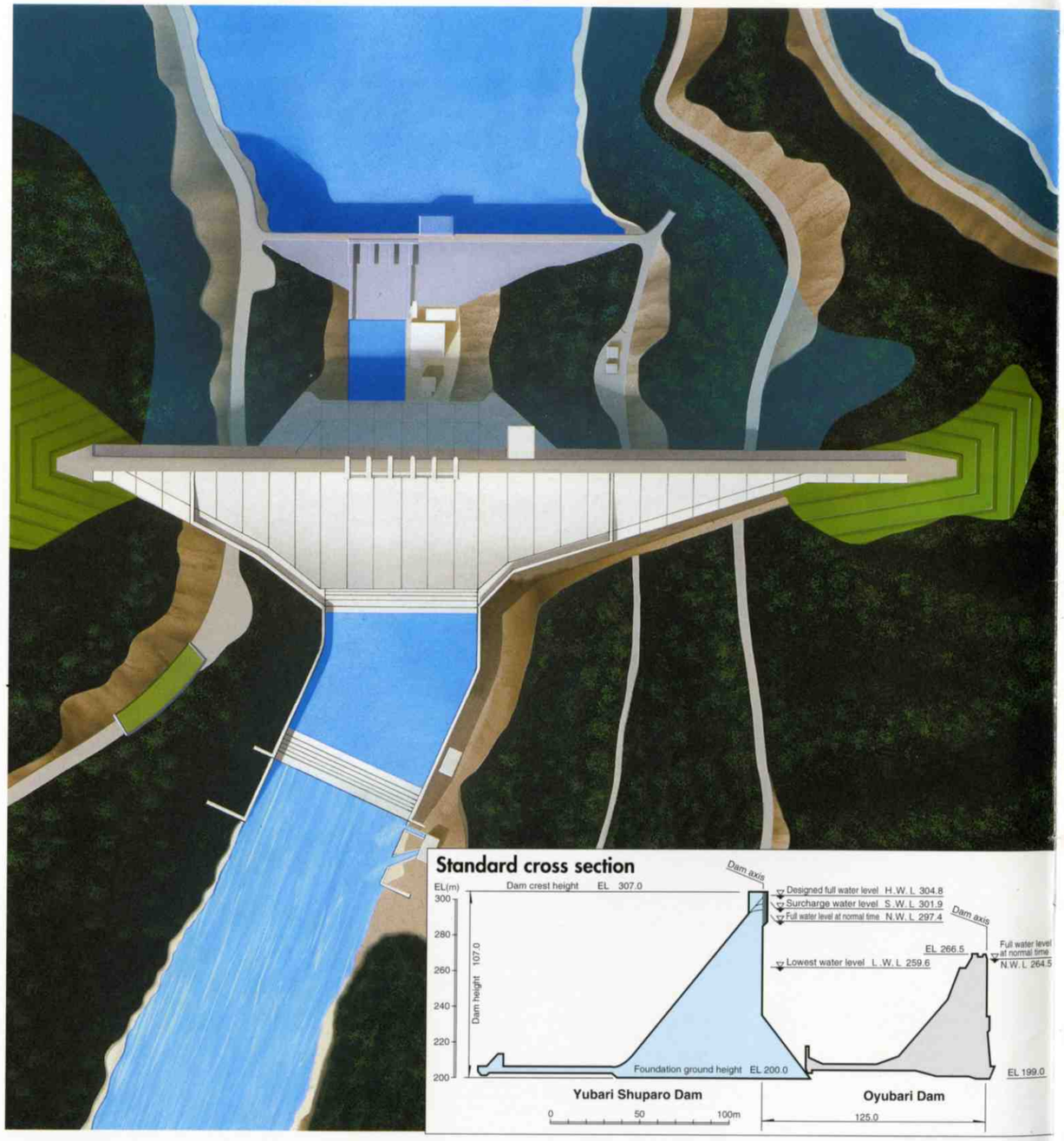
YUBARI SHUPARO DAM

Abundant Water Bringing Smiles

Yubari Shuparo Dam Construction General Office

Offering safe, abundant water at any time to support a region where 2 million people live

The Yubari Shuparo Dam will be constructed directly downstream of the Oyubari Dam, not only to ensure constant abundant water flow, but also to prevent damage from floods. The dam will create a reservoir with the second largest catchment area in Japan. It will firmly support our lives and harvests, which continue to develop with the approach of the 21st century.



