

# 野尻湖の利用と水利権をめぐる長野・新潟両地域間の争い

吉田隆彦<sup>1)</sup>

<sup>1)</sup> 信州大学人文学部

**Water Resource Development, Water Rights Disputes and Legal and Political Battles between Nagano and Niigata Administrative District among Nojiri Lake Water.**

Takahiko YOSHIDA<sup>1)</sup>

<sup>1)</sup> Faculty of Arts, Shinshu University

**Abstract:** The Nojiri Lake is located at Nagano Prefecture's northernmost section and lying near the administrative border between Nagano and Niigata. The Lake was formed by debris flows in Pleistocene 50 kilo years ago with volcanic activities of Mt. Kurohime. The Nojiri Lake has the largest volumes of water container (96 million cubic meters), surpassing that of the Suwa Lake (61 million cubic meters), the second larger one being famous in central Nagano Prefecture.

Hydrologically the Nojiri Lake is situated in the uppermost section of the Seki River drainage basin and is linked to the Takada Plain and, it is within the administrative Nagano Prefecture. Nojiri Lake is a sort of 'exotic' one for the peoples in the Takada Plain. Its 'double reversion' of physical and human, has been marked deeply in its water use history. This character also has been reflected in obtaining and ensuring process of the water right of the Nojiri Lake. Today almost whole of the amount of waters are consumed in the side of the Seki river areas, and the usage purposes of water are very diversified. On the opposite side small amounts are used for only Nagano City urban water.

It also can be said that the Lake water's potential has been properly developed and managed ever since the Lake Water Use Agreement of 1952 when the Lake Water Sharing Schemes were started. Nojiri Lake water development has experienced so complex evolution process that following descriptions has needed to make clear for its water right problems.

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**Key Words:** Water Right, Nojiri Lake, Irrigation and Power Purposes, Drainage Area, Land reclamation

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## I. Introduction

In summer season, Lake Nojiri and its surrounding areas exhibit fine landscapes, volcano mountains with rugged lava rocks and green thick forest vegetations mirror themselves in the Lake surface, appearing like

picturesque scene. Altitude of the Lake are 654 meters and summer day's cool and comfortable temperatures are very attractive for the major urban dwellers. The Lakeside has become one of the popular resort areas

with many second houses and summer cottages in the Central Japan. The lake water has been used for various purposes rather than agriculture and most of the waters are used in the along and downstream areas of Seki River in Niigata Prefecture.<sup>6)</sup> The way of such water consumption seems curious for the people living in the Nagano administrative area. This report is aiming to make clear the obtaining, establishing and keeping process of the water right of the Nojiri Lake. For the author's purpose, following questions will be valid. 1) What is the geographical setting of the Nojiri Lake and its surrounding area? 2) How the Nojiri lake water has been used for the many purposes? 3) How various factors or conditions influenced water resource apportionment between the two, Nagano and Niigata administrative districts? 4) How had the farmers along the Seki river in the Takada Plain obtained the water right of the Nojiri lake? 5) What were the evolution processes of the two major canals, Nakae and Uvae, in the Talada Plain?

Followings show this paper's framework. Location and water resources of the Nojiri Lake will be described in II. Takada Plain's Geographical Settings will be presented in III. In IV, agreement and collaboration between the Farmers and the Power company with the Lake water management will be explained. Land reclamations and modernizations of the irrigation systems in Takada Plain are the subject of V. In VI, Water war between Nagano and Niigata in connection with the Nojiri Lake will be described along with various water conflicts within the Takada Plain. Circumstances that tourism industry has grown to become a major water user and

began to assert of their own water right will be added finally.

## II. Location and water resources of the Nojiri lake

Concerning Nojiri Lake, problems such as its location together with its hydrological characters, its water right jurisdiction, and its water use history will be outlined.

### II - 1 Outline of the Nojiri Lake

The lake Nojiri is situated in the Nagano Prefecture's northernmost corner immediately south of the administrative margin between Nagano and Niigata Prefectures. Its Latitude is  $36^{\circ} 49' N$  and Longitude is  $138^{\circ} 14' E$ . Its altitude are 654ms, surface are 4.4 square kms, surrounding length are 14kms.

Distances From the outlet toward rivermouth of the Seki on the Sea of Japan coast is approximately 50 kilo meters.<sup>6)</sup>

Seki River drainage basin receives heavy snowfall in winter season because of its windward position toward the Northwestern Monsoon and it counts over 5 meters depths every winter. The accumulated and melted snow in the mountain areas especially above 500 meters altitude provides affluent water for irrigation, electric power and urban consumption.

