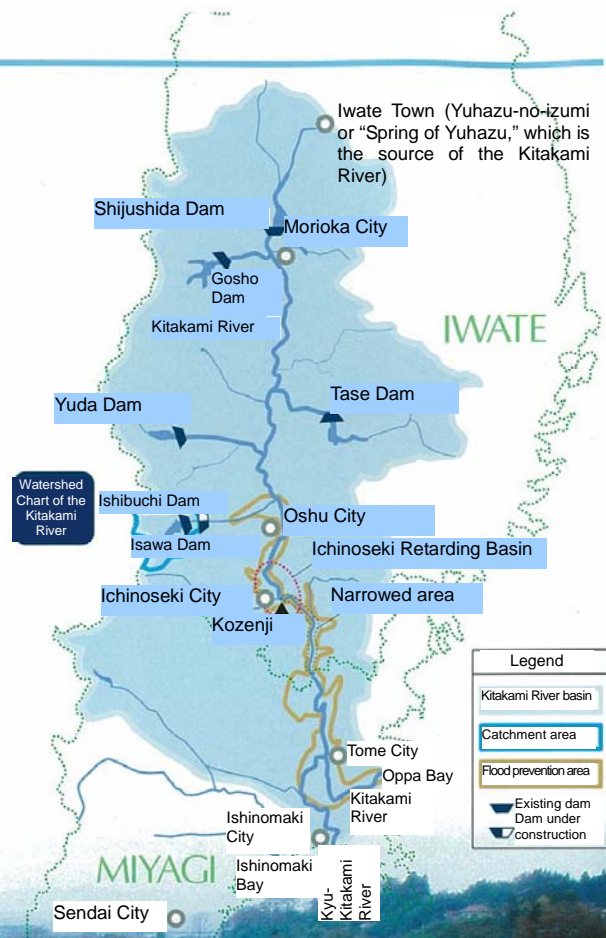


Outline of the Kitakami River

Originating from the compound of the Mido Kannondo temple in Iwate Town, Iwate Prefecture, the Kitakami River runs down from north to south. At Tome City, Miyagi Prefecture, it forks into the Kitakami River, which empties into Oppa Bay, and the Kyu-Kitakami River, which flows into Ishinomaki Bay. It is the greatest river in the Tohoku district with a total length of 249 km (fifth longest in Japan), a catchment area of 10,150 km² (fourth greatest in Japan), and about 270 tributaries, including the Isawa River, which originates from Mt. Yakeishi.

The Kitakami River still brings a variety of blessings to the people living in its catchment area—11 cities, 11 towns and 1 village—as the source of agricultural water, industrial water, drinking water, and water for power generation. But there is a downside: the river repeatedly overflows and has often caused flood damage. In response, active efforts have been made to construct levees and multiple-purpose dams to control the river flow as well as to develop infrastructures to promote local development.



For the Betterment of the Local Community and the Kitakami River Basin

Grand Project for a Better Future of the River Basin

KVA Project

Conception Going Back to the Pre-War Days



Shijushida Dam

The watershed of the Kitakami River has been plagued by flooding and water shortage. In 1941, a plan to solve this century-long problem was developed, and was called the Five Major Kitakami River Upstream Dam Project. Its aim was to construct five dams on the main flow channel of the Kitakami River, or the Shijushida Dam, Gosho Dam on the Shizukuishi River, Tase Dam on the Sarugaishi River, Yuda Dam on the Waga River, and Ishibuchi Dam on the Isawa River.

The project was suspended because of lack of materials and funds and the breakout of World War II. But one year after the end of WWII, the project was resumed in 1946, starting with the construction of the Ishibuchi Dam. It was renamed the Kitakami River General Development Project in 1950 and went smoothly and rapidly thereafter because the authorities decided that the purpose of the project should include general development of the watershed area such as irrigating areas or supplying hydroelectric power in addition to the original purpose of flood control. The project came to be popularly known as the KVA Project following the example of the successful undertaking of the TVA (Tennessee Valley Authority), USA.