Maximum effectiveness with minimum changes

It has been said that radical measures are necessary for the Yubari River, which is in a tributary to the Ishikari river system (Class A river), to meet the increasing demand for water in the ever developing river basin downstream of the Oyubari Dam, and to prevent damage from repeating future floods. After considering various possibilities, it was recognized that maximum effectiveness with a minimum of changes could be achieved by constructing a multi-purpose dam directly below the existing Oyubari Dam, which is presently used for agricultural irrigation and power generation.

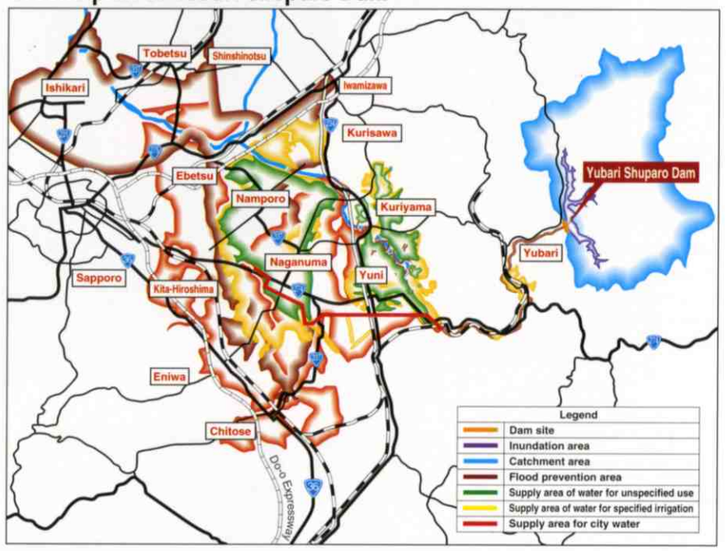
To supply safe, abundant water to a wide area

Even for Japan, the Yubari Shuparo Dam will be a unique redevelopment dam, in that the new dam will be constructed only 125 meters downstream from the Oyubari Dam.

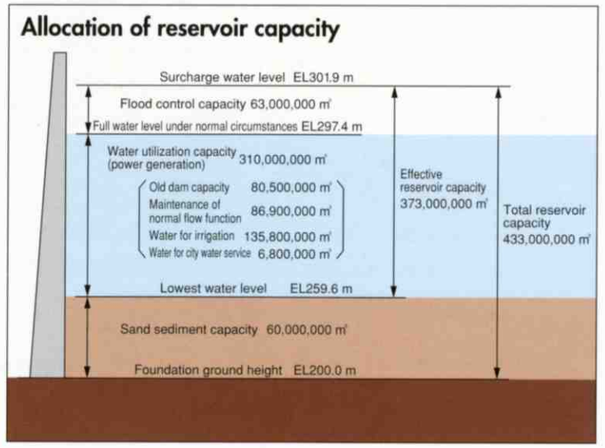
The total reservoir capacity of the new dam will be approximately five times that of the old dam, and the fourth largest in the nation. It will supply safe, abundant water for many purposes in the Minami-Sorachi region in its lower reaches, and the farther downstream Ishikari region.