### II - 2 Lake's outlet, its river system, its administrative jurisdiction, and its water right

Nojiri Lake itself is included in the Seki River drainage basin. Its natural overflowed waters finally pours into Seki River through tributary Ikejiri River. The fact that outlet of the lake is linked only for the Seki river Basin had and has been the basic factor of the jurisdiction which River Basin, Seki (Niigata) or Torii (Nagano), obtain the water right of the Nojori Lake.

The administrative border between Nagano and Niigata takes from the east to the west course which does not coincide with natural hydro-dividing ridge but rather runs along the river flowing channel where the Seki and its tributaries incised deep gorge. Nojiri Lake is situated closely to the district border between Nagano and Niigata.<sup>6)</sup> The Lake also lies very closely to the opposite side Torii River drainage basin, and water competitions and frictions between both districts had been arisen over again. Nowadays almost of all the right of the Lake water are revert to Niigata District and only very small portions belongs to Nagano District. Nagano City is solely one water right holder of the lake within Nagano Prefecture. How various factors or conditions influenced water resource apportionment between the two districts, Nagano and Niigata, will be seen in VI.

Some historians and local people said that the commencement of the approaching for the Nojiri lake water for the Takada Plain irrigation purpose dates from the beginning of pre-Modern Age of Edo Era. They had built then a primitive wooden weir at the lake's outlet. And the history of ensuring the water right of the Nojiri Lake by the peoples of Takada Plain had not been so simple as an outward appearance. The process had and have been far highly complexed ones.<sup>1),3)</sup>

### II - 3 Lake water use and its capacity expansions

In Nagano Prefecture today the Nojiri Lake has the largest storage capacity with water volume of 90million cubic meters, surpassing the Suwa lake.

Comparing the size of the catchment areas, Suwa Lake has 531square kms, but Nojiri Lake has only 12.8 square kms. Nojiri Lake's

water catchment area is very small in spite of its amount of volume, and the effective way of using Lake water had been the question of many years standing.

Throughout the Takada Plain irrigation regions, seasonal variation in streamflows was heavily affected by the spring melt of the huge snowpack in the mountains within the drainage basin of the Seki River. It formed the amount of flowing water peak, during two months from April to May. Stream flow amount of peak and irrigation water consumption peak did not simultaneously occur. On the other hand padi-growing season when irrigation water may be need during 6 months from April to September.

From the early times of the Feudal Age, following the padi expansion, the necessity of flowing water quantitative adjustment had been arisen and become more acute. The function of the lake water so as to redress seasonal imbalance between periods of peak supply and peak demand had been expected.

During irrigation season, lake outlet weir was open to release stored water for supplying additional irrigation waters. At the end of the padi season, leveled down lake water surface must be replenished again till previous full surface preparing for next season irrigation.

Then, during non-irrigating season, it was needed to close lake outlet weir for more water storage. From the Pre-modern Era, farmers of the Takada Plain had took several trials and had mastered the lake water operation technology in degrees. The modern history of the Lake water use has been characterized by the repeated research and development the way of supplemental water supplying.<sup>1),3)</sup>

II - 4 Collaboration between Agriculture and Power Company with Lake water storage management

The lake surface water upperlimit was already given, because inundation by overflowed lakewater itself must be avoided. In fact, such artificial charge and recharge process of lake waters were very difficult task for agriculture sector alone. It was possible only after the combined agriculture and hydro-power project were planned and carried out from the early 1920s.<sup>1)</sup>

Today lake water can be released into the canals irrigating padi fields or diverted into penstocks of power stations. By using the lake as a huge reservoir, irrigation can be done on more stable base and electric generation can be done with full capacities more longer times. Details will be mentioned later in IV.

### III. Geographical setting of the Takada Plain, one of the Japanese typical rice growing area

In this section at first, Takada Plains climatic character and water resource conditions will be described. Secondly, several topographical features of the Plain will be mentioned. Finally, Hydrological environment is mentioned along with the transition of water use and development.

III - 1 It's location and climatic character and water resource conditions of the Takada Plain

There are plenty sunny days along with high and enough temperatures of above 20 °C monthly average degrees among the highest is 26 °C of August throughout the rice growing periods from June till September, although heavy snowfall and short sunshines during the winter season. So during summer season

Takada Plain is blessed with high temperatures simultaneously have often experienced short rainfall. That has arisen the year of water scarcity by which padi fields were frequently suffered and in when the water deficit had spread to the four corners of the Plain. Rainfall can be most unreliable and be uncontrolled, thus, irrigation water management by reservoirs and canals are essential.

