

信州の観光事業の発展と土地利用の変遷に伴う
環境問題に関する地理学からの考察

**Land Use Conversion and Landscape Transition
with the Development of Tourism and
some Environmental Problems in Shinshu District,
an Inland Area of Central Japan**

Takahiko YOSHIDA (Faculty of Arts, Shinshu University)

Abstract : The Shinshu District, synonym of Nagano prefecture and local people had and has preferred this name with a little pride, are extending horizontally and vertically, occupying vast territory, in central Japan. People of its northern portion under heavy snowfalls has to do unwilling snow disposal works in every winter, others living in its southern portion are engaged in tea growing works and can enjoy early cherry blossom. They experience different climates living in the same district. Along with large climate variations the high mountain land area represents one more important regional character. Three ranges of Japan Alps, Hida, Kiso and Akaishi are paralleling each others in north-south alignment. Those high mountains most of the peaks higher than altitude 2,500 meters are often referred to the Nation's Roof. Nestled within those higher mountainland, several flattened surface lands of alluvium developed and in each of them people has grown urban areas. Those urban centers are serving as a focal point for the local dwellers life and economic activities. Mountain foothills, extending from 800meters to 1,500 meters heights are having very important facilities for the people's life. Those areas form the deciduous forest zones and has been afforested or intensively managed at one times by the local people. Those afforested area has offered many essential materials and water resources for the urban dwellers more lower altitude areas.

Being endowed with plenty of natural beauties, of those mountainlands and surrounding foothills, many places are designated as national or regional parks. After World War II, some of those forests had cleared for the purpose of cool upland vegetable production. With improved transportations, the tourist industry have grown to become important for the local people's life as a source of income. Especially since the High Growth Era large portions of those forest zone has been actively converted to the purpose of tourism development. Today the tourism land use are prevailing in those cool highland areas and has also arose some accidents and environmental disruptions. In case of Chikuma river basin, large scale forest clearance accompanying to the development of resorts on the Yatsugatake and Asama volcano mountain foothills, people of the downstream areas

such as Nagano and Iiyama City has often been suffered from river flooding damages.

Whether the tourism development would arise any environmentally undesirable results or not are largely depend on the forest land use management and land use regulation. They are also greatly affected by the historical landownerships. In Shinshu, as the basic property, we can find those three types of ways land has been dealt with. The first one is exhibited by Shiga Highland area in Yamanouchi-machi, in where land has been owned, managed and treated as a common property with strict land use regulations. Local people of mainly Kutsuno settlement had set up the juristic organization named *Wago-kai*, *kai* means cooperation, for the purpose of adjusting to the modern law system and has been managed their common forest and land from the beginning of the 1920's. Tateshina-machi located on the Tateshina volcano mountain's northern foothills shows the second type in where land use management and water use regulations are conducted independently. They had also adjusted to the modern law systems under the Cooperation of the Kawanishi land reclamation organization. And tourism development has to submit such land management rules in above both regions. The third one, reversely, forest and common land were divided and transfered from the communal property to privately owned ones and traded respectively from the beginning of the Modern Era. As a result the ownership of the former common land was divided among tourism developers and each summer house owners individually. Under this system, resort development and land use has been likely to conduct disorderly. For example, the demand and consumption for underground waters rapidly increased and resulted unbalanced situation of the underground water budget. Chino-city and Karuizawa-machi exhibit such case typically. Forest vegetation could be renewed if they would be properly managed. Water quality could be maintained at their former natural levels if they would be carefully looked after. Concerning this point more detailed description will be made in IV. So, to protect natural beauties and to avoid environmental disruptions, it can be said that land use regulation, keeping the traditional and renewed, integrated water right holdings are, the key measures.

Key words : Tourism Development, Communal Forest Land, Land ownership,
Water Resource, Environment

I. Tourism, Land Use, and Water Resource

Surpassing famous Suwa Lake, Nojiri lake has the largest volume of water in the Shinshu and are under highly making use of. So it is seemingly benefitting many dwellers surrounding and near the lake area. But, Nagano administrative district, lies in the inland area, only offers the place of the lake and lacking any water right, which is critical means for making use of water resources profitably and breeding economic welfares. Almost all of the lake waters are passing through the area of Nagano District and consumed in far

downstream Seki river basin areas in Niigata district. The author has analyzed the process such 'disparity' situation had resulted (Yoshida, 2001).

It looks like very curious for the inhabitants of the Nagano district and someone might doubt that such one-sidedly favorable status for the people of the Takada plain be unlawful circumstance, but this suspicion is not true as will be described in the later section.

To overcome regional conflicts and opinion differences, people of Nagano prefecture have preferred and called their homeland name as 'Shinshu'. It has been the symbol of integrations and cooperations. Under this popular name, people can hold a sort of common feeling to form as an entirety, so as of the Shinshu University name. The author will also use this name in the following description.

Economy and industry of the Shinshu has been characterized by its exporting market orientation. During from 1980s to 1990s, some transformation had arisen under the so called 'High Yen' circumstances. Manufacturing of the Shinshu had eagerly shifted their production activities from the Japan to the Asian New Industrializing nations strategically and most of their homeland works except R and D functions were curtailed. On the other hand, in response to the major urban dwelling people expanding leisure needs, national and local government began to promote tourism. In place of manufacturing, newly arose tourism were expected to support the local people's income and to make people employment opportunities. Generally, tourism require very large tracts of land to be far extensive than manufacturing. Manufacturing are able to make land use intensive and practice space savings as well as other urban industry. On the contrary, tourism are essentially occupying far extensive land surface and cannot save space at all. Thereafter, by promoting tourism, large scale land were converted mainly from the forest and pasture land containing some agricultural land. At one times forest lands, situated surrounding local people settlements originally commonly owned and managed by the local people had been indispensable for the people's life. They supply many woods for dwelling materials and fuel purpose and heavy amount of hays for thatching, animal feeds, and natural fertilizers for crops. We must add water resource for drinking and irrigation as more one of the important forest resource. Traditionally those forested lands were managed strictly under customary law because, in fact, their function was to support and to make people's life be sustainable.