Rendering of the Shuparo Dam

Ground plan of Yubari Shuparo Dam



Allocation of reservoir capacity



Dam specifications

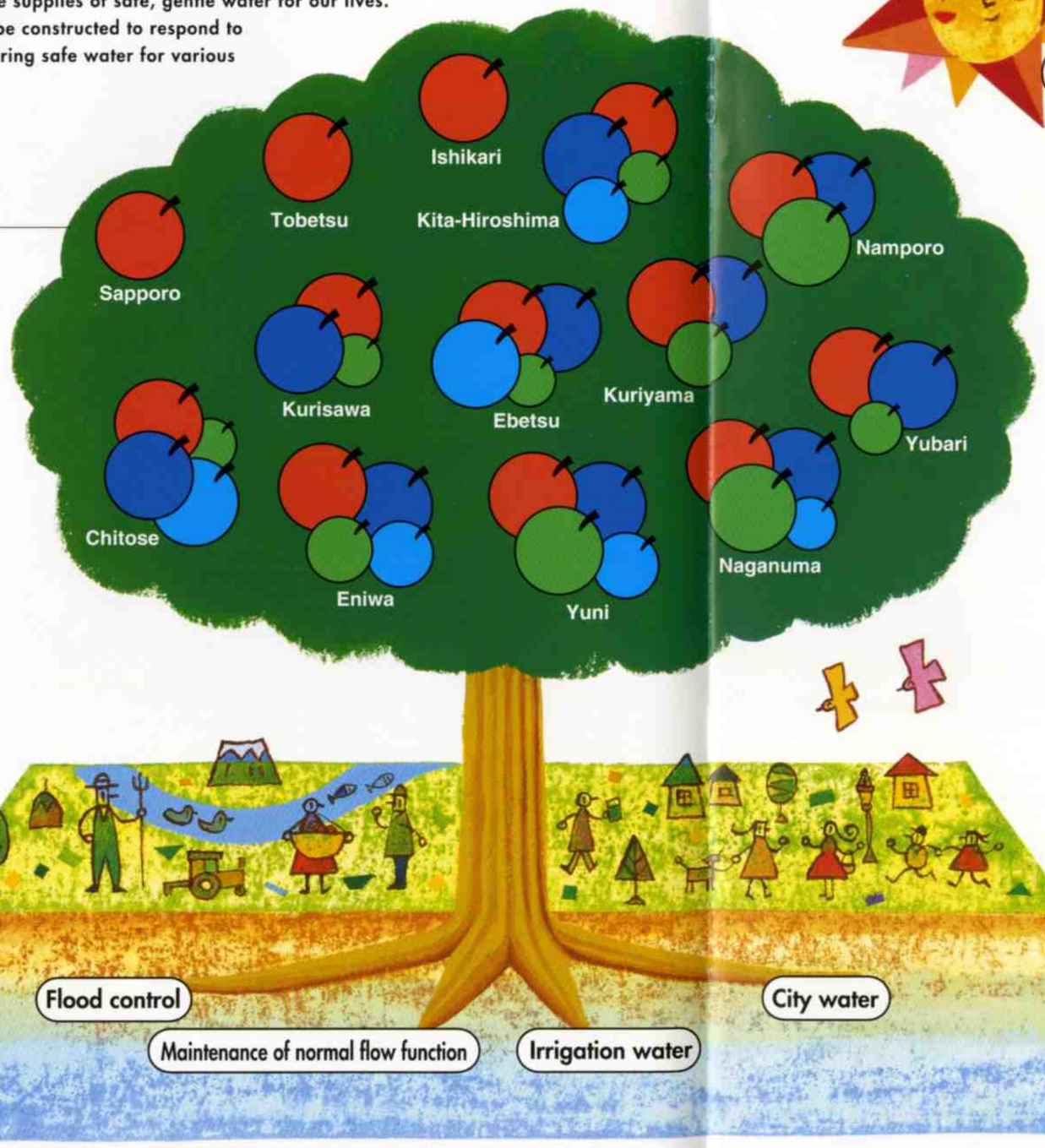
	Yubari Shuparo Dam	Oyubari Dam
Purpose	Flood control, maintenance of normal flow function, irrigation, city water, power generation	Irrigation, power generation
Dam height	107.0 m	67.5 m
Length of dam crest	480.0 m	251.7 m
Dam volume	880,000 m³	200,000 m³
Catchment area	433.0 km²	433.0 km²
Flooding area	15.1 km²	4.75 km²
Total reservoir capacity	433 million m³	87.2 million m³
Effective reservoir capacity	373 million m³	80.5 million m³
Maximum power generation output	26,600 kW	14,700 kW

Many functions welcoming a tomorrow filled with smiles

Rainfall alone cannot always ensure supplies of safe, gentle water for our lives. The new Yubari Shuparo Dam will be constructed to respond to increasing needs of the times, securing safe water for various purposes to large areas.

Municipalities to be benefited by Yubari Shuparo Dam

Safe, abundant water is necessary for lives filled with smiles. The new dam will be constructed to realize such a bright future.



Basic aims of dam project

The role of a dam is to control the flow of water which is essential for our lives and industries. Because rainfall greatly varies with the seasons in Japan, it is particularly important for a dam to prevent flooding of rivers after sudden heavy rains, as well as to guarantee necessary water when needed. The Yubari Shuparo Dam will be constructed for these various purposes.

