan)
	<i>Dr. Dinesh Manandhar</i> (The University of Tokyo, Japan)
	<i>Dr. Ved Prasad Kafle</i> (NIICT, Japan)

**16:45 – 16:50 Concluding Remarks:** by *Dr. Vishnu Prasad Pandey*, President, NEA-JC

## The 5<sup>th</sup> NEA-JC Workshop

on

### “Current and Future Technologies”

20 November 2011, The University of Tokyo, Hongo Campus, Tokyo

## PRESENTATION SUMMARIES AND SPEAKERS' PROFILES

---

**Title:** Cross border transport in landlocked countries

**Speaker:** Prof. Shinya Hanaoka

**Summary:** Many landlocked countries (LLCs) have difficulty in international trade. Since LLCs have no their own seaport, they have to across at least one border when they access to seaports located in neighbor transit countries (TCs) for trading through maritime transport. Previous researches concluded that LLCs had disadvantage compared to coastal countries in terms of trade and economic activities. This presentation aims to identify the characteristics of international freight transport of LLCs.

**Speaker's profile:** Dr. Hanaoka is an Assoc. Professor (2007~now) at Department of International Development Engineering, Graduate School of Science and Engineering in Tokyo Institute of Technology (Tokyo Tech). Before joining Tokyo Tech, he worked as a Visiting Lecturer (2003-2004) and as an Asst. Prof. (2004-2007) in Asian Institute of Technology (Thailand), as a Researcher (1999-2003) and Senior Researcher (Apr-Jul, 2003) in Institute for Transport Policy Studies (Tokyo, Japan). He has visiting positions at several other institutes and universities in Japan, Thailand and UK as well. His research areas include transport development studies, air transport, transport logistics, transport infrastructure management, among others. He has authored/co-authored nearly 20 referred international journal articles and more than 15 referred national journal articles.

---

**Title:** Global Climate change and climate vulnerability of Nepal

**Speaker:** Dr. Shobhakar Dhakal

**Summary:** This talk would start with key drivers of global climate change and an overview of global climate change impacts. These are global trends of greenhouse gas emissions and the current state of understanding on the impacts of climate change and their regional diversity. The talk would then downscale the discussions to Hindu Kush mountain region and especially to Nepal. In the context of climate change, knowledge gaps in Nepal will be discussed and the vulnerability of Nepal to climate change and its regional variations will be discussed based on the published studies. The talk will also touch upon the role of knowledge and technology transfer to cope with climate change impacts.

**Speaker's profile:** Dr. Dhakal is one of the two executive directors of the Global Carbon Project, an international scientific program hosted by CSIRO Canberra (Australia) and NIES Tsukuba (Japan). His core expertise is on urban carbon modeling and management but covers a broad portfolio of activities in the area of carbon cycle, climate change mitigation and urban system. He is also a visiting Associate Professor of the Graduate School of Environmental Studies of Nagoya University Japan and a guest research scholar of International Institute for Applied System Analyses in Austria. Dr. Dhakal serves as Coordinating Lead Author to the Working Group III of IPCC's 5<sup>th</sup> Assessment Report and contributes to UNEP's Global Environment Outlook (GEO-5) as Principle Scientific Reviewer. He has published over forty papers, several book chapters, edited two books, co-edited four journal special issues and others. He is currently a senior editor to carbon Management Journal, associate editor to Journal of Industrial Ecology and a member of editorial advisory board of International Energy Journal. His co-edited book “Low Carbon Transport in Asia” will be available in a month from Francis and Taylor (UK).

