

PROCEEDINGS OF THE INTERNATIONAL SYMPOSIUM ON DAMS FOR A
CHANGING WORLD – 80TH ANNUAL MEETING AND 24TH CONGRESS OF
ICOLD, KYOTO, JAPAN, 5 JUNE 2012

DAMS FOR A CHANGING WORLD
*-Need for Knowledge Transfer across
the Generations & the World*

Organization committee, ICOLD 2012 Kyoto
JAPAN COMMISSION ON LARGE DAMS

Table of contents

Title	Page
Invitation from the Chairman of Organizing Committee and President of JCOLD	i
Preface	ii
Themes of the Symposium	iii
Dams in Japan	iv
Organization	vi

Key note presentation

State of the Arts of Real-time Precipitation Forecast and Climate Change Impact Assessment on River Regime Eiichi Nakakita, Japan	i
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Papers

(1) Impacts of Climate Change on Dams and the Benefits from Dams

Title of paper	Authors	Country	Page
Climate Change and Dam Safety in Sweden	Bartsch Maria, Engstrom Meyer Anna	Sweden	1-1
Assessment of Changes in Design Flood Due to Climate Change for Sysen Dam in Norway	Chernet Haregewoin, Alfreksen Knut, Midttomme Grethe Holm	Norway	1-7
Construction of the Integrated Management System in Dam and Reservoir for Climate Change	Jong Mun Lee, Young Do Kim, Boo Sik Kang, Deuk Koo Koh	Korea	1-13
Role of Dams in the Adaptation and Mitigation of Climate Change in Developing Countries	Sanchez Francisco, Perez Alfonso, Martinez Elena	Spain	1-19
Climate Change and Water Supply Reliability Practical Guidelines for Dealing with Uncertainty	Annandale George William	USA	1-27
Minimization of Adverse Climate Change Impacts on Multi-Dam Systems by Optimized Operation	Meon Gunter, Gocht Martin	Germany	1-33
Food, Energy and Water from the Nizao River Water Projects Dominican Republic	Armenteros Rius Jose Manuel, Gomez-Achecar Octavio Manuel	Dominican Republic	1-39
Modelling Tidal Renewable Energy Schemes as Building Blocks in a Low Carbon Society	Fenrich Eva, Wieprecht Silke, Ahmadian Reza, Bockelmann-Evans Bettina, Marx Walter, Falconer Roger	Germany	1-45
Cascade Type Flood Control Using Plural Dams	Oshikawa Hideo, Komatsu Toshimitsu	Japan	1-51
A Methodology for Analysis of Uncertainty in Probable Maximum Precipitation	Micovic Zoran, Schaefer Melvin, Taylor George	Canada	1-57
New Dam Construction Policy and Future Korean-Style Dam Model to Adapt to Environment Change	Kim Sae jin, Jin Seong Won, Cha Kee-Uk, Park Byungun	Korea	1-63

Hydrologic Safety of Small Dams under Climate Change	Adama Nombre	Burkina Faso	1-69
Deep Catastrophic Landslides and Landslide dams in Japan	Tadanori Ishizuka, Nobutomo Osanai	Japan	1-75
Preliminary Study of Recent Water Temperature Trends of Dam Reservoirs in Japan	Nagao Masayuki,Suzuki Atsushi	Japan	1-81
Mitigation Strategies Based on Flash Floods Simulation Considering Water Resources Management at Wadi El-Arish, Sinai Peninsula, Egypt	Saber Mohamed,Hamaguchi Toshio ,Tanaka Kenji ,Kantoush Sameh Ahmed,Sumi Tetsuya	Egypt	1-87
Impacts of Climate Change on Water Resources Programming of Vanyar Dam	Kanani Reza	Iran	1-93
Recovery Works from Landslide Dams Caused by Typhoon Talas 2011	Yoshiaki Nanami	Japan	1-97
The Ruataniwha Plains Water Storage Project: Sustainable Irrigation for Central Hawke's Bay New Zealand	Leong David, Hansen Graeme	New Zealand	1-101
Parameter Determination of a Distributed Runoff Model Considering the Surveyed Ground Surface Conditions	Kaoru Haga, Tsuyoshi Sakai, Yasunobu Otsuru	Japan	1-107
Garung Dam on Menjer Lake "Planned" to Last 650 Years	Ariyanti Rr. Vicky,ST, M.Sc, M.Eng, Ir. Faizal Adicondro, M.E, Ir. Muhammad Syamsudin, Dipl. HE	Indonesia	1-113
Thermal Load of the Sava River – Revision of Results After Partial Completion of the HPP Chain	Sirca Andrej	Slovenia	1-119
A Study on New Technique of dam Sluice Operation for Flood Control	Qian Chaochao,Yamada Tadashi, Kitada Yusei ,Kikkawa Hideo	Japan	1-125
Impacts of Climate Change on Spillway: A Case Study Situ Gintung Dam, Indonesia	Mulyantari Fransisca	Indonesia	1-129
Overtopping of Reservoir Water over the Dam Crest as One of the Dominant Causes of the Huge Flood	Brotodihardjo Agus PP,Munir Moh. Dedi	Indonesia	1-135
Dynamics of an experience on local water resources management as a strategy for adaptation to climate change in the Nakanbé basin	MILLOGO Dibi	Burkina Faso	1-141

