

# Study about the Increase of Welfare, Medical Care and Education Effect in the River

Ito, Kazumasa

*Dr.Eng, PEJP, International Dept. of Planning Bureau, CTI Engineering Co., Ltd, Tokyo,Japan*

Kozo Fukunari

*Dr.Eng Fukken Co., Ltd, Hiroshima, Japan*

Noboru Tsukamoto

*Non profit organization, Kokaigawa Project, Ibaragi, Japan*

Katsuhide Yoshikawa

*Professor, Transportation Engineering and Socio-Technology, College of Science and Technology, Nihon University, Chiba, Japan*

ABSTRACT: The river technology of Japan was highly developed and achieved much result in flood protection, water use and the environment. Nowadays, the function which is requested to the river is changes because the society changes from growth to maturity. In this study, we suggest the functions of the river in the maturity society about future welfare, medical care and education based on field research of case study. In this research, we pay attention to the functions related with culture, one) function of healing, mental stress improvement and life, two) function of landscape, education and recreation. And this paper proposed the usage of the river where adopt to the times, a function and the value of "the river as the space". We made a questionnaire to 187 river managers, and 90% of answers wear positive for use the river as the medical aspect, health and the welfare. Furthermore, based on research result of hospitals and welfare facilities which used a river for their activities, we suggest to develop and use the river walk, to design a city and rivers as one, and to use many facilities which are located on river front more active, those are improve the new river functions.

## 1 INTRODUCTION

The river technology of Japan was highly developed and achieved a lot of results in flood protection, water use and the environment. Nowadays, the function which is required to the river has been changed because the society changes from growth to maturity. In this study, we propose the effect and functions of the river in the mature society about the future well-being, medical care and education, these are based on field research of case study. In this research, we pay attention to the functions related with culture, one) function of healing, mental stress improvement and life, two) function of landscape, education and recreation. And this paper proposed the same meaning of the usage of the river where adopt to the times, a function and the value of "the river as the space".

## 2 NEW FUNCTION AND VALUE OF RIVER

### 2.1 FOCUS ON THE USE OF THE RIVER SPACE

Fig.1 shows the area of the river channel which is occupied around 10% of the urban area. Based on "National census of River and water front" 1990 (Ministry of Land, Infrastructure and Transport)<sup>2)</sup>, usage of the river space are summarized as follows.<sup>3), 4)</sup>

The total length of rivers in Japan is about 140,000km, and 87,000km is A-Class River. Ministry of Land, Infrastructure and Transportation manages only approximately 10% of A-Class River. However, about 180,000,000 peoples are using this riverfront. More than the half of the purposes of river use is to take a walk. And the others are sports and fishing which are seems to be really river use. (Fig-2) In the latter half of 1990's, the society of Japan had great discussion to introduction of the long-term care insurance, which was start from April 2000 to prepare for aged society and introduction of the comprehensive education which was started from April 2000. Activities to use a river at the same time in an area was began slowly, and, for example, a citizen group held "private supplementary school" for the river, which accepted children in the Chitose river, and it was it with a subject by the comprehensive education a river around the school, and, as for the thing of administrative support, new movement came out to the space usage of the river including activity "experience activities in the river committee to learn from the river".

