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# Technical Assistance in Japan: With a Focus on Concrete Case Examples\*

SEKI, Tomohiro

## I. Introduction

This paper presents an overview of technical assistance in Japan. Technical assistance in Japan has a long history and its beginnings can be traced to the late 1800s. However, close examination of the history of related policies reveals that it is extremely complex in terms of content. In particular, it was unavoidable for technical assistance efforts to be influenced by changes of policies related to small and medium-sized enterprises (SMEs), the target of such assistance, as well as industrial policies, local industrial policies, and science and technology policies. Since the content and system of policies and measures have become highly diversified and complex, the framework of technical assistance cannot always be simply explained.

For this reason, while this paper has the purpose of presenting an overview of technical assistance in Japan, it will also concretely introduce actual agencies that carry out assistance policies and focus is on explaining the content of their work. This paper will focus mainly on two agencies, public research institutes and local autonomous bodies (both public agencies), but a brief explanation of the activities of private agencies will also be provided at the conclusion. As is pointed out in this paper, there is a need to fully utilize the power of the will of the people due to the changes that have taken place in the role of public agencies. This paper is comprised as

follows. Section II introduces the Industrial Research Center of Shiga Prefecture as a case example of the activities of a public research institute. Section III introduces, as a case example of an effort made by a local autonomous body, the Basic Ordinance for the Promotion of Small and Medium-sized Enterprises and assistance policies that were subsequently enacted by Yao City, Osaka Prefecture, in particular. In place of a conclusion, Section IV presents the case of the New Industry Research Organization (NIRO) located in Kobe City, Hyogo Prefecture, as a case example of a public agency, followed by a summarization.

## II. Public Research Institutes: The Case of the Industrial Research Center of Shiga Prefecture

This section describes the main tasks being carried out by public research institutes in Japan. The role of public research institutes is gaining increasing attention throughout the world to the extent that such institutes in Japan are referred to as “Kosetsushi” in English. In Japan as well, public research institutes have fulfilled a vital role in enhancing the skills of SMEs.

From the mid-1800s, efforts were begun aiming to enhance the technical capability of local industries, and the need for providing assistance in technical instruction as a government policy was raised. In response, a

promotion policy for businesses in the fields of agriculture, forestry, and fishery was enacted, and as a consequence public research institutes were established. Pertaining to businesses in fields related to engineering, with the announcement of the provision related to the establishment of public research institutes in 1901, public research institutes were subsequently established in local-government units, currently referred to as prefectural governments, in increasing numbers. The earliest ones were the Industrial Research Institute of Fukushima Prefecture in 1901, and the Industrial Research Institute of Fukui Prefecture in 1902. Most of them were primarily related to textile-related businesses (weaving and dyeing), and others were closely connected to indigenous industries of the locality such as ceramics and shoyu (TANAKA [2006]). Presently, public research institutes provide assistance mainly to local industries primarily in the form of conducting tests upon request, making equipment and testing rooms easily accessible, and holding lectures and study meetings. There has been no fundamental change in their strong connection to this day with local industries in each locality.

According to the "The Current State of Public Research Institutes in Fiscal 2004" published by the Japan Industrial Technology Association, in fiscal 2006 there were eighty-seven public research institutes. Though there may differ in dates of establishment, number of employees, and amount of budget, hardly any differences exist with respect to the extensive amount of work they undertake (HONDA [2006] pp.112-113). At present, many of these public research institutes are encountering management problems due to decreases in amount or termination of subsidies including reduced budgets, and aging of facilities and equipment as well as researchers (lack of young personnel). It is therefore considered necessary for these institutes to obtain their own source of

income such as outside funding. Moreover, accompanying budget decreases there has been a trend toward restructuring and taking procedures to become independent administrative institutions. The meaning of the existence of public research institutes is being once again re-examined, and the respective institutes are striving to heighten their individuality in their given areas and conduct innovative undertakings.

Below is introduced the activities of the Industrial Research Center of Shiga Prefecture which, though still young among the public research institutes established in Japan, possesses the clear mission of assisting enterprises and a deep connection with local enterprises.