(2) Dams for Meeting Increasing Demand of Growing World Population

Title of paper	Authors	Country	Page
Damage from Typhoon Talas to Civil Engineering Structures for Hydropower Stations and the Effect of the Sediment Bypass System at Asahi Dam	Hajime Fukuroi	Japan	2-1
Management of Reservoir Sedimentation in the Brantas River Basin Indonesia	Hariato, Edhie Subagyو, Alfan Rianto, M. Taufiqurrachman, Fahmi Hidayat & Astria Nugrahany	Indonesia	2-7
Study of Sedimentation of Reservoirs in Poland	A. Kosik, J. Kloze, A. Wita	Poland	2-13
Sediment Management through Tandem Operation of Dams in Kurobe River	Masanobu Takeuchi, Kenichi Sasaki	Japan	2-19
Reservoir Sedimentation Different Type of Flushing - Friendly Flushing Example of Genissiat Dam Flushing	Francis FRUCHART, Benoit CAMENEN	France	2-23
Sediment Management at Grande Dixence Dam	N.-V. Bretz, M. Barras	Switzerland	2-29
Hydraulic Characteristics of the Burrowing Type Sediment Removal Suction Pipe	Toshiyuki Sakurai, Noriaki Hakoishi	Japan	2-35
Development of Numerical Analysis Code for Predicting Behavior of Removal Sediment from Reservoir Bed by Using Discharge Pipe Based on Siphon Principle	N. Yoneyama, A.Saito, K. Iguchi	Japan	2-41
Dam Safety Decision Making in a Risk Environment	Mal Halwala, Rob Keogh	Australia	2-47
Tracking Construction Progress, Costs and Risk using an Integrated Accounting System	L.S. Tromp, P.S. Swart	Lesotho	2-53
Dams and HPPs Construction as Optimal Coexistence Solution Between Energy Demands and Environment	S. Stevovic, H. Milosevic	Serbia	2-59
Negotiations for Conflict Management during Impoundment of Large Dams	Saied Yousefi, Eisa Bozorgzadeh	Iran	2-65
Need for Construction of Large Dams for Food, Energy and Water in Pakistan	Syed Raghieb Abbas Shah, Muhammad Ashraf Abid, Saqib Zia	Pakistan	2-71
Dam Development and Water Management in Central Vietnam. Case Study of the Vu_Gia - Thu_Bon River Basin	G. Pham H., N. Pham H., T. Pham H. V.	Viet Nam	2-77
People's Awareness to River Improvement Projects with Planning of Dam Construction for the Kitagawa River, Fukui Prefecture	T. Hosoda, T. Kazusa, K. Ohara	Japan	2-83
The Multiple Contributions of Dams and Reservoirs after the 2011 Great East Japan Earthquake	Toshio Okazumi	Japan	2-87
Study on a Comprehensive Evaluation Method for Reorganizing Water-Use Systems	Yoko Yamamoto, Tadahiro Toyoda, Shinya Mitsuishi, Okito Mukouzaka, Saeko Osaki	Japan	2-93
An In-Situ Experiment on Oxygen Solubility of Micro-Bubble Aeration in A Eutrophic Dam-Reservoir	K. Michioku, H. Minagawa, S. Yamada, T. Ikeguchi, N. Ohkawa	Japan	2-99

