

Initial Bulletin

Sapporo, Japan
Sep. 26 to 30, 2016

INTERNATIONAL SYMPOSIUM

INNOVATIVE TECHNOLOGIES
FOR DAMS AND RESERVOIRS
TOWARD THE FUTURE GENERATIONS

(FOR 4th APG & 9th EADC)



February, 2016



Japan Commission on Large Dams



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Tobetsu Dam (Trapezoidal CSG Dam)

TABLE OF CONTENTS

INVITATION FROM THE CHAIRMAN OF JCOLD	1
MESSAGE FROM THE CHAIRMAN OF THE APG	2
WELCOME TO JAPAN	3
WELCOME TO SAPPORO	4
CONFERENCE VENUE & ACCOMODATION	7
GENERAL PROGRAM	8
SYMPOSIUM	9
TECHNICAL TOUR	10
HALF DAY CITY TOUR	13
PRACTICAL INFORMATION	14
REGISTRATION	15
SAPPORO STREET MAP	16

INVITATION FROM CHAIRMAN OF JCOLD



To APG and EADC Members:

JCOLD is truly honored to host the 4th Asia-Pacific Group (APG) Symposium and 9th East Asian Dam Conference (EADC) in Sapporo, Japan from September 26 to 30, 2016.

The world is now facing regionally variable shortages of energy and food caused by population growth and challenges to the sustainable management of water resources including frequent abnormal floods and droughts, which may be thought to be the results of the impact of climate change. To deal with these problems, various regions are striving to tackle a variety of technical issues such as constructing new dams, improving the functions of existing dams, and appropriately managing reservoirs. The EADC has conducted technical exchanges concerning dams in the three countries of China, Korea and Japan, which share a common culture and monsoon climate, and will now simultaneously hold the APG symposium and EADC. This will give the many ICOLD members from West Asia to Oceania the opportunity to exchange information, and I am confident that it will provide the setting for an unprecedented landmark exchange of views.

The overall challenge taken up at the symposium will be “Innovative Technologies for Dams and Reservoirs toward the Future Generations” and consisted by three themes which have been set are: (1) Innovative Technologies of Dams, (2) Extending Service Life of Dams, and (3) Dam Safety and Risk Management

September is a pleasant season in Sapporo. I am looking forward to many of you taking part in the APG Symposium and EADC.

A handwritten signature in blue ink that reads "N. Hashimoto". The signature is written in a cursive, flowing style.

Noriaki Hashimoto

Chairman of Japan Commission on Large Dams

MESSAGE FROM THE CHAIRMAN OF THE APG



On behalf of the Asia and Australasia Zone of ICOLD, I would like to extend my deepest gratitude for being given the opportunity to co-host the 4th Asia-Pacific Group (APG) symposium which is the follow up of the 3rd Symposium held on June 26th, 2007 in St. Petersburg, Russia together with the 9th East Asian Area Dam conference with the theme of “Innovative Technologies for Dams and Reservoirs Toward the Future Generation.”

Thanks to the great effort by 3 NCs (KNCOLD, CHINCOLD and JCOLD), the EADC (East-Asian Area Dam Conference), established in 2007, has expanded its membership to include more Asia-pacific Group members, as well as ICOLD members, to its Symposium. This decision, made on October 21st, 2014 at the 8th EADC among 3 NCs, will be very helpful for coping with the many challenges that we encounter in Asia-Pacific Region.

Also considering the need to activate APG activity, established in 2002, the constitution was amended in a timely manner for the purpose of strengthening its role at the Bali APG Board Meeting held on June 3rd, 2014. As one of our quick action responses that followed the decision made at the APG Board meeting in Stavanger, Norway on June 13th, 2015, it was suggested and approved that a joint symposium be held together with the 4th Asia-Pacific Group (APG) symposium and 9th East Asian Area Dam conference which is to be held in Sapporo, Japan from Sep. 26 to 30, 2016.

The main purpose of the symposium is to foster and strengthen neighboring friendship between Asia-Pacific countries since the region has a significant number of dams, almost half of dams in the world. In the years to come, many more dams will have to be built to meet the many challenges that lie ahead.