#### 1. Industries in Shiga Prefecture and the Industrial Research Center of Shiga Prefecture

##### 1) Characteristics of industries in Shiga Prefecture

Shiga Prefecture is counted among the leading prefectures in Japan with industries located in inland areas. The ratio of secondary industries (coal mining, manufacturing, and construction industries) occupies approximately 47% (2003) of total production within the prefecture, which indicates that Shiga's industries have the characteristic of *Monozukuri* ("making things," signifying superb manufacturing)<sup>1)</sup>. Japan's largest lake, Lake Biwa, is also situated in Shiga Prefecture, and the local citizens have a great interest in environmental conservation. Local enterprises are also carrying out activities to conserve the environment, and have initiated various new projects focusing on the environment. In this way, Shiga Prefecture is characterized by its industries and environmental conservation, but it recently also has the characteristic of having an increasing ratio of universities and/or departments that have transferred their

campuses there. A remarkable increase was observed especially from the Heisei Era. Due to the relocation of a great number of universities and/or establishment of departments, the number of students of the ten universities and nineteen departments has shown a dramatic increase to approximately 30,000<sup>2)</sup>.

As a result, in March 2003, Shiga Prefecture enacted the “Shiga Prefecture New Guidelines for Industrial Promotion,” and commenced its effort to devise a system for the collaboration of the industrial sector, academia, and government, and shift to a creative and self-sufficient model of industrial structure. It should be noted here that with the organizational target for promoting skills in Shiga Prefecture being determined, the role of Industrial Research Center of Shiga Prefecture has become all the more greater towards its realization.

## 2) Transformation of the Industrial Research Center of Shiga Prefecture

In response to the strong request of the Kusatsu Chamber of Commerce and the industrial sector of the prefecture, the Industrial Research Center of Shiga Prefecture (hereinafter, Industrial Research Center) was established in 1985 in the present Ritto City, Shiga Prefecture (formerly Industrial Technology Center of Shiga Prefecture). It is a relatively newly established public research institute among others in Japan<sup>3)</sup>.

In Shiga Prefecture, where the ceramic industry has thrived as one of the indigenous industries, the Ceramics Research Institute (currently Shigaraki Ceramic Research Institute) was established early in 1927. Accompanying the reorganization of the Department of Commerce, Industry, and Labor in April 1997, the Ceramics Research Institute and the Industrial Technology Center were merged and newly named the Industrial Research Center. After three periods of reorganization to date, since 2005 it has

consisted of five sections in charge of management, mechanical electronics, functional material, ceramic design, and ceramic material (of these, the Shigaraki Ceramic Research Institute is responsible for the ceramic design and ceramic material sections). Staff involved in skill-related activities now number thirty-three.

Next is an introduction of the Industrial Research Center located in Ritto City. Unless otherwise stated, no further details on the Shigaraki Ceramic Research Institute are provided in this paper.

## 2. Research and Assistance at the Industrial Research Center

### 1) Research

Let us examine the Center’s research achievements as follows.

The first pertains to project research (support and commissioned projects). Following the five-year preparatory period after the Center’s establishment, the direction for research development was determined while, at the same time, improvements were made to the implementation system. By the end of fiscal 2005, the Center carried out nine project researches (support and commissioned projects) (see table 1). Even at present, it is making the effort to secure competitive funding from within the prefecture by devising projects in collaboration with enterprises and universities located in the prefecture.

The second pertains to collaborative research together with enterprises. From 2003, collaborative research implementation has shown an upward trend with each passing year, and twenty-four were recorded in 2004. Upon receipt of requests for technical consultation, there are cases where they are proceeded with, if feasible, in the form of collaborative research based on the requirements for collaborative research implementation. This has the implication of providing more in-depth services regarding matters that had previously dealt with

Table 1: Project Research in Brief

Name of System	Research Period
Project for Assisting with Expenses for Technology Development Research (Collaborative research covering a broad area): SME Agency	1990 - 1992
Project for Assisting with Expenses for Technology Development Research (Collaborative research covering a broad area):SME Agency	1994 - 1996
Support for Technology Development Research through Subsidies to Cover Expenses for Networking Projects for Local Revitalization: SME Agency	1996 - 1998
Project for Promoting Interaction between Local Industries, Academia, and government: SME Agency	1997 - 1999
Project for Promoting Interaction between Local Industries, Academia, and government for SMEs: SME Agency	1999 - 2001
Research & Development Project for Local Consortiums: NEDO	1999 - 2000
Research & Development Project for Immediate Remedies for Newly Emerging Local Consortiums: Ministry of Economy, Trade and Industry	2002
Project for Assisting with Industrial Technology Research: NEDO	2001 - 2003
Project to Strategically Reinforce Basic Technology: Organization for Small & Medium Enterprises and Regional Innovation, Japan	2003 - 2005

Source: Industrial Research Center of Shiga Prefecture [2005] p. 52.

only in the form of technical consultation.