Design and Operation Guideline Standardization for Reservoir Circulation Improve Water Quality of Reservoir in Korea	Byeong-Yong.Sohn, Kyung-Tack.Yum, Jin-Soo.Kim, Yang-Jin.Ban, Chang-Young.Byun	Korea	2-105
Influence of Gachsaran Formation Salt Layers on Reservoir Quality of Upper Gotvand Dam	Noor Ali Damough, Heydar Zarci	Iran	2-111
Study on Flushing Mechanism of Dam Reservoir Sedimentation and Recovery of Riffle-Pool in Downstream Reach by a Flushing Bypass Tunnel	Tomoo Fukuda, Katsumi Yamashita, Kengo Osada, Shoji Fukuoka	Japan	2-115
Simulation of River Bed Degradation with Bed Rock Erosion Downstream of the Reservoir	Tetsuya Sumi, Jih-Sung Lai, Fong-Zuo Lee, Yih-Chi Tan, Chen-Chia Huang	Taiwan	2-121
Monitoring and Evaluation of the Invading Mollusc, <i>L. fortunei</i> , at Itaipu Binacional, City of Foz do Iguaçu, State of Paraná, Brazil	Domingo Rodriguez Fernandez, Carla Canzi, Tacias Villa de Lima	Brazil	2-127
Reservoir Sediment Management Using Replenishment: A Numerical Study Of Nunome Dam	Cajot Sebastien, Sumi Tetsuya, Schleiss Anton, Kantoush Sameh	Switzerland	2-131
Three-Dimensional Numerical Study of the Flushing Process in a Dam Reservoir	A.R. Mansoori, H. Nakagawa	Japan	2-137
Approaches for Integrated Sediment Flow Management at Dams in the Mimikawa River Basin	Y. Yamagami, M. Kaku, K. Asazaki, Y. Tashihiro, T. Yamashita, K. Nishida, J. Oshikawa, K. Nonaka, H. Kodama, S. Sugio	Japan	2-143
Plan of Controlling Freshwater Red Tide Outbreak by a Vertical Fence in a Reservoir	Hikaru Sakaida, Akitoshi Omori	Japan	2-149

(3) Knowledge & Technology Transfer in Dam Engineering

Title of paper	Authors	Country	Page
Dam Engineering Moving towards Sustainability	Polimon Jose.Giron Fernando	Spain	3-1
Knowledge Transfer To Succession Planning -The Problems Are Coming	Hughes Andy	UK	3-7
Dam Safety Training for Operators - Your Most Important Risk Management Tool	Rankin Mike S. Stewart David J A	Australia	3-13
Initiatives for Knowledge Succession in Dam Engineering	Takahiro Konami, Masaki Kawasaki, Masashi Nomura, Daisuke Kuribayashi, Yoshio Suda	Japan	3-19
Knowledge Transfer in the Dam Monitoring Practice within Romanian Water Authority	Asman Iulian Dan, Abdulmit Altan	Romania	3-25
The Implementation of Severn Trent Water's People Plan to be recognised as the Best in Great Britain at Managing Reservoir Safety	Ian Hope BSc MA CEng FICE	UK	3-31
Turning Unknown Unknowns into Common Knowledge: A Dam Owners Challenge	Chanan Amit P., Dr Kandasamy Jaya	Australia	3-37
Case Study on Knowledge Transfer to the Next Generation in Indonesia	Firman Aries Feizal, Wahyu Lolo	Indonesia	3-41

Knowledge & Technology transfer in Dam Engineering	Farhangi Bijan	Iran	3-47
Dam Safety Enhancement Program: A Cooperation Project between Switzerland and China	Mean Philippe.Droz Patrice .Cai Yuebo .Sheng Jinbao	Switzerland	3-55
Bridging the Gap Between Prevention Research, Education and Practice: Japan Egypt-Hydro Network (JE-HydroNet)	Kantoush Sameh, Saber Mohamed , Sumi Tetsuya . Elshennawy Ibrahim . Aziz Medhat . Senousy Mahmoud . Awad Haytham . Sefelnaser Ahmed	Egypt	3-61
Survey and Research Activities and Publicity Work of the Japan Society of Dam Engineers	Honjo Masashi,Tanaka Tadatsugu ,Mori Hideto .Takashi Ikeda	Japan	3-65