III - 2 Landform features and Landuse conditions of the Takada Plain

Takada plain occupies the southwest quadrant of the Niigata Prefecture on the Sea of Japan, forms one of the leading rice production district and has been referred to as the Japanese rice granary. It also shows an outline figure seemingly like a large diamond-shaped rectangular. The Sea of Japan coast is overlapping the northern rectangular side extending from northeastern to southwestern direction to which the southern side is paralleling. Both eastern and western sides of the plain are extending north-south direction and are showing an abreast shape. All four sides has its length of approximate 20kms.

Almost whole of the Plain is covered by alluvium with surrounding small portions of dilluvium and has been formed by two major river systems and other four small tributaries jointed by the former ones. Two major rivers flowing through the plain are the Seki and the Hokura. The former has its headwater area surrounded by Quarternary volcanic mountainland in the southwestern corner of the Joetu district. The latter begins its channel within the Tertiary hilly mountainland watershed called Higashikubiki Hilly Land, flowing from the east to the west, finally poured into the Seki river near its mouth to

the Sea of Japan. The Seki river limits the western margin and the Hokura river similarly northern margin of the Takada Plain.<sup>6)</sup>

Takada Plain's land surface has quite gentle slopes towards the sea and water from the Seki has been used longer times for irrigation. Across the Seki River many headworks had been built to obtain irrigation water. In the southernmost portion of the Plain, the gentle sloping surface collides with the steep ends of Mts. Sekita that rise about 1100 meters high.

Landforms of the Takada Plain transforms gradually along the Seki River flowing, at first from the valley bottom of hilly mountainland with steep gradient being originated of the Tertiary Era, by way of Pleistocene terraces and finally end on the Holocene flood plains. Of the last one most of which are covered by top surfaces of several fans. The northern fan margins are marked off by the Hokura River flowing east-west direction. Originally the Hokura river had heavily meandered on the previous swampy delta areas, had often changed its course and made natural levees along both banks.

At the northernmost portion of the Takada Plain where the land is barely 5 meters above sea level, poorly drained areas had been existed widely and farmlands were usually suffered from being inundated with flooded water, before modern land reclamation project has carried out.

On the inland side of the Katamachi coastal Sand Dune extending along the Sea of Japan, there was a large lagoon called 'Oogata' till the end of the Pre-Modern Edo Era. Since close to the end of the Pre-modern Era great efforts had been devoted to drain the lagoon Oogata and to reclaim the large swampy land, the purpose was to convert the swampy area

suitable for padi cultivation. Rare effort had been continued till the year of 1953 when the building of the short-cutting waterway across the Katamachi sand dune and the large tidal control gate to protect reclaimed land was completed.<sup>6)</sup>

### III - 3. Main river and water use transition in the Takada plain

In this part, hydrological environment is mentioned along with the way of transition of water use and development.

In Takada Plain, Seki River stands out among other rivers forming natural stream flow for supplying ordinary discharge of the largest amount. The Seki originates in high mountainland areas over 2,000 meters altitude with rugged landforms. Those high mountains are such as Mt. Myoko, Mt. Kurohime and Mt. Hiuti and are forming Seki river's headwaters.

Other four small streams are originating from the southeastern hilly mountainland at most with altitude of 1,000 meters and flow toward northwesterly paralleling each other and ended into the Seki river. These small streams arranging from the south to the north are, Ookuma, Bessho, Kushiike and Iida. Each of them has small fans at the valley outlet areas. Because of their controllable water volumes, from the early Pre-Modern Age, rice cultivation had already carried out along these small rivers prior to the opening and operation of the major canals such as the Nakae and the Uvae of latter days. Those along small rivers early cultivated padi went ahead than the areas of Takada Plain central portions tapping more large Seki river, in where flood controls were still impossible. With very steep gradient in the upstream areas the Seki river flows with high velocity and whole of the waters are used

for electric power generations. On the downstream section with altitude less than 100 meters river gradient become gentle and water flows slowly with much affluent volumes. In there most of the waters are resources for padi-irrigation. At the beginning portion of this slow flowing zone several headworks situated, from where start some major canals of their conveyance to deliver waters for those minor and numerous short distributing ditches.<sup>2)</sup>

Of above major canals location point of the intakes are very significant because a headworks helps to raise the water level of the river to the height of the canals so that the river water can be channelled into the padi-fields. So major canals of the Takada Plain has their intakes concentrated at the altitude between from 140 ms to 120ms of the Seki river.