In cases where collaborative research is undertaken together with an enterprise, necessary expenses are basically shared with each party providing funds. In regards to collaborative research, oftentimes not only the national government but also Shiga Prefecture comes up with its own policies, and in such cases the prefecture's policies are actively utilized. The Industrial Research Center currently does not carry out commissioned research and makes its response in the form of collaborative research in all cases.

## 2) Assistance to Enterprises

Next, achievements in terms of assistance to enterprises will be examined.

The first pertains to technical consultation. As indicated in the table below, technical consultation is increasing year by year. Though this is due to the increasing needs of enterprises, it is also greatly the result of having delved deeply into the needs of the clients. For instance, the Industrial Research Center is intentionally open about its activities and diligently pursues PR activities<sup>4)</sup>.

The second pertains to tests upon request. In recent years, the number of tests has undergone transition reaching the level of approximately 300 requests (see table 2).

The third involves the use of equipment. Since the establishment of Industrial Research Center, the number of times equipment is used is showing an upward trend year by year. The Industrial Research Center is well aware that it has the highest number of usages to test equipment among public research institutes in Japan<sup>5)</sup>. The reason for the upward trend in number of times equipment is used will be covered in a later section.

The fourth pertains to study groups. The Industrial Research Center has been actively conducting study groups such as the Shiga Fine Ceramic Forum, which was established taking the opportunity of the relocation of universities and transfer of departments, beginning in the Heisei Era. To date, eleven study groups have been inaugurated and nine study groups are currently active<sup>6)</sup>.

The fifth pertains to the "incubation" function. In fiscal 1999, the Industrial Research Center established the "Building to Assist in

**Table 2: Transition in the Center's Achievements in Terms of Assisting Businesses**

Fiscal Year	1999	2000	2001	2002	2003	2004
Technical Consultation	3,431	3,729	3,170	3,138	5,867	6,048
Tests upon Request	403	361	282	647	252	338
Use of Equipment	4,239	4,834	5,324	5,791	5,987	6,157
Collaborative Research	n.a.	15	12	13	18	24

Source: Same as table 1.

Developing Enterprises, Technology Development Office (Rental Laboratory)” as a facility to foster the growth of venture businesses, etc. As of the end of fiscal 2004, twelve companies have graduated and six companies are still located in the building. Targeted to enterprises within the prefecture that aim to enter a new field and/or develop new technology or entrepreneurs who aim to begin new businesses, use of building space is permitted for as long as three years. Businesses that are located there are considered to be able to enjoy the merits of gaining the trust of society from the fact that they are located in the incubation area of a public agency and, moreover, they receive benefits such as the use of the facility's equipment any time they wish (Industrial Research Center of Shiga Prefecture [2005] p. 47)<sup>7)</sup>.

Characteristics of companies using the facility in terms of number of employees are 28.4% have thirty to ninety-nine employees, 23.3% have more than 300 employees, and 22.2% have 100 to 299 employees (excluding the Shigaraki Ceramic Research Institute). These three categories of number of employees occupy approximately 70% of the company total. Most of the companies using the facility are located in the Otsu, Konan, and Koga areas. Shiga Prefecture has a total of about 3,000 companies, and approximately 500 to 600 companies of this total use the Industrial Research Center annually (545 companies in fiscal 2004).

### 3. Its Mission in Providing Assistance to Enterprises

Since its establishment, the Industrial Research Center has gained the immense trust of leading local medium-sized enterprises and other SMEs. For example, an employee of a leading medium-sized enterprise located in Otsu City, Shiga Prefecture, stated, “It is thanks to the public research institute (Industrial Research Institute) that our company was able to grow to this extent.”<sup>8)</sup> The reason why local enterprises have a deep trust of the Industrial Research Center is that the agency has the basic mission of providing assistance to local enterprises. Let us clarify exactly what this mission involves below.

#### 1) Open access to equipment

First is accessibility to the facility's equipment. Open access to equipment owned by public research institutes throughout Japan is one item included in its assistance to enterprises in each locality. However, it is often the case that open access particularly of high performance equipment is limited due to various personnel limitations arising from the inadequate number of researchers. Though access to equipment is limited at public research institutes of other prefectures, the Industrial Research Center of Shiga Prefecture is taking the lead in actively making its equipment fully accessible to all, and anyone can use it freely at any time. At the Industrial Research Center, staff members provide advice regarding which equipment to use for a particular method of analysis when

equipment is in use, but the equipment itself is mainly operated by a technician of the visiting company.