(4) Advanced Technologies for Construction of Dams

Title of paper	Authors	Country	Page
Unique challenges Influencing the Design and Construction of Three Recent Australian RCC Dams	R. Herweyenn, T. Griggs	Australia	4-1
The Asphalt Core Embankment Dam:An Attractive Alternative	Wang Weibiao, Zhang Yingbo, Zhu Yue ,Kaare Hoeg	China	4-7
Back Analysis of Tabarak Abad Dam Behavior during Construction	A.Farivar, A.A.Mirghasemi, R.Mahin Roosta	Iran	4-13
Innovative Geomembrane System at Vaité Embankment Dam	A.S. Scuero, G.L. Vaschetti	Switzerland	4-19
Trapezoidal CSG Dam Design and Construction for Kasegawa secondary dam	N. Gotoh, K. Nagamatsu, Y. Matsumoto, M. Sakurai	Japan	4-25
Lime Treated Materials for Embankment and Hardfill Dam	G. Herrier, D. Lesueur, D. Puiatti, J.-C. Auriol, C. Chevalier, I. Haghighi, O. Cuisinier I, S. Bonelli, J.-J. Fry	Belgium	4-31
Deformation Modulus of Embankment Materials for Narmashir CFRD	D.Belashi	Iran	4-37
Effective Model for Dynamic Vertical Joint Opening of Concrete Arch Dam	M. Ghiasian, M.T. Ahmadi	Iran	4-41
Study of Reasonable Cooling Water Scheme for Temperature Controlling of RCC Dams	Li Tongchun, Wu Zhen, Cheng Jing, Liu Xiaoqing	China	4-47
Numerical Analysis of High CFRD Using an Elastoplastic Constitutive Model	Yuguang Chen, Jean-Jacques Fry, François Laigle, Eric Vincens, Francesco Froio	France	4-53
Rapid Saturated Permeability Evaluation Method of Unsaturated Dam Foundations	Yoshikazu Yamaguchi, Hiroyuki Satoh, Hiroki Sakamoto, Satoshi Yoshida, Kenji Shimoyama	Japan	4-59

Long-Term Field Exposure Tests of Dam Concrete Using Large-Scale Concrete Blocks	Shigeyoshi Nagataki, Tomoaki Tsutsumi, Yoshinori Kabe, Akira Mitsuzumi, Masanori Shibata, Takashi Itou, Hiroshi Katahira, Tatsuo Nishiuchi	Japan	4-65
Optimizing Placing Speed of Concrete at Concrete Gravity Dams	H. Irie, M. Okamoto, K. Sano, K. Oyabu	Japan	4-71
Design and Construction of the Discharge Facilities of the Shitsumi Dam	T. Nakagawa, D. Hirayama, W. Nakane	Japan	4-77

(5) New Techniques to Prevent and Manage Incidents & Accidents

Title of paper	Authors	Country	Page
How to Prevent Embankments from Internal Erosion Failure?	Jean-Jacques Fry	France	5-1
Monitoring of Fill Dams Using GPS-based Displacement Measurement System	S. Nakashima, H. Kawasaki, N. Shimizu	Japan	5-7
Monitoring of Leakage through Face Slab of Nam Ngum 2 CFRD	C. Thongthamchart	Thailand	5-13
Structural Monitoring of a Zayandeh-Rud Concrete Arch Dam in	L. Faramarzi, A. Horiyat, M. Tabae	Iran	5-19
On-Line Dynamic Monitoring of Cahora Bassa Dam	E. F. Carvalho, I. Tembe	Mozambique	5-25
A Structural Framework for Dam Safety Plan According to Brazilian National Law on Dam Safety	Carlos Henrique de A. C. Medeiros, Yvonilde D. P. Medeiros	Brazil	5-31
Risk Assessment Required In The Framework Of New French Regulation On Dams Methodology Developed By INERIS	T. Balouin, A. Lahoz, C. Bolvin, Y. Flauw	France	5-37
Lessons Learned from Flood Management Practice and Implementation them in Emergency Planning ; Case Study : Latyan Dam , Iran	Alireza Asaddokht, Sasan Mafian	Iran	5-43
Investigation Techniques and Remedial Works to Control Seepage through an Earthfill Dam	Dan Stematiu, Radu Sarghiuta, Catalin Popescu, Daniel Gafloi	Romania	5-49
Performance of Highly Ductile Modified Asphalt for Use in Impervious Facing Zone	T. Mizuno, M. Shimazaki, Y. Nakamura, Y. Ohne, K. Narita, T. Okumura	Japan	5-53
Experience of Maintenance and Further Operation of Rock-Fill Dam	V.I. Shcherbina	Russian Federation	5-59
Discussion on Evaluation Method for Defect Probability based on Maintenance History Data of Spillway Gate Components	Shuji Umesaki, Hidetoshi Ohmi	Japan	5-63
Application of Unified 3D Hydro-Thermal Model of a Reservoir for Estimation of HPP Construction Influence on Environment	V.A. Prokofyev	Russian Federation	5-69
Risk criteria for determining design storms	Gustavo Adolfo, Paz Soldan Cordova, José Juan, Barrera Pérez	Mexico	5-75

