

Using and Adapting Tachibai Water for the Local Region Connecting the Local People to Our Area's Resources

Tachibai Water Midori Network
(Last updated 25 April 2017)

1. Introduction

Our 194-year old irrigation infrastructure, named Tachibai, conveys water, called Tachibai Water, throughout the Seiwa-area in Mie Prefecture. A number of our ancestors led by the local leader Nishimura Hikozaemomn (Figure 1) dammed the Kushida River (Figure 2) and constructed over 30 km of irrigation canals/channels towards to the end of the Edo-Period (early 1800s). It took 247,000 laborers and significant local investment to create Tachibai Water, with the goal to develop new paddies and increase rice cultivation. According to stories, this investment in water development saved the area farmers from poverty.

Tachibai Water flows out of the forest, weaves between the mountains and flatlands, branches out to numerous large and small channels, cruises around the farmhouses, and after feeding the paddies and fields, returns back to the Kushida River. People made use of this local water by making rice, washing vegetables, controlling/preventing fires, and generating electricity (starting in 1921 by Chubu Electric Power Company [Chubu Electric]). Over time, the use of this water played a central role in forming the villages' customs, systems, and internal relationships that continue to protect and manage this resource. Tachibai Water nurtured various aspects of agricultural culture and built the foundations of our agriculture and lives.



Figure 1 - Nishimura Hikozaemomn



Figure 2 – Today's Intake on the Kushida River

Today, agricultural communities throughout Japan are now facing new challenges. Our Seiwa-area is representative of a typical rolling foothills geography. Most of the farming households are small-scale, and industrialization and urbanization have long shifted the economic base away from agriculture. Rice agriculture, in particular, is less profitable. Crop prices compete with national and international food prices, and popularity of western cuisine has led to a significant

decrease in domestic rice consumption. Rural areas that were previously fully dependent on agriculture now also rely on outside, non-agriculture based incomes. The rural population is in decline as the younger generation relocates to cities for work. The average age of a Japanese farmer, as of year 2005, was 65. The average person today has a low awareness of the role of water in their communities and their lives.

As a result, the ‘trust and the spirit of cooperation (the ties/cohesiveness of the area)’ have been deteriorating. In the past two decades, the Tachibai Water Midori Network (Tachibai Water Land Improvement District) has felt and started to address this ongoing crisis. The Midori Networks has focused on creating and realizing various potential uses and roles Tachibai Water should be serving our community. This includes understanding and re-establishing the local water’s central role in our community. The Midori Network, along with area residents, has begun initiatives to make use of the water, not just for irrigation purposes, but more widely for use in residents’ everyday lives and regional revitalization.

2. Management of Tachibai Water and its Local Uses and Roles

2.1 Organizational Structure of Tachibai Water Midori Network

As of 1 April 2017, the organization of Tachibai Water Midori Network consists of the following people.

- 619 landowner members (429 ha of combined productive land)
- 31 representatives
- 12 directors
- 2 financial secretaries/controllers
- 6 water and drainage coordinators
- 2 full-time staff
- 4 administrative/office staff

2.2 Tachibai Water Infrastructure and its Operation and Maintenance

- 1 weir intake
- 4.1 km of water canal – shared use with hydropower generation
- 21.8 km of main canals
- 1.0 km of Matsuyama tributary
- 156 irrigation diversion gates
- 38 flood/discharge water release gates

The Midori Network and the Chubu Electric share responsibility for Tachibai Water’s O&M (operation and maintenance). Chubu Electric operates and maintains the Tachibai weir intake and the initial 4.1 km of shared, multi-purpose water canal. The Midori Network is responsible for the O&M of the infrastructure downstream of the hydropower generation plant, which includes 21.8 km of main canals, and the 1 km Matsuyama tributary. This O&M differs depending on whether it is during flooding or irrigation season. The 6 water and drainage coordinators control the 38 flood release gates, while the 2 full-time staff is responsible for the 156 irrigation diversion gates.

2.3 Various Beneficial Uses/Roles of Tachibai Water

In addition to the traditional agricultural uses, Tachibai Water just as importantly plays a role in the following purposes.