Yuda Dam



Gosho Dam

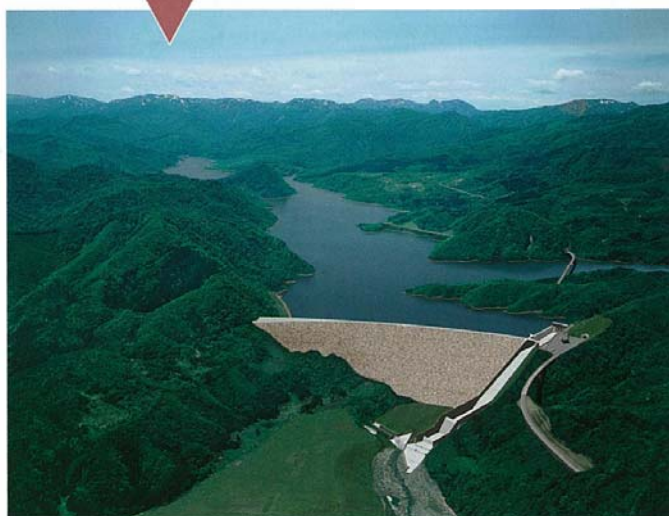
In 1951, a local effort, namely the Kitakami Specific Area General Development Project, was made to promote construction of the five dams. After many years of construction, the five major dams along the Kitakami River were finally completed. As the watershed development gradually went on, the social economy began to flourish, with an increasing population and number of assets in the river basin. The living standard of Iwate Prefecture, which had stayed in the lower bracket, rapidly improved because of the Kitakami River basin development. But such prosperity backfired; concerns for the lack of water or electricity emerged. The local development project was therefore revised a few more times. Now one of the major elements of the Kitakami River General Development Project is construction of the Isawa Dam, which is currently under way.



Ishibuchi Dam



Tase Dam



Conceptual drawing of completed Isawa Dam

History of Isawa Dam

DATA

September 1967	An association to promote raising the embankment of the Ishibuchi Dam was established
April 1969	Preliminary survey started at the Iwate Construction Work Office
April 1983	Survey for execution planning started
April 1988	Construction project started (New Ishibuchi Dam renamed the Isawa Dam)
September 1989	Environmental impact assessment procedures completed
May 1990	Basic plan on construction of the Isawa Dam was publicly announced
February 1992	General compensation standard agreed and signed by all the parties involved
February 1993	Construction of relocated national road Route 397 started
March 1993	Special Measures Act concerning Reservoir Area Development and Development Plan announced
June 1999	Diversion work started
June 2000	Change of the basic plan for construction of the Isawa Dam announced <ul style="list-style-type: none"> • Completion: 1999 to 2013 • Total cost: 136 billion yen to 244 billion yen
January 2003	Foundation excavation started
May 2003	First phase of the construction of the relocated national road Route 397 opened to the public
October 2005	Embankment construction started

For the Betterment of the Local People's Lives

Always Prepared for Flooding

Protecting Our Lives and Property from Flood Damage

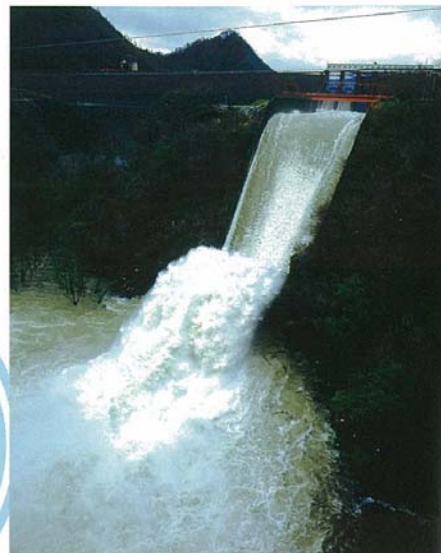
The river basins of the Kitakami River and its tributaries have repeatedly suffered from serious flood damage for many years. Such damage includes Typhoons Kathleen and Ione that landed on the northern part of Japan in 1947 and 1948, respectively, and wreaked serious damage, and the recent disasters in September 1990, August 1998 and July 2002.