Iron Bacteria at the Drain Pipes in Gravity Dams and Their Treatments	J. Bea, Y. Kim, J. Kim, Y. Ban, Y. Nakase, M. Yotsuji	Korea	5-81
The Proposal of the Technique for the Repair of Defects in Waterstops at Concrete Gravity Dam	J. Riha, M. Spano, F. Glac	Czech Republic	5-85
The Challenge of Dam Heightening	R. P. Brenner, S. Messerklinger	Switzerland	5-91
Rehabilitation and Heightening Main problems In Concrete Dams	Najaf Pahlavani, Nasser Kheirkhah, Rooholla Amini	Iran	5-97
Improvement Methods to Ensure Hydraulics and Structural Stability of Existing Concrete Gravity Dam with Overflow Experience	Sung Jun. Lee, Kwang Seop. Kim, Kyeng Soo. Park	Korea	5-103
Influence of the Relative Alveoli Widths on Piano Key Weirs Efficiency for Varied Weir Heights	O. Machiels, S. Ercicum, B. Dewals, P. Archambeau, M. Piroton	Belgium	5-109
Increasing Flood Control Ability at Jatiluhur Downstream by Heightening the Crest of Morning Glory Spillway of Djuanda (Jatiluhur) Dam	Mardjuki Surachmat, Eddy Adywarman Djajadiredja, Andrijanto	Indonesia	5-115
To Estimate Flow Velocity and Depth at the Inception Points and to Form an Uniform Flow at the Stepped Chute of Spillway in Javeh Dam Using the Relations Presented by Various Researchers and to Compare that with the Results of Physical Model	Ehsan Emami, Mohsen Hadavand Aghaei	Iran	5-121
Failure Analysis of Concrete Arch Dam under Unexpected Loading	Mohammad T. Ahmadi, Tahereh Ahmadi	Iran	5-127
Hydraulics of Dam-breaching Flow	G. Zhao, Y. Ren, P. J. Visser, W.S. J. Uijtewaal	Netherlands	5-133
Application of Advanced Displacement Measurement System Using GPS to Concrete Gravity Dam	Toshihide Kobori, Yoshikazu Yamaguchi, Norikazu Shimizu	Japan	5-137
Study of Efficient Maintenance of Dams	K. Kimura, S. Takasu, H. Yoshida, K. Kikuch, T. Sakai.	Japan	5-143
The Development and Management of the ICT System for Dam Construction at Okukubi Dam	Masayuki Kitamaki, Harunobu Shinjou, Masatoshi Eda, Ryutaro Takemoto, Michio Matsumoto, Saburo Katayama	Japan	5-149

(6) Earthquakes

Title of paper	Authors	Country	Page
Comparison of Recorded and Computed Earthquake Response of Arch Dams	Anil K. Chopra, Jinting Wang	USA	6-1
Seismic Behaviour of an Arch-Gravity Dam Featuring a Pre-Existing Crack	A. Mellal, M. Balissat, A. Fankhauser	Switzerland	6-7
Nonlinear Dynamic Analysis of Lean RCC Dams	S.Y. Bagheri, M. Ghaemian, A. Noorzad	Iran	6-13