Along with your participation, it would be greatly appreciated if you could please submit any papers and or topics that you think would be relevant to improving the discussions at symposium.

I would like to express my sincere thanks to the organizing committee of JCOLD for the significant effort they have made and wish to see you soon in the very beautiful city of Sapporo, Japan.

With warm regards,

A handwritten signature in black ink, appearing to be 'Kyung-taek YUM'. The signature is stylized and includes a large, sweeping flourish at the end.

Kyung-taek YUM

Chairman of Asia Pacific Group and Vice President of ICOLD

WELCOME TO JAPAN

Welcome to Japan

Japan is situated in northeastern Asia and is an archipelago of about 6,800 islands. The four largest islands are Honshu, Hokkaido, Kyushu and Shikoku, together accounting for 97% of Japan's land area. The north to south distance of Japan is approx. 2,000 km and the total land mass is approx. 378,000 km². It experiences four distinct seasons. Since 70% of the islands are mountainous, Japanese people live and carry out their major and economic activities on the remaining 30% of the land. Japan's topographical features include coastlines with varied scenery, towering mountains, which are very often volcanic and twisted valleys that invite visitors into the mysterious world of nature.

Japan has a long history of absorbing advanced cultures from the Asian Continent from ancient times through the Middle Ages.

Later it began to assimilate elements of Western civilization from the latter half of the 19th century. By selectively assimilating these many cultural influences, the country has successfully added rich new dimensions and depth to its indigenous culture.



This marvelous harmony between the refinement of "Oriental" things and concepts blended with the leading-edge technology and the often ultramodern urban lifestyle you find in Japan today is truly proof of a long history. With its long history, traditional culture and beautiful nature, Japan has fourteen locations registered as World Heritage Sites. These consist of eleven Cultural Heritage Sites and three Natural Heritage Sites.

WELCOME TO SAPPORO

Welcome to Sapporo

There are various theories on the origin of the word “Sapporo.” The leading theory is that it derives from the Ainu (indigenous people of Japan) words “Sap (Dry) – Poro (Wide),” but another theory is that it derives from “Sari (Wetland) -Poro (Wide) -Pe (River)” which describes the downstream basin of the Toyohira River.

Until the end of the Edo Period (1603–1868), Sapporo was a trading post with the Ainu. In 1869, it was renamed Hokkaido and the Hokkaido Development Commission was sent and began to establish the head office in Sapporo.

The Hokkaido Development Commission organized Sapporo into a planned city modeled after Kyoto.

Thus, Sapporo becomes known for its functional grid of streets and avenues.

After the railroads were built, the beer, flour milling and paper making industries began to flourish and Sapporo became the political and economic center of Hokkaido.

In 1970, the population surpassed 1 million.

In 1972, Sapporo was described as Japan’s northernmost city designated by government ordinance, and hosted the Sapporo Olympic Winter Games.



Okurayama Ski jump Stadium

WELCOME TO SAPPORO

Sapporo is attracting much attention as a city of tourism with attractions such as the “Sapporo Snow Festival” which began in 1950.



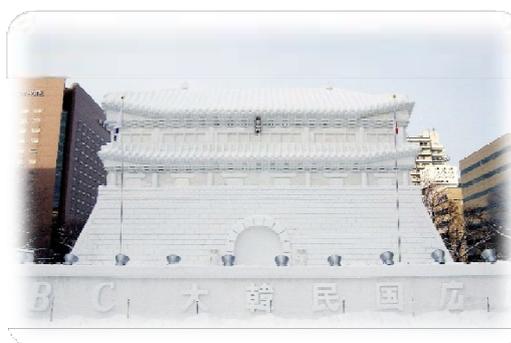
Odori Park



Snow sculpture



Snow sculpture: Beijing plaza



Snow sculpture: Korean plaza

Area and Climate of Sapporo

Area of Sapporo is 1,120 km², a little less than double Tokyo’s special 23 wards (621 km²), about the same as Hong Kong.

The average temperature reaches 20°C (68°F) in the summer, but the humidity is low and the temperature is cool during the morning and evening.