Through the High Growth Era, fuels had converted to petroleum gas and locally supplied woods had also gave way imported woods for building purposes, transformation of the people's life changed the forest products made low value, except water resources. And there were some widely spreaded misunderstanding that water resource could be supplied enough by reservoirs of dammed streams without afforestations. Thus, afforested land previously owned and managed commonly as the local people's indispensable property were began to be treated as dissolved private properties and were released

from under the common landuse regulation rule and gave way disorder tourism developments. Tourism requires extensive land and has heavily fill space character. With its development, there will be changes in landuse. The physical environmet as forests or landform or hydrology, that is, the natural eco-system can be affected considerably. Conflicts may arise amongst the different sectors of the economy and people's life for the use of land. Agricultural or industrial land as well as settlements may have to give way to the development of tourist resorts.

Today, it can be recognized that one of the newly arose problem is degradation of drinking water quality that would threat human health of the local people dwelling in the lower reaches of the tourism developed areas.

II. Tourism Promotion by Nagano Prefectural government

National and local government tourism promotion policy affects tourism itself and local society to a large extent. Endowed with affluent natural beauty spots, Nagano prefectural government had also positively participated in the tourism promotions and had took several measures. Those measures were infrastructure improvement such as 1.) Road construction and 2.) Preparation the land for summer house lots by acquisition and reclamation and development of the forested land. Followings are details of the measures adopted by Nagano prefectural government.

II - 1 Buildings of the toll road

As to road building and improvements in 1970s and 1980s, to attract many urban car driver visitors, Nagano prefectural government had built several toll roads as a mean to solidify tourism infrastructure.

Some of those roads were popularly known as 'Bird line' in Togakushi resort and 'Venus line' in Shirakabako, Kirigamine and Utsukushigahara Highland areas. The latter has been opposed to by many local citizens as the cause of environmental disruption of the Central Shinshu Highland Area and its final plan, linking Utsukushigahara with Matsumoto urban area still has not been realized.

II - 2 Scheme of the development planning with 'the Sugadaira Format' and its implementation

Concerning the land reclamation for summer house lots, following description by Saito is valid. Local government, composed many towns and villages with of small population and of small finance ability, -chou and -son class, had the land itself in their hands, but without any economic means. Although land is the most elemental tourism resource, possession itself is the only a possibility without financial ability. They had none of financial ability to excecute plan and ability to develop and promote tourism industry. Then Nagano prefectural government had positively participated into tourism promotion projects. Nagano prefectural government with more higher ability capital furnishing had devised unique method referred as the 'Sugadaira Format'. Under this format, im-

plementing the project to develop lands for summer housing lot was started in 1970. Ueda city and surrounding towns such as Sanada-machi and Tobu-machi situated and were included in the northern portion of the Chiisagata County had experienced tourism development under this format. At first, prefectural government recommended those small municipal governments to tender their possessed land formerly afforested. Then, on the prefectural government burden the land development reclamation for summer housing lots had proceeded. Prefectural government land development contains following works as forest clearing, land leveling, building of local road network, water supply and sewage draining (斎藤, 2001). During 1970s and 80s, within the Nagano prefecture, such tendered land for development purpose under those 'Format', that was the disintegration former commune ownership land, had amounted to 1,011 hectares (青木・上條, 1983). In where sell in plots were completed for summer houses, tourism has been partially realized, some people have been employed and some tax payments been added to as annual revenue for the municipal government, but the local governments has no longer owned any land in their hand at all. The land can be regarded as a sort of the principal from it interest accrues. Without the principal, any interest can be expected to obtain. Being no famous for as Karuisawa or Nojiri-ko, those newly-risen summer house lots were not popular and tradings were unprofitable. Small local government had lossed not the interest but the principal. Iizuna highland, Togakushi highland, Kaida highland, Kurohime highland, Chikuma and Hijiri highland are such poor profit or unprolific cases as of Sugadaira. Subsequently only deforestations and poorer hydrological environments were brought about.

III. Completion of the Highspeed Transportation Networks

Both of national and prefectural governments had worked directly and indirectly in promoting and developing the tourist industry. They had promoted and engaged in construction of highway automobile roads and local road networks eagerly through direct public investments. It has been expected for longer times that Nagano's location would further be enhanced by the operation opening of high speed transportation linking with majour urban centers. Automobile highway interlinking Shinshu with other regions and intra-linking four majour intermontane basins within Shinshu completed in 1980s and Bullet Train service (Nagano Shinkansen) linking Tokyo and Nagano has commenced in 1990s. The Winter Olympic Games held in Nagano in 1998 contributed to the development of tourism and to improvements to the infrastructure and tourist accomodations. Those new transportation systems would never only be favorable for Shinshu area. Those rapid transportation networks had expected to be spread over nationwide scale and they make tourisms be favorable of many regions within the nation other than Shinshu alone. It can be forcasted that the competitions between inter resort areas will be more intensive than at one times.

More one problem faced by the modern tourist industry is the changing behaviour of visitors. Opening operation of the bullet train service and the completion Kan-Etsu automobile highway realized high accessibility for Shinshu resort from congested major urban areas. And those made it possible peoples to enjoy one day tour, with more short stay and more smaller money spending, being reverse result against previously expected. Many visitors tend to enjoy natural beauty and historical heritages only at a glance and do not consider and examine closely its environmental and cultural background and values.

IV. Three types of common land use and management under tourism development

Under the modern times in the tourism development process, the former forest communal lands had experienced following three ways differ from each others. By author, Karuizawa and Chino City could be classified as the first type, Shiga Highland of the Yamanouchi-machi could be the second type, and Tateshinamachi be the last third type.

Karuizawa resort area has exhibited typical case in which almost all of the former communal lands were from the outset dissected and had been privately traded (小林, 1975・軽井沢町誌刊行委員会, 1983・浦山, 2000). On the contrary the Shiga Highland resort area has exhibited another typical example in which communal land ownership had and has been completely facilitated through the Modern Era. Land use rules in the Shiga were almost the same as in at one time and development of the tourism reflects such land use and land management rules. Of all tourism firms had to rent land lots from the landowner Wago-kai for land use, instead of purchasing to obtain ownership of the land (財団法人和合会, 1975). The third case, of Tateshinamachi resort area, on the northern slopes of Tateshina volcano, exhibits very unique example way of tourism land use and management. In Tateshinamachi land ownership and water resource management has conducted independently. Tourism firms in Tateshinamachi have to clear water use regulation with farmer's approval, adding to land rent system (小林, 1991・沓掛, 1997). Follows are details of each those three types.