Proposed Redesign and Analysis of Upper Cisokan Dams Subjected to MCE	S.P. Mangkoesoebroto, R. Parithusta, N. Mulyanto	Indonesia	6-19
Response-History Analysis of the Moondarra Intake Tower: A Novel Approach Based on New Methodologies and Performance Requirements	F.J. Lopez, A.K. Chopra	Australia	6-25
Earthquake Design of a Gated Spillway Using the 3D Finite Element Method for the Theun Hinboun Expansion Project (THXP) in Laos	JC Girard, M. Demirdache, G. Diel, C. Babini, P. Porcelli	France	6-31
Design of Siah Bishe Penstocks to Resist Earthquakes	Reza Nasibifard, Mozhgan Motevalian	Iran	6-37
Dynamic Analysis of Right Abutment of Upper Gotvand Dam	M. Sharifi Broujerdi, M. Hazrati Aghchai, D. Salehi, D. Mahjoob Farshchi	Iran	6-41
Earthquake Induced Failure of Fujinuma Dam	Tadatsugu Tanaka, Fumio Tatsuoka, Yoshiyuki Mori	Japan	6-47
Effects of the 2011 Tohoku Earthquake on Dams	N. Matsumoto, T. Sasaki, N. Sato	Japan	6-53
Missing Water at the Aratozawa Dam due to the Iwate-Miyagi Nairiku Earthquake in 2008	T. Ohmachi, M. Kohayakawa	Japan	6-59
Seismic Behaviour of Dams	J. Hinks, M. Wieland, N. Matsumoto	UK	6-65
The Key Role of Master Hidden Faults, Under Zagros Folds on Seismic Hazard Evaluation Nargesi Dam Case Study	H. Samari, A. Mobini	Iran	6-71
Microseismic Monitoring at Tokuyama Dam and Its Reservoir Area	Hideeki Soda, Nobuteru Sato, Takayoshi Nakazono	Japan	6-77
Inherent Seismic Risk Design and Construction for Flood Control Dykes, Vedder River, BC	B.L.J. Mylleville, R.R. Williams, H.H. Hawson	Canada	6-83
Seismic Aspects of Bottom Outlets, Spillways, Intake Structures and Penstocks of Large Storage Dams	M. Wieland	Switzerland	6-89
Reproduction of Seismic Waveforms of the 2011 Off the Pacific Coast of Tohoku Earthquake at a Dam Site Using the Empirical Green's Function Method	H. Asahara, T. Ohsumi, T. Tomiyama, M. Kashiwayanagi	Japan	6-95
Seismic Performance Evaluation of Concrete Dams Considering Ultimate Stability of Detached Upper Block	M. Kondo, T. Kirinashizawa, H. Kojima, Y. Yamaguchi	Japan	6-99

(7) Geotechnical Aspects of Dam Foundations

Title of paper	Authors	Country	Page
Water Tightening of Tangab Dam with Washing out the Fine Soil Particles of the Alluvium	A.M. Hossein Nezhad, Y. Aliyari, H. Javar	Iran	7-1
Design, Construction and Monitoring of Grout Curtains for Concrete Face Rockfill Dams in Volcanic Rocks	J.A. López-Molina, J.A. Valencia-Quintanar, J.A. Espinoza-Guillén, G. Mendieta-Torres, P.G. Hernández-Juárez	Mexico	7-7
Satpara Dam Project on Difficult Foundations	Z.M. Malik, A.K. Khan, S.R.A. Shah	Pakistan	7-13

Mechanics of Particle Breakage in Rockfill Using Combined DEM and FEM	A. Bagherzadeh Khalkhali	Iran	7-19
Assessment of Safety of Sabalan Dam	M. Akbarzad Ghamari, S. Ghorbany, A. Mihandoost	Iran	7-25
Problems of Management of Rock Foundation Reliability of Concrete Dams and Risk Reduction during Operation	S.E. Mogilevskaya	Russian Federation	7-31
Techniques for Obtaining High Quality Boing Core of Rock Mass	Yasuo Nakamura	Japan	7-37
Manual of Geological Boring and Engineering Investigation of Dam Geology for Next-Generation Dam Engineers	Isamu Hirano, Shinji Utsuki, Keiichiro Sakamoto	Japan	7-43
Theoretical Approach of Grouting Treatment for Fractured Rock	K. Kishida, T. Hosoda, K. Kobayashi, T. Fujita, H. Kishi & Y. Kuzuha, J. Nobuto	Japan	7-49

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Invitation from the Chairman of Organizing Committee and President of JCOLD

We are honored to invite all ICOLD delegates and dam experts to attend and participate in the 24th Congress and 80th Annual Meeting to be held in Kyoto, Japan in June 2012.

