



Ministry of Land, Infrastructure and Transport

Tono Dam Reservoir and Management Office, Tottori Office of River and National Highway

Chugoku Regional Development Bureau, Ministry of Land, Infrastructure and Transport

Tono Dam, built in a historic town with ancient ambience and a rich natural environment with aspirations for the safety of the locals and development of the region.

Tono Dam has been constructed in the Tono District of Kokufu-cho, Tottori City, Tottori Prefecture, on the upper Fukuro River of the Sendai River system.

The historic town of Kokufu thrived during the 8th to 12th centuries (Nara and Heian Periods) as the center of Inaba Province.

In the town blessed with natural heauty, there still remain many cultural assets, including a mysterious stone construction named Okamasu no Ishindo.

In the town blessed with natural beauty, there still remain many cultural assets, including a mysterious stone construction named Okamasu no Ishindo, and the ruins of the government office of Inaba Province, giving glimpses of the scenery depicted in Man-yo-shu, the oldest collection of poems in Japan. Down the Fukuro River lies the urban district of Tottori City, the political, economic,

and cultural center of Tottori prefecture, serving as the core of the Eastern San-in Region.





Roles of Tono Dam

The Five Roles for Maintaining the Safety and Security of the People

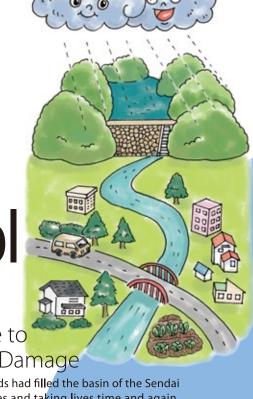
In order to assure the safety and security of the residents living in the Sendai and Fukuro River basins, it is essential to adequately control the flow of the rivers ("river management") and to effectively use the river water ("water utilization").

Tono Dam is a multipurpose dam constructed on the Fukuro River, a branch of the Sendai River. The dam contributes to the local people's lives by protecting the Tottori City area from flood damage, providing water for drinking and industrial uses and generating electricity (hydroelectricity). In addition, it mitigates drought damage to further contribute towards making people's lives safe and secure.

Flood Control

Regulates the Outflow Discharge Rate to Prevent Flood Damage

Since the remote past, floods had filled the basin of the Sendai River, washing away houses and taking lives time and again. Thanks to the construction of the Tono Dam, the river water can now be stored in the reservoir and then discharged into the lower river in regulated amounts. These functions reduce flood damage and allow people to live their lives free from its danger.





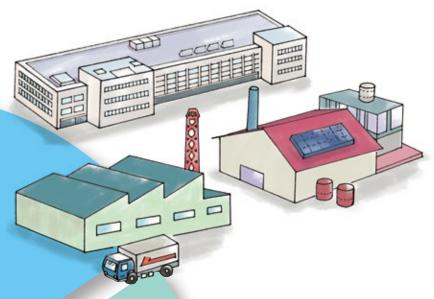
Mitigates Drought Damage and Protects the River Environment

When the water level of the Fukuro River drops after a drought, the water stored in the Dam reservoir will be discharged into the River in order to mitigate the drought damage to rice fields and farmlands that are taking water from the Fukuro River. The Dam also helps to protect the river environment and maintain shelters for river creatures.

Industrial Water

Provides a Stable Source of Industrial Water

Enables the taking of an additional 30,000 m³ of water per day at a maximum for industrial use in Eastern Tottori Prefecture.

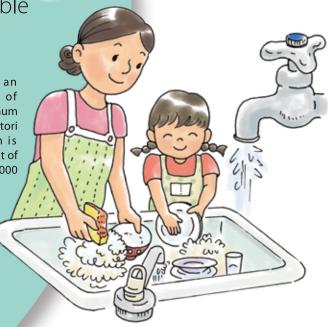


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The Five Roles of Tono Dam

Drinking Water

Secures a Stable Supply of Tap Water

Enables the taking of an additional 20,000 m3 of water per day at a maximum as drinking water for Tottori City residents, which is equivalent to the amount of water used by about 40,000 people.