IV-1 Karuizawa in where dissolved common lands had been purchased and sold privately

Karuizawa is the most famous summer resort in central Japan where foreigners as well as Japanese built summer houses prior to World War II. Nowadays this area attracts many vacationists who own summer houses, while short term visitors can also enjoy the highland environment and varied tourist facilities. At early days of the Meiji Era, when beginning of the modernization, most peoples of Karuizawa were engaged in agriculture, and they had worked on common forest and pasture land extending wide areas. On favorable location along Nakasendo highway many farmers were also engaged in such horse-back transportation assisting as their important side works under feudal system. Under modernization processes farmers suffered from curtailed sidework earnings and

had to seek other income sources.

Situated relatively short distant from the new capital City of Tokyo and endowed with highland cool climate, Karuisawa was recognized from the early Meiji Era as one of the typical hill resorts for those tourists who wanted to get away from the heavy summer heat of Tokyo. It also had the longest resort history so as had the Hakone area from the outset of Japanese Modern era. Persons who paid attention on Karuisawa as its resort possibility were with high social status as university professor, businessmen of financial circles, high class government officials and high class pastors, including many foreigners. Suggestions and supportings by those leading high-class persons land reclamation for summer house purpose lots had begun. Along with such activities another agricultural development projects following of U.S. frontier style had commenced. Above those business activities purchased extensive agricultural common land and, communal land ownerships were soonly dissolved. This process was smooth because farmers were required income opportunities from the new tourism. Thus in Karuisawa most of the land for tourism had and has been easily obtained and traded privately as the objects of commodities in the real estate trading process and sometimes speculatively, and in degrees, with more small scale and disorderly. Land lots converted from the former forested areas are mainly used for many golf courses, tennis courts, skiing grounds with snow-making machines, shopping centers equipped with large parking spaces as well as great numbers of summer houses. And large amount of ground water are consumed by each of them. Today Karuizawa area exhibits too heavily developed land use circumstances that were arisen by tourism.

As the result of the tourism development, the expansion of the disorderly deforested areas were also rapid. And the capacity of the ground to reserve precipitated water and to control surface runoff has been diminished to larger extent. Karuizawa resort areas are situated on the uppermost portion watershed of the large Chikuma River drainage basin. Both of uncontrolled flooded water and degraded quality water would damage downstream agricultural and urban areas and would make ill effects on the potable water resources. It should be considered to make a counterplan for the protection of soil, water, and natural environment as a whole.

IV-2 Shiga Area in where Land had and has been completely controled under traditional commune rule.

Shiga Plateau is centrally located in Joshin'etsu Kogen National Park. This resort had acquired the nationwide fame, top class skiing ground, as early as from the 1940s. The famous skiing resort Shiga Plateau lies among the common forests for the settlement of 'Kutsuno' which is included to the Yamanoutimachi. From the Pre-modern Era local people had to make use of this plateau for the production of charcoal, hay, woods of building materials, bamboo and processed bamboo products and other forest products as late as the end of 1950s. Origin of the tourism of the Shiga can be traced back to early

days of 1930s, when skiing introduced to the Shiga. Simultaneously railway linking between Nagano City and Yudanaka at the foothills of Shiga was completed and the Shiga obtained high accessibility from the Tokyo.

Just in the same year the *Wago-kai*, the Juridical Foundation of the settlement of Kutsuno, *kai* means association, the reorganised successor of traditional land and forest management agency, was established to manage and control the Shiga plateau land. Since 1930s many skiers had begun to visit this plateau. Shiga had made its start as the national level skiing resort. This era was epoch making one and Shiga's beginning of tourism was as more later approximately 50 years than Karuisawa area. It was this period when the inhabitants of Kutsuno migrated to Shiga to begin the operation and management of resting houses and huts including small ski-grounds (Shirasaka, 1977). Those above accommodations were possible to carry on businesses all year round, previously only operated in summer season. Ropeways, ski lifts, gondolas, bus and taxi services, those with invested heavy fixed capital and mechanical maintenance technologies sections were operated by Nagano Electric Railroad Company. Villagers of settlement Kutsuno in fact the landowners of the Shiga, and Nagano Electric Railroad Company, both were coexisted with each other on the Shiga Plateau tourism and had kept combination with business activities. Under such situation, to protect scenic landscape and natural environment from the tourism disorder development was not so difficult as the Karuisawa area. Wagokai, the landowner of the Shiga Highland, has well recognized the value of natural environment, although some problems such as heavy traffic congestion by cars has arose. In Yamanoutimachi, for the profit making, land has been rented only to the internal members of the Wagokai, under the original common property management local people's society. For business purposes, toward out of the members of the Wagokai, land rent had and has not been allowed. Rented land under regulations had been used for only big firm workers resting and recreation purpose, health resort houses, for workers welfare only, not for profit making tourism business.

Shirasaka described the Nozawa Onsen spa and skiing resort case, in where tourism firms had been very strictly limited within the original local members. This area had also owned and managed commune land, of which had developed and converted to skiing ground under the permission of original Ski-Club, under control of local membership. Lately regulation had descended to local government Nozawa Onsen-mura, the land management rule had been kept and maintained very well. Thus, skiing ground purpose, common land has been rented only for their relations, not for outsiders. This case is also very suggestive to protect the environment for the local people (白坂, 1976).

Tateshina-machi soonly will be described and above mentioned Yamanouchimachi exhibit very similar situation because their area of tourism grounds has been formed of renting the forest lands, and had offered business opportunity for the local people by charging of rented land be not so high. Both of them are also largely different from the

case of Karuisawa resort area.

But, although above two areas show similarity, not be the same one. Now, the common land transformation experienced in the Tateshina-machi will be described.

IV—3 Tateshina-machi in where Land Use Management and Water Resource Management are independent

Concerning the water resource management and land use research subjects, Tateshina-machi have extremely suggestive and interesting landforms to consider interaction between natural environment and human activities. First of all, land use transformation will be showed. Map-1 is 1 : 200,000 scale 「Nagano」 of 1966. Map-2 is 1 : 200,000 scale of 「Nagano」 of 1998. By comparing with two maps, we can find in Map-2 several resort areas of summer houses such as Yumenotaira, Shirakaba-kogen, Minamitairadai, Megami-lake and toll road of Yumenotaira. Till 1990s, during the High Growth Era, as well as other areas in Shinshu district, development of resort areas had been actively promoted in Tateshina-machi (Map-1, Map-2).