On behalf of JCOLD, I would like to express my sincere appreciation for the condolences and assistance we received from many ICOLD national committees and colleagues, in response to the Tohoku-Pacific Ocean Earthquake and subsequent tsunami, in Northeastern Japan, 11 March 2011. Japan has been mobilizing all the resources and wisdom, with international support, to rescue victims and recover from the unprecedented crisis including the situation in the Fukushima Daiichi Nuclear Power Station. I firmly believe that Japan will successfully overcome these trying times and we welcome you to the ICOLD 2012 in Kyoto.

Having joined ICOLD way back in 1931, Japan is one of its oldest member countries. Japan has since contributed to ICOLD activities by organizing two ICOLD annual meetings in Tokyo in 1960 and 1984. In 2012, we will have the privilege of hosting the ICOLD Congress in Kyoto, the ancient capital of Japan dating back more than 1,000 years, designated as a World Heritage site by UNESCO. Kyoto is located in western Japan and has served for all sorts of conventions and meetings such as the 3rd World Water Forum, the United Nations Framework Convention on Climate Change, COP3 and the like.

Ever since the 7th Century, Japan has built and operated as many as 3,000-or-so dams for irrigation, municipal water, hydro power and flood control. You will have an opportunity to visit old and modern dams and hydro power projects, which will also offer a taste of cultural and natural tourist attractions. The global climate change is a pressing issue worldwide and dams are expected to play an important role in adapting and mitigating the adverse effects of climate change. We are confident that dam engineering is indispensable to world sustainability, and the Organizing Committee is preparing for the ICOLD 2012 with the utmost efforts to make it rewarding through discussions of the latest technology and experiences of dam engineering.

It will be a great pleasure for myself and JCOLD associates to welcome you in June 2012 to Kyoto and we will ensure your stay is informative as well as enjoyable.

Tadahiko Sakamoto
President of JCOLD
Chairman of Organizing Committee
for ICOLD 2012 Kyoto

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Preface

It is our great honor to invite all ICOLD delegates and dam experts to attend the International Symposium on DAMS FOR A CHANGING WORLD. Need for Knowledge Transfer across the Generation & the World in June 5, 2012. The main objective of the symposium is to highlight the necessity of knowledge transfer to young dam engineers both in developed and developing countries in order to confirm dam engineering sustainability.

We have received 251 high quality papers from 39 countries related to themes listed below, in which 120 papers are presented in oral session and others in poster session. We have invited Prof. Eiichi Nakakita from the Disaster Prevention Research Institute, Kyoto University for the keynote presentation titled 'State of the Arts of Real-time Precipitation Forecast and Climate Change Impact Assessment on River Regime'. Additionally, invited papers from Japan will present catastrophic disasters caused by Tohoku Earthquake and Tsunami, and Extreme Typhoon Talas in 2011.

- (1) Impacts of Climate Change on Dams and the Benefits from Dams
 - Deep Catastrophic Landslides and Landslide dams in Japan
 - Recovery Works from Landslide dams caused by Typhoon Talas 2011
- (2) Dams for Meeting Increasing Demand of Growing World Population
 - Damage from Typhoon Talas to Civil Engineering Structures for Hydropower Stations and the Effect of the Sediment Bypass System at Asahi Dam
 - Multiple Contributions of Dams and Reservoirs during Emergency. - Lessons from the Great East Japan Earthquake and Tsunami -
- (3) Knowledge & Technology Transfer in Dam Engineering
- (4) Advanced Technologies for Construction of Dams
- (5) New Techniques to Prevent and Manage Incidents & Accidents
- (6) Earthquakes
 - Earthquake induced failure of Fujinuma Dam
- (7) Geotechnical Aspects of Dam Foundations

As the first challenge, we are preparing the Kyoto Young Dam Engineers Award (KYDE Award) based on the efforts in providing papers and presentations at the Symposium. We hope all presentations and discussions will be fruitful, and greatly contribute to the future dam engineering and the successful symposium.