1. Disaster prevention/response
2. Tourism and regional revitalization
3. Regional education and welfare
4. Sustenance of daily life
5. Small scale hydroelectric power generation
6. Agricultural village environmental conservation
7. Ecosystem conservation
8. Historic preservation
9. Agricultural village's ties/cohesiveness and local autonomy

The “Taki-chou Seiwa-area Resources Preservation and Use Council” consisting of 22 organizations and four support organizations manages Tachibai Water under collaboration with the Midori Network. Council activities are financed by a Ministry of Agriculture, Forestry, and Fisheries grant/subsidy.



Figure 3 – Firefighting Training



Figure 4— Hydrangea Festival



- ① 防災用水
- ② 観光・地域活性化用水
- ③ 地域教育・福祉用水
- ④ 生活維持用水
- ⑤ 小水力発電用水
- ⑥ 農村環境保全用水
- ⑦ 生態系保全用水
- ⑧ 歴史的遺産保全用水
- ⑨ 農村協働力・自治形成用水

The Seiwa-area holds customary water rights to the Tachibai Water, meaning its uses have developed over the years. Legalities aside, however the above nine uses of Tachibai Water can be grouped into 3 broad categories, from the local user perspective: 1) multipurpose use of the water, 2) multipurpose use the infrastructure, and 3) multipurpose use of Tachibai Water's cultural value. The conversation around multiple beneficial uses/roles of agricultural villages/communities is often based on an assumption that there is an inherent potential in the land to increase agricultural production. However, in the case for agricultural water, its use by the local people is what creates value, and hence, accepted recognition of the water's value. People who utilize and manage the water create and form its beneficial roles and purposes.

Some of these uses or values of Tachibai Water are described in the subsequent sections.

Disaster Prevention/Response

Tachibai Water weaves through mountains and plains, collecting water from heavy rains that fall on about 700 ha of mountainous terrain. This equates to an annual flow of 6,800,000 m³. Tachibai Water Midori Network's water and drainage coordinators work day and night to manage this inflow. Tachibai Water has been also called 'precaution water' throughout the years and is used as fire prevention water to protect residents' lives and possessions. In the past 20 years, Tachibai Water has been used to fight fires for two brushfires and five house fires. In 2013, Tachibai Water helped put out one house fire and one bushfire. 0.2 to 0.4 m³ per second of water is diverted and maintained year round within the Tachibai Water system for the purpose of fire prevention and environmental flow. This includes non-irrigation periods. The government, the fire company, community residents, and the Midori Network all rely on Tachibai Water for

disaster prevention, and cooperate to implement drills and trainings for emergency situations (Figure 3). Tachibai Water flow conditions are made public on the Tachibai Water website (<http://www.tachibai.jp/>) and can be accessed real-time using cellphones or other communication devices. This information is also shared with relevant organizations/agencies including the fire company and government agencies.

Tourism and Regional Revitalization

From 1993 to 2008, the ‘Council for a lot of hydrangeas movement’ planted hydrangeas along the maintenance road that follows Tachibai Water canals. The council consisted of the Midori Network and the larger Seiwa-area residents, and now, about 30,000 hydrangeas now thrive along over 30 km of canals and surrounding rice paddies. Since 1997, the Midori Network and local residents have organized ‘The Land of the Leader, Hikozaemon’s Hydrangea Festival’ every June. The festival makes use of the Tachibai water infrastructure and the surrounding rice paddies, and aims to foster and promote interaction and exchange between the agricultural villages and the cities. A crowd of over 10,000 visitors attend the festival.

The festival has had positive impact in the Seiwa-area, and local residents have begun businesses that add secondary and tertiary production value to the traditional agricultural primary production. Such value-added service businesses/initiatives include village restaurants and markets, which take fuller advantage of area resources and support regional revitalization.

Regional Education and Welfare

The Seiwa-area, representative of the rest of Japan, is facing challenges of an aging population, low birth rate, and population decline. More than ever before, coordination and involvement with schools and education have become important to maintain and preserve Tachibai Water and our area’s water and land resources. It is important to ‘coordinate with schools/education,’ and teach children to love and to be proud of their hometown. This education is the best future investment for the area’s continued existence and development.