Then, landform of Tateshina-machi will be described. It have the location as follows. Nakasendo passing through it from eastern to western direction once was the main transportation route Edo-era divide the landform of the Tateshina-machi area into two sections (Map-1). The one is the northern tip end portion of the steep mountain slopes of the Tateshina and Yatsugatake volcanic chain (Photo. 1). Nakasendo forms the margin of the volcanic mountain northern extension. Ground surface in this sections are covered with thick volcanic ejecta and eroded materials with steep gradient. The other is the plateau or



Photo. 1 View of the tip end of northern foothills with steep gradient, Tateshina Volcano.

Photo.1 was taken on the extremely gentle slope in altitude 1,000 meters. Year of 2000 August, by author.



Map-1. 1: 200,000 Topographical Map 「Nagano」 of 1966.

Landform composition of the Tateshina-machi. Nakasendo Road (N) divides the landform of Tateshina-machi into southern and northern portions.



Map-2. 1: 200,000 Topographical Map 「Nagano」 of 1998.

On the halfway up Tateshina Volcano, newly developed resorts can be seen.



Photo. 2 Landscape of Farmland in the Vicinity of Motai settlement along Nakasendo. Landforms surrounding Motai, surfaces altitude of 700 meters belongs to the geomorphological Yaehara surface group. Year of 2000 August, by author.

terrace like landform extending with very gentle or flat slopes (Photo. 2 and Photo. 3).

Many parts of this section have gentle slopes or flat surfaces that can support the growth of various crops (Map-3). Map-3 is 1 : 50,000 Topographical map 「Komoro」 of 1970. Map-4 is 1 : 50,000 scale topographical map 「Komoro」 of 1998. In Map-3, contour lines of 680meters and 700meters exhibit thrusting out shape of promontory, representing suitable ground surface for agricultural use exist. By comparison Map-3 with Map-4, we can recognize the landuse transformation such as farmland conversion from the mulberry to apple orchard and from padi to factories and shops. In the Map-4, building and beginning of service operation of new roads also can be seen, most of them are facilitating as bypasses supplementing old aged Nakasendo.

They occupy northern section of Tateshina-machi and its gentle or flat surfaces are extending spacious area till suddenly broken on the northernmost fringe by vertical deep cliff eroded by the major Chikuma river (Map-1). Its uppermost ground surface is covered by loam in a 0.5 meters deep, toward downward followed by basement layers of lake bed sedimentations composed of fine grain sand, mud and clay and partly small size soared gravels. This plateau-like terrace landform extends over northern and eastern directions beyond Tateshina-machi and contains areas of Komoro and Tomi city, the latter has merged recently on the plateau Kitamimaki-mura. The Kakuma River flowing from south to north direction had cut deeply into the land to form a gorge like valley and



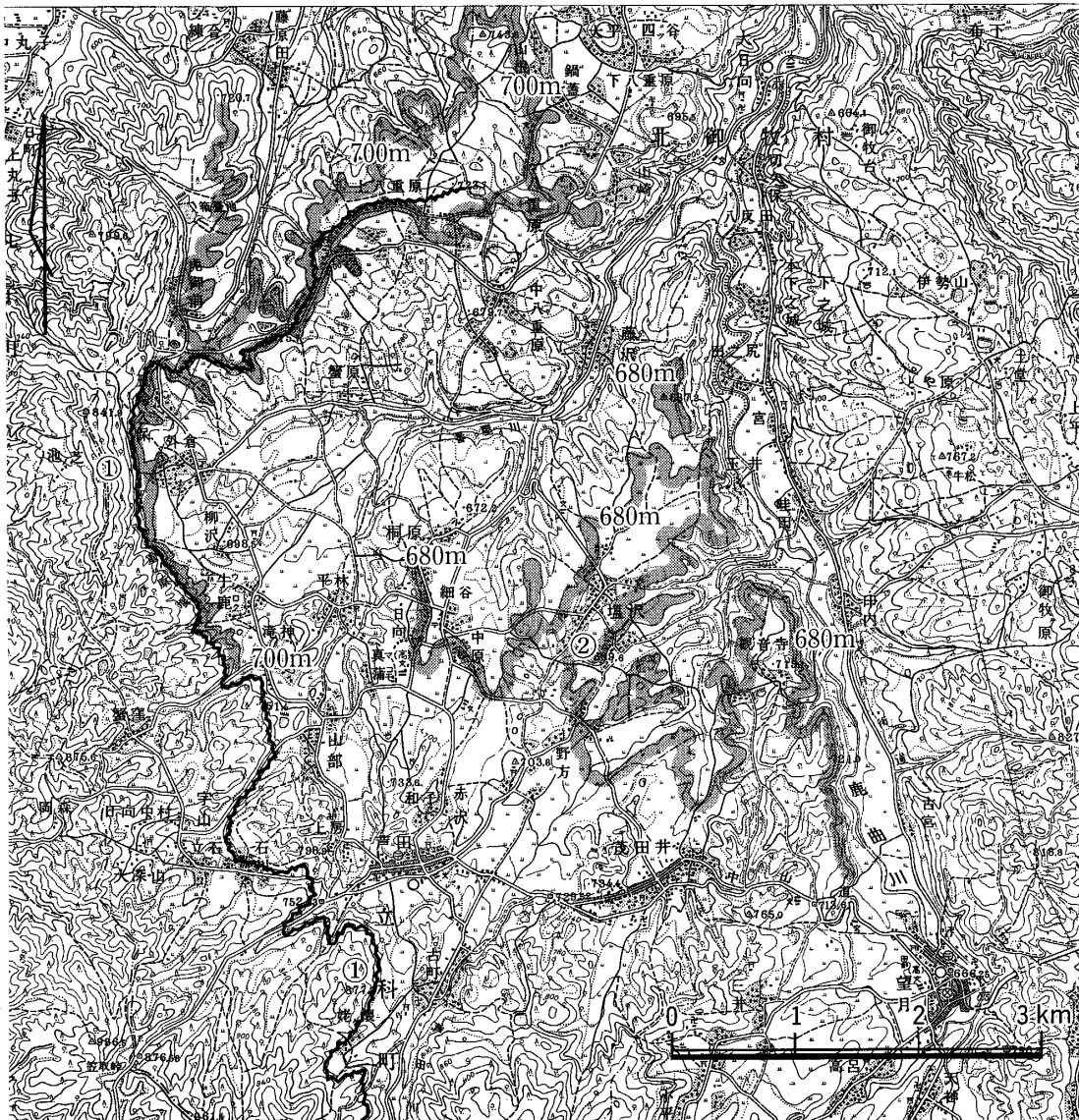
Photo. 3 Landscape of Mimakigahara, undulating or flat surface landform is dominant.