---

**Title:** Bridging the Technological Development between Nepal and Japan in the field of Space Technology Applications and Research (STAR)

**Speaker:** Dr. Dinesh Manandhar

**Summary:** Many applications related with disaster prevention, management, early warning systems, weather forecasting and navigation etc use information from satellites in the space. Such applications are increasing day by day and are depending on satellite data since these data are getting cheaper (or even free) due to possibility of launching micro-satellites and increased global coverage. GNSS is widely used for navigation and positioning applications like car, chip, aircraft and even pedestrian navigation. In the next few years Asia Pacific region will be the most well covered region by these satellites since Japan, China

## The 5<sup>th</sup> NEA-JC Workshop

on

### “Current and Future Technologies”

20 November 2011, The University of Tokyo, Hongo Campus, Tokyo

and India are launching their own satellites. This will generate lot of applications together with huge business opportunities. In this regard, Nepal cannot be left alone to use these satellite data that are freely available. In order to get the maximum possible benefits from such technologies, Nepal shall establish its own technological unit and research facilities. In this paper, approaches for technological development between Nepal and Japan will be discussed in the field of Global navigation Satellite System (GNSS) by conducting joint R&D projects, capacity building and conducting web-based courses.

**Speaker's profile:** Dr. Manandhar is a visiting researcher at the University of Tokyo. He received Ph. D. from the University of Tokyo, Japan in 2001. He is involved in Signal Design and Applications Development in the field of Global Navigation Satellite System especially MICHIBIKI satellite (Japanese Quasi-Zenith Satellite System for Navigation and Positioning).

---

**Title:** Emerging trends and the future of energy technologies

**Speaker:** Dhruba Panthi

**Summary:** Growing global environmental problems, continuously depleting fossil-based conventional energy resources and energy security concerns of various nations have all urged to a shift to more efficient, clean and sustainable energy systems. In recent decades, there has been a considerable progress in exploiting renewable energy resources, exploring alternative routes of energy conversion as well as increasing the efficiency of existing power generation and end-use processes. However, there is still a long way to go in order to make the alternative energy technologies competitive with the conventional ones in terms of cost, performance and reliability. Moreover, several emerging energy technologies themselves are strongly competing with each other to lead the race. This presentation will give an overview of these recent trends along with insights on the future of the energy industry mainly from a perspective of electrochemical energy conversion and storage. The significance of novel developments in energy technologies in Nepalese context will also be briefly discussed.

**Speaker's profile:** Mr. Panthi is currently pursuing his doctoral study in mechanical engineering at the University of Tokyo. He completed bachelor's degree in mechanical engineering from Tribhuvan University in 2006 and master's degree in the same stream from the University of Tokyo in last September. Before coming to Japan, he worked as production engineer for Alcoa CSI Nepal, a subsidiary of Alcoa Inc., for almost two years and was also briefly involved in instructing undergraduate students at Pulchowk Campus, Tribhuvan University. His current research is primarily focused on electrochemical energy conversion and energy system engineering.

---

**Title:** Development of hydrophobic capillary barrier system for solid waste landfill capping

**Speaker:** Shaphal Subedi

**Summary:** Alternative earthen capping systems such as capillary barriers and evapotranspirative covers are recognized as useful technical solutions for landfill final cover systems in developing countries semi-arid and arid climate. However, their application to the landfills at wet regions seems to be matter of concern due to loss of their impending capacity under high precipitation. In developing the possible concept of “hydrophobic capillary barriers”, the development technique to enhance the impermeable properties of capillary barriers, which consists of turning the coarse grain surface of subsoil water repellent by mixing it with low-cost and locally available hydrophobic material such as oleic acid and stearic acid were discussed by water repellency test. The desired characteristics of such techniques are: (a) allow use of soils located nearby the landfill, (b) assure the sustainable and long term performance, (c) be economically affordable to be implemented in developing countries.

**Speaker's profile:** Mr. Subedi is a Ph.D. student in Saitama University at the Graduate School of Science and Engineering. His majors are Geoenvironmental Engineering and Wastewater Engineering. Current research interests are pollution control and environmental risk assessment at waste disposal landfill sites.