At Ooe-kuchi headwork east of the Arai City water of the Seki is diverted into two major canals, the Uwae and the Nakae. The Uwae takes its northeastern course paralleling the previous mentioned southern 'diamond' side and crosses 4 small rivers. Those small rivers are tributaries of the Seki and are, Okuma, Bessho, Kushiike, and Iida. The Uwae delivers supplement waters one by one recovering water shortages of above small streams. The Uwae canal extends for 20 kilo meters and its irrigation areas are amount to 7,200 hectares. Sanwa Village is the Uwae's termination. The other major one, Nakae canal, runs northward direction approximately parallel to the course of Seki river and its irrigating total padi fields amount to 2,300 hectares. Originally Nakae and Uwae canals had crossed over those branch Ookuma, Bessho and other small rivers by wooden structure bridges. During 1920s and 30s those bridges were improved to

become more reliable modern concrete siphons, to be free from frequent repairing.<sup>3)</sup>

It is easy to recognize the significance of the Seki river's scale and facility by referring next figures representing the acreages of drainage area those of each tributaries such as, Ookuma river 41.7km<sup>2</sup>, Bessho river 36.1km<sup>2</sup>, Kushiike river 36.0km<sup>2</sup>, Iida river 112.8km<sup>2</sup>. Compare with the figures 1,143.4km<sup>2</sup> that of the Seki river itself.<sup>6)</sup>

Those small branch rivers had in early Pre-Modern Times very important roles although today they have minor consequence in the overall surface water supply for irrigation in the Takada Plain. Preceded research contribution as of Takeuchi<sup>2)</sup> has suggested that in the upstream areas of those small rivers, water shortages had been arisen already because of more early day padi-opening than the central portion of Takada Plain. That the padi-opening in the central portion of Takada Plain had made accelerate demands to supply of additional water from the major Seki River. Farmers had sought water and, finally found their way to the Nojiri Lake, at the beginning of the Pre-Modern Age.

#### **IV. Agreement and Collaboration between the Nakae Irrigation District and Chuou Electric Power Company.**

The Nakae Irrigation District had secured Lake water right in one hand, and Chuou Power Company had carried out several construction works aiming expand the Lake water's capacity virtually 'water right' make more larger in other hand. Both party's intimate collaboration had strongly characterized the Lake water use history. Details of the Lake water use history are as

Details of the Lake water use history are as follows.

IV-1 They were commonly situated in the same drainage, Seki river Basin

Since the early 1910s, hydro-electric power companies entered into the Lake water competition as new water seekers. Soon after the Nakaé Water District decided to select the Chuou Electric Company as the partner to alliance with. Chuou Electric Company, one of the local firm had been originated 1906 in Takada City and had searched for power station sites with the plan to develop Nojiri Lake water. The Nakaé accepted power company's plan and agreed with Lake water use and storage management. They had begun to develop and to establish the system that could effectively manage the Lake water together with. They had also common interests surrounding the Lake water use. This was the main reason why they had cooperated without difficulty.<sup>1)</sup>

IV-2 The commencement of the joint use facilities of the Lake water

Their cooperation commenced from 1910 was noteworthy. It could be conceived as a sort of combined project both of agriculture and electric power company. After some adjustment and remedies of water use were done, Nojiri Lake water usage had finally set as follows.

1) From Jun to September, then of irrigation season, waters for padi and for power were used together. Water surface heights of the Nojiri lake were to kept at standard level.

2) During non-irrigation season from October to March water was used for electric power alone. Lake water surface fallen downwards largely to the limited lowest level at the season end.

3) From the latter half of the March to the end of May, by driving turbin of the Ikejirigawa Pumping Power Plant, Lake waters was recovered and stored up to the fulfilled surface making ready for the irrigation season to be begun.

By carrying out joint works the amount of usable water of the Nojiri Lake had increased remarkably. The Chuou Power Company had made large financial contributions toward the capital costs of the aqueduct and other water facilities including for irrigation purposes. The acquisition of lands with appurtenant rights to lake water was accomplished almost completely by the power company as the compensation for inundation damaged land of the lakeside areas.

Adding obtained physical water use merits, the important purpose of their alliance was to guard and to ensure lake water right and preventing from the encroachment by others.<sup>3)</sup>

IV-3 Measures to increase the capacity of the Lake water

To increase the usable amount of Lake water storage, following two measures were adopted. The first was the water transfers from the two small rivers surrounding the lake area by converting of their flows toward the Lake formerly poured to outside areas. Those small rivers were Denkurou Canal and Huruumi-Gawa. Denkurou Canal was a small waterway that had already existed at the beginning of the Edo Era. Huruumi-gawa streamed in the northern area of the Lake and poured directly into the Seki River. Those improvements were attained in 1925 and in 1929 respectively. After this improvement, whole the non-irrigation season waters were caught. The second measure was as follows.

river, Ikejirigawa Station, a pumping power plant was constructed in 1934. The purpose of the Ikejirigawa Power station, the first Japanese pumping-up power plant, was to fulfill the lake water and recover the lake surface water level more smoothly by withdrawal from the far downward larger Seki river through reverse driven turbins of the power plant, supplementing several natural rivers flowing into the Lake which cannot supply enough water.<sup>1),3)</sup>

Subsequently, the Seki River and the Lake Nojiri were in fact connected via Ikejiri Power Station. The completion of this power station in 1934 exhibited the highlight scene of the Lake water use history.