When rain falls in the upstream area because of a typhoon, the rainwater collects in rivers and eventually flows into dams. Dam reservoirs store part of the water and regulate the amount of water that flows downstream. As a result, the water level is prevented from rising, and even if flooding occurs, the duration of that flooding may be reduced.

The watershed area of the Kitakami River has plenty of urban and agricultural areas with many residents. To protect their lives and property from floods, it is necessary to construct dams and repair river channels in a systematic way to mitigate the flood damage. The Isawa Dam, which is currently under construction, is planned to have flood storage of about 5,100 million m³, about nine times that of its predecessor, the Ishibuchi Dam, and to regulate design flood discharge of 2,100 m³/s at the dam construction site in order to mitigate the flood damage along the Isawa River and Kitakami River. There are great expectations for the Isawa Dam with its large flood control capability.



Purpose of dam 1



Water being discharged from the Ishibuchi Dam



Kitakami River with its water inundating the dried riverbed near Sakuragi Bridge, Mizusawa-ku, Oshu City

History of Flood Damage along the Kitakami River

Date of occurrence	Cause	Highest high-water level	Damaged area	History of flood damage in The Kitakami river						Public facilities		
				Death toll	Houses washed away	Houses totally or half destroyed	Houses half or partly damaged	Flooded houses	Wetted surface area			
											Person	House
Sept. 16, 1947	Typhoon Kathleen	16.89	At Kozenji									
Sept. 15, 1948	Typhoon Ione	14.89	Municipality	Person	House	House	House	House	ha	Location		
Aug. 23, 1981	Typhoon No. 15	12.51	Ichinoseki and others	120	296	963	—	30,754	1,436	—		
Aug. 16, 1987	Front	11.9	Ichinoseki and others	308	898	1,780	—	48,288	12,950	—		
Aug. 26, 1988	Typhoon No. 15	9.87	Mizusawa, Ichinoseki and others	—	—	—	—	760	38,505	703		
Sept. 20, 1990	Typhoon No. 19	10.87	Esashi, Ichinoseki and others	—	—	—	—	278	2,417	239		
Sept. 30, 1994	Typhoon No. 26	8.4	Esashi, Ichinoseki and others	—	—	—	—	353	2,105	388		
Aug. 2, 1995	Front	10.3	Esashi, Ichinoseki and others	—	—	—	—	51	1,940	153		
Aug. 27, 1998	Front	11.14	Mizusawa, Esashi, Ichinoseki and others	—	—	—	—	88	498	11		
Aug. 6, 2001	Front	8.53	Mizusawa, Esashi, Ichinoseki and others	—	—	—	—	15	2,021	86		
July 11, 2002	Typhoon No. 6	13.51	Mizusawa, Ichinoseki and others	3	—	17	28	7,185	7,059	2,908		

Source: Statistics of Flood Damage (River Bureau, Ministry of Construction), Disaster Damage Report of Iwate Prefecture (Fire Defense and Disaster Prevention Dept., Iwate Prefectural Government), materials of local municipalities of Miyagi Prefecture, and Flood Reports

Note that the wetted surface area and the number of public facilities in 2002 are data for Iwate Prefecture.

Maintenance of the River Environment

Ensuring stable flow helps maintain a good river environment

Dams have multiple roles; they are not simply meant to control flows such as avoidance or mitigation of flood damage by flood control, they are also designed to maintain a stable quantity of flow with their reservoirs and play a critical role in maintaining the river environment.

The Isawa River dries up every summer because the Ishibuchi Dam takes in quite a lot of water despite its smallness in size. For about 20 km downstream of the dam site, the riverbed is almost chronically devoid of water.