Flood control

River flows greatly fluctuate, depending on heavy rains and thawing. Dams prevent floods by stabilizing the water flow in lower reaches. This can be done with systematic adjustment of flow rate to prevent sudden increases of flow into the river.

Maintenance of normal flow function

Rivers require a normal flow even during the dry season. The new dam will ensure the water flow, not only to maintain the water use in the lower reaches which is presently supplied by the Oyubari Dam, but also to support the lives of various creatures and plants which live in the river.

Irrigation water

Securing water for agriculture is essential because dependence on the weather prevents stable farm management. With the modernization of agriculture in recent years, amounts of water required have increased and more systematic supply of water has become an even greater priority for abundant food production.

City water

Wherever people live, water is indispensable. In urbanizing areas, in particular, the demand for water tends to grow by leaps and bounds due to the diversification of lifestyles. In the event of a shortage of city water, it is already too late to find the needed water. To guarantee available city water is an important function of a dam.

Power generation

In areas where the population is increasing, demands for electric energy are also growing. Dams have the excellent capabilities to efficiently utilize water flow to supply electricity as clean energy without generating CO_2.

Flood control

The dam will provide flood control not only to the lower reaches of the Yubari River, but also the Ishikari river basin, to which the Yubari River is a tributary.

Days when people need not be concerned about heavy rains

Flood in August 1981 at the junction of the Horomui, Ishikari and Yubari rivers near Toyohoro and Bihoro in Ebetsu

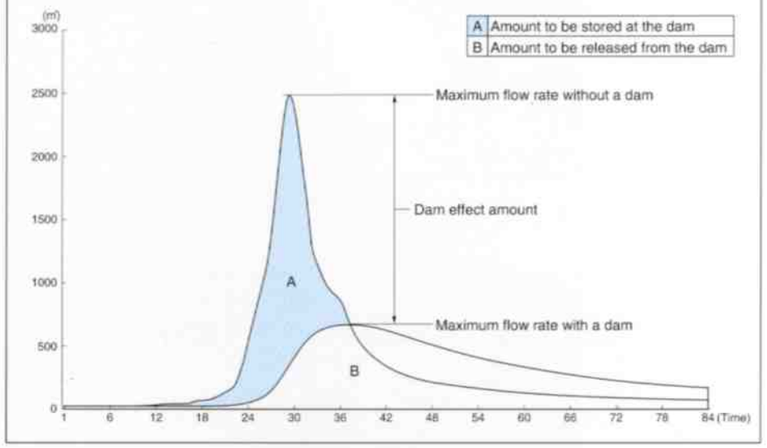
Unforgettable large flood of August 1981

The largest flood ever observed in this area occurred in August 1981. Total rainfall exceeded 400 mm in many areas due to the combination of a heavy rain front and typhoon No. 12. At Ishikari Ohashi Bridge, a maximum flow rate of 11,330 m^3/sec. was observed. It was higher than the estimated high-water discharge, 9,000 m^3/sec.

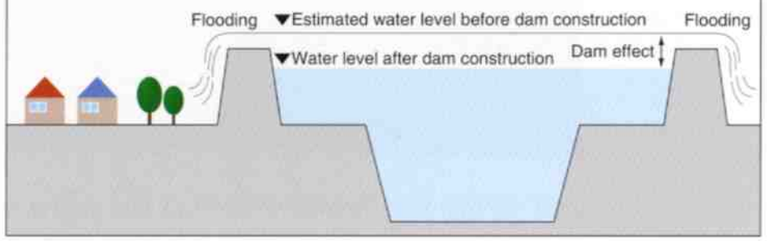
Serious damage to houses and agricultural lands

The 1981 flood caused very serious damage. In the Yubari district, some villages were isolated by landslides. Damaged houses totaled 22,500 and inundated area 614 km^2. Total damages in the entire Ishikari River basin were estimated to be approximately ¥115 billion (at the current value).