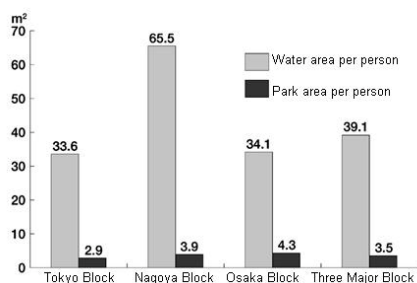


Fig. 1. Water area and Park are per person

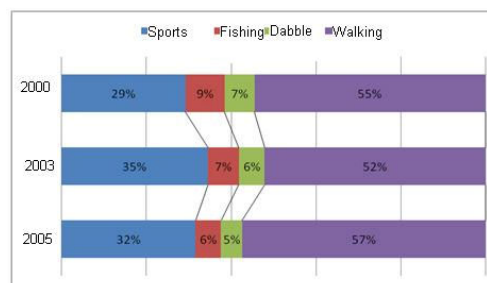


Fig. 2. Types of River space use

## 2.2 START OF THE ACTION IN THE WHOLE COUNTRIES

From 1997 to 1998, manager from the Ministry of Health and Well-being, manager of the River Bureau, Manager of river office from the Ministry of Construction, manager of river section of local self-governing body and the people of specialist established the round-table conference. They started the discussion and research activity about the use on the well-being side of the river. At the same time, the river council started the discussion of the river use on education side. And they concluded to "learn from the river". And Ministry of Education, Culture, Sports, Science and Technology and Ministry of the Environment and the Ministry of Construction shared it and promoted. "Symposium of the well-being and the river in the Arakawa" was held in 2002. Especially, in the down-stream area of Arakawa river basin, the well-being organizations, a medical facilities and the group of disabled people arranged the meeting in the round-table conference about the usage for the well-being of the river. And "the well-being improvement of the Arakawa" has been promoted. And the citizen group which participated in the symposium, decided to continue the communication among the people who are concerned with a river and the well-being of the whole country. And, after 2000, they held ten times of conferences every year from Hokkaido to Kyushu.

## 2.3 THE ROLE OF THE RIVER IN THE MATURE SOCIETY

The society becomes mature, and an aged society with a low birthrate progresses. Fig.3 showed a change of the population and the change of the ratio of the senior citizen. In the times when an aged society with a low birthrate progresses, "the river as the space" in a city area is the precious

resources of the social infrastructure and practical use of that is the future policy. Practical use of the river space to medical care, the well-being and the education has already been started. And those activities became valuable resources for those areas. However, most of those activities were separated from individual as the well-being, the medical care and education. It is expected to use the space as compounded. Furthermore, it is leveled up of the new function in the river, not only to use as event activity or occasionally use but also to use the daily or permanently.

Table 1. National Conference of Well-Being Medical Care and Education with River

Year and Number	Location(River)
1 <sup>st</sup> 2000	Obihiro City, Hokkaido (Tokachi-River)
2 <sup>nd</sup> 2001	Hiroshima-City, Hiroshima (Ohta-River)
3 <sup>rd</sup> 2002	Fujisiro, Ibaragi (Kokaigawa-River)
4 <sup>th</sup> 2003	Honjyou-City, Akita (Koyoshi-River)
5 <sup>th</sup> 2004	Kitakami-City, Iwate (Kitakami-River)
6 <sup>th</sup> 2005	Shimanto-City, Kouchi (Shimanto-River)
7 <sup>th</sup> 2006	Kumamoto-City, Kumamoto (Midori-River)
8 <sup>th</sup> 2007	Eniwa-City, Hokkaido (Izarigawa, Moizarigawa)
9 <sup>th</sup> 2008	Setagaya, Tokyo (Tama-River, Nogawa-River)
10 <sup>th</sup> 2009	Tokushima-City, Tokushima (Shinmachi-River)

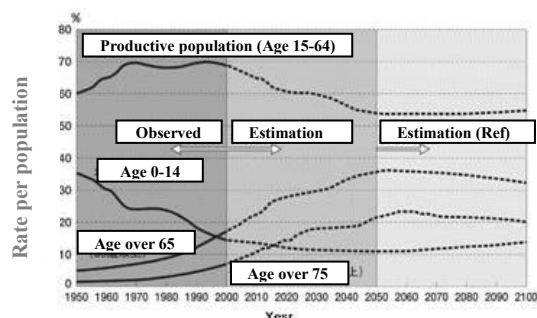


Fig. 3. Estimation of Aged population and future

### 3 THE ACTUAL SITUATION OF THE RIVER USE WITH THE WELL-BEING AND THE MEDICAL ASPECT

#### 3.1 THE PRESENT CONDITIONS OF THE RIVER USE

From the result of the national census of the river and waterfront <sup>3), 4)</sup> of A-class river which are managed by national government, about 1.8-1.9 hundred million persons use river space as annually for walks and sports (fig.2). To understand the actual situation of the river use about the well-being, medical care, we carried out questionnaire to the 187 managers of the river office all of Japan, and returned 108 answers. As a result,

- 1) it was used more than 80% for walking.
- 2) 72% of the river managers tried to improve restroom facilities, parks and open space, slope setting, walk road, promenade to promote the river use including senior citizens and the disabled persons. (Fig-4) These arrangements have been increased from 1995 (Heisei 7). From this, we can understand that managers begin to change their aspects of usage in the river space for health, well-

being and the medical care. As result of these arrangements, we got answers that the river usage was promoted 41%.

3) In the future, 41% of the river office plans to improve river space similar with arrangement. The items which are most needed are slopes, path way and promenades (Fig.5).