Rivers can maintain their cleanliness and create a rich ecosystem and beautiful scenery when a decent amount of water flows in them. If droughty conditions continue, rivers will have difficulty in maintaining an appropriate river environment and there will be a serious effect on the animals and plants living in or along them.

The Isawa Dam has a reservoir capacity that is sufficient to regain the flowing water of the river and is therefore expected to tremendously improve the river condition. Originally, the flows of rivers are greatly affected by rainfall and are not always constant. If nothing is done to a river, there will be a great difference between the amount of water the river can supply and the demand for water that the river is required to meet. But the Isawa Dam is intended to eliminate such a difference and provide a stable flow of water. When there is much rainfall, the reservoir stores water, and when a water shortage occurs because of drought, the dam releases the water stored in its reservoir to the downstream areas thereby maintaining a flow of water.

It is important for a river to keep a decent flow of water all through the year to protect the lives of the residents against floods and maintain the necessary amount of water for living. When the Isawa Dam is completed, the Isawa River will be able to regain its flow of water and maintain a good ecosystem and a beautiful riverine landscape and environment.



Present condition: Isawa River dried up



After completion of the Isawa Dam: An artist's impression of the Isawa River with a stable flow



For the Betterment of Local People's Lives

Purpose of dam 2

Supply of Agricultural Water

Ensuring a Water Resource Sufficient to Support Local Farming

The Isawa Plain, which spreads along the Isawa River at the eastern foot of the Ou Mountains, is known to be a major granary in Iwate Prefecture. But if not for the indefatigable efforts of the local people, the Isawa Plain could not have become such rich land. The majority of the efforts of the forefathers of those people, including excavation or construction of the Juan Weir and the Shigeira Weir, were meant to ensure water indispensable for agriculture.

It was in 1953, when the Ishibuchi Dam was completed, that the farming operation of the Isawa Plain started to grow remarkably. The dam stored water for agricultural use and supplied it to a farming area of 7,600 ha in the Isawa Plain to realize a remarkable rise in agricultural production. Since the completion of the dam, new paddy fields were developed one after another, with an accordingly rapid rise in the number of areas planted with rice and in crop yields.

An increase in the amount of farmland, however, resulted in a water shortage again. Keeping a balance between the water supply and demand became very difficult with the Ishibuchi Dam alone. Farmers in the Isawa Plain, which is prone to chronic water shortage, use sequential irrigation where water is supplied to paddy fields by turns during a drought season as a means of thorough water saving and control; but the local farmers have to sprinkle water on the land with water trucks from time to time. Field improvement and water supply facility improvement have been integrally conducted to allow the local farming community to survive. Acquisition of a water source with a large water storage is now seen as the top priority task for the local people to tackle.

Under those circumstances, a plan to construct the Isawa Dam was launched. When the dam is completed, it is supposed to bring benefits to the local area both in terms of flood control and water supply, and provide a maximum irrigation water of 23,303 m³/s to about 9,646 ha of farmland in the state-run land improvement project area in the Isawa Plain. A stable supply of water realized by the Isawa Dam will help stabilize local farming operations and eventually help the prefecture's major granary survive.