IV - 4 Beginning to tap on the Torii river water, the final stage

As the final stage affair, Denkurou Canal was improved and reinforced its facility once again. Partial interbasin water transfer from the Torii River Basin to the Seki River Basin was realized in 1942 under enforced order by the central government aimed to increase hydro-electric power production for munition. In the non-irrigation season waters were diverted from the Torii river through improved Denkurou Canal and stored in the Lake. It released for power plants along Seki River after reserved in the Nojiri Lake.

This waterway connection had reinforced its facility to make expand the ability of the Lakes reservoir, for the purpose of hydro-electric generation.<sup>3)</sup>

#### **V. Land reclamations and modernization of the irrigation systems in Takada Plain**

In this section, summarizing technological evolution of the irrigation facilities will be done at first. Descriptions concerning

persuasive policies of land reclamations paralleling Agrarian Land Reforms of 1949 will be followed. Outcomes and meanings of the carried out land reclamation project will be discussed finally.

#### V - 1 Outline of the irrigation evolution

In Takada Plain the irrigation schemes has been successively designated mostly for growing padi. Water resource development and management were advanced in degrees Pre-Modern Age, through 16-19th centuries.

From the early 20th century, along with legal and institutional arrangements, the primitive and traditional methods of irrigation became a hindrance to the more advanced methods of padi-cultivation.

As well as to realize tapping Nojiri Lake water, in Takada Plain from the outset Pre-Modern Era, several trials for large scale irrigation were commenced. This process were accelerated from the second half of 19th centuries. A more modern and expensive way such as the building of a concrete headworks across the river or concrete waterway or other facilities had been promoted. Simultaneously canals were renewed and were extended more longer. It was noteworthy that electric-power pumps were installed for irrigation and drainage purposes. They had greatly supported following land reclamation projects.

In the Takada Plain at the outset of 1950s, along with above mentioned investment, reclamation and orderly rearrangement of padi-fields were also undertaken and fields were planned to divide into rectangular of 30 ares units. Agricultural mechanization were intended under such designs. Recently extensive rice fields were connected with each other under integrated single water delivery system.



## V - 2 Agrarian Land Reform and Land Reclamation Project

Agrarian Reform (Land Reform) of 1949 was very meaningful affairs for the war defeated economy reconstruction process. Before the reform most of the farmers were tenants had to pay rent to the landowners and payed rents were high sometimes above half of the harvested rice and it was the main hinderance to the more production expansion. So, great many farmers has experienced and been favoured with Agrarian Reforms enacted shortly after World War II. Farmers incomes were increased and their wills toward production expansions were also stimulated.

Adjusting the partitions of farmland was also done very smoothly. Farmers who became landowners did their best to promote rice cultivation.

At the same time farmers have received positively large scale land reclamation project promoted national and municipal government and conducted many planning.

After World War II, to overcome then serious foods shortages, along with Agrarian Land Reform, the national government protected rice growers by purchasing products at a prescribed price. Adding above price-supporting policy, government eagerly conducted improvement in land conditions refered as land reclamations. Finally it make possible wide spreading of agricultural machines and realized great labour savings.

The Reclamation Act of 1952 can be recognized as the beginning of many decades of central government involvements in financial supporting and constructing great many projects. Under this law, technological advancements and high productivities of agriculture were greatly realized.

In Takada plain reclamation and orderly rearrangement of rice fields were also undertaken and carried out under the Land Reclamation Act. Central government had and has initiated preparing various long term planning and has financially permanent role and carried out many projects in the work of land reclamation.

Water management and development have also shifted from small local private institutions at the early times of the Modern Era, i.e., Nakae and Uwae Irrigation Water Party, to predominantly large public agencies such as the Incooperated Land Reclamation Association of Niigata Prefecture of the present times.

Befor conducting of the land consolidation project, the farming unit was made up of one small unit or several small plots and in spontaneous or irregular shapes. To solve the problems of land fragmentation and farming inefficiency, land consolidation must be conducted so that efficient farming can be carried out. Large scale farm consolidating projects were undertaken. Those projects were also financed by the national and local government because road rearrangement, modern irrigation and drainage schemes were very expensive to conduct privately.