4) Construction of facilities for river use for the well-being or medical facilities, slope arrangement is the most, and promenade arrangement was installed. Those were rapidly increased from 1997 (Heisei 9). More than 70% of river use is walking, for well-being or medical facilities which are not to be installed for similar river arrangements. 90% of the river office answered that the river space usage for health, well-being and medical care should be promoted. And, in some river offices point out that the priority of the safety being necessary and fiscal security are necessary.

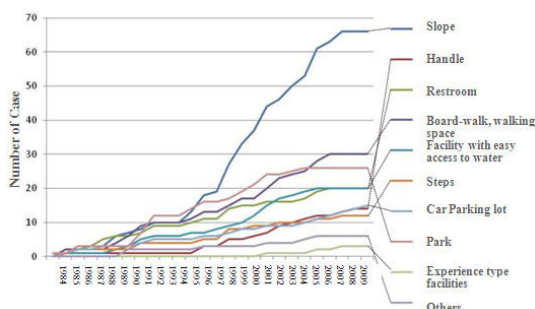


Fig. 4. Installed Facility number by Year

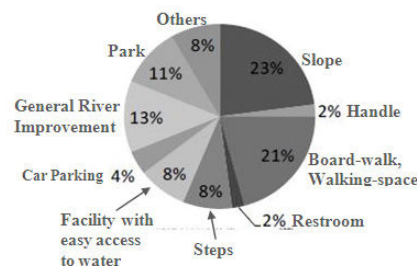


Fig. 5. Plan of Installation

### 3.2 THE ADVANCED EXAMPLES

Table 1 showed the advanced examples of river use for health, well-being and medical aspect.<sup>3), 4)</sup> The characteristics of these examples are 1) use the river space for the well-being, medical facilities, 2) use the river space compound with health, the well-being, medical care and education, 3) use the river space as improving the urban design that considered the well-being, medical care side .

The followings are characteristic of the examples.

- (1) The river space is used daily. (Kinugawa at Mooka-City, Koyoshi River at Yuri-Honjo-City, Kokaikawa at Toride-City, Shinmachi River at Tokushima-City, Fukano River at Un-nan-City).
- (2) The river space is used for the multi-purpose, not only for single purpose for well-being or education. (Kinugawa of Mooka-City, Koyoshi River of Yuri-Honjo-City, Kokaikawa of Toride-City, Izarigawa, Moizarigawa of Eniwa-City, Fukano River of Un-nan-City).
- (3) Case of Administration leadership (Arakawa down-stream, Eniwa-City, Mooka-City), case of the cooperation with citizen or citizen's group and administration (Toride-City, Un-nan-City), case of private leadership (Honjyo-Daiichi Hospital), case of citizen leadership and the administration participation (Tokushima Prefecture Shinmachi-River).
- (4) Some specialists have tried to evaluate effectiveness of healing of the river (Hideo Nakamura of Tokushima City, Shinmachi River, and Araseki Iwao of Eniwa City)
- (5) The advanced example has not seen year by year.

### 3.3 THE KNOWLEDGE FROM QUESTIONNAIRE AND RESEARCH RESULT OF ADVANCED EXAMPLES

The following was provided as knowledge of the river space use.

- (1) To focus on the usage of the river space for well-being and medical care, all most of the workers are busy with the work, so that special incentive is necessary to spread the use of the river

space for well-being and medical care. (Honjyo-Daiichi Hospital activity, Kokai-River Activity)

(2) It is similar in the use on the education. (Mooka-City)

(3) In case of the advanced example, there were key persons who led the cases or activities for many years and his purpose of river space use is compound with the well-being, education and medical care. (Tokushima-City, Eniwa-City, Un-Nan-City, Yuri-Honjyo-City)

(4) The daily use which we showed in the advanced example shows the future direction.

(5) However, the advanced example is not increasing year by year recently. And there is the example which is not to use sufficiently, even if in river space is arranged for the well-being and medical facilities.

#### 4 SUGGESTION AND IMPROVEMENT OF NEW FUNCTION AND VALUE OF THE RIVER

Based on our research and various activities, as an improvement measure of using river space for well-being and the medical care (includes education), we propose as follows.

4.1 Construct the permanent facilities (well-being facility, hospital, educational center) in the river banks, and use them every day for health, well-being, medical care and educational activities. And these should promote the citizen's daily use. The advanced cases (table 2) with this aspect are as follows.

(1) Use the river space for the hospital. Honjo Daiichi hospital of Koyoshi River of Yuri-Honjo-City, Akita.