Prof. Tetsuya Sumi
Chairman of the Scientific Committee
of the International Symposium
The 80th Annual Meeting of ICOLD, 2012 in Kyoto

Tetsuya Sumi



Themes of the symposium

Main Theme

DAMS FOR A CHANGING WORLD -Need for Knowledge Transfer across the Generations & the World

Sub-Theme

- (1) Impacts of Climate Change on Dams and the Benefits from Dams
 - Role of dams in the adaptation to climate change
 - Assessment of climate change impacts on water resources and floods
 - Climate change impacts on water storage facilities and its mitigation
 - Role of hydropower in a low carbon society
 - Guidance and policies on climate change adaptation planning
 - Research needs for a more reliable knowledge on climate change
 - The impact of climate change on dam safety
 - The role of dams in mitigating storm floods
 - The monitoring and operation of dams during flood
- (2) Dams for Meeting Increasing Demand of Growing World Population
 - Food, energy and water - needs for dams in developed and developing countries
 - Coexistence of dams with society and the environment
 - Management of reservoir sedimentation
 - Financial aspects of dams
 - Institutional, planning and regulatory aspects
 - The benefits of dams and new technologies in providing potable water supply
- (3) Knowledge & Technology Transfer in Dam Engineering
 - Knowledge transfer & succession planning
 - Transfer of information across the world
 - Methods of information transfer to the next generation
 - Case studies of technology transfers
- (4) Advanced Technologies for Construction of Dams
 - Recent development in RCC dams and hardfill (CSG) dams
 - Recent development in embankment dams
 - Recent development in appurtenant structures
- (5) New Techniques to Prevent and Manage Incidents & Accidents
 - Information and communication technology for operation and monitoring
 - Technologies to prevent accidents and incidents
 - Remedial technologies
 - Case studies
- (6) Earthquakes
 - Recent strong earthquakes and the behavior of dams
 - Lessons from case histories of dams and appurtenant structures subject to earthquakes
 - New methodologies to predict causative faults and earthquake ground motions
 - Design and operation of hydraulic structures to resist earthquakes
 - Emergency measures taken after earthquakes
 - Performance monitoring for seismic events
- (7) Geotechnical Aspects of Dam Foundations
 - New techniques in exploration and evaluation
 - Treatment technologies: efficiency and long-term performance
 - Treatment of difficult geological conditions
 - Design technologies for dams on weak foundations

Organization of the Symposium

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Pham Hong Giang (Vietnam)
Toshio Hirose (Japan)
Norihisa Matsumoto (Japan)



Keynote presentation

1. THE CHANGING NATURE OF BUSINESS

The business environment is changing rapidly. The pace of change is accelerating, and the nature of the competition is becoming more intense. This is due to a number of factors, including the globalization of the economy, the rise of the service economy, and the increasing importance of technology. These changes are creating new opportunities and challenges for business leaders. In this keynote presentation, we will explore the implications of these changes and discuss strategies for success in the new business environment.

One of the most significant changes in the business environment is the globalization of the economy. This has led to increased competition from international firms and has created new opportunities for growth. Business leaders must be able to understand and navigate this global market. Another major change is the rise of the service economy. This has led to a shift in the focus of many businesses from manufacturing to services. This requires a different set of skills and strategies. Finally, the increasing importance of technology is creating new opportunities for innovation and growth. Business leaders must be able to leverage technology to gain a competitive advantage.

Business leaders must be able to adapt to these changes and create a vision for the future. This requires a combination of strategic thinking, innovation, and execution. In this keynote presentation, we will discuss the importance of these skills and provide practical advice for business leaders.

2. THE CHANGING NATURE OF LEADERSHIP

The nature of leadership is also changing. In the past, leaders were often seen as autocrats who made decisions for their followers. However, in the new business environment, leaders are expected to be more collaborative and to empower their followers. This is due to the increasing complexity of the business environment and the need for innovation. Leaders must be able to inspire and motivate their followers to achieve their goals. This requires a different set of skills and strategies. In this keynote presentation, we will explore the implications of these changes and discuss strategies for success in the new leadership environment.

One of the most significant changes in the nature of leadership is the increasing importance of collaboration. This is due to the increasing complexity of the business environment and the need for innovation. Leaders must be able to work with others to achieve their goals. This requires a different set of skills and strategies. In this keynote presentation, we will discuss the importance of collaboration and provide practical advice for business leaders.

Business leaders must be able to adapt to these changes and create a vision for the future. This requires a combination of strategic thinking, innovation, and execution. In this keynote presentation, we will discuss the importance of these skills and provide practical advice for business leaders.