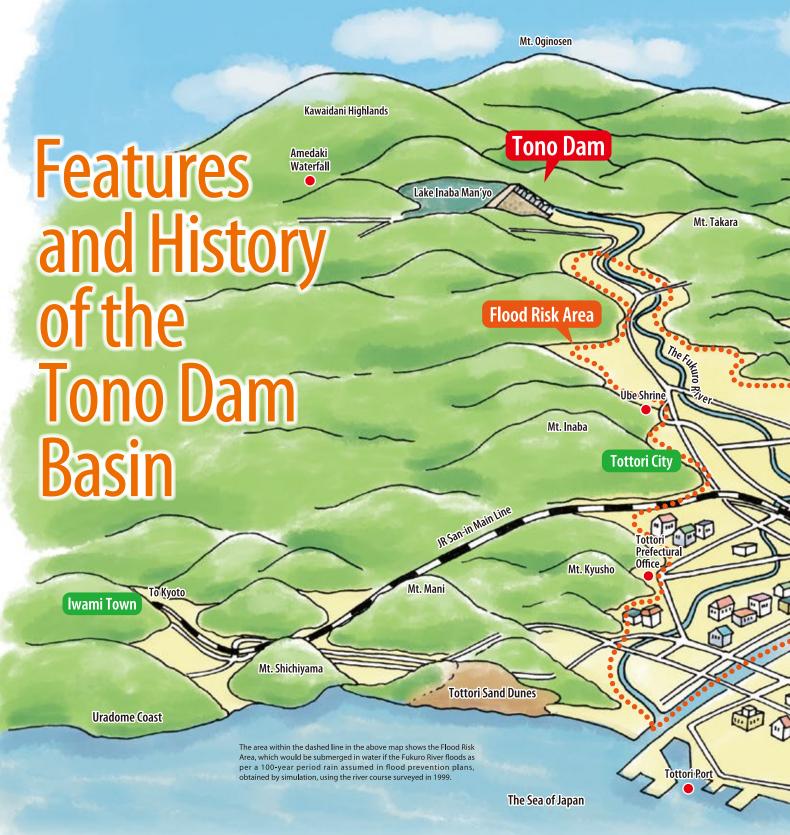




Hydroelectric Power Generation

Generates green electricity with discharged water

Generates electricity by using the force of discharging water stored in the dam, efficiently producing electricity of 1,100kw at a maximum, which is equivalent to supplying about 1,400 general households.



The Sendai River—a Flood Prone River

The Sendai River, a class A river, starts from its source in Mt. Okinoyama (1,319m) in Chizu Town, Yazu County, Tottori Prefecture, combines its branches such as the Saji, Hatto, Sunami and Fukuro Rivers and flows through the middle of the Tottori Plain to the north into the Sea of Japan with a basin area of 1,190 km² and a main channel length of 52 km. The catchment area, consisting of a population of around 200,000, extends over one city and three towns, serving as the political, economic, and cultural base of the Eastern Tottori Range.

The Sendai River basin is characterized by the

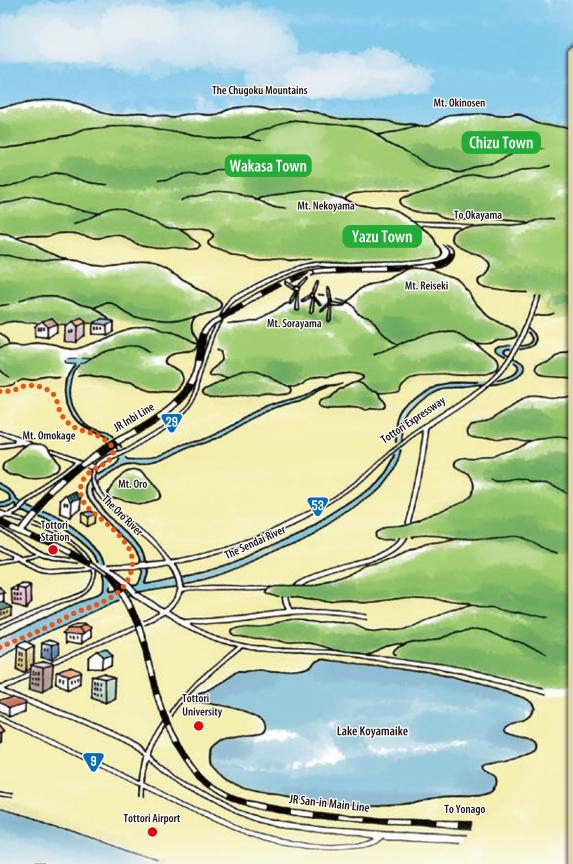
steepness of the river, steeper than foreign rivers or major rivers in Japan, inducing the rainfall in the basin to flow into the sea guickly. In addition, due to the short distance between the Chugoku Mountains and the coast of the Sea of Japan, along with the steep geography of the area between them, the catchment area of the Sendai River is prone to flood and drought. The climate of the region, typical of the coastal regions of the Japan Sea, is largely controlled by seasonal winds influenced by the geographies of the Chugoku Mountains and the Eurasian Continent as well as the Tsushima Current in the Sea of Japan, and the

annual rainfall of the Sendai River basin reaches to 2,000 mm, while the average of the country is about 1,600 mm. Thus the basin has been overcome by floods and the residents have suffered from their damage over and over again.