In September, temperatures drop with each rainfall and the precipitation increases as autumn deepens. The leaves begin to change color in October and the temperature sometimes approaches 0 degrees. Snow covers the ground 132.4 days a year. The first snowfall is in October and by December the city is covered in snow. There is much snowfall with an average annual snow accumulation of about 6 m. However, with efficient measures for snow removal in place, there is little effect on daily life. It is rare by world standards that over 1.9 million people reside in an area prone to this much snowfall. The characteristics of the summer are not rainy season and affected by Typhoon. Water resources are abundant due to snow that remains on the mountains into the summer, which acts as storage of water.

Temperature and Rain fall in September

	Mean maximum temperature	Mean minimum temperature		Rain fall
°C	22.4	12.2	mm	122.7
°F	-72.3	-54	(inch)	-4.831

WELCOME TO SAPPORO



Odori Park

Many locals gather at Odori Park to eat lunch and take walks.

Experience the seasons through the flower beds, trees, and events held at the park.

Odori Park is an oasis with 92 types of trees including lilacs and elm stand located in the middle of a business district. On its lawns and around its fountains, one can find locals and tourists alike relaxing.

Odori Park is called a park, but it's really a street. In 1871, a firebreak, which cuts central Sapporo into northern and southern parts, was built. The firebreak became Shiribeshi Dori, which was renamed Odori. Odori Park, which is usually a very calm and relaxed space, is also used for many of Hokkaido's best-known seasonal events, such as the Snow Festival in the winter, Lilac Festival in the spring, YOSAKOI Soran Festival and beer garden in the summer, and Autumn Festival, which brings together various Hokkaido cuisines, in the fall.

Sapporo Beer Museum

Built in 1890, the redbrick museum is a witness to the history of Hokkaido. At the museum, the history of Sapporo Breweries Ltd. is shown in exhibits and in promotional posters from olden days. Visitors can try the activity "canned beer triple pouring." The hall on the ground floor seats 170 and is available for parties. Fresh beer tapped directly from the brewery and Hokkaido



cuisine are served. Live accordion performances can be heard. Sapporo Beer Museum Video images of Hokkaido scenery are projected on the screen. A unique atmosphere can be enjoyed.

A "Food Festival" takes place at Odori Park 24 days filled with tastes from all over Hokkaido

During September, autumn arrives in Sapporo without the lingering heat as in *Honshu* (Main Island). The morning air is crisp, and as the sky seems to gain in height, the season for the palette is here. The salmon begin their run upriver in Toyohira River and other rivers across Hokkaido, and if you are lucky, you can spot their black shadows from a bridge. It is the season when people can fill their appetites and enjoy art at same time.

There is the "Sapporo Autumn Festival" at Odori Park where people can taste local seasonal food such as oysters and mushrooms. The average temperature is 22.4°C so you will need a light coat during the evenings.



CONFERENCE VENUE & ACCOMODATION

The Royton Sapporo Hotel, venue of the 4th APG & 9th EADC, is fully equipped with large and small convention halls on Floors 2, 3, and 20.

Royton Hall on Floor 3 is one of the largest venues in Sapporo. With 1,607m² of space and an 8m ceiling, the hall is suitable for exhibitions and other large-scale conventions, as well as modern visual presentations using two 200-inch projector screens.



The Royton Sapporo



Royton Hall on Floor 3



Empress Hall on Floor 3



Hotel Entrance



Guest Room

GENERAL PROGRAM

		Symposium & Conference			Technical Tour			
Date		25th Sep. (Sun)	26th Sep. (Mon.)	27th Sep. (Tue.)	28th Sep. (Wed.)	29th Sep. (Thu.)	30th Sep. (Fri.)	1st. Oct. (Sat.)
AM				Symposium Opening Ceremony Symposium Session	Symposium Session			
PM		Registration Beginning	City Tour (With Dinner)	Symposium Session	Symposium Session APG Roundtable Meeting Symposium Closing Ceremony	1st Day	2nd Day	After breakfast Tour end
		Registration						
Social Program				Welcome Reception			Farewell Dinner	

SYMPOSIUM

The Symposium will be held on September 27th & 28th at the Hotel Royton Sapporo. JCOLD invites professionals, managers and decision makers from the international dam community to participate in an international symposium organized as part of 4th APG and 9th EADC from September 26 to 30, 2016.