One might have the impression that the Industrial Research Center is simply making its equipment accessible. However, it is important to note that staff of the Center gives technical consultation at the time the equipment is being used by the technician from the visiting company. The technician from the visiting company is able to obtain ideas pertaining to the development of products and technology for example, as information is exchanged with the staff of the Industrial Research Center. Above all, the most attractive point is that it is possible to have a technical discussion with staff at the Center who is equipped with specialized knowledge. If this point was to be considered only in terms of accessibility to equipment, companies might not view this point as being attractive<sup>9)</sup>.

## 2) Assistance in acquiring ISO certification

Second is assistance in acquiring ISO certification. In March 1998, the Industrial Research Center was the first public research institute in Japan to register to receive ISO14001 assessment. (Integrated later in 2001 with the Environmental Management System of Shiga Prefecture)<sup>10)</sup>. The background for such action is to provide favorable negotiating conditions to SMEs that support the industrial sector of Shiga Prefecture, which ranks at the top in the nation in terms of ratio of secondary industries, and to improve the quality of Lake Biwa, the largest lake in Japan<sup>11)</sup>. Furthermore, as the Industrial Research Center proceeded towards acquisition of ISO certification, it conducted collaborative research with the Chemicals Inspection & Testing Institute, Japan in 1996 and organized a study group among SMEs wishing to acquire ISO14001 certification.

Of particular importance is the fact that the Industrial Research Center served as the model

for ISO14001 certification, and that it is carrying out activities to disseminate information on ISO14001 to companies in Shiga Prefecture, especially SMEs. Concretely speaking, it conducts seminars and consultation meetings, and dispatches advisors. Moreover, the Industrial Research Center had the results of such activities published by the Union of Japanese Scientists and Engineers in 2002 as *ISO14001: Ready-to-Use Case Examples of Environmental ISO for Small- and Medium-sized Enterprises*, which was compiled together with the Air Conditioning Co. of Matsushita Electric. Needless to say, the Industrial Research Center has contributed much to Shiga Prefecture, as reflected by the fact that the prefecture has the highest ratio of ISO14001-certified companies in the nation<sup>12)</sup>.

## 3) PR activities

Third is PR activities aimed at increasing new users. In order for a public research institute to be accepted by enterprises in any given locality and to be an agency that can be of service to these companies, it must make various efforts to increase clients such as disseminating information on the activities of public research institutes. The Industrial Research Center is working together with an organization that supports SMEs in Shiga Prefecture, and is also carrying out PR activities in order to increase use of the Center. As one of its efforts, it has asked the Chamber of Commerce to advertise the Industrial Research Center's activities to its members.

Moreover, in order for the Industrial Research Center to become an agency that can be depended on by businesses in the locality, it is strengthening its networking with organizations supporting businesses such as Shiga Prefecture Industrial Support Center<sup>13)</sup>. In order to not only make easy access to the Center by local enterprises possible, but also improve the quality of support given to these enterprises

from the viewpoint of promoting industries, the Center is particularly making a special effort in the following two activities. One is enhancing the abilities of the staff of Industrial Research Center, and sharing of information possessed by the Center with organizations supporting businesses in Shiga Prefecture. In order to enhance the abilities of staff, a training program has been prepared covering a span of several years. In addition, the Center is aiming for the realization of these goals by dispatching staff to universities, the National Institute of Advanced Industrial Science and Technology, and SME University<sup>14)</sup>. The other is serving a core role in the networking that is formed among various parties. This means fully taking the role of coordinator for networking between agencies and between business groups. For example, when implementing the collaborative research project among the industrial sector, academia, and government in the locality such as a local consortium, and networking projects between the industrial sector, academia, and government of the prefecture, the Center serves as a coordinator in establishing projects and matching industries and universities.

#### 4. Requests from Local Areas

One of the underlying reasons why the Industrial Research Center had the clear mission of assisting enterprises, as stated above, is that its establishment is founded on a request received from leading medium-sized enterprises and other SMEs of the local area. As mentioned at the beginning of this paper, Shiga Prefecture had in the past established the Shigaraki Ceramic Research Institute; however, the Industrial Technology Center of Shiga Prefecture, as the Industrial Research Center was previously known, was established comparatively recently in 1985 in response to the request of the Kusatsu Chamber of Commerce and other entities. The fact that the Industrial Technology Center was established

comparatively recently as compared to others throughout the nation is closely connected to the history of industrialization in Shiga Prefecture. As Shiga Prefecture shifted from an agriculture-based prefecture to one of the leading industry-based prefectures in Japan, it was likely that a great number of leading local medium-sized enterprises and other SMEs voiced their wish of having a public research institute established there<sup>15)</sup>. The Kusatsu Chamber of Commerce submitted its official request in September 1980, and establishment of the public research institute was realized five years later.