Flood control after construction of Yubari Shuparo Dam (dam site)



Cross section of reduced water level after construction of Yubari Shuparo Dam



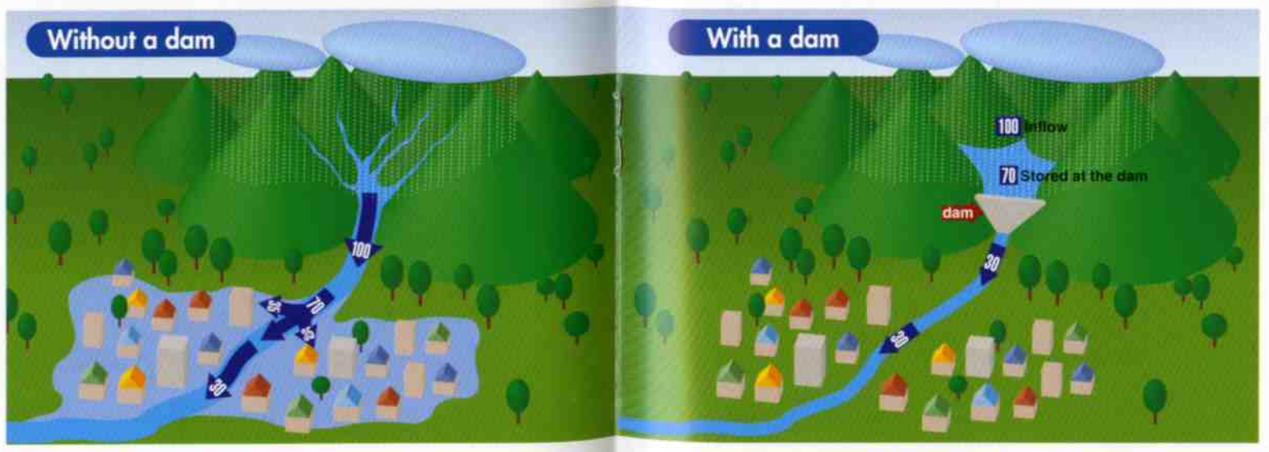
To prevent repeating flood damage

The Yubari Shuparo Dam was designed taking past experiences of floods into account.

Flood prevention even after sudden heavy rains

One of the important roles of the Yubari Shuparo Dam is flood control to prevent a sudden large increase in water flow from the upper to the lower reaches after heavy rains.

Thus, such floods as we experienced in the past can be prevented, not only in the lower reaches of the Yubari River, but also in the farther downstream Ishikari River basin.



Estimated heavy rainfalls which may occur once in a century

According to the Yubari Shuparo Dam Project, the amount of water suddenly surging toward the dam site (estimated high-water discharge) is estimated to be 2,450 m^3/sec. The Yubari Shuparo Dam will be able to control the flow and reduce it to less than one third. As shown in the figure, the dam will allow torrential water flow to be slowed down and released for downstream flow at broken intervals, thus controlling approximately 30% of the amount of downstream water flow (The peak flow rate at the Kiyohoro Bridge reference point will be reduced by 1,000 m^3/sec. to 2,400 m^3/sec.).

Irrigation water

Water is necessary for agriculture. Present-day agriculture demands a concentrated use of water over a limited period of time. It is therefore necessary to plan to secure the required water.

Sufficient water for abundant delicious crops

Overlooking the town of Naganuma from Mt. Umaoi

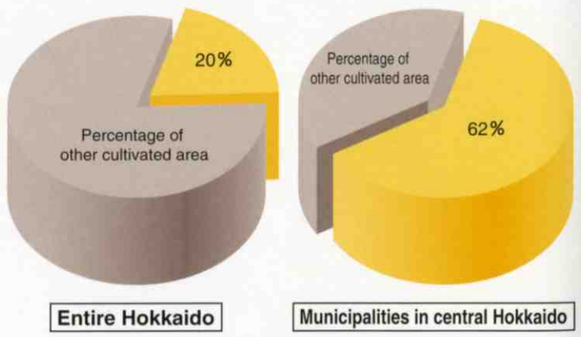
For securing water needed for agriculture in central Hokkaido

To further support modern agriculture in which water increasingly plays an important role

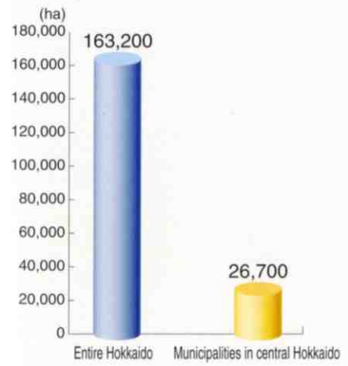
For Hokkaido's leading rice-producing area

Blessed with favorable climatic conditions and located close to Sapporo, a major consumer area, the area around the lower reaches of the Yubari and Chitose rivers is a leading agricultural district of Hokkaido, mainly for rice production. However, the district has repeatedly suffered damage from both floods and shortage of irrigation water, as it is a swamp.