---

**Title:** Preliminary investigation of the damaged buildings in Bhaktapur and Eastern Nepal due to Nepal-Sikkim earthquake of September 18, 2011

**Speaker:** Kabir Shakya

## The 5<sup>th</sup> NEA-JC Workshop

on

### “Current and Future Technologies”

20 November 2011, The University of Tokyo, Hongo Campus, Tokyo

**Summary:** A strong earthquake with a magnitude of 6.9 jolted eastern Nepal on September 18, 2011 at 18:25 (Nepalese Standard Time) with shaking felt 272 km west in the capital, Kathmandu. The epicenter was located at Nepal-India border (27.72°N, 88.06°E) (Taplejung District of Nepal) and the focal depth was 19.7 km. This shallow focus earthquake lasted for about 30-40 seconds and affected several areas of Nepal, India, China, Bhutan and Bangladesh. The devastating earthquake claimed the lives of 111 people with the maximum of 97 in India. A press release of the Ministry of Home Affairs of Nepal on October 24, 2011 reported a total of 6 casualties in Nepal which includes 3 deaths in Kathmandu, 2 in Sunsari and 1 in Sankhuwasabha. Similarly, 30 people were critically injured and 134 suffered minor injuries. A total of 6,435 houses were completely damaged, 11,520 were partially damaged and 3,024 houses suffered only minor damage throughout the country.

From the preliminary investigation it was found that most of the buildings in Bhaktapur which suffered extensive damage were old and constructed using sun dried bricks with mud mortar. The buildings were built prior to the implementation of building design codes. The heavily damaged or collapsed buildings in the eastern part of Nepal were primarily constructed using random rubble stone masonry with mud mortar which offers very weak resistance to lateral loads and extremely vulnerable to seismic loads. The buildings with timber frame exhibited better performance compared to the stone masonry buildings. The local construction technique so called “*Centibera*” which is composed of timber framing with woven bamboo strips found to be more appropriate for those locations as almost no damage or cracks were observed in such buildings. Extensive shear cracks and flexural cracks on the structural walls were very common in most of the buildings. Besides, the collapse of building due to structural pounding was also found. No damage to the bridges and no landslides were noticed in the investigated locations.

**Speaker’s profile:** Mr. Shakya is currently a PhD. Student at Department of Civil Engineering, Tokyo Institute of Technology, O-okayama Campus. He completed his Diploma and Bachelor in Civil Engineering from Institute of Engineering, Pulchowk Campus, Tribhuvan University, Nepal in 1998 and 2004, respectively. He obtained Master of Engineering in Civil Engineering from Tokyo Institute of Technology, Tokyo, Japan. He has also engaged in design, construction and supervision of numerous residential, commercial buildings, hospital buildings and institutional buildings during 1998 to 2006. He is interested in analysis and design of earthquake resistant structures particularly RC buildings and bridges. He is currently involved in research work for the optimization of reinforcements at beam-column joints of bridges by using steel fiber reinforced concrete.

---

**Title:** Slacking effect on shear strength and creep deformation of crushed mud stone

**Speaker:** Keshab Sharma

**Summary:** In this paper, a series of direct shear tests was conducted on mudstones with different initial water content and varying stress ratio i.e. ratio of shear stress and normal stress by using a modified direct shear apparatus. Different specimens with varying initial water content were consolidated, then applied creep load and fully submerged under creep loading. Then, shear strength and creep deformation characteristics were examined for each sample. The effects of initial water content for saturated mudstones on shear strength and creep deformations are investigated in this paper. A significant creep deformation and a reduction in the peak shear strength after saturation were observed for dry sample (initial water content zero) as compared to other samples with certain initial water content even all samples have nearly same density. Sieve analysis also performed to investigate the changes in particle size distribution before and after experiment. The gap between shear displacement-creep time and shear stress-shear displacement of specimens with and without saturation can be considered to represent an effect of slaking on mudstones. Similarly, finer particles obtained after experiment can be considered as slaking effect on mudstones.

**Speaker’s profile:** Mr. Sharma is currently pursuing his Master degree in Civil Engineering at The University of Tokyo. He completed bachelor’s degree in Civil Engineering from Pulchowk Campus, Institute of Engineering, Tribhuvan University in 2007. Before coming to Japan, he involved in rural infrastructure development. He had experience of designing more than thirty trail bridges, micro-hydro and rural roads. He worked as a full time lecturer at Kathmandu Engineering College and also as a part time lecturer at many Engineering Colleges in Kathmandu. His current research is primarily focused on earthquake induced Geo-disaster, slaking of mudstones and slope failure etc.