Data on the Flood Risk Area in Tottori City

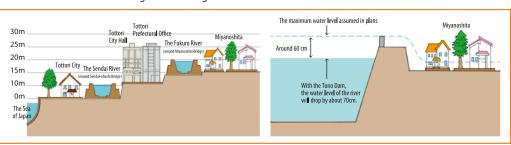
Area of the Flood Risk Area		1,670 ha
Number of the Households in the Flood	Risk Area	23,784
Population in the Flood Risk Area		58,624

Source: Economic Survey on the Sendai River Management in FY 2007



Flood Control Benefits of the Tono Dam (at Miyanoshita, Kokufu-cho, Tottori City)

Because the surface of the Fukuro River is above ground level of the city center, any overflow might result in a disastrous situation. With flood control at the Tono Dam, the highest water level is expected to drop by about 60 cm so that flood damage will be mitigated.



History of Flood Disasters in the Sendai River System



732 Houses & 185.2 ha Farmland Submerged

732 TOUSES & 183.2 TIAl FAITHIAITO SUBTIFEIGED This typhoon, having stayed near Japan for a long period, in combination with a stationary front extending from around Kanto to Shikoku, brought heavy rain, sediment disasters and floods in many places throughout Japan. In Tottor, where a rainfall of 136 mm was recorded, the damage was serious, including road destruction, collapsed banks and landslides, and among others, railways and agricultural products were severely damaged. Since many areas in Tottor (ity went under water, the Disaster Relief Act was applied to the municipality.



Formed in October 1979 1355 Houses (1131 in Tottori City) & 509.7 ha Farmland (356.9ha in Tottori City) Submerged

This massive typhoon with a large storm area moved northward and almost all parts of Japan were affected. It rained heavily in the Tottori region, but eased gradually and the water level of the Sendai River system started to drop. The flood control facilities that had been put in place combined with the well-organized flood brigades enabled intense flood fighting and all owed the river banks to escape collapse but the revetments of irrigation channels were broken in many places.



Formed in September 1990 135 Houses (77 in Tottori City) & 20.5ha Farmland (3.8 ha in Tottori City) Submerged

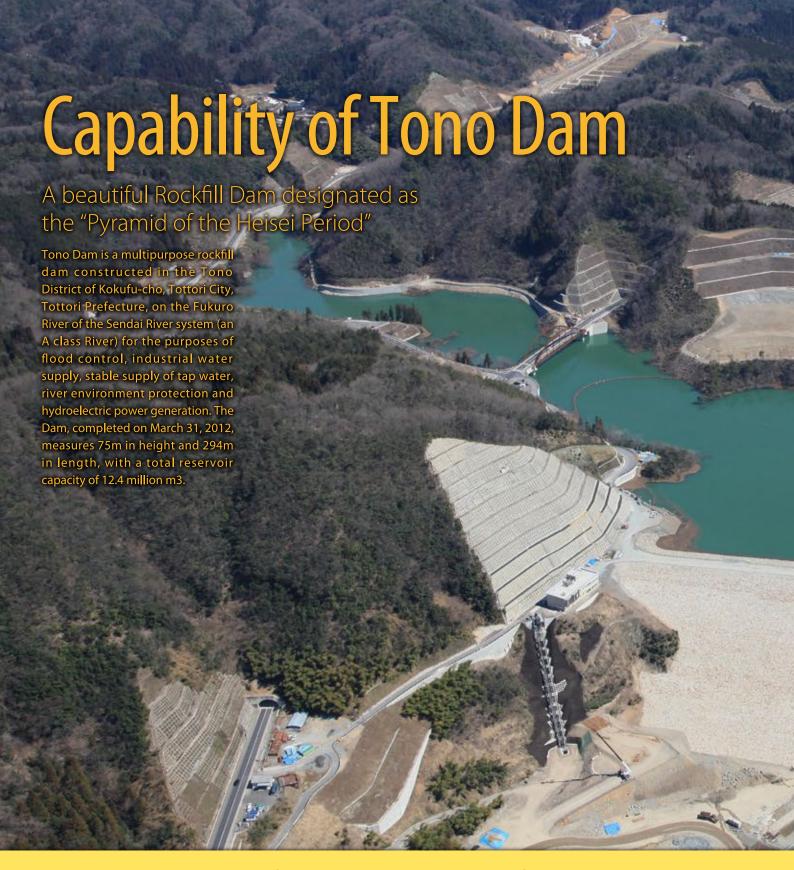
A front, which moved slowly southwards on Mainland Japan as the typhoon approached, brought heavy rains accompanied by thunder, along with tornados in some places, resulting in serious flood damage. In Tottori, 135 houses were inundated.