Percentage of rice paddy area to cultivated area (1995)



Rice paddy areas in entire Hokkaido and central Hokkaido (1995)



Concentrated use of water over short periods of time due to mechanization

Modern agricultural methods around the lower reaches of the Yubari and Chitose rivers require larger amounts of water. For example, in May before rice is planted, rice paddies are filled with water to make them level. This is called "soil puddling," in which soil and fertilizers are uniformly distributed.

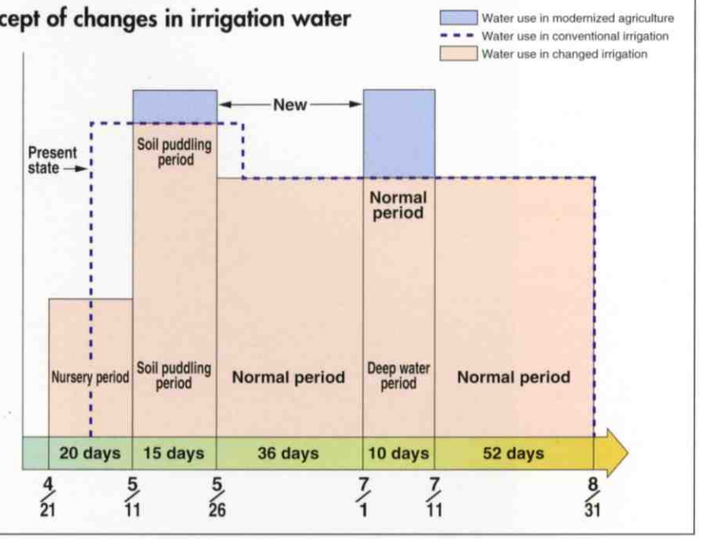
Due to mechanization in recent years, this period has been made very short with larger amounts of water temporarily required.

More water needed to prevent cool summer damage

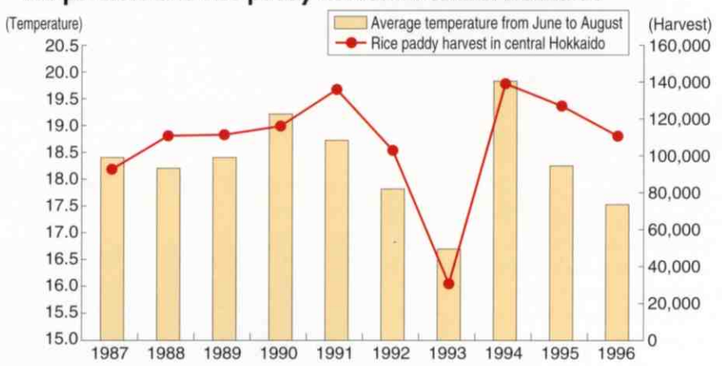
"Deep water management" is also becoming popular. In this system, rice paddies are submerged deeper than usual in July to protect against cool summer damage. This method protects paddies from rapid temperature falls by making the water deeper, naturally requiring more concentrated use of water over a short period of time.

Introduction of such agricultural methods results in the use of larger amounts of irrigation water.

Concept of changes in irrigation water



Temperature and rice paddy harvest in central Hokkaido



Rice-planted area by type

Type / Year	Kirara 397	Yukihikari	Yukimaru	Joiku No.418	Kuiku No.150	Kuiku No.125	Other
1991	134,150 a	210,331 a				33,130 a	1,905 a
1992	155,971 a	253,535 a				48,723 a	1,508 a
1993	171,216 a	324,564 a				36,158 a	2,567 a
1994	208,105 a	442,061 a				18,171 a	7,014 a
1995	229,920 a	373,773 a	20,469 a			2,789 a	1,956 a
1996	288,504 a	275,951 a	17,420 a	1,226 a	14,195 a		1,685 a
1997	284,809 a	169,609 a	8,446 a	36,958 a	100,993 a		1,230 a

Maintenance of normal flow function

While effectively utilizing water, we will protect the water flow of rivers for the many creatures living there and for the comfort of people.