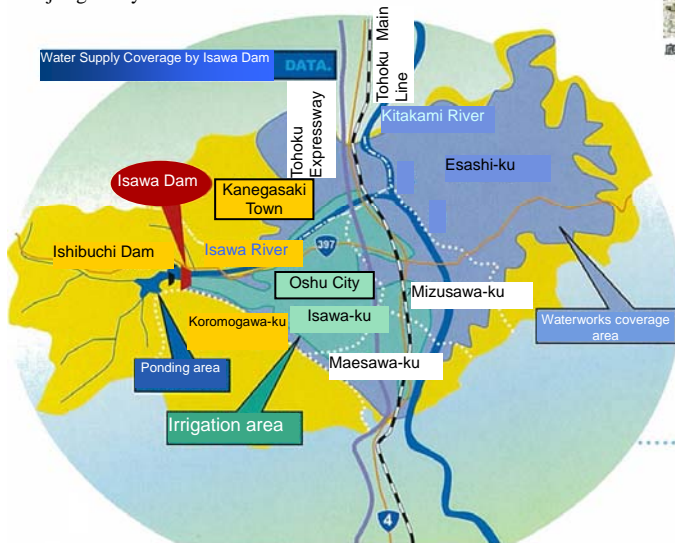


豊かに水を張った胆沢地区の水田



底をつく石淵ダム

給水車による散水



Status of Water Intake Control for the Isawa Plain DATA.

Year	Month	No. of days	10	20	30	40	50
1984	August	30 days	[Bar chart showing 30 days]				
1985	July to August	32 days	[Bar chart showing 32 days]				
1989	June	8 days	[Bar chart showing 8 days]				
1990	August	7 days	[Bar chart showing 7 days]				
1992	July	19 days	[Bar chart showing 19 days]				
1994	July to September	48 days	[Bar chart showing 48 days]				
1997	July to August	20 days	[Bar chart showing 20 days]				
1999	August	10 days	[Bar chart showing 10 days]				
2000	June	4 days	[Bar chart showing 4 days]				
2001	July to August	9 days	[Bar chart showing 9 days]				
2004	August	10 days	[Bar chart showing 10 days]				

Water intake is regulated for the Ishibuchi Dam almost every year.

Stable Supply of Water



With the development of rapid transport systems such as the Tohoku Jukan Expressway and Tohoku Shinkansen, urban areas in the basin of the Kitakami River have increased their population, together with a concurrent rise in the standard of living. Many factories are also being built here. As a result, demand for water is expected to rise in years to come.

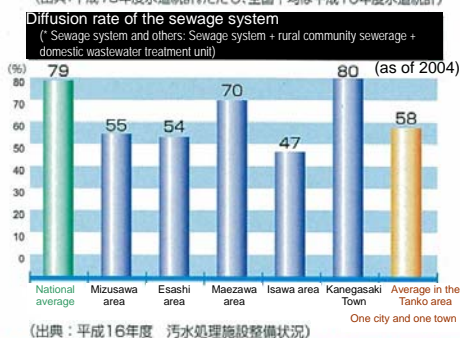
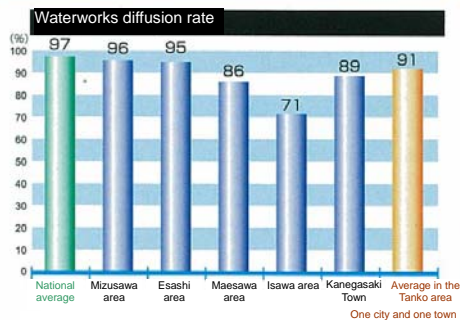
If water supply stopped, local residents, farmers and industries would suffer incredible damage. Therefore, it is essential to secure a water resource that guarantees a stable water supply.

The Isawa Dam is planned to serve as a promising water resource for drinking water; it can store about nine times as much water as the existing Ishibuchi Dam and is thus fully capable of eliminating local concerns about water shortage. Expected to support sustainable living in the Kitakami River basin, the Isawa Dam is supposed to provide a stable water supply of up to 46,800 m³ a day to one city and one town in the Tanko area, including the Mizusawa area, Esashi area, Maesawa area, and Isawa area in Oshu City and Kanegasaki Town, through the Tanko Wide-area Water Utilities Association, when completed.

Supplying Water for Domestic Use and Power Essential for Our Living

Data on Waterworks in Tanko Area

DATA.



Power Generation

Electric power is an indispensable element in our comfortable lives. Power consumption is increasing with a rise in our standard of living.