Mimakigahara is famous for its excellent quality potatoes and for medicinal use 'carrot' production. Cottage-like straw-hat sunshine shelter can be seen. In the shelter *Panax Schingseng* are grown called 'Korean Carrot'. Cool upland climate and clayey soil are favorable for cropping *Panax Schingseng*, Year of 2001 June, by author.

had divided the original plateau into two sections, of which western portion are named Yaehara, eastern portion are named Mimakigahara respectively (Map-1, Map-2). Landform uppermost surface of the western Yaehara has altitude of approximately 700 meters high and the ground surface is continued to the southern volcanic mountainland (Map-3). So volcano mountain spring waters could be diverted from the southern mountains to the northern plateaus in gravity flow and water conveyance possibility has been realized by canal construction (Photo. 4, Photo. 5).

On the north-western slope of Tateshina volcano, formerly existed swampy land (Akanumadaira, Map-1) was reclaimed and a large reservoir named Megami-lake was constructed (Map-2). With the fact that water facilities were improved and amplified under the project of Nagano prefectural government, the Uyama canal (Map-1) was integrated into Yaehara waterway.

The eastern Mimakigahara has 800 meters altitude high but ground surface succession is cut-off by Kakuma river valley. Water scarcity has been the heavy restriction on Mimakigahara's land use and settlement expansion for long times. The big scale project aiming to improve water conveyance capacity along with to preventing water leakage and to make rise water use efficiency has been carried out from the year of 1961 till 1972



Map-3. 1: 50,000 「Komoro」 of 1970. Relief and Landuse surrounding Yaehara Plateau.

Each three settlements of Kami-Yaehara, Naka-Yaehara and Shimo-Yaehara has been colonized in 17th century as the result of the pre-Modern Land Reclamation Project, supported by the Yaehara waterway construction.

Map-3 LEGEND

- ① Yaehara waterway (open ditch)
- ② Shiozawa colony



Map-4. 1 : 50,000 「Komoro」 of 1998. Relief and Landuse surrounding Yaehara Plateau.

Landuse transformation i.e. conversion from mulberry to orchard and from padi to factory or store are able to be seen by comparison Map-3 with map-4.

LEGEND

- ① Yaehara waterway
(siphon • improved)
- ② Causeway
- ③ Banyu river
- ④ Nakasendo-bypass



Photo. 4 View of the Yaehara plateau from the Ashida stage town.

In the far background flat ridge of Yaehara plateau thrusting from the west (left) to the east (right) direction.



Photo. 5 View of the Yaehara plateau western margin, in the vicinity of Tokura settlement.

Horizontal line of cleared pine tree forest shows upper limit of the apple orchard and along this line Yaehara canal extends from the south (left) to the north (right), by siphon. Foreground is valley head area of the Banya river. Year of 2001 September, by author.



Photo. 6 View on the ridge heights of 1,000 meters from the Mochizuki-machi toward western Kasatori Pass (887 meters) direction.

That the geological fact of the pyroclastic flows and the lava flows had exploited and expanded almost laterally characterizes the flat surface landform. It might be allowed to call this near-flat landform as the 'Kasatori surface'. Nakasendo passes Kasatori-toge (pass) from Ashida stagetown (Tateshina-machi) beyond over to Nagakubo stagetown (Nagato-machi). Year of 2000 August, by author.

when the works completed. The financial support by Nagano-ken and the application of modern technologies finally made more larger amount of water delivery and land reclamation possible.

Landform geological origine of the Yaehara plateau was the lakebed sedimentation named Komoro Formation at early stage of Pleistocene Quaternary (Photo. 6). Surrounding the Yaehara plateau several flat surface landforms in different hights can be seen. Millions of years ago, Volcanic activities and huge scale lake bed formations had occured repeatedly. Extremely flattend skylines in Photo. 6 reflects such geological process. Afterward a little crustal movement had arose and eastern Mimakigahara was uplifted in some degrees than western Yaehara, but flatted original surfaces remains in most areas except along eroded river valley portions.

On the ground surface with landform of gentle slops and small undurations such as Yaehara plateau, that water conveyance by gravity flow must be done in keeping downward inclinations had to encountered more frequently happen to meet obstacles than expected. Sometimes the course of waterway must pass through siphon tunnels or other times pass over beyond causeways (Map-4). Previously precise measuring have to completed to overcome those obstacles. Making full use of the traditional, simple but

skilful construction technologies and under the leadership of the local powerful man, regional people had worked together and completed the Yaehara waterway in 1662.

In recognition of being successful for land reclamation and colonization, people of the region had established their favorable and exclusive privilege to exploit the forest resources of the Tateshinayama mountainland under the power of feudal authority, the Komoro-Clan (Photo.1). Regional people had used those mountain forestland as their common property. And this had resulted in the fact that the water right were also in the hand of the regional people.

Following is some exhibition concerning the land use and water resource management in Tateshina-machi on the topographical map and photograph.

Map-3 and Map-4 shows relief and landuse in the northern portion of Yaehara Plateau. In spite of its name called Yaehara-dai, Japanese 'dai' means terrace land form, Yaehara Plateau, lacks thick and successive gravel deposits which could raise and stock large amount of groundwater. And the scarcity of available water has been the key factor of the land use history of this region. Water had to obtained and had to conveyed beyond the far distant way by the waterway construction, from the springs in the vicinity of the Shirakaba Lake. On the same geological and on the same geomorphological conditions in case of Yaehara waterway and colonization previously mentioned, Shiozawa Waterway had been already completed in 1646, and colonization of Shiozawa-shinden was commenced.