Formed in October 1998 121 Houses (93 in Tottori City) & 13.4 ha Farmland (13.3 ha in Tottori City) Submerged



Formed in September 2004 38 Houses (32 in Tottori City) & 0 ha Farmland (0 ha in Tottori City) Submerged In Tottori, the total rainfall in the Sendai River basin reaches 1376 mm, damaging 99 houses in the Sendai River basin, 97 locations along roads as well as 216 locations along rivers were damaged. At a quarry on the border between ex-Mochigase Town and Chizu Town, sediment collapsed into and blocked the Sendai River.



History of Tono Dam

- ► **January 1, 1962**Start of a survey by the Tottori Prefectural Government
- ► April 1, 1968

 Taking over of the project by the Ministry of Construction from the Tottori Prefectural Government.
- ▶ July 1, 1968 Establishment of the Oppositional Alliance against Tono Dam Construction

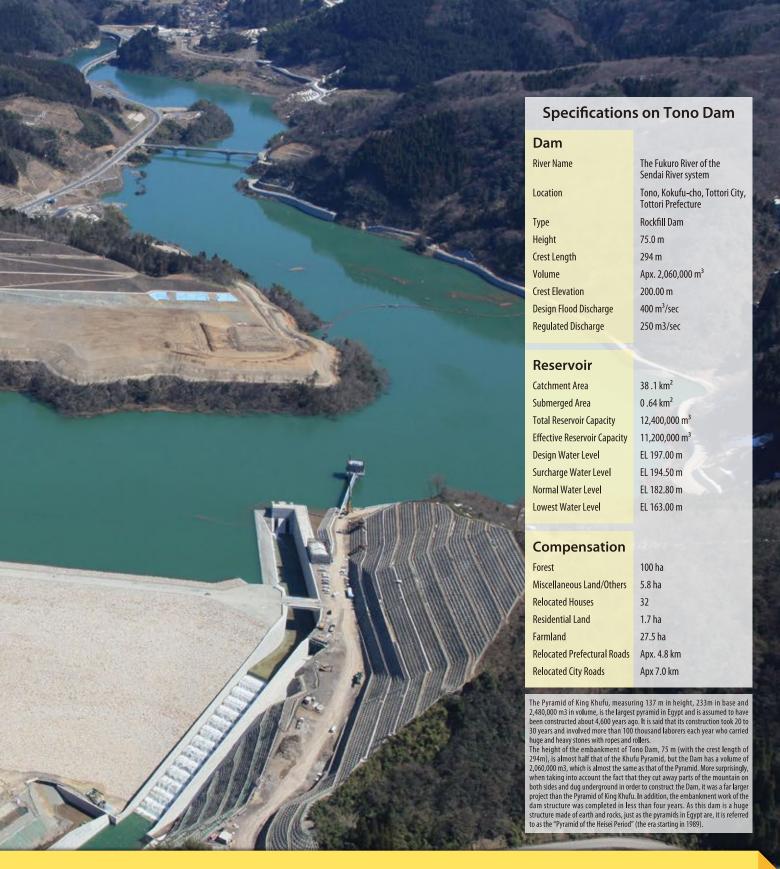
- ► April 12, 1991 Start of the Tono Dam construction project
- January 21, 1993
 Start of site investigation
- Announcement of the Tono Dam Basic Construction Plan
- December 16, 1997
 Signing of the Agreement on Loss Compensation Criteria





- March 24, 1999
 Adoption of the Water Sources Area Maintenance Plan
- May 20, 2000
 Start of relocation work of the roads
- June 13, 2004
 Start of construction work of a temporary drainage canal
- November 1, 2006
 Start of diversion of the Fukuro River
- ► December 14, 2006

 Partial opening of the relocated prefectural and city roads



- December 20, 2006
 Publication of environmental prevention measures
- June 27, 2007 Commencement of ceremony for construction of the main dam structure