The Isawa Dam is also designed to generate electric power for the local people. The dam has a hydroelectric system that makes effective use of water discharged for irrigation to generate electricity without dirtying the air or water. The designed annual power generation will be about 93,900 MWh with Isawa No. 3 Power Plant, run by the Corporate Bureau, Iwate Prefecture, located immediately below the dam, and Isawa No. 1 Power Plant, run by Electric Power Development Co., Ltd., located downstream of the dam.

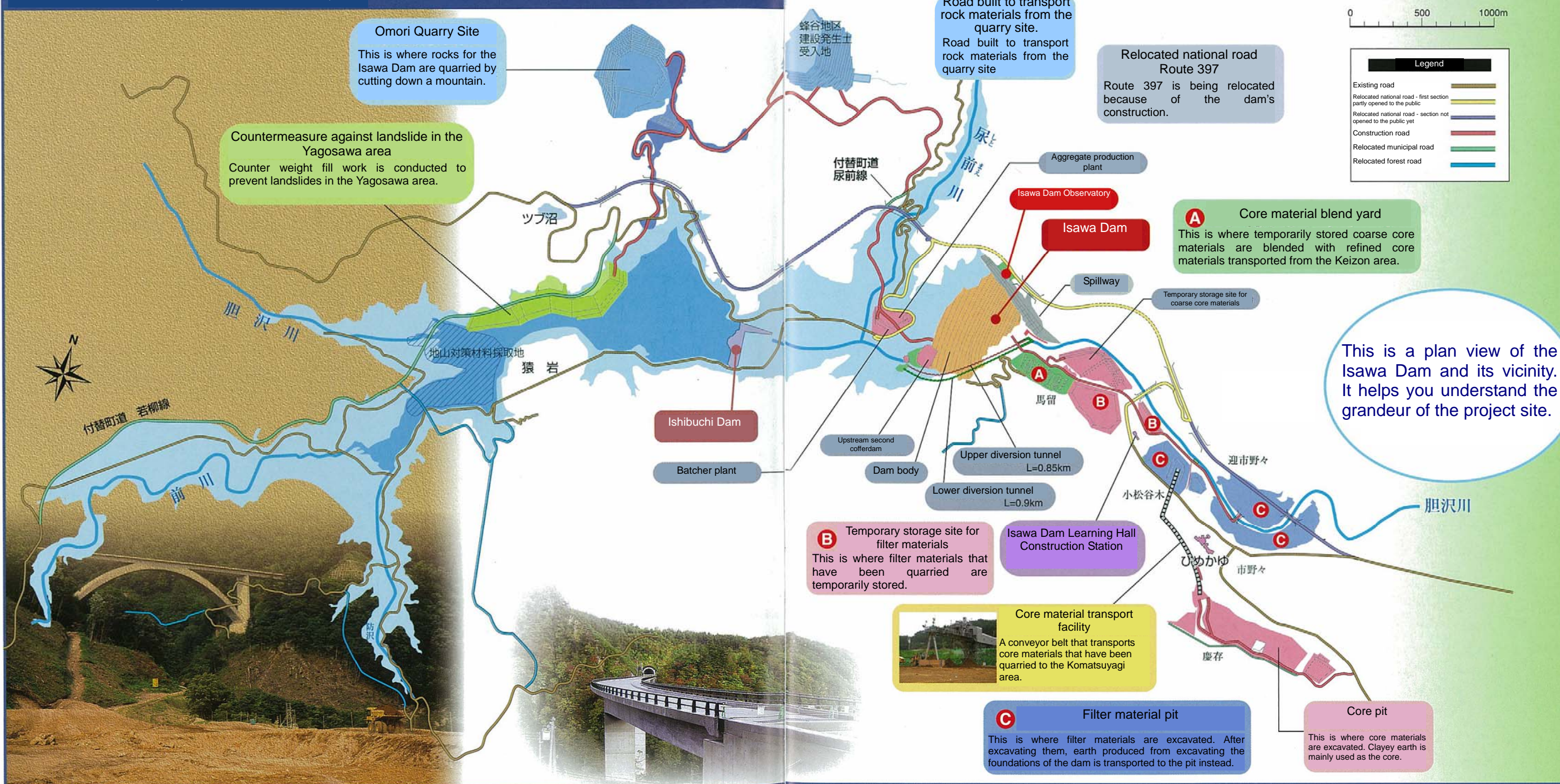
The urban population in the Kitakami River basin is logically expected to rise in the future, with many more factories coming. Power generated by the Isawa Dam will certainly make a great contribution, as a clean energy producer, to the local growth and development.