To trace Map-3 and Map-4 by northing will make it easy find out that the Yaehara waterway was constructed skilfully paralleling contour line of 700 meters for water distribution aiming as possible as more wider and more extensive areas.

Photo.7 and Photo.8 are landscapes surrounding northern portion of Yaehara Plateau. Photo.7 was taken in the vicinity of Kamiyaehara settlement (Map-3, Map-4) along the Yaehara waterway. Paddy cultivation is dominant view. The waterway takes the route on the hill ridge, trailing the highest point from the west to the east.

Photo.8 was taken on the Banya river valley bottom near Kanihara settlement (Map-3, Map-4). In the left side on terrace slope, former mulberry fields has been converted to apple orchard. The prefectural government's big scale improvement of water facilities in 1970s made increase the amount of water conveyance which made possible the expansion apple growing orchard nearby.

In the modernization process of the legal system, civil law was adopted and former common property forest land were handed to and under the management of reorganized Tateshina Common Property Management Association, Tateshina-Zaisanku (立科村外一町・立科村外一町一村財産組合, 1957). Under this system, before World War II, reforestations were actively promoted. And little evolution for tourism had arisen, exceptionally, Zaisanku rented their forested small land parcel to Tokyo High Education School for their summer school in 1930 (立科村外一町一村財産組合, 1957). That was not for revenue



Photo. 7 Padi extending along the Yaehara waterway, in heights of 700 meters. On the plateau, paddies are dominant view because of its high water accessibility.



Photo. 8 North side of the Banya river valley, in heights of 650-660 meters. Banya river is a left branch of Kakuma river (Map-4). On the left side terrace slope, former mulberry field has been converted to apple orchard. Year of 2001 September, by author.

purpose but for only education purpose. Member of the Tateshina Zaisanku was composed of nowadays Tateshina-machi and Mochizuki-machi. During the High Growth

Era, land ownership and management of the forest land was transferred respectively to the two local governments, Tateshina-machi and Mochizuki-machi from the former Zaisanku. Under the local autonomy system, Tateshina-machi had to apply the common property to create and to increase its financial revenues. The local government positively research their way of making profit and commenced trials for tourism businesses. They did not sell their land. But eagerly made effort to obtain and master the know-how of the tourism business operation, firm management and profit making. Tateshina-machi had set up the joint firm of the tourism promotion agency semi-public sector so called Kankou Kaihatsu Kosha, and introduced financial capital of the private big tourism company. Tateshina Kankou Kaihatsu Kosha had developed several summer house resort lots, pleasure ground, toll roads, and skiing grounds (沓掛, 1997).

During 1970s, with the development of tourism, needs of substantial amounts of waters had arisen. By this time, Kankou Kaihatsu Kousha had assumed responsibility for providing the water supply. It is only a matter of form. Water is supplied in fact by the local government as a municipal duty. Private tourism firms cannot get any water for themselves. And local government barely to deliver water under the approval of the water right holder that is the only legal one which facilitates as the water conservancy district, the United Organization of the Kawanishi Land Reclamation Cooperation, Kawanishi Tochi Kairyoku Rengo. Since 1980s, waters for skiing ground consumed for artificial snow making purpose has begun to supply. Recently tourism water consumption has remarkably increased.

It is interesting that in Tateshina-machi landownership holder and water right holder are independent. Today Japanese civil law gave unique lawful base for water right, originally evolved from the customary law. Water right was based on the principle of 'first come, first in right' and has been standing on very firm base. Under this principle, water right gained its position as absolute and monopolistic one. Agriculture have the predominant such right of water user over any other new water seekers or new comers. And today in Tateshinamachi too, tourism is just only the new comer one. They could not use any volume of water without agricultural permission on some documented bond, premissing the new comer should make never disturb on the preceded water users, agriculture and dwellers.

Concretely, in Tateshinamachi the water right holder above-mentioned is the corporated agricultural landreclamation association, Kawanishi Tochi Kairyoku Rengo, the same one that of the water conservancy district of the U.S.. Peoples of Mochizukimachi, Kitamimakimura and western small portion of Komoro City along with Tateshinamachi areas coincide with above corporated land reclamation association has diverted their domestic waters from the above agricultural water (Fig.1). Water right is recognized one sort of property right and can assert its benefit protection with strong lawful base. On this law base, people, of domestic water users can protect their health and lives.

V. Conclusion

The author have considered by overviewing the transformation of the afforested land at one time under communal landownership partition, with the development of the modern tourism industry and described some problems concerning environment. Nowadays afforested lands are even facilitating the function of soil and water resource conservation as well as at one times. Formerly communal forest lands were owned and managed in commune and were strictly regulated by land use rules of customary law. They reflect characteristic natural ecosystems of the East Asian climate, vegetation, soil, and landforms. Those commune land use regulations are never be of old time remnants or a remained part of feudal social system, as often simply misunderstood in social and human sciences. From the Meiji Restoration, under the whole social modernization processes, agricultural water right had positively adopted itself through many law disputes and established well-founded lawful position in the civil law system. Especially since the beginning of the 20th century, farmers had 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. Along with the establishment the Riparian Act of 1896 (original KASEN Act, in 1964 revisioned), water users other than agriculture had to require permission for the central or municipal government to obtain appropriated water rights. For agriculture, the fact of water was used or, any documented friction with others surrounding water use, were treated as recorded files, so agricultural water right alone based on the customary law. In this meaning, government permission was only a ratification. From the feudal days till modern days agricultural water right experienced little transition. Water right is exclusive and absolute right having priority over any other newcomers. They recognized as a sort of real rights being well founded law-suit one.

At present, one circumstance has arisen surrounding traditional agricultural water right.