Papers are invited on the topics listed below.

Theme:

Innovative Technologies for Dams and Reservoirs Toward the Future Generations

Topics:

- (1) Innovative Technologies of Dams
- (2) Extending Service Life of Dams
- (3) Dam Safety and Risk Management
- (4) Climate Change and Dam Strategies

The Symposium will be organized so as to give as much time to speakers for discussions. To stimulate discussion on the oral presentations, experts will be asked to present the latest developments in their field of expertise and to give his/her views on the key issues raised.

Papers will be presented orally by authors or postered in the lobby adjacent to the Conference hall.

The official language will be English only. The participants are required to register to the 4th APG and 9th EADC.

TECHNICAL TOUR

JCOLD will prepare 2 days technical tour which will visit The Apporo Dam (Trapezoidal CSG Dam), the Yubari-shuparo Dam (Gravity Dam), The Kyogoku Pumped Storage Power Station and we will also prearrange city tour. (29 & 30 Sep.)

1st Day

The Shuparo Dam, The Apporo Dam

2nd Day

The Kyogoku Pumped Storage Power Station (Upper & Lower Dam) ~Nikka Yoichi Factory

○ The Apporo Dam



Rendering of the Apporo Dam

- Multipurpose
- Under Construction

Type of Dam	Trapezoidal CSG
Height of Dam	47.2 m
Dam volume	$480 \times 10^3 \text{ m}^3$
Crest length	516.0 m
Gross storage capacity	$47.4 \times 10^6 \text{ m}^3$



Aerial photograph of the Apporo Dam in construction

TECHNICAL TOUR



CSG Placement



Concrete Plant

○ The Yubari-Shuparo Dam



- Multipurpose
- Completed in 2014.

Type of Dam	Gravity
Height of Dam	110.6 m
Dam volume	940×10 ³ m ³
Crest length	390.0 m
Gross storage capacity	427.0 ×10 ⁶ m ³



Panoramic view of the Dam in early winter



Downstream face in early winter

TECHNICAL TOUR

○ The Kyogoku Pumped Storage Power Station



© HEPSCO

Panoramic view of the Kyogoku Pumped Storage Power Station

The Kyogoku Project

● General plan	
Type of the power plant	Pumped-storage
Maximum utilisable flow	190.5 m ³ /sec
Gross head	394 m
Effective head	365 m
Maximum output capacity	600 MW (200 MW per unit for 3 units)
● Reservoir	
	Upper reservoir
Name of river	Peperai river and Binrai river
Catchment area	51.3 km ²
Reservoir area	0.16 km ²
Gross storage capacity	4,400 × 10 ³ m ³
Effective storage capacity	4,120 × 10 ³ m ³
Maximum water level	a. 800.0 m
Minimum water level	a. 845.0 m
Total area of asphalt facing	177,170 m ²
Total crest length	1,457.9 m
● Dam or Embankment	
	Embankment
Type of dam	Rockfill dam with asphalt facing
Maximum height	22.0 m
Crest length	1,140.9 m
Total volume	1,530 × 10 ³ m ³
	Lower dam (Kyogoku dam)
Type of dam	Rockfill dam with vertical clay core
Maximum height	54.0 m
Crest length	332.6 m
Total volume	5,288 × 10 ³ m ³

● Powerhouse	
Underground powerhouse	H=45.0 m, W=24.0 m, L=61.0 m
Turbine unit	Vertical long-shaft Francis pump-turbine units
Generator	Synchronous generator-exciter
● Intake	
	I.D.=11.8-6.0 m, L=61.7 m
● Penstock	
	I.D.=5.0-1.9 m
	From the upper reservoir to the junction: L=583.0 m
	From the junction to the unit: No.1 unit: L=71.0 m
	No.2 unit: L=55.6 m
	No.3 unit: L=97.0 m
● Draft tunnel	
	I.D.=3.7 m
	From the unit to the surge chamber: No.1 unit: 106.7 m
	No.2 unit: 100.0 m
	No.3 unit: 106.7 m
● Surge chamber	
	H=100.0 m, I.D.=12.0 m, L=25.0 m
● Tailrace tunnel	
	I.D.=6.4 m, L=0,480 m
● Outlet	
	H=6.4-7.0 m, W=6.4-28.0 m, L=75.0 m



© HEPSCO

Upper Reservoir (Asphalt Facing)



© HEPSCO

Lower Reservoir (Rockfill Dam)

HALF DAY CITY TOUR

Delegates and accompanying persons will be able to discover the Sapporo city, many-faceted, cosmopolitan city on September 26th.