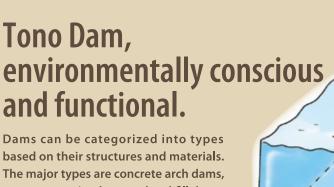


- October 9, 2009
 Opening of the entire prefectural road
- October 22, 2010
 Completion of the embankment of the dam
- December 22, 2010 Completion of concrete placement for the spillway
- March 3, 2011
 Start of test water filling
- ► April 25, 2011
 Completion of test water filling
- ► June 30, 2011
 Start of generation at the Fukuro River Power Station

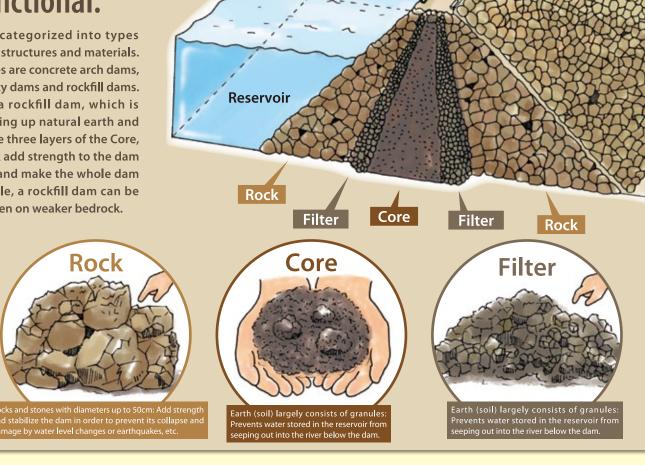
November 27, 2011
Completion ceremony of Tono Dam



March 31, 2012 Completion of Tono Dam How Tono Dam Works



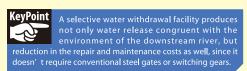
concrete gravity dams and rockfill dams. Tono Dam is a rockfill dam, which is made by heaping up natural earth and rocks. Since the three layers of the Core, Filter and Rock add strength to the dam embankment and make the whole dam structure stable, a rockfill dam can be constructed even on weaker bedrock.

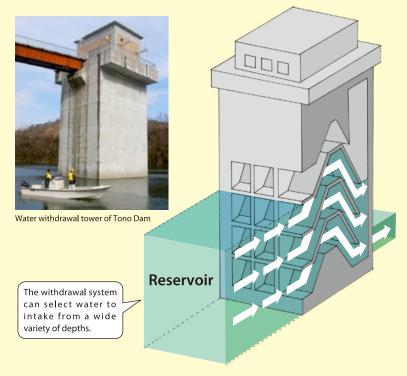


Selective Water Withdrawal Facility

Technologies to select eco-friendly water

A facility to discharge water stored in the dam to the river below is called a water withdrawal facility. The water temperature of a dam reservoir varies by point, being warm on the surface and cold on the bottom in summer, for example. If a dam keeps discharging cold water, fish and insects living in the Fukuro River, or even agricultural products of its basin may be impacted, so consideration for the environment of the river below is required. For that reason, Tono Dam has adapted a selective water withdrawal system, which enables it to select and intake water of temperature as close to that of the natural river water as possible from the dam reservoir.





Three Technologies to Operate Tono Dam

Aiming to reduce the impact on the surrounding environment and to save costs, Tono Dam has been constructed after a great deal of technical consideration. Let's look at its inside mechanisms consisting of state-of-the-art technology, part of which was introduced for the first time in Japan, with an easy-to-understand explanation.

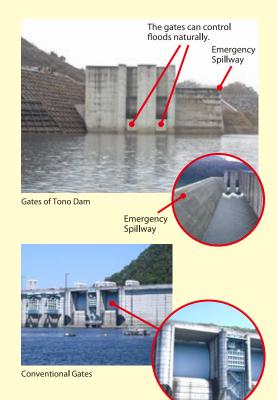
Overflow Type Technology to control floods naturally without gate operation

Tono Dam has adopted the overflow type flood control. When heavy rain falls, the flooded water flows into the Dam and the water level of the reservoir raises. If the water level exceeds the Normal Water Level, a part of the flooded water is stored in the reservoir while the rest flows into the lower river through the spillway (a structure where water is passed through when a flood occurs). In this system, the water's energy is dissipated at the spillway before entering the river.

In case unexpectedly large amounts of water flood into the Dam...

Due to an extraordinary storm rainfall, larger amounts of flood water than planned may flow into the reservoir. In such a case, along with the regular spillway, the emergency spillway is used to discharge water to the river below.





To control floods steel gates are operated.