---

\*\*\*

## The 5<sup>th</sup> NEA-JC Workshop

on

### “Current and Future Technologies”

20 November 2011, The University of Tokyo, Hongo Campus, Tokyo

## PROGRAM VENUE

**Institute:** The University of Tokyo, Hongo Campus

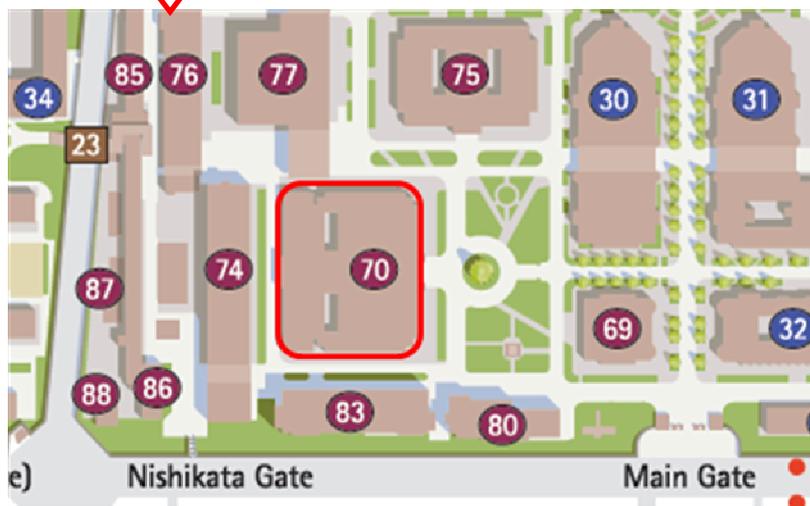
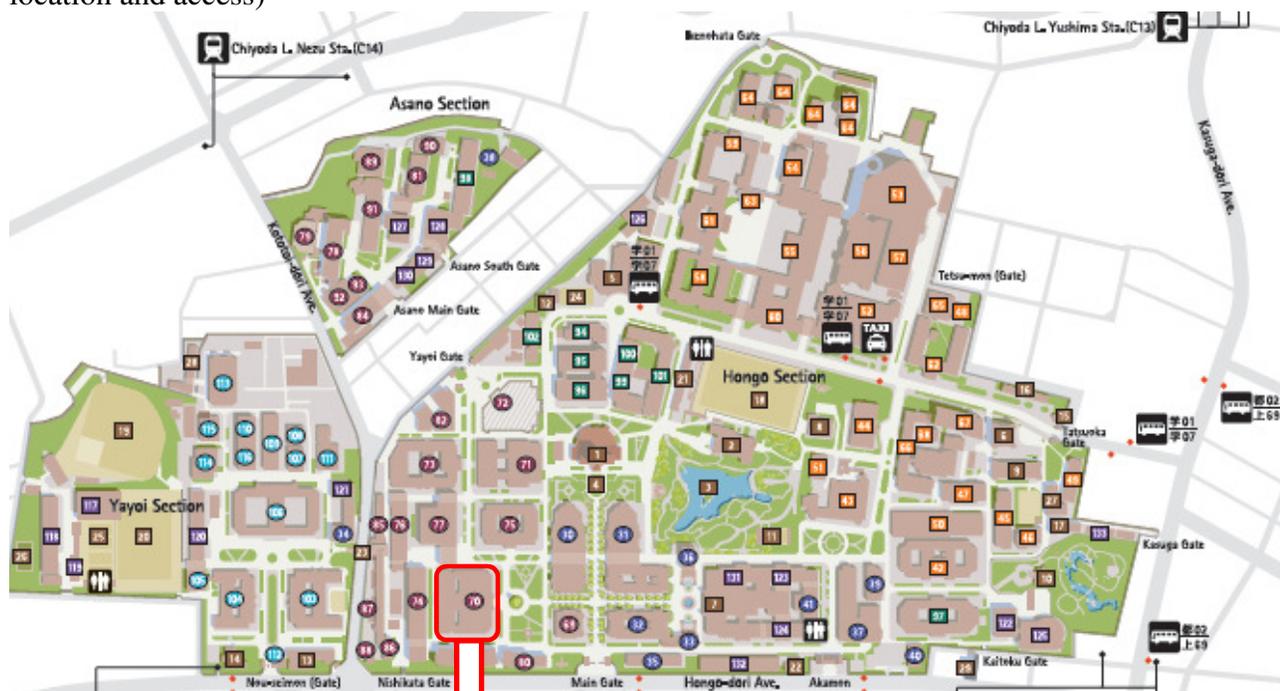
**Address:** Engineering Building No. 1 (Civil Engineering) (block no. 70 in the map).