Therefore, the Industrial Research Center has the background of having been established in response to the request of local enterprises, and it has fulfilled its role to this day with the clear mission of assisting enterprises. Furthermore, from here on it will strengthen networking with local agencies that lend their assistance to enterprises and fulfill its *raison d'être* as a core organization in the network.

### III. Local Governments: The Case of Yao City, Osaka Prefecture

This section presents an overview of case examples of efforts being taken by local governments in providing technical assistance. The case in focus here is the efforts of Yao City, Osaka Prefecture. Yao City enacted a basic ordinance pertaining to the promotion of SMEs, the Basic Ordinance for the Promotion of SMEs and the Local Economy of Yao City, and is carrying out technical assistance based on that ordinance. Below, first of all, we will describe how the role of local governments changed accompanying the revision of the *Small and Medium Enterprise Basic Law*. Next, the current state of the manufacturing industry in Yao City, Osaka Prefecture, will be presented while covering the process of the enactment of the

Basic Ordinance. Improvements made in technology assistance as an SME policy following the enactment of the Basic Ordinance will follow. A summarization will conclude the paper.

### 1. Shifting Role of Local Governments

Article 4 of the *Small and Medium Enterprise Basic Law (Former Basic Law)* that was enacted in 1963 gives reference to local governments. It states, "Local public entities must strive to devise policies that are in accordance with the national policy." In other words, it was a general procedure for local governments to develop SME assistance policies in accordance with the national policies. However, the *Small and Medium Enterprise Basic Law* that was revised in 1999 (*New Basic Law*) had the wording changed to, "Local public entities will conform to the basic principle (of the *New Basic Law*) and have the responsibility to devise and implement policies for SMEs that are suited to the natural and social condition of each locality by sharing roles as appropriate with the national government. This meant that local governments were given greater roles in implementing SME policies, resulting in the development of SME policies that are unique to each prefecture and municipality throughout Japan. A typical example is the Basic Ordinance pertaining to the promotion of SMEs. A number of prefectures as well as cities and towns throughout Japan are actively engaged in devising Basic Ordinances<sup>16)</sup>. Among them, Yao City, Osaka Prefecture (hereinafter, Yao City) is one of the leading local governments in this effort and, moreover, it was the first in Osaka Prefecture to enact the Basic Ordinance for Industrial Revitalization and the Promotion of SMEs. Furthermore, following enactment of the ordinance, it has been carrying out various assistance policies with the aim of accumulating industries and revitalizing SMEs. These days, there is an accelerating trend towards the enactment of Basic Ordinances for

the Promotion of SMEs observed throughout Japan, and there may be a need to carefully examine points such as what will change and how by the enactment, and what kind of merits will it give SMEs. In this connection, the case of Yao City will be introduced below, particularly how policies for the promotion of SMEs are unfolding following enactment of the Basic Ordinance for the Promotion of SMEs, and each of those points will be reviewed.

### 2. Enactment of the Basic Ordinance for the Promotion of SMEs and the Local Economy of Yao City<sup>17)</sup>.

Similar to Higashi-Osaka and the Ikuno and Hirano districts of Osaka City which are well known as areas with an accumulation of *Monozukuri* in Osaka Prefecture, Yao City also is a city of industrial accumulation, particularly small- and medium-sized manufacturers. According to data from the 2006 Statistical Survey of Establishments and Enterprises, a comparison of Yao City and Higashi-Osaka City in terms of number of manufacturing establishments shows Higashi-Osaka having 7,388 while Yao City only has half with 3,625. However, when examining the ratio of number of manufacturing establishments to establishments pertaining to all industries, Higashi-Osaka City has 26.3% while Yao City has 28.3%, with Yao City having a higher ratio. Furthermore, examination of the ratio of employees of manufacturing industries compared to the number of employees of all industries shows Higashi-Osaka being 29.2% while Yao City 36.7%. Comparison only with Higashi-Osaka may not be considered a precise measurement, yet it is presumable even with only such a simple comparison that the manufacturing industry takes a relatively high position in Yao City. Moreover, examination of the scale of manufacturing establishments in Yao City from the viewpoint of employee number shows that 87.2% have less than twenty



employees, which indicates that a large percentage are small- and medium-sized manufacturers. It can be thus understood how important the existence, maintenance, and growth of small- and medium-sized manufacturers as well as efforts towards maintaining and revitalizing the manufacturing industry are for Yao City's local economy.