The central government has began to trials for deprivation of agricultural water right of real right, exclusive and absolute substances. Under the pretext of water resource saving and water use rationalization, central government has asserted that it is required generally of new water use and delivery system should be established. They pointed that agricultural waters had and has been excessively favoured. The author's assertion is, under present law system, protection of humans life and humans health are very difficult because the principle purpose of present law system is protect property and real right itself, not human's life or health. Under the present law system, human's life and human's health can only be protected through bringing a lawsuit against whatever threaten their safety by ensuring for their protention of the property right. In Nagano Prefecture, there are several local governments which divert their domestic water from the agricultural waters. People of the previous Kawanishi Tochi Kairyoku Rengou has diverted

their domestic water from their agricultural water on that property rights had been set. By tourism developments, when their domestic water i.e. agricultural water, are environmentally or hygienically injured or given some ill effects damaging human healths, or available amounts are decreased, people can bring the matter before the court to ensure their own water right. Tourism has at one times premised that they should never make any disturb on the preceded agricultural (and domestic) water users, on some documents. Breaking the contract is clearly and absolutely the criminal offence, never should be judged only simple mistake. The polluter pay principle must be carried through. Strengthening management and control of the agricultural water right by the central government may subsequently weaken the agricultural water's protection ability of the people's life and health. Presenting ethically, tourism should never be prosperous at the expense of local people's lives and healths.

References (日本語文献で英語表記のないものはそのまま日本語とした)

- 1) 立科村外一町・立科村外一町一村財産組合 (1957) 『蓼科山と財産組合』 同財産組合
- 2) 関東農政局 (1970): 『長野県における農業水利の展開と農業発展』 同局
- 3) 小林 収 (1975): 軽井沢小史 「信濃路」 No.3 pp.156-166
- 4) 白坂 蕃 (1976): 野沢温泉におけるスキー場の立地と発展 地理学評論49-6 pp.341-360
- 5) 財団法人和合会編 『和合会の歴史 志賀高原の歩み』 上巻・下巻 (1975) 信毎書籍
- 6) 大字上ヶ屋水利組合 (1977): 『あげや』 同組合 (長野市旧芋井村大字上ヶ屋) 刊
- 7) Shigeru Shirasaka (1977): Formation of New settlements in Conjunction with the Location of Skiing grounds at The Shiga Plateau, Central Japan. Bulletin of Tokyo Gakugei University Ser. III Social Sciences vol.29 pp.53-77
- 8) 青木孝寿・上條宏之 (1983): 『長野県の百年』 山川出版社
- 9) 軽井沢町誌刊行委員会 (1983) 『軽井沢町誌 歴史編 (近・現代編)』 信毎書籍
- 10) 池 俊介 (1986): 長野県蓼科の観光化による入会林野利用の変容 地理学評論59-3 pp.131-153
- 11) 小林幹男 (1991) 『蓼科の水』 川西土地改良区連合 信毎書籍
- 12) 北佐久郡川西土地改良区連合 (1973) 『ありがたきかな此の水』 (未刊行) 川西土地改良区連合三十周年記念誌, ワープロ原稿。
- 13) 立科町誌編纂委員会編 (1995) 『立科町誌 自然編』 第一法規出版
- 14) 沓掛哲生 (1997): 立科町誌歴史編 (下) 現代第三章 観光と交通・通信 pp.366-404 第一法規出版
- 15) 浦山佳恵 (2000): 外国人避暑地から日本最大のリゾート地へ 『地図で読む百年 中部II』 古今書院 pp.19-24 所収
- 16) Takahiko YOSHIDA (2001): Water Resource Development, Water Right Disputes and Political Battles between Nagano and Niigata Administrative District among Nojiri Lake water. The Annals of Environmental Science, Shinshu University, Vol.23 pp.119-133
- 17) 斎藤幸男 (2001): 『森林を育てる—財産組合沿革史』 真田町外一市一町共有財産組合
- 18) 信州地理研究会 (2002): 『長野県の自然とくらし』 信濃毎日新聞社

摘 要

山国信州と一口にいわれるが、山国なる用語にはどれだけ、きちんとした意味が込められ使用されているのであろうか。高度800mはそれより上に高冷地が始まるとされる境界である。高冷地に属さない、高度800m以下の県土は、県下総面積13,585平方km中、28%に過ぎない。市役所の位置で求めた都市の高度で最大は茅野市の801mで、大町・諏訪・伊那・佐久のすべての市は800m以下である。盆地もほとんどは800mをきっている。ところが高度800から1,500mまでの県土の面積比は51%になる。山国という以上、1/3に満たない広さにすぎない高度の自然や文化で、信州を語れるはずがない。高冷地の一角、高度999mに位置する軽井沢測候所のデータは、820kmも北の札幌より平均気温が低いのみか、積算温度も札幌のそれを大きく下回る（詳しくはYoshida, 2004）。気候がきびしい高冷地への居住は近世末から本格化した。定住はなかなか困難で、敗戦後の食糧難が高冷地の開拓と利用をいわば強要し、苦闘の末、酪農や高原野菜の栽培の定着でやっと一息つき、高度成長期以降の観光開発に引き継がれる。植生についていえば高冷地には落葉樹林帯が形成され、大型動物たちには貴重な生息空間であり、かつ水源涵養地帯でもあるからヒトの命の水も作られている。

敗戦の復興に一区切りがつくと、工業化が牽引車になって、兼業農業の問題はあったにせよ、所得獲得機会の増加は生活様式を変え、暮らし向きは向上し、地方都市もいくらかは成長し、道路その他の社会的共通基盤の整備の進行で盆地内と盆地間の幹線交通路沿いの土地利用変化を促した。だが、大きいといわれるこれらの変化は、高冷地よりも低い、たかだか県土の3割に満たない区域で起きたにすぎない、ともいえる。第二次大戦前の製糸業でも、戦後繁栄した機械工業・電子工業でも、素材型工業でなかったせいもあり、観光業に較べるなら、それほど広大な用地を必要とはしなかった。市街地の膨張も郊外の住宅地化の進行も、しょせん30%以下の枠内のことだった。

工業の海外流出が進むいま、観光業のあり方が県民所得を左右すると熱っぽく説かれるが、その舞台が高冷地であるのはいうまでもない。県民生活の将来がかかるとなれば高冷地の土地利用展開の如何は戦略目標である。観光業が広大な空間を必要とする産業であるだけに、信州は県外の大手不動産資本の投機的市場行動に大きく振り回されても来た。かくて特に高冷地の土地利用展開の過程の追跡は信州人にいまや考察の深化を要求している。

さて長野県というよりも住民には信州という名が親しまれてきた。生活環境が垂直的水平的に、実に多様なこの土地では、地域ごとの自己主張が強く、相互の対立を克服するのに、信州という用語はふさわしいとされ、住民はこの呼び名を誇りにしている。ところが高冷地は北信・東信・中信・南信のいずれにも存在し、過去、類似の苦闘を経験し、将来のあるべき利用方法について、どの地域も同じ課題を背負っている。「信州」の名称が割拠性を克服する理由の一つがここにある。