All About the Isawa Dam

現在、胆沢川の上流部で着々と建設が進められている胆沢ダムは、ダム堤体の規模が国内最大級となるロックフィルダムです。
 多くの機能を備え、地域に計りしれない潤いをもたらす胆沢ダムは、平成25年度の完成を目指しています。完成の暁には、地域のシンボルとして多くの人たちに安心感を与えることでしょう。



Plan View of the Isawa Dam (compared with the Ishibuchi Dam)



This is a plan view of the Isawa Dam and its vicinity. It helps you understand the grandeur of the project site.

All About the Isawa Dam

石淵ダムと比較すると胆沢ダムの大きさがよく分かります。つまり、胆沢ダムの地域への貢献度は、石淵ダムのそれと比べても、さらに大幅アップすることになります。

From Ishibuchi Dam to Isawa Dam ...

When the typical cross-sections of the Ishibuchi Dam and the Isawa Dam are compared, the difference in size is quite self-explanatory in terms of the height of the dam's body or the magnitude of its volume. Comparing the allocation chart of storage capacity of the two dams shows you there is a 9-fold difference in flood storage and a 13-fold difference in service water capacity between them. Such differences in size and performance will directly result in a greater level of contribution to the local community.

To determine the role of flood control, simulations were conducted assuming a heavy rainfall the size of one in 100 years has occurred (size equal to that of Typhoon Ione that hit Tohoku in September 1948) and the Isawa Dam performed its flood control capability. The results were very encouraging; the water level dropped by 1.5 m at Kozenji, Ichinoseki City.

The results were very encouraging; the water level dropped by 1.5 m at Kozenji, Ichinoseki City.

Furthermore, the storage capacity of the Isawa Dam also sets aside a greater amount for service water including irrigation water. Currently, local farmers have to accept intake restrictions during drought days because of chronic water shortages. The Ishibuchi Dam is unable to supply sufficient water to large-scale paddy fields or irrigation channels. But the new Isawa Dam with its enormous storage capacity will instantly solve this problem. It will be able to supply water for irrigation purposes as well as power generation. In addition, the Isawa Dam will fulfill a new role not played by its predecessor; it is going to supply drinking water to one city and one town in the Tanko area.