Energy Dissipation by a Cascade Spillway

The nation's first adoption of technology to weaken the force of water current

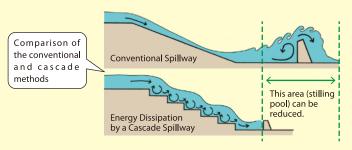
Tono Dam has introduced the nation's first application of the technology, "energy dissipation by a cascade spillway" . Spillways, through which dam water is discharged in case of floods, are usually in the form of a slide. The energy of discharged water, however, is so great that if the water is released untreated, the embankment and/or the river below might not remain safe.

To weaken such force, usually an auxiliary dam is installed just below the spillway. In Tono Dam, on the other hand, a stepped water channel, which was introduced in the spillway for the first time in Japan, makes the water force weaken as the water is running down the stepped channel.

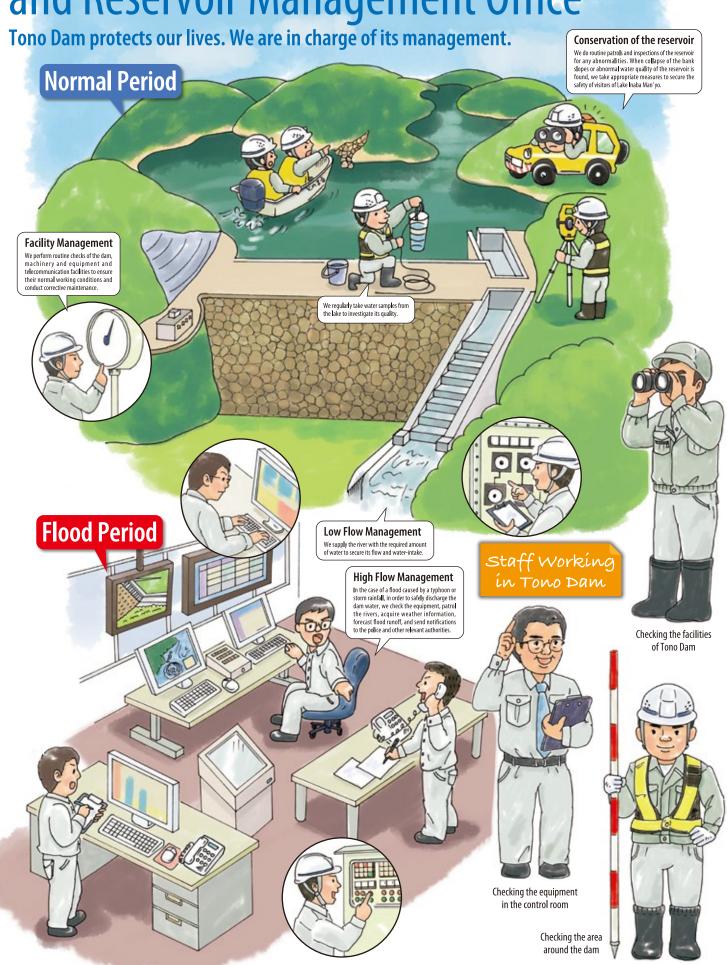


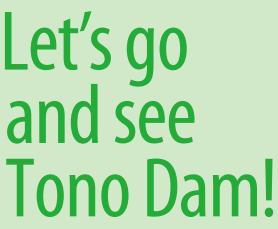


Energy Dissipation by a Cascade Spillway in Tono Dam



Welcome to Tono Dam and Reservoir Management Office





The surrounding four public squares rich in nature offer relaxation and leisure activities.

To Tottori Station

space with a view of the highest dam embankment in the prefecture is popular among the residents as a place for social exchange. Area: 4.9 ha/ Facilities: a multipurpose square, Tono Dam Exchange Center and large playground equipment

Memorial Square

Tono Dam

Lake Inaba Man'yo

Jikkoku Tunnel

Kokango Square A quiet place where you can stroll in the woods

Central Square

likkoku

A peaceful and tranquil space along the lake shore, great for a walk and bird-watching. Area: 4.7 ha/Facilities: Nature Observation Square. Bird-Watching Square and a heliport.

To Waii

To Amedaki Waterfall

Nawashiro

Water Square

Fish-Hand-Catching Pool

A space where adults and children can be close with nature and the river and enjoy activities

including river mountain stream fishing. Area: 0.9 ha/Facilities: Event Square and

Yamasaki

Nakagawara Atelier Shogakko

Matsuo

Yoshino Yoshino Sobano Yakata

The four public squares located around Tono Dam have been constructed with the aim of preserving the surrounding environment, promoting community building by emphasizing regional characteristics, and encouraging citizens to rest, promote their health and exchange

Kamiarafune

with others. A wide variety of events are held in these open spaces, attracting everyone from young children to seniors so that every citizen feels free to drop by and enjoy the area.