Along with the land condition improvements, to make water use more efficient was undertaken by installing taps in each unit of padi controlling irrigation water. Excess water drainning from the field would contribute to improve soil conditions.<sup>8) 9)</sup>

## V - 3 The outcomes of land reclamation projects in Takada plain

In Takada plain, the extent of land reclamation completed areas has been covering almost the whole cultivated areas amount to

approximate 10,300 hectares. That had achieved mainly through the decades of 1960s and 70s. The whole irrigation network will be quite rational and efficient if a waterway and a road were constructed parallel to the direction of the incline, and waterways and roads has been organized into grid-pattern networks for the best possible use of irrigation water.

Execution outcome of the Takada Plain's land reclamation is shown in the values as recent yields of rice per 10 ares equal to or above 650kgs.

#### **VI. Water right conflicts and disputes among water users between different drainage basin of Nagano and Niigata and within the Takada Plain, surrounding Nojiri lake**

There had been arisen many conflicts, disputes and political battles between both Districts of Nagano and Niigata and between communities within the Takada Plain, and those had strongly characterized the Nojiri Lake water use history.

In this section, at first, affairs accompanying water right as general and common problems will be described. Next, water right disputes within Takada Plain will be commented. Finally, water right disputes, lawsuits, litigation, legal and political battle between Nagano and Niigata around Nojiri Lake water will be described.

##### **VI - 1 Water right disputes, water conflicts, and legal and political battles among water users in Japan**

It is occasionally referred that Japanese water "law" is the typical one of the traditional custom-law. Its traditional items of rules reflects Japanese natural hydrological

environment and are rather well-founded, although often commented as are outdated. From the early times, whenever the opening of padi-fields, a primitive body of water law had adopted and in degrees, received and recognized widely, in where relatively water were available and padi cultivation had been prevailed over.

The 'first in time, first in right' tenets also had seemingly been born in traditional Japan. That priority system afforded security of supply in times of drought to those with early claims. The priority of early developed padi in water use based on assumption that any change in point of diversion or type of use may affect and give some damages on downstream water users. This priority right has often been explained as one of the typical model of the feudal society system but, the priority of old padi, should be understood as one of the clever way to prevent from being fallen together by the drought damage.

It was natural that rice cultivation was also used water exclusively and absolutely. Farmers engaged in rice production had to divert water from the natural river streams with artificial headworks although in early times unmaturing construction technology such as using brushwood and stones allowed much amount of water passed and flowed away and uncaptured. In degrees irrigation systems had grown and spatial expansion resulted some integrations between irrigated regions proceeded.

During the Shogunate, rice played a dominant role in the economy. Central and local feudal government eagerly promoted the construction of long waterways, headworks, and huge irrigation ponds and other irrigation facilities forming agricultural common base.

Under the feudal government controls those irrigation facilities were financed, managed and maintained directly.

In Japan, for long times, water for agricultural purpose had priority over any other consumption. This priority itself had experienced little transformation under modern Law systems following the Meiji Restroration (1868). On the Nojiri Lake, situation was the same.

As the result of the Meiji Restoration feudal authority and ruling systems had given way to the modern civil law systems. Water resource management system in the civil law had experienced transformations to some extent. Along with the establishment the Riparian Act of 1896 (original KASEN Act, in 1964 revisioned), water users other than agricultural sector had to require permission for the central or local government to obtain appropriated water rights. On the other hand, farmers as water users could no longer be depended on the traditional feudal authorities. They might establish themselves in the modern law systems and obtain water rights through the process of water appropriation, 'first user could to file first right'. Under this rule, water divert claim was allowed priority over any later claimants. Then farmers had to consolidate cooperation or parties of water users to solve various troubles, most of them were arised from water allocation and diversion. Water users' cooperations or parties were not a natunal person but were incooperated firms as farmers agency that were aimed to occupay more favorable position in the law court.

Since the beginning of the 20th Century, they claimed and appealed positively toward whatever seemed to be feared that would invade and threaten their own vested interest

or privilege, and bring the matter before the court to ensure their own water right.<sup>1),3)</sup>

The fact that the first acessor had the prior position over any other water users, was some degrees similar to those circumstances such as the principle of the "first in time, first in right " priority system arised and grew in the modern western U.S.A. arid regions.<sup>5),7)</sup>

Of course, the Nakae, the most prominent water party in Takada Plain then, could not be an exceptional existence. Although at first, in early times, water rights were recognized as a exclusive, absolute one. But, in practice, used waters exhibit a sort of circulation forms such as one users return flows to the river were at once another's source of supply. This is the physical base for corporation of water users.

VI - 2 The transition of water right disputes among the Nojiri Lake from the Pre-Modern to Modern Era

The Nakae Irrigation Water District had its origine one of the irrigation district collective organization of water using farmer's party at the beginning of Pre Modern Shogunate in the Takada Plain, patronaged by Takada Clan.