The accumulation of manufacturing establishments in Yao City is found for the most part in areas surrounding the city perimeter rather than in the center of the city. Many factories, particularly, are accumulated in the area of Oota-Shinmachi to the south of Yao Airport in the southern part of Yao City. The number of manufacturing establishments in Yao City reached a peak of 4,300 in 1995. However, according to data from the 2006 Statistical Survey of Establishments and Enterprises, as mentioned above, Yao City has an accumulation of 3,625 establishments, thus showing a decreasing trend (UEDA ed.[2004]). It is for this reason expectations were high for some kind of promotion policy for the manufacturing industry in order to bring this decreasing trend to a halt.

It is however said that Yao City did not always carry out concrete measures as part of its policy to promote the manufacturing industry. Though they were able to renew their awareness of the existence in their locality of resources in the form of an industrial accumulation, at that time the local government did not take any measures to deal with it. However, the turning point for undertaking policies to promote manufacturing industries, especially small- and medium-sized manufacturers, came in 1997 when it participated in the 1<sup>st</sup> SME City Summit organized by Higashi-Osaka.

The first undertaking Yao City carried out towards devising a policy to promote industries in 1998 was to visit the Sumida district in Tokyo, which is well known for its accumulation of industries. What they learned through the visit

to the Sumida district was not only that Yao City and the Sumida district closely resembled one another by their structure of industrial accumulation, but also that Sumida district had held a Meeting for the Promotion of Industries in order to devise policies for industrial promotion. Using that meeting as a model, Yao City held a Meeting for the Promotion of Industries that same year in 1998 led by the administrative sector, which had the participation of local residents, businessmen, and manufacturers.

This Meeting for the Promotion of Industries comprises university professors, local residents chosen through public subscription, associations related to commercial businesses and manufacturing industries within the city, and the Kinki Bureau of Economy, Trade and Industry. Based on two-way communication between the local residents and the businessmen and manufacturers, suggestions on Yao City's policies for industrial promotion were raised at this Meeting for the Promotion of Industries. Founded on these suggestions, an informational magazine was published, a database on company information was prepared<sup>18)</sup>, and the system of advisors for industrial promotion was established. The Meeting for the Promotion of Industries is a meeting that has the participation also of members who are not connected to government, and it has an important function of making suggestions for promotion policies.

In November 1998, suggestions pertaining to the Ordinance for the Promotion of Industries of Yao City were presented at the Meeting for the Promotion of Industries. Then in March 1999, a resolution was passed by Yao City requesting the national government and Osaka Prefecture for a Basic Ordinance pertaining to industrial revitalization and SMEs. In April 1999, a working group on an industrial promotion ordinance was established at the Meeting for the Promotion of Industries. In January 2000, having received suggestions pertaining to policy framework for

the second time, a basic ordinance investigative committee was established at the Meeting for the Promotion of Industries. At that time, examination of Yao City's comprehensive plan was begun at the same time as the examination of the ordinance. Since the concrete implementing policy was examined based on the long-term framework of the comprehensive plan that reflected the city's future direction in industrial promotion, there was consistency in the comprehensive plan and the ordinance's implementing policy. Following the resolution of the City Council and in-depth discussion with participating local residents, the Basic Ordinance for the Promotion of SMEs and the Local Economy of Yao City was enacted and put into effect.

The Basic Ordinance for the Promotion of SMEs and the Local Economy of Yao City<sup>19)</sup> defines the principles for promoting SMEs in Yao City, and can be considered as being an ideological type of ordinance. It is an ordinance with unique characteristics, which can be summarized in the following three points. First, the purpose of the Ordinance is presented as being, "Promotion of the maintenance and development of the city's accumulation of industries." It is clearly stated that maintenance and development of the accumulation of industries that has been formed in Yao City contributes to the development of its local economy, and reinforcement and improvement of the industrial accumulation foundation and reinforcement of the network are referred to as basic policies. Second, the basic principle of the ordinance is to "respect the original measures and voluntary efforts of SME managers". It gives emphasis to the independent action of Yao City's SMEs. Third, it clearly states the respective roles of those who make up the local community. Concretely speaking, it expressly states not only the importance of gaining the efforts of SME managers, but also covers the responsibilities of large enterprises and the city

as well as the need for the cooperation of the local residents. This implies that although SME owners must make their own effort for development, large enterprises and the local government as well as local residents must cooperate for the continuance and development of SMEs, and must fulfill their responsibilities for the sake of the growth of SMEs.