**Room:** 14 (Ground floor)

**Contact phone:** Shaphal Subedi (080-40725450), Keshab Sharma (080-37504992)

**Access:** Hongo Sanchoe St<sup>n</sup> (8min walk from Marunouchi subway or 6min walk from Oeda subway)

**Visit:** [http://www.u-tokyo.ac.jp/en/about/documents/Hongo\\_CampusMap\\_E.pdf](http://www.u-tokyo.ac.jp/en/about/documents/Hongo_CampusMap_E.pdf) (for details of venue location and access)



## The 5<sup>th</sup> NEA-JC Workshop

on

### “Current and Future Technologies”

20 November 2011, The University of Tokyo, Hongo Campus, Tokyo

## ORGANIZING COMMITTEE

Er. Deepak Raj Bhat, Ehime University  
Er. Deepak Raj Pant, Tokyo Institute of Technology  
Er. Hari B. Pahari, Fuji Electric E & C Co. Ltd.  
Er. Keshab Sharma, The University of Tokyo  
Dr. Kshitiz Charan Shrestha, Kyoto University  
Er. Kumar Shimkhada, KDDI  
Er. Kabir Shakya, Tokyo Institute of Technology  
Er. Laxmi Prasad Suwal, The University of Tokyo  
Er. Maheswor Shrestha, The University of Tokyo  
Er. Mukta Sapkota, Kyoto University  
Er. Priza Kayestha, Tokyo Institute of Technology  
Er. Rajesh Shapkota, HITACHI  
Er. Ram Krishna Regmi, Kyoto University  
Er. Shaphal Subedi, Saitama University (**Coordinator**)  
Er. Satya Narayan Sharma, Saitama University

## PROGRAM COMMITTEE

Dr. Achyut Sapkota, Chiba University  
Dr. Akhilesh Kumar Karna, Nippon Koei  
Dr. Badri Bhakta Shrestha, Kyoto University  
Dr. Bhoj Raj Pantha, KEI, Ginza, Tokyo  
Dr. Bhubaneshwor Shah, PASCO Corporation, Tokyo  
Dr. Dinesh Manandhar, The University of Tokyo  
Dr. Hari Ram Parajuli, Ritsumeikan University, Kyoto  
Dr. Jhabindra Ghimire, Common wealth Engineers Co. Ltd., Tokyo  
Dr. Madhusudan Kayastha, Chubu University  
Dr. Netra Prakash Bhandary, Ehime University, Matsuyama  
Dr. Phatta Bahadur Thapa, Tokyo Engineering Consultants Co. Ltd  
Dr. Rabindra Raj Giri, Osaka Sangyo University  
Dr. Rabindra Osti, ICHARM, Tsukuba  
Dr. Sanat Wagle, Osaka University  
Dr. Shobhakar Dhakal, NIES, Tsukuba  
Dr. Sudip Adhikari, Chubu University  
Dr. Sunil Kumar Karna, Tokyo Engineering Consultants Co. Ltd  
Dr. Surya Raj Acharya, Institute of Transport Policies Studies, Tokyo  
Dr. Tara Nidhi Lohani, GeoResearch Institute Kobe  
Dr. Ved Prasad Kafle, NICT, Tokyo  
Dr. Vishnu Prasad Pandey, University of Yamanashi (**Coordinator**)