In the early times of the Edo Era, several Shoya Class farmers, were the members of the ancestral Nakae Irrigation Water District, together with some warriors of the Takada Clan, researched the headwaters of the Seki River and the Nojiri Lake and reported to the Takada Clan collected informations of the hydrological environment. They undertook to develop water resource of the Nojiri Lake soon after. The fact that Nakae had been the first seeker for Nojiri Lake and Seki River's headwater area had given them the well-founded base of their holding water right assertion in the Japanese traditional custom-law.

During the Pre-Modern Era, Within Takada Plain. Nakae had repeated opposition to the Uwae's all opening new padi schemes. The Uwae, another major water district that had more later origine but grown as the rival of the Nakae and had competed with Seki River. Because most of plans of the Uwae were based on extention the existing Uwae Waterway of which water inlet situated more upstream position than of the Nakae and its accomplishment opening-padi might affect harmful effects on the downstream Nakae.

Water right conflicts and disputes were continued and carried over to the Modern Era, and litigation in 1920s between the Uwae and the Nakae, was the most acute case.<sup>3)</sup>

Those water competitions and strained circumstances had eventually overcome by the alliance with and carrying out jointing works with electric power company and details has been mentioned in the previous chapter IV.

Following the big affair of 1949 Agrarian Reform, the former water districts under the initiation of land owners had transformed to the land reclamation cooperation composed of new workingpeople-landowning farmers.

VI-3 Nagano against Niigata Water War, its outbreak and ending

Today people in the Takada Plain in fact hold the Nojiri lake with their own lake water right, beyond their administrative border but physically within their same drainage area.

Through the Pre-Modern and Modern Era, all of the new application for the water rights of the Nojiri Lake, were requied from the Torii River drainage basin within Nagano District. And all of them were rejected. Because lawyers recognized in the court that planned or proposed alteration of water use especially in

the Torii River drainage basin Seki River's opposite site would threaten existed water users along and downstream of the Seki River. Only exceptionally Nagano City on her for domestic and urban use has its water rights for the Lake. This claim has been limited only within the non-irrigation season. The limited times from 11, September to 31, May, Nagano City can divert from the Lake water 9,600 cubic meters per day.

In 1913, aiming to guard their Nojiri Lake water right going on, the Noriji Water District along Ikejiri River and the Nakae had established one body of water users party named "Nojiri Lake and Ikejiri River Waterway Management Cooperation", and formed an alliance with each other.<sup>1)</sup> They had been situated upstream and downstream on the Seki River respectively and were, formerly independent two irrigation water district.<sup>1)</sup>

Soon after the annexation of two water district, commencement of teaming up with irrigation water cooperation and the hydro-electric company in 1917 was followed.

It had seemed impossible to maintain holding water right of the Nojiri Lake by farmer's water cooperation alone or by electric company alone, to quarrel with others and to survive among severe water competitions. Only intimate partnership between with the electric company and the Nakae farmers made it possible to establish their lawful water right.

Farmers and electric company had adopted themselves to civil laws by keeping their claim of holding the lake water right and, they had expanded their quantity of usable amount of water substantially.

In 1945, just before the defeat of the World War II, under the millitalism government

policy, enforced allocation were ready to adopt to the Nojiri Lake water. With back of military power, the Nagano Prefectural Government had expected then that their water demand could easily be met by reallocating the Nojiri lake water. Coincidentally, Nagano City herself was faced with urban water scarcity along with the proceeded military population dispersals.<sup>9)</sup>

The irony of the fate, the same militarism central government had required to supply additional amount of lake water for expanding power generation for munition and for foods production increase, and that might more easily and effectively realized within Seki river drainage basin in the Niigata District.

Immediately after the War Defeat, controversies surrounding Nojiri Lake water development were revived and repeated again among Nagano and Niigata District. From the outset they were unable to negotiate a mutually satisfactory allocation and finally a compromise was reached between them that were resulted in The 1952 Nojiri Lake Water Use Compact.

According to the 1952 Agreement with the two districts, the Lake-water 's allocation were carried out under logical and orderly way provided justification rather than were seemingly skewed in favour of the side of the Seki River darinage basin. It could be refered as the latest round of the water war between Nagano and Niigata.

This apportionment assigned 2,545,051 cubic meters per annum to Nagano City. And it limited the diversion only 263 days during non- and quasi-irrigation season. Comparing the volume of water permitted in the Niigata District totally amounted to 132,451,200m<sup>3</sup>, one can easy to see that apportiond Nagano

City's shares show only 1.9 per cent, very small portions of the lake water. Farmers of the Niigata prefecture attained the reaffirmation of priority over the Lake waters after the conflict resolution.<sup>3)</sup> Adversely for the peoples who had resided on the side of the Torii River basin, on the Seki River's opposite, the amount of water seemingly available over the long time now appears to be less than was assumed a half-century ago.