以下、高冷地を具体的にみていきたいが、自然と歴史・社会・文化の接点である水資源に注目してみたい。水資源から見て、信州の高冷地には、いま、どういう問題があるのだろうか。時代は21世紀、その21世紀のキーワードの一つが環境保全ならば、住民の飲料水の安全を観光産業伸長の中でどう守ればよいのか。

観光業は製造業と違い、広大な空間を使うが、観光業の土地利用に制約をかける時、土地所有や利用管理の変遷をおさえておくのは非常に有効と考える。土地所有や管理の側面から、信州の観光地は三大別できる。すなわち、第一の類型は、明治維新直後から入会地が分割され東京の大手観光業に買われ土地の私的所有下で開発の進んできた軽井沢型で、同様にして八ヶ岳火山から蓼科山火山の南西山麓一带の観光開発は、土地売買が伝統的な規制の解体の下で進み、また水利権の統合も達成されなかったので、第一類型の軽井沢型といえる。これと逆に、管理組織和合会の法人化の下で、入会共有共用制が事実上今なお維持されているのが第二の類型の志賀高原型で、野沢温泉もこの型に含まれる。これらに類似するのが立科町である。しかし立科町では、土地の管理は自治体の立科町や望月町に継承されたが、別途開発公社をたてて大手企業も加わり観光業の振興が図られる一方、川西土地改良区連合に統合された強大な農業水利権が独立して存在している。観光業の水利用はその都度農業水利の承認が必要な、土地利用と水利用が分離しているという特徴がある。よって立科町は第三の類型とできるであろう。

第二類型の和合会の志賀高原は、発哺温泉以南の丸池や熊の湯一带で、ここでは沓野集落を核にした周辺部落の入会林野の利用組織を法人化した和合会（1922年）が、長野電鉄以外の外部観光資本の土地取得を認めず、有力企業に保養施設の建設だけを許してきた。和合会の規制は水利用にもおよび、個々の保養施設の井戸掘削はできず、山ノ内町営水道の給水を受けなければならない。1960年代以降長野電鉄や西武資本が入っている、発哺温泉以北の奥志賀は和合会のテリトリーの外にある。しかし同じ山ノ内町営水道の供給を受けなければならない。

第三類型の立科町は、黒澤嘉兵衛（八重原用水）や六川長三郎（塩沢堰）らの、「水大将」の往時の権威が、川西土地改良区連合に実質的に継承されているのが注目に値する。立科町と望月町は共に川西土地改良区連合の傘下にある。土地所有とは別個に統合されて強大な水利権が存在するから、当地では、観光業者は井戸の勝手な掘削はできないし、水の利用はすべて事前に、川西土地改良区連合に利用水量を明記した計画を示し、了解を得る必要がある。川西土地改良区連合と観光業者との水量データの記された文書のやり取りは、そのまま水利用の正確な現状把握のデータになる。加えて契約を旨とするのが我々の社会の基本であるから、交わされて相手方（土地改良区）の手に渡った文書は観光開発業者の水使用に強い規制になる。いったん交わしている文書に違反した水利用は容易に裁判沙汰になり、手間と費用のかかる裁判所行きはどの観光業者も避けたいから、水利用にあたっては事前に十分注意することになる。ここでは詳述しないが、水利権の保持者は現行法下では絶対に強い。水利権を持つ電力会社が発電用取水で川原沙漠を生んでも、法理上では何らの違法行為にも当たらない。水利紛争をめぐる過去からの膨大な判例が事実上の法の機能をしているのだ。くだんの「水大将」に関する史料の利用は従来は困難なことが多く、半封建的権威のイメージがあった。それと裏腹に、その権威は住民の生活環境を守る今日的使命には立派に応じ得ている。というのも、御牧ヶ原台地の住民は1961年着工、72年完成の県営御牧ヶ原農業水利改良事業結果ゆとりの生れた農業用水を、水道水に転用しているからである。農業水利権の固いガードは、すぐにでも裁判を起こせるスタンスに自らを置くことで、住民の健康の安全を守る働きもしているのである。

これらとは対蹠的なのが、第一類型の、八ヶ岳火山から蓼科山火山の南西山麓一帯の観光開発で、1963年秋の「大河原事件」に端を発した水利紛争は土地改良区を分断し相互の協力はみられなくなり、水利権の処理は曖昧なまま土地（山林）はそれぞれに売却され観光開発はそれをさらに細分し、別荘地ごとに井戸が掘削されていった。この別荘地群は高度が1,000から1,500mにおよんで、諏訪盆地の水源地域にもあたっている。懸念されるのは、近い将来地下水に量的また質的な問題が生じた際、これでは責任の所在をはっきり糺すことができない点である。川西土地改良区連合傘下の住民と違って、諏訪盆地の住民には地下水の質的量的環境を守るための闘いの、有効な手段がないのである。

こういう次第で、自然保護や水管理が一番難しいのは第一類型の軽井沢型で、茅野市側の蓼科高原もこれに入る。対して、多少問題はあっても、解決しやすいのが志賀型である。多雪地の入会林野はスキー場に転用される場合が多かった。白坂によれば、下高井郡野沢温泉スキー場は地元住民が入会林野を巧妙に生かし、観光開発を地元の事業者だけに限定して成功した例である（白坂、1976・Shirasaka, 1977）。細かい内容はさておき、類型では志賀型であろう。第三の立科町型は三セクの観光開発が大手企業に引きずられ勝ちだが、水利権の活用が生活環境の破壊の歯止めともなる。内陸地信州の数多くの観光地をこうした類型で整理すれば、住民の生活環境を守る手段も工夫しやすくなるであろう。

法的には物権とみなされる水利権は、要するに争う権利である。現行の法体系の下では他の財産権同様最も強い権利で、それを犯せば相当の償いが求められる。法の扱い上、人の生命や健康よりも重いのは悲しいが、水利権が手中にあれば住民の生命や健康を守る強力な武器にもなり得る。長野市旧芋井村大字上ヶ屋の住民の、1977年の農業用水と飲料水を含めた水利組合結成の例があるが、別の機会に譲りたい。

(以上)