### 3. Development of SME Promotion Policies Following Enactment of the Ordinance

#### 1) Establishment of the Yao City Small and Medium-sized Enterprise Support Center

Following the enactment of the Basic Ordinance for the Promotion of SMEs and the Local Economy of Yao City, for the purpose of pursuing the maintenance and development of the area with an accumulation of industries according to the spirit of the Ordinance, Yao City established the Yao City Small and Medium-sized Enterprise Support Center (hereinafter, Support Center) in June 2002 as an agency to assist SMEs. The Support Center has the mission of maintaining and developing the accumulation of industries in accordance with the spirit of the Basic Ordinance for the Promotion of SMEs and the Local Economy of Yao City. From the principle of placing importance on on-site services, the Support Center makes visits to companies and conducts seminars, and acts as an intermediary for forming networks among companies, and between companies and assistance agencies and universities for consultations and the resolution of pertinent issues regarding the development of new products and requests for the processing of products.

As of April 2008, the Support Center has an advisor who has successively served in the capacity of providing technical advice to SMEs and five other coordinators who cover diversified fields including metal materials, production technology, factory management, procurement of materials, quality of general administration

and business management, securing and fostering human resources, assistance in networking between public agencies and companies, and evaluation of business management. The coordinators are invited from throughout Osaka Prefecture, in addition to Yao City, to secure human resources who are rich in experiences in each specialized field. As a result, SMEs of Yao City can make use of coordinators of a variety of specialized fields by going to the Support Center. The Support Center is primarily an agency that assists SMEs in Yao City, and a great number of SMEs of Yao City take advantage of it and make good use of the advisors. The Support Center is also used by SMEs other than those of Yao City when they have networked with the Center or an SME of Yao City, and its doors are relatively open.

## 2) Establishment of the Burrs Technology Research Association

It is generally often the case that small- and medium-sized manufacturers possess a high level of technology and skills. However, many small- and medium-sized manufacturers are not knowledgeable of the content of university research. For instance, they can process steel, but they may not have ever seen or examined steel components under a microscope. Small- and medium-sized manufacturers often encounter various issues that must be resolved in the process of *Monozukuri*, and there are instances where they require specialized knowledge not available at their companies. Yet they do not have many opportunities to acquire such knowledge. With the intention of making improvements to this state of affairs, the Support Center concluded an industry-academia agreement with universities in Osaka Prefecture. As a result, it has initiated a coordinative effort between industries, academia and administration that links local SMEs with universities and research institutes, and it aims to further revitalize SMEs. One representative example of

such efforts is the Burrs Technology Research Association.

In December 2003, Yao City established the Burrs Technology Research Association through the networking of universities and SMEs of Yao City. This is the first study group established together with Kansai University, which is the first university with which Yao City concluded an industry-academia agreement. Small- and medium-sized manufacturers were always faced with the problem of how to effectively remove the burrs that are generated in the welding process. It so happened that a professor in mechanical engineering at Kansai University, who had conducted research on cutting and abrasive finishing, had an interest in the removal of burrs generated during processing. Research thus began on burr removal under this professor.

A burr is an inessential piece that is generated in the machining process of metal materials such as press molding and cutting. It is expected that burrs will be removed prior to delivery of parts and products, and purchasers view those that do not have burrs removed as being of poor quality. However, since the removal of burrs requires cost and time, it remained a big problem for *Monozukuri* by small- and medium-sized manufacturers. In consideration of this, the Burrs Technology Research Association is comprehensively examining this issue by seeking measures to control the generation of burrs from the stage of product design as well as countermeasures for controlling the generation of burrs at the time of processing as well as techniques for burr removal and edge finishing (fine finishing process at the terminal), in addition to economical processing methods. It also aims at creating high-density products, gaining a high level of trust, and high added value of products.

#### 4. How Should the Case of Yao City be Evaluated

As previously explained, Yao City established the Support Center and Burrs Technology Research Association in order to sustain and develop the area with an accumulation of industries in conformance with the spirit of the Basic Ordinance for the Promotion of SMEs and the Local Economy of Yao City following its enactment and implementation. With the establishment of the Support Center and the Burrs Technology Research Association, the SMEs in Yao City (surrounding areas outside the city) were able to consult with advisors and coordinators as well as other agencies such as universities about various issues including those related to management and technology such as research and improvement of the problem of burr removal. SMEs are now able to resolve issues they encounter related to management and technology through networking with government authorities and advisors.