(2) Use the river space with education and training for children. Kokaikawa River Fujishiro, Toride-City, Ibaraki

(3) Use the river space for nature experience education for children and train the aged people. Kinugawa River, Mooka-City, Tochigi

(4) Use the river space for care facilities. Care Port Yoshida in the Fukano River (Hiikawa river branch), Un-nan-City, Shimane

We suggest to construct the permanent facilities (well-being facility, hospital, educational center) on the river banks, and use them every day for health, well-being, medical care and educational activities, and promote the citizen's daily use. (fig.5)

4.2 To promote the daily use of river-walk as the medical aspect, walking, jogging or cycling for health.

(1) Most frequent use of river is "To enjoy a river space walking" was showed in "the national census of the river and waterfront". This means that walking is for health or rehabilitation with the medical aspect, the jogging or cycling also for keep health as positive. For example, the river walk of Edo levee(called Edogawa healthy eco-road), that flowing through the boundary of Chiba and Tokyo, there are the milestone of the river for jogging and cycling and equipped with a barrier-free slope, the restroom. So that, many of the neighbors use it together with children, senior citizens and the disabled persons. Such a river is showed as well used river by this questioner survey, and this kind of river is exist in the whole country. The river which is located in a city and the area, river spaces have been installed river walk, restroom, refresh house with universal design, and offer it to a walk, jogging and cycling.

(2) The advanced examples with health, well-being and medical aspect are as follows.

1) Izarigawa and Moizarigawa in Eniwa-City, Hokkaido.

These rivers were designed parks for children as the first step, and now neighbors enjoy walking.

2) Down-stream of Arakawa River in Tokyo.

This river is located downtown in Tokyo and has been used for sports. Nowadays this space is used to senior citizens, disabled people and parents with small children.

3) Kokaikawa of Fujishiro, Toride-City, Ibaraki.

Riverbank of this river is designed with cycling road and covered with plenty of flowers, so every year many people visit and enjoy this river space. Today Riverbank and river space is restored with the milestone of the river and installed the slope with universal design.

(3) Nowadays, the river which is used well for walking has to be prompt more. In addition, the river which is not used too much today even if there are houses around a river in urban area, we have to equip with river walks. Today, the passage for river management was construed for mainly flood fighting activity, patrol or inspection of the river system, and it did not plan to use with health, well-being, medical care or education.

We propose to improve this existing passage for the river walk that can promote the use of the river.

#### 4.3 The positive use of the river passage (River walk)

River walk is a required system that is connected with city, region and river.<sup>1), 4), 6)</sup>

The river walk is a required system, because in Japan, 10% of the city area is river space, and this open space is very valuable for urbanized area.

The river of our country, river walk (a passage for river management) showed about 62% of the Class-A river (Ministry of Land, Infrastructure and Transport direct control river 10,515km), and it showed about 24% of other rivers (controlled by local government as 31,663km) based on the River Act.<sup>1), 6)</sup>

Utilize these river walk more, and we expect to install the river walks in cities where are not arranged yet, because river walk will be able to connect with rivers and cities and regions. The area, where river walk had already installed, has to improve with universal design because of waterway transportation.

#### 4.4 The design is requested as unify with river, city and Region.

The senior citizens who are older than 65 years old is approximately 25,000,000 now, however it is estimated that population of aged people will dramatically increase in the future. Now the number of disabled people is approximately 6,400,000, and approximately 3,000,000 are required some level of care. These are occupied 7% of 127,000,000 total populations of Japanese, but it will increase in the future.<sup>1)</sup>

Particularly, in the regional area, this ratio is higher than the urban area. The nursing homes, well-being facilities, hospitals in an area are not placed alone. Senior citizens, people who need care and children have to communicate and interact freely with people in community. Set up the permanent facilities (facility for well-being, hospital, education center) on the banks of a riverside are important. And to use those facilities for health care, well-being, medical aspect and education are also important. And to promote daily use by citizen, makes excellent design of rivers and regions. Effort of well-being and medical care in the river space is to offer the valuable space to people that can be used together with children, senior and disabled persons. Rivers are also expected to provide healing, empower people improve well-being of community.

## 5 CONCLUSION

The river was used as waterway, a place of the fishery and river space to pick up the firewood or the manure. However, after the Meiji era, the water transportation was switched to railroad and the fishery was changed to aqua plant business. Based on these backgrounds, the use of river space is also changed to athletic ground or sports ground, along with the change of economical development and urbanization.