 $\langle\!\langle$ Information of Events around the Tono Dam Area $\rangle\!\rangle$

Kokufu Trout Fishing Festa





This is an annual event held in Water Square, one of the four public spaces near Tono Dam. During the event the river is stocked with trout and the participants enjoy catching them.

Forest and Lake Week





Arafune

The inside area of the Dam is open to the public during this time of the year only. You can join an inside-the-dam expedition tour and experience a ride on a patrol boat on Lake Inaba Man'yo. Come with your children and discover a good theme for their research or essay as a part of their summer vacation homework!

Tono Dam Walk





The area around Tono Dam has a comfortable environment and facilities to walk around. Why not join this walking event and see beautiful views of the rich nature around Lake Inaba Man'yo to refresh yourself?

Tono Dam Snow Festival





Snow is a great joy in winter! Let's play outside in a wide open space. The kids' favorite snow play corner, snack stands, and other fun activities

In addition to the above, quiz events, hands-on workshops, outdoor music festivals, various lectures, etc. are being held. We are planning various events that will enable you to appreciate the seasonal joys of the four public squares—waiting for your visit! Please check the latest information on our website.

Surrounding Area Welcome to Kokufu Attractive Of Tono Dam Welcome to Kokufu Attractive Town



Amedaki, one of the 100 Best Waterfalls in Japan, is a popular tourist spot, especially in autumn when the leaves of the trees turn red. This is the birth place of Inaba no Kasaodori, a traditional dance with umbrellas.

Amedaki Waterfall Tofu Dishes Ruins of the Tower of Tochimoto Amedáki Haiji Temple Tochimoto

Nawashiro

Jikkoki

Kango



This cozy log–house restaurant serves cuisine incorporating Tofu. Enjoy the local specialty "Amedaki Tofu", made with 100% pure spring water sourced from the depths of the mountain of Amedaki Fall"!

Arafune

Waji

Tono Dam



Ube Shrine is Ichinomiya (the first shrine) of Inaba Province and visited by many people from within and outside the prefecture. Its main hall and the deity enshrined there are printed on the first issues of 1 yen and 5 yen banknotes.

Atelier Shogakko

Aso

Machiya

Ube Shrine

Situated in a wooden building of a former elementary school, this gallery and café offer a relaxing time.

Lake Inaba Man' y

Atelier Shogakko

Matsuo Yoshino

Yoshino Buckwheat Noodle Restaurant

Yamasaki

Kajiyama Okamasu Ancient ∕Tomb

Okamasuno-Ishido

Nii

Tani

The Inaba Man'yo

Museum of History

Ruins of the

Government

Office[®]

Inaba Provincial



This restaurant offers buckwheat Noodles (soba) made from local ingredients as well as soba making workshops. Open Sundays only.



In this cemetery, designated as a national historic site, 78 gravestones are solemnly lined up. View the spectacle of illuminated autumn leaves during special nights in late autumn

To Kyoto

The Fukuro River

Miyanoshita

To Okayama



In this museum, introducing the ancient history and culture in the Inaba district, you can try on ancient clothes or stroll around the garden with plants described in old Man-yo-shu poems

Ruins of the Inaba Provincial Government Office

This is the site where the government office buildings of Inaba province used to stand.

Tono Dam is located in the very attractive town of Kokufu. Come and take in the ancient ambience surrounding Tono Dam along with the wonderful fresh air!

It takes about 30 minutes by car from Tottori Station to Tono Dam.



Tottori Station

To Yonago

Visual Guide to Wildlife

Animals and plants inhabiting the area around Tono Dam

A natural environment where a rich variety of animals and plants are grown

Surrounded by mountains in Kokufu, a wide variety of flora and fauna inhabit the area near Tono Dam. Let's take a walk around the Dam, so that you may encounter some of them.



As its Japanese name meaning "Bear Hawk" suggests, it is big and strong and referred to as "the king of woods" as well, positioned (Wingspan: 160 to 170 cm) at the top of the food chain. The Hawk Eagle, designated as an endangered species, flies so high in the sky that you will rarely see one.