Clean stream flowing forever

Creatures in rivers needing water

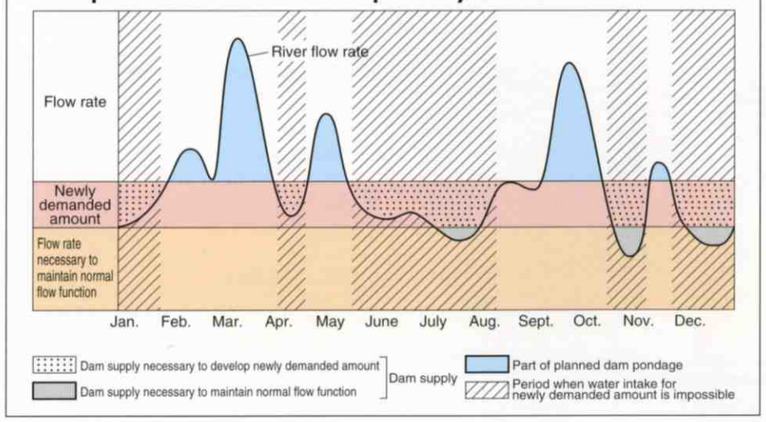
Many creatures and plants live in the lower reaches of rivers beyond the dam. Not only to protect the lives of creatures but also for people who find peace of mind in flowing rivers, minimum flow rates are required even during the dry season.

Ensuring clean water flow forever while controlling river water flow according to weather is one of the functions supplied by the Yubari Shuparo Dam.

Avoiding inconvenience to exsiting water utilization

The construction plan for the Yubari Shuparo Dam includes guaranteeing water utilization presently offered by the old dam.

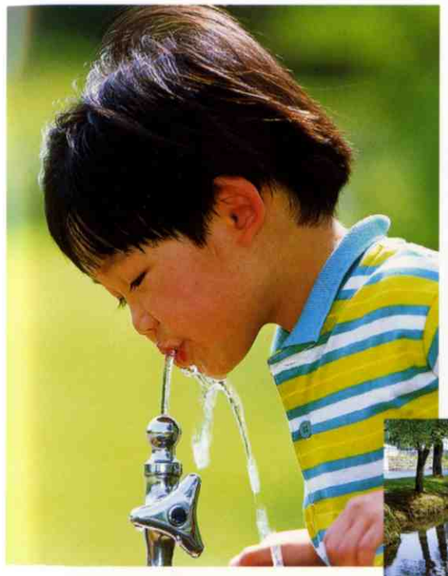
Concept of water resource development by the dam



City water

City water is essential for comfortable daily lives. As a regional water source, the Yubari Shuparo Dam will support the potential of regions expected to develop in the 21st century.

Ensuring comfort for the developing central Hokkaido area



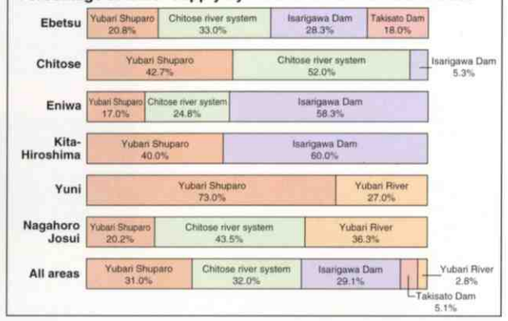
Serious city water shortage

Yearly demand for city water has increased in four cities, Ebetsu, Chitose, Eniwa and Kita-Hiroshima, and two towns, Naganuma and Yuni, all of which have growing populations and are located near Sapporo. Some regions now even suffer water shortages. Securing water is a serious problem because industrial promotion projects are being planned and the populations of these municipalities are expected to increase further.

Securing necessary water for developing regions

In the Yubari Shuparo Dam Project, the population in the above four cities and two towns is estimated to be approximately 500,000 by 2015. The expected amount of city water for daily consumption for this area is therefore calculated to be approximately 250,000 tons. Future shortage of city water in present supply systems for 2015 is estimated to be approximately 82,000 tons. The Yubari Shuparo Dam will supply water equivalent to the shortage and support the development of this growing area.