From very early on, Tachibai Water Midori Network has developed and taught age-appropriate curriculum that passes down traditions to local children. For example, during graduation ceremonies and hydrangea festivals, kindergarteners sing Tachibai Water’s song “Midori” and learn about Tachibai Water directly through their five senses. First and second graders explore living organisms in the biotope that is supported by Tachibai Water and grow potatoes under the direction of local farmers. In conjunction with social studies/community studies, fourth graders draw large pictures and learn Tachibai history by storytelling with them (Figure 5). Fifth graders grow rice using Tachibai Water. As a part of their volunteer work, middle school students take on the role of ship captain for the hydrangea festival’s Tachibai Water boat cruise, and they put on a historic showcase to passengers.



Figure 5 – Picture Storytelling

In 2013, the Ministry of Education, Culture, Sports, Science and Technology recognized Seiwa Elementary and Middle Schools as “Community Schools.” The Midori Network has embraced this trend and began more in-depth cooperation with local schools and education. The Midori Network is currently responsible for teaching about 50 hours of classes per year.

(<http://seiwashigen.jp/omame/>)

Small Scale Hydroelectric Power Generation

Since 1921, Tachibai’s agricultural water has been used in conjunction with Chubu Electric for hydropower generation. To further promote local resource use, a partnership of private industry, Mie Prefecture, Taki-chou municipality, Midori Network, a university research lab, and Taki-Chou Seiwa Area Resources Conservation and Use Council has together implemented an experimental project “Tachibai Water Small-Scale Hydropower Generation,” ongoing since 2012 (Figure 6).



Figure 6 - Power Generation Experiment

The project has two objectives – 1) to develop a new small, highly-efficient, and low-cost hydroelectric generation system that does not require extensive construction, and 2) to locally consume the locally produced electricity (without storage) for agricultural village revitalization purposes or for value-adding processes and local businesses. Participation of proactive local residents has been central to find beneficial uses of the electricity. Active community organizations, including agricultural associations, nonprofit organizations, and neighborhood organizations, promote holistic, integrated management and

use of Tachibai Water. These citizens groups are currently taking the initiative to fully utilize local renewable hydropower and solar energies. These groups are revitalizing the local society by for example, establishing value-added agricultural production, starting agricultural welfare projects, and retackling village planning to form stronger community centers within the larger rural community. (<http://www.tachibai.jp/about/#energy>)

3. The Role of the Midori Network in Utilizing Tachibai Water for Multiple Beneficial Purposes

In 2005, the Ministry of Agriculture, Forestry and Fisheries of Japan, Tokai Agricultural Administration Office recognized “Tachibai Water – Where the Hydrangeas Grow” as “Tokai’s 100 Beautiful Homelands.” In 2006, Tachibai Water was also selected as the ministry’s “100 Best Canals.” The multiple uses/roles of Tachibai Water were considered to have ‘value for conservation and use,’ and the area was recognized as a Registered Monument in 2014, Japan’s first registered agricultural water infrastructure that is still in use. The same year, Tachibai Water was also registered as one of the world’s Heritage Irrigation Structures by the International Commission on Irrigation and Drainage.

The realization of beneficial uses/roles generally follows this process: 1. Project planning, 2. Alignment with Midori Network’s articles of incorporation and bylaws, and 3. Joint effort with residents (organizing councils). Of these steps, the most important is organizing councils that focus on holding a dialogue with residents. The Midori Network takes on the responsibility to administer these councils, and in the past 25 years, we have organized the following councils with local residents: ‘Council for homeland water and soil conservation measures,’ ‘Council for local water capability enhancement measures,’ ‘Council for farm roads and murmuring brooks,’ and ‘Council for a lot of hydrangeas movement (Figure 7).’ Today, the Taki-Chou Seiwa Area Resources Conservation and Use Council presides over these individual councils and brings together the 10 Seiwa area villages into one collective. Since 2007, this council has been actively engaged in ‘agricultural land, water, and environment conservation initiatives’ using funding provided under the national Direct Payment System (Figure 8).