The term of the Compact validity was set for 50years from 1945 till 1995 at first. Then, from the year of 1995, the Compact should be reviewed every 10 years cycle on the meeting.

After the review of the 1952 Compact in 1995 to Nojiri lake water, among both Niigata and Nagano districts, anew appropriation has not allowed yet for the people of Nagano district side.<sup>10)</sup> Within Takada Plain, domination for irrigation and power has inherited and has none been allowed anew adding appropriations to the Seki river's stream flow.

## VII. Conclusion

Following the ruled water management and usage, in every season lake water has been released for irrigation purpose between the fulfilled surface level (altitude 656 meters) and the base level (altitude 653ms) and, during the irrigation season, fluctuation of the surface water is kept within minimum range.

This situation have favoured lakeside tourism over many years because stable water surface near at fulfilled level is indispensable for swimming, rowing boat, pleasur shipping, yacht playing and other water plays.

The summer of 1994 was never experienced heavy drought season. Takada plain's agricultural sector had to release lake water for 20 centi meters depths below the fixed lake

base level. Depths of 20 centi meters means 650,000 cubic meter volumes in Nojiri Lake. Beforehand, they had to negotiate with the lakeside tourism businesses so that tourism might approve of the reducing lake water level in farmer's interest. After severe disputes between them, tourism unwillingly conceded farmer's requirement.

This affair exhibited suggestive matter. By excessive releasing the lake water will not only be threat for irrigation purpose but also for tourism. To keep the lake water level to be stable has become already a one ruled custom, like of the custom-law. Today, tourism has arised itself as a new water seeker, adding themselves to preceeded water right holders of the lake.<sup>10)</sup>

#### 摘 要

本稿では長野県内にありながら、水利権は新潟県高田平野側が掌握している野尻湖について、近世から今日まで、水利用の変遷と水利権の確保までの過程を追った。野尻湖は関川流域に含まれ、その利用も関川水系の住民の手で始まったから、水利権が高田平野側にあるのは自明に見える。しかし本稿で述べたとおり、水利権確立までの過程は単純でなく、反復された争いの中の粘り強い執念の貫徹こそが高田平野の住民の今日の水利権保持の要であった。

大井川、木曾川の「河原砂漠」、青木湖で 20m 余、本稿で取り上げた野尻湖でも 6m 余の湖面の季節変動の容認など、水利権の行使にはよいイメージがない。農業用水のそれも、社会経済論からは、慣習法の延長で認識され、伝統的半封建的秩序と評価される場合が多い。ところで目下筆者の取り組んでい課題は、代表的観光地信州の、住民達の飲料水の安全がどうしたら確保できるか、である。とりわけ農民の立場から

する伝統的水利権は、本文のVIでも述べたが、要するに争う権利である。水利権は現行の法体系の下では物権とみなされ、最も強い権利であり、それを犯した場合には、相当の償いをしなければならない。法の扱い上、物権が人間の健康や生命よりも重いのは悲しいが、水利権が手中にあれば、生命や健康を守る強力な武器にもなり得るのである。その争う権利を存分に駆使すれば、飲料水の安全もまた守ってゆけると筆者は考える。機会をあらためて詳しく紹介したいが、長野市旧芋井村大字上ヶ屋の住民は 1977 年に農業用水と飲料水を含めた水利組合を弁護士の支援で結成し、将来の争いに備えた。市川五郎兵衛・六川長三郎と塩沢堰で名高い川西土地改良区連合も御牧ヶ原水利改良事業の中で 1970 年代から農業用水の一部を水道水にまわしているが、その水利権は強大で蓼科火山北麓一円を覆っている。そこで後から入った観光業の水利用はすべて、水道水を含む農業水利に支障を来さない旨の証文を土地改良区に出さなければ、できない仕組みである。だから水利権を武器に、観光企業との真つ向勝負も可能である。水道用水の水源を農業水利から得ている自治体は上水内郡三水村や牟礼村はじめ、県内には幾つもある。いっぽう、農業水利の水利権をうやむやにして観光業者に土地利用を委ねた自治体は、遅かれ早かれ飲料水の安全への脅威に直面させられ、いわばツケを廻されてきたのであって、すでに沢山の事例のあることは周知のとおりである。こういう次第で、環境問題を加味すると、農業用水の水利権は伝統的慣習法の枠組みには収まらない。伝統的水利権の吟味は優れて今日的課題なのである。

終わりに、冗長な本稿の掲載を容認して下さった本誌編集担当、農学部の先生方には厚くお礼申し上げます。

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