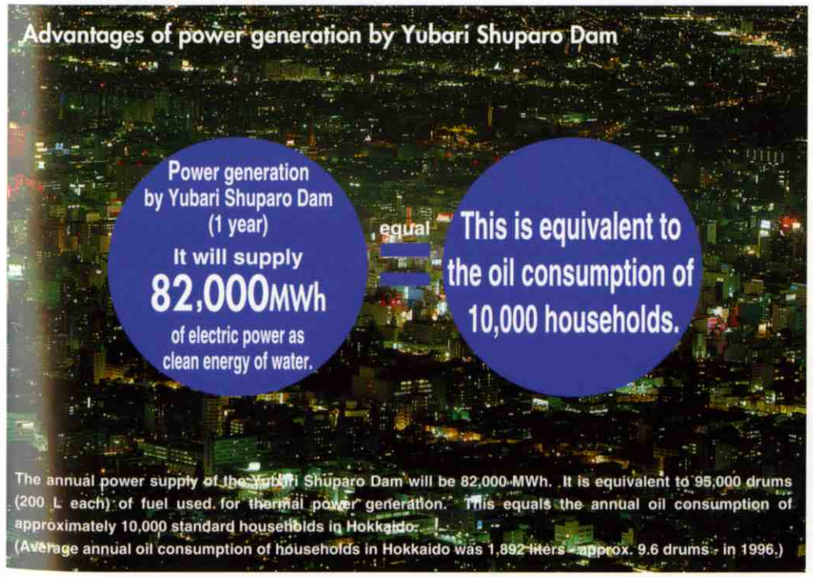
Percentage of water supply by water source in municipalities to be benefited from the Yubari Shuparo Dam



Power generation

River water continues to flow every day. The Yubari Shuparo Dam will make the most of river water as a clean energy source.

Water energy lighting up our lives



Securing environment-friendly electric power to meet increasing demand

Increasing demand for electric power is pronounced in Hokkaido. To counter possibilities of disasters and ensure stable electric supply, various sources of power generation are required. At the same time, greater emphasis is put on effective use of water-power generation, to reduce CO_2 (carbon dioxide) which deteriorates the global environment and to secure energy to replace oil.

The Yubari Shuparo Dam will efficiently utilize the power of water flowing every day to support stable power supply.

Power supply equivalent to the total consumption of households in five municipalities

The new dam will discharge much water every day. The new power plant to be constructed immediately below the new dam is planned to supply a maximum output of 26,600 kW. It will be 1.8 times the maximum output of the Futamata Power Plant, which will be abolished after construction of the Yubari Shuparo Dam. The scale of supply will be equivalent to the total consumption of households in the city of Yubari and the towns of Kurisawa, Namporo, Naganuma and Kuriyama (250 kWh/month/household)

Origin of Shuparo

Shuparo is a combination of two Ainu words, "yuparo (a place with a mineral spring)," which is the origin of the name of Yubari, and "shi," which means "real" or "of the origin." Shi-yuparo is thought to mean "the real Yubari River" or "the main course of the Yubari River." (Yubari City History)

The Yubari Shuparo Dam Construction Project adopts the joint project method involving the four parties engaged in 1) river management (Ministry of Construction), 2) land improvement (Ministry of Agriculture, Forestry and Fisheries), 3) water service (Ishikari Tohbu Wide-Area Water Service Association) and 4) power generation (Hokkaido Bureau of Prefectural Enterprises), to maintain the role which was played by the Oyubari Dam, as well as add new functions of flood control and efficient water utilization around the Yubari and Chitose rivers. The construction is mainly executed by the Ishikarigawa Development and Construction Department of the Hokkaido Development Bureau.

あしたを創る 北の知恵
北海道開発局
Hokkaido Development Bureau

Yubari Shuparo Dam General Construction Office
Ishikarigawa Development and Construction Department
Head office: DEVEX 120 Bldg., 2F, 46, Nishi 20-chome, Kita 1-jo, Chuo-ku, Sapporo 064-0821 Tel: (011) 611-4006
On-site office: Nambu Azuma-cho, Yubari 068-0545 Tel: (01235) 5-2121