In addition, the river space also is use as a park or the green land.<sup>8)</sup>

The era becomes to an aged society with low birthrate, the use of the river space may be switched to the new age. From the results of case based research, use of the river space is changed from playing sports to walking. In other words, main users of river space have been changed from young population to senior citizen. This means that river space is used by the people of aged group

for walking, jogging to promote health. To answer for these social requests, to use the river space has to promote for health, well-being and medical care, not only river terrace but also river walk. Usage of river walk has to be required not only the flood management tool or daily patrol and management route system but also place for improve well-being of people in community. As well as river improvement, irrigation, river management on the environment side, to use the river space should be added purposes in river planning how rivers contribute to community. Results of this research offer many basic ideas and show the future direction of river planning, which should consider with health, well-being, medical aspects.

#### REFERENCES

- 1) Yoshikawa K. “Ryuiki Toshi Ron” , Kajima-press, 2008
- 2) River Bureau of Ministry of Land, Infrastructure and Transport (Foundation for Riverfront improvement center) ” The national census of the river waterfront” ,2006
- 3) Moritani K, Yosikawa K. “Research for use of river space as health care, well-being and medical care” , JSCE Kanto, March,2010
- 4) NPO Institute of Welfare, Medical care and Education with River, “Research Report of Actual Condition of Welfare, Medical care and Education with River” , March,2010
- 5) Ishikawa, Ohno, Komatsu, Yoshikawa, “Practice in the river - Welfare, Medical care and Education” , Gakugei Printing, 2004
- 6) K. Yoshikawa, K. Ito, “City and River” , Gihoudou-Printing, 2008

Table 2. The Advanced Examples of Welfare, Medical Care and Education Activities in the River

Case	Welfare	Medical	Health	Education	General	Outline
Kokaigawa Toride-City,Ibaraki	2	1	3	3	2	<ol style="list-style-type: none"> <li>1. Use the river as three dimensions, sky, land, and surface of the water.</li> <li>2. The surface of water is use for boat, canoeing, and the land is use for the bicycle, pony riding, motocross, and the sky is for the kite and paraglider.</li> <li>3. Cooperate with welfare facility of neighboring</li> <li>4. Activity to make flower bloom in river terrace</li> </ol>
Koyoshi-River Honjyo-City, Akita	2	3	2	1	2	<ol style="list-style-type: none"> <li>1. River is used for the medical treatment.</li> <li>2. Patients use the river as stroll, rehabilitation, and occupational therapy</li> <li>3. The citizens' participation</li> <li>4. Sharing the space with children from neighboring preschool</li> </ol>
Kinugawa Mooka- City,Tochigi	2	1	1	3	1	<ol style="list-style-type: none"> <li>1. Public school.</li> <li>2. Nature experience class built into curriculum of elementary school and junior high school</li> <li>3. The child and the senior citizens jointly study.</li> </ol>
Arakawa Tokyo	3	1	3	1	3	<ol style="list-style-type: none"> <li>1. The administration leads and guides to uses.</li> <li>2. Facilities was installed for senior citizens and disabled persons</li> <li>3. Located in the central area of Tokyo, and a lot of people can use.</li> </ol>
Moizarigawa, Izarigawa Eniwa- City,Hokkaido	2	1	2	3	2	<ol style="list-style-type: none"> <li>1. Example of excellent city planning that connect with river</li> <li>2. Children positively use the river.</li> <li>3. A lot of people including the senior citizens use it by walking.</li> </ol>
Shinmachi-Gawa Tokusima- City,Tokusima	2	1	2	1	3	<ol style="list-style-type: none"> <li>1. River use activity plans and restoration plans are suggested by citizens.</li> <li>2. The facilities were installed for citizen, those were supported by prefecture and city.</li> <li>3. Construct the River walk, the shop which covered by parasol, construct the open restaurant were planned and installed by citizens.</li> <li>4. Install the Barrier-free system for senior citizen and disabled person.</li> </ol>
Care Port Yoshida Un-Nann- City,Shimane	3	2	2	2	2	<ol style="list-style-type: none"> <li>1. The care facility is installed near riverbank.</li> <li>2. Cities were planned and constructed neighboring area of care facility.</li> <li>3. The elementary school, the clinic, the day-care center, and the market are arranged around facilities.</li> </ol>
Others Jintsu- Gawa,Ishikari- Gawa						<ol style="list-style-type: none"> <li>1. The hospital uses the river actively.</li> <li>2. The municipality also positively use the river bank for green park development etc..</li> </ol>

1: Subsidiary Activity, 2: Secondary Activity 3: Main Activity