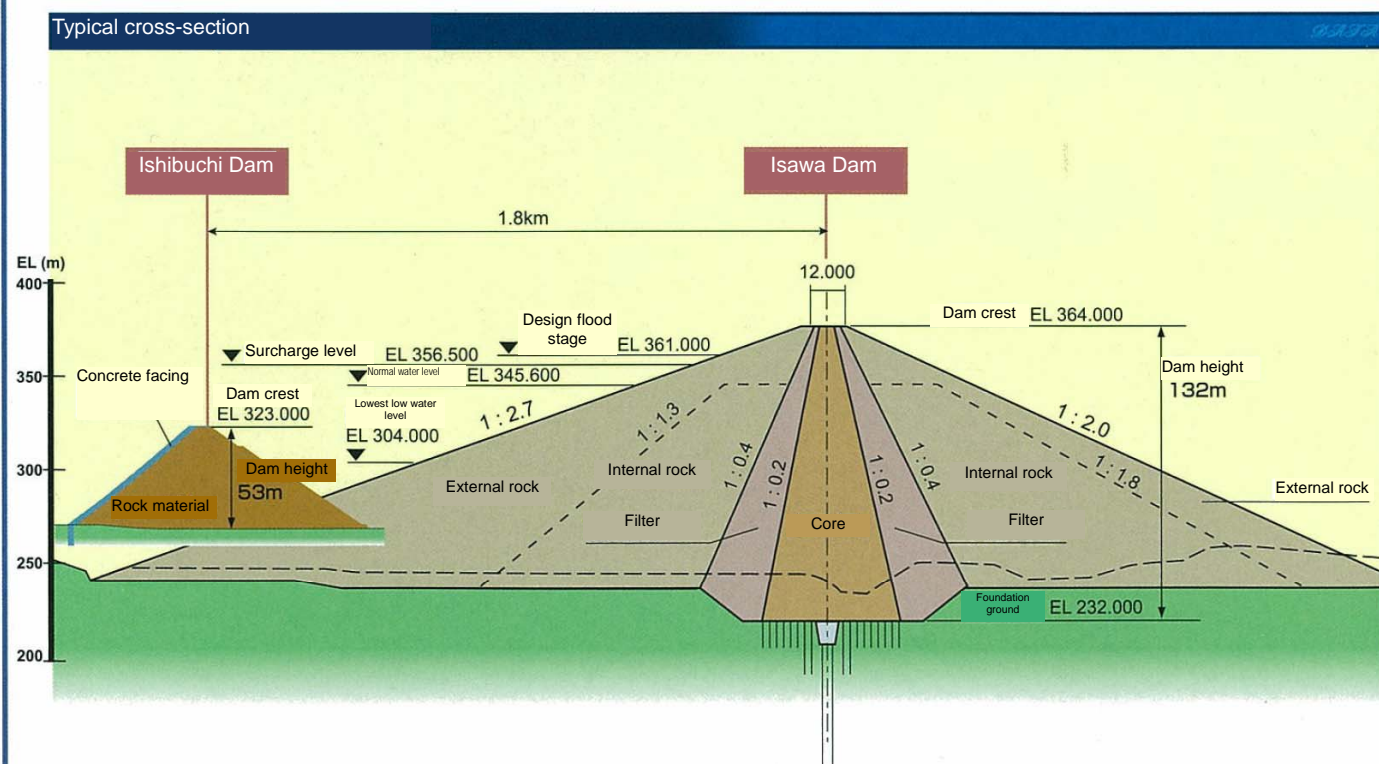
Another function, not performed by the Ishibuchi Dam, is now available for the new dam: the capability of supplying maintenance water to restore the flow of the Isawa River and revive the river environment. There is a certain amount of maintenance flow determined from the viewpoint of landscaping and ecology for each point in the river, but the present Isawa River has as many as 25 days a year when the flow fails to reach that level. But when the Isawa Dam is completed, the Isawa River will never be devoid of water, unless the river is hit by a serious level of drought whose occurrence probability is about once in 10 years. Since the storage capacity of the new dam includes the maintenance water, the dam will be able to release water down the river every day and yet maintain the normal function of the river.

Far Greater Roles

Specifications of the Isawa Dam and Ishibuchi Dam

	Isawa Dam	Ishibuchi Dam	Comparison
Type	Central core-type rockfill dam	Facing type rock-fill dam	—
Geology	Dacite	Liparite	—
Elevation of crest (EL, m)	364.0	323.0	—
Dam height (m)	132.0	53.0	2.5 times
Crest length (m)	723.0	345.0	2.1 times
Dam volume (m ³)	13.5 million	442,500	30 times
Catchment area (km ²)	185.0	154.0	—
Ponding area (km ²)	4.4	1.1	4 times
Gross storage capacity (m ³)	143 million	16.15 million	9 times
Effective storage capacity (m ³)	132 million	11.96 million	11 times
Flood storage (m ³)	51 million	5.6 million	9 times
Service water capacity (m ³)	81 million	6.36 million	13 times

Comparison of Ishibuchi Dam and Isawa Dam



Allocation Chart of Water Capacity