The Midori Network directly manages and is the most familiar with the area’s water and soil resources. Involvement of Midori Network in the community brings ease and assurance to the area’s people who would also like to actively use, conserve, and manage our resources. And by keeping the Midori Network grounded within the area residents, the people understand the reason for its existence, which in turn energizes and invigorates the Midori Network’s operations. Looking back these past 25 years, local initiatives have contributed greatly to re-strengthening the previously-diminishing bond within the area, and have increased the cooperative capacity of the local community. Through engagement and involvement of many people, the use of local water is becoming increasingly sophisticated.



Figure 7 – Hydrangea Festival Council



Figure 8 – Taki-chou Seiwa Area Resources Conservation and Use Council

4. Conclusion – the importance of an active community –

Agriculture and agricultural villages' multiple beneficial roles/uses were extensively debated nationally as a part of a larger discussion of measures and policies to improve Japan's Less Favored Areas. The Japanese Direct Payment System was developed as a way to support these Less Favored Areas and provides compensation according to area of agricultural land. This system is still in place, and the productivity potential of agricultural land continues to be the criteria for subsidies/grants to this day.

However, agricultural water is simultaneously irrigation water as well as regional water. Evaluation of water's beneficial uses/roles focuses on irrigation purposes, but the definition of beneficial uses/roles should be expanded to include these potential regional uses and to reflect the local area's unique history and the lives of the local people.

Further, national studies on multiple beneficial uses/roles report its economic value in term of million or billion yens, but it is difficult to see how such a number applies or is relevant to us on the ground. Instead of using a third-person, monetary measure, Japan needs to recognize, value, and evaluate other parameters or indicators that are closer to the everyday person. Such relatable discussions and evaluations will further strengthen our awareness and encourage us to think about what is truly valuable and needs to be protected.

Reflecting on the management of Tachibai Water and the activities of the Tachibai Water Midori Network, it is clear that multiple beneficial uses/roles do not simply appear, evident for us to see. Instead, uses and roles are something that people nurture and develop. It is about people's relationship to our water. And these uses/roles multiply on itself the more that people use it. After all, people naturally tend to care about what they nurture and rely on.

These ideas additionally align with the following components of the national Regional Revitalization strategy: 1. The realization of multiple beneficial functions, 2. Development of a

self-sustaining society, 3. Harmonization with the regional environment, and 4. Cultivation of the regional community. These four components are also characteristics of integrated and holistic water use. Water's role must be multifaceted, varied, living, and viable.

Today, agriculture and agricultural villages are increasingly expected to evolve their systems by having each system serve multiple roles and uses. Within this environment, the role of the Midori Network is to directly manage the foundations of all systems: the local water, soil, and homeland resources. Instead of just simply fulfilling the traditional role of natural resources managers, the Midori Network should redefine their positions as the 'coordinators that connect people to their regional resources.' People are the ones that use and develop new values and capabilities of the area resources for their daily lives.

Ensuring Midori Networks act as local coordinators will be an important next step. New national policies, evaluation criteria, and recognition would be also needed. This societal recognition will allow Midori Networks to confidently continue and improve 'local resources management and conservation' for the public good into the next generation.

Terms and Definitions

Direct Payment System – a global standard, in which the government supports agriculture by a non-production, income based system. Since 2014, the Ministry of Agriculture, Forestry, and Fisheries of Japan provides direct payments also for activities that support maintenance or realization of various roles/uses/purposes of agricultural infrastructure, such as irrigation canals, agricultural roads, and water detention ponds.

Land Improvement Districts – public corporations established by the 1949 Land Improvement Law. Districts can be formed when 15 or more farmers jointly want to implement farmland improvement projects, such as constructing and maintaining irrigation and drainage facilities, with support from the prefectural government. The Land Improvement Law was revised in 2001 to encourage more holistic management by better integrating needs of locals and the area environment in addition to infrastructural needs. Project can be funded by the prefecture, local municipalities, or by the Districts themselves from membership fees.

Less Favored Areas –agricultural land that is less productive due to natural conditions, such as hilly or mountainous areas that limit field sizes. These areas are provided specific support under the Direct Payment System.

Midori Network – colloquial name for Land Improvement District. Written 水土里ネット, this is a play on words. "Midori" means "green" while it is written with characters that signify water, soil, and homeland.

Regional Revitalization – activities, projects, programs, and policies that aim to improve rural area economies, increase rural populations, and re-energize its inhabitants.