The tour will visit Okurayama Ski Jump Stadium, Sapporo Winter Sports Museum, Former Hokkaido Government Office Building, Odori Park, Clock Tower and Sapporo Beer Museum & Garden with Diner.



Okurayama Ski Jump Stadium



Sapporo Winter Sports Museum



Hokkaido Government Office Building
(From a bus window)



Clock Tower
(From a bus window)



Sapporo Beer Museum & Garden

PRACTICAL INFORMATION

Location

The 4th APG & 9th EADC will be held at Hotel Royton Sapporo.

Hotel Royton Sapporo is located in the center of Sapporo city, and it takes 10 minutes from Sapporo Japan Railways Station by subway and 3 minutes' walk or 70 minutes from New Chitose International Airport by car or limousine bus.

Immigration and visa

It is recommended that you check with your local Japanese embassy for correct and up to date entry requirements to Japan. All non-Japanese passport holders are required to give finger prints (electronically recorded) and be photographed at passport control.

The Ministry of Foreign Affairs of Japan advises on its website a list of countries that do not require a visa to enter the country.

http://www.mofa.go.jp/j_info/visit/visa/index.html

Currency and foreign exchange

The Japanese currency is called the yen. Cash is the most widely accepted method of payment. Major credit cards are widely accepted, except in some small sole traders. Debit cards are almost unknown and should not be relied upon as a payment option. Travelers' checks are only accepted for exchange in banks and post offices, and, in general, cannot be used to purchase goods and services. Foreign exchange can be performed in banks (look for signs in English), larger post offices, a limited number of hotels.

Emergencies

In the unlikely event of an emergency while you are in Sapporo it is good to know the systems in place to support you. Your first source of information and advice should be your hotel or the Secretariat of JCOLD.

REGISTRATION

The details about registration are not decided yet.
 It is scheduled to begin the registration in early April.
 The details will be listed in the following website.

<http://jcold.or.jp/e/apg-eadc/>

 bicycle parking area	 Do not leave bicycles in this area.
 Subway Namboku Line	 Hotel / Inn
 Subway Tozai Line	 Post Office
 Subway Toho Line	 Money changing
 National highway	 Foreign Currency Exchange
 One way	 Police station / box
 Japan Railway (JR)	 Hospital
 Streetcars	 School
	 Temple
	 Fire department
	 Tourist Information Center
	 International ATMs
	 Bus stop for Okadama Airport
	 Bus stop for New Chitose Airport
	 Car Rental
	 Bicycle Rental
	 Public bath
	 Public bath (for males)
	 Toilet (Wheelchair Accessible)
	 Elevator (Wheelchair Accessible)
	 Restroom with facilities for ostomates
	 7-Eleven (International ATMs)
	 Seven Bank (International ATMs)



- Downtown Area Large Scale Parking**
- P1** Sapporo-eki Kitaguchi Underground Parking (overnight parking possible)
8:00-22:00 011-726-1601
 - P2** JR Tower Parking
7:00-24:00 011-209-5061
 - P3** Repark Sapporo-eki Minamiguchi Parking
open 24 hours 011-231-6560
 - P4** Sapporo Kita-ichijo Parking
open 24 hours 011-251-3841
 - P5** Sapporo Odori Underground Parking
8:00-22:00 011-231-3733
 - P6** Parking Jumbo 1000
open 24 hours 011-511-1000
 - P7** Kita 1-jo Underground Parking
7:30-22:00 011-290-5908

SAPPORO STREET MAP



ORGANIZATION AND PROMOTION



JAPAN COMMISSION ON LARGE DAMS

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