Length: 75 to 80 cm Chance to see: July to October



Groups of gray herons make their nests in pine woods near the Dam. They stand still on the water shore for 20 to 30 minutes stalking fish for food. Its back is colored blue gray and you will find black wing tips when it flies. There are black eyebrows on the face. As a gray heron is so big, some people confuse it with a crane or white stork, but a gray heron flies bending the neck into an S shape.



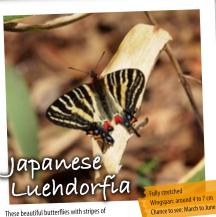
Many tree frogs live in the grasslands around the Dam. Since they love rain, it is said that if tree frogs croak, it will rain.

When a shower or pressure trough approaches, they croak in unison and climb to a higher place.

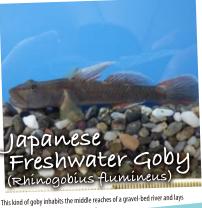
Length: Around 3 to 4 cm



Many freshwater crabs reside in streams around the Dam. They are a small and an endemic species in Japan, famous for laying their eggs and raising their young in rivers. As their name suggests, they prefer to live in marshes.



These beautiful butterflies with stripes of yellowish-white and black on the wings are praised as "spring goddesses". They suck the nectar of dogtooth violets, violets, cherry trees, etc. and lay eggs on Japanese wild ginger.



eggs there. Most of their young swim down to the sea, but return to the river when fully grown.

Local people use this goby for food

ning Period: April to September

Fish of the Cyprinidae family with a small mouth and protruding lower jaw, living in the middle and lower reaches of a river.

Length: about 10 cm



Inhabiting mainly mountain thickets or glasses, when it senses the body temperature or odors of an animal, it sucks the animal's blood with its sharp teeth. If you are bitten by a tick, be sure to see a doctor.



oval leaves in the shape of a

heart. While serving as food for Japanese Luehdorfia, it has been put on the endangered species list of Tottori prefecture



This plant, whose scientific name is Arisaema urashima, blooms with a dark purple flower. The name "urashima" comes from the petal extending from the flower, which looks like a fishing line used by Taro Urashima, a fisherman who appeared in a famous folk story in Japan



Nettle, a kind of water grass, has prickles which look like fur on the surface of the stems and leaves. If the prickles touch your skin, you will feel a sharp pain. In such a case, never rub the affected area, but wash the prickles away with clean water right away

Blooming green flowers



Dam Card Distribution Spots in Tottori Prefecture

Only one Dam Card is given to each person who has actually visited that particular dam. Please contact directly the distribution spot above for each Dam Card.

What is a Dam Card?: Dam Cards, which display a picture and data of the dam, are distributed at dams managed by the Incorporated Administrative Agency Japan Water Agency and other authorities. Distribution of Dam Cards started in 2007 across the nation as a way to widely publicize dams to the general public. You can get a Dam Card of each dam only when you visit there. When you visit a dam, why not take home a dam card as a token of your visit, and start your own collection?

Information Station on Tono Dam



Official website

loesawa Dam

Tono Dam & Reservoir Management Office posts information on the current status of Tono Dam and its latest events through the website. Please visit our website. THE ADMINISTRATION OF THE ADMINISTRATION OF

殿ダム水源地域ビジョン In the interest of promoting the Tono Dam Water Resource Area Vision

igawa Dam

In the interest of promoting the Tono Dam Water Resource Area Vision (*) steadily and vitalizing the water resource area in an autonomous and sustainable manner, the Liaison-Conference on Tono Dam Water Resource Area Vision (established in March 2012) is held regularly.

*Tono Dam Water Resource Area Vision: carries the fundamental policy, aiming to "develop an attractive area in Inaba, rich in nature and history, where citizens gather to exchange", including action plans designed in view of how Lake Inaba—Man' yo and its surrounding area should be.

http://www.cgr.mlit.go.jp/tottori/tono/

tonodam

Search

Chugoku Regional Bureau, Ministry of Land, Infrastructure and Transpo

Tottori Office of River and National Highway

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Tono Dam and Reservoir Management Office

206-4, Tono, Kokufu-cho, Tottori City, Tottori Prefecture, 680-0222 Tel: 0857-58-0581 /Fax: 0857-58-0582

Access

☐ 30 min. from JR Tottori Station by car

 \square 50 min. from Tottori Sand Dunes Conan Airport by car \square 1 hour and 30 min. from Tsuyama IC of Chugoku Expressway by car

 \square 1 hour and 30 min. from Sayo IC of Chugoku Expressway by car

Your comments and opinions are welcome. Visit the webpage of Tono Dam! → http://www.cgr.mlit.go.jp/tottori/tono/