This can be considered a policy for promoting SMEs that makes full use of the merits of industrial accumulation in Yao City through the SME network linking those industries, particularly the small- and medium-sized manufacturers, with advisors and various agencies. In other words, the SME managers in Yao City can resolve their own problems pertaining to managerial and technical aspects and can take the next step for further development by actively utilizing, through mutual cooperation, the local resources that are referred to as industrial accumulation in a broad sense, including assistance agencies such as Support Centers established and improved upon after enforcement of the Ordinance, universities, and research institutes in the area. In Yao City, there are cases among the small- and medium-sized manufacturers that are reflecting the results of this type of SME networking. Though yet small in number, we are beginning to steadily see actual results.

#### IV. In Place of a Conclusion

This paper presented an overview of the Industrial Research Center of Shiga Prefecture as an example of a public research institute (*Kosetsushi*), and the undertakings of Yao City, Osaka Prefecture, as that of a local government, both which can be said to play a major role in enhancing the technical ability of Japanese SMEs. They are similar in terms of their being undertakings by local government agencies; however, they differ in that the former is a traditional agency which exists in each prefecture, and the latter is a new attempt in the form of a local government agency.

There are other case examples other than those of undertakings by local government agencies that are carrying out technology assistance for local SMEs using the power of the will of the people. One example is the New Industrial Research Development Organization (NIRO) located in Port Island of Kobe City, Hyogo Prefecture. With the aim of reconstructing the areas of Hyogo Prefecture damaged by the Hanshin-Awaji Earthquake, it was established in March 1997 as a foundation based on the common principle of creating new industries, and received contributions from the private sector such as Kawasaki Heavy Industries and Kobe Steel Group that support Hyogo Prefecture's economy. This is NIRO, which received the immense support of Mr. Ohba who successively served as the president of Kawasaki Heavy Industries and was also the President of the Kobe Chamber of Commerce at the time of its establishment. NIRO's operational system is, in actuality, primarily carried out by the private sector, but on the occasion of its establishment and operations it was indebted to public agencies of Hyogo Prefecture and Kobe City. Currently, NIRO's staffs have mainly been dispatched there by private companies, but Hyogo Prefecture and Kobe City also send one staff member each to NIRO. Without the use of

experiment equipment, it conducts research on topics such as health and welfare, information and information technology, robots, new materials, SR (synchrotron radiation) for industrial use, plasma application, environment (recycling), energy, transportation, and distribution. Within NIRO is located the Technology Transfer Center (TTC). The Hyogo Intellectual Property Center, which is under TTC in the organizational structure, has received the certification of the Patent Office and conducts projects which transfer “seeds” of technology and intellectual property in the possession of large enterprises, universities, and research institutes to local SMEs. Also, with the aim of returning patents of universities and other agencies to society, NIRO was recognized as a Technology Licensing Organization (TLO, popularly called TLO Hyogo), the 11th organization to receive that recognition in Japan. TTC’s main work involves serving as an intermediary for patents and does not possess any on its own; whereas, TLO Hyogo’s main work involves directly purchasing patent rights from universities and others, taking possession of them, and then transferring them to private companies. Furthermore, the Innovation Center was also established through the collaboration of industries, academia, and government, and it is conducting coordination work to commercialize researched ideas. The aim of the Center is to improve cross-sectional collaboration among the NIRO institute, TTC, and TLO Hyogo in order to provide “consistent support” for commercialization of technology possessed by research institutes including universities, such as those in the fields of nanotechnology, bio-science, information technology, and environment. By the linking of related agencies while forming a collaborative relationship with local universities such as the University of Hyogo and Kobe University and the Hyogo Prefectural Institute of Technology, the local public research institute, the Innovation

Center provides consistent support to local SMEs in new product development and technology advancement from the planning to the research and development stages while putting commercialization into perspective.

Technical assistance to local SMEs through the power of public will is taking place in this manner. There is a need for public and private agencies to clearly define their roles and responsibilities towards clear aims of enhancing the technological skills of local SMEs and promoting the local area while working in collaboration with one another and producing results.

### Notes

- \* ) This paper is based on a teaching material that I used in the Seminar on Small and Medium Enterprise Development Policies, on 9 June 2008. This paper was translated into English by JICA (Japan International Cooperation Agency).
- 1) Commerce and Industry Policies Division Shiga Prefecture [2006] p. 53.
- 2) From a survey conducted by the Industrial Research Center of Shiga Prefecture. The number of universities was limited to Shiga University (Faculty of Economics, Faculty of Education) in 1949 and Shiga University of Medical Science (School of Medicine) in 1974, for a total of two universities and three departments. However, relocation of universities and/or departments included Ryukoku University (Faculty of Science and Technology, Faculty of Sociology) in 1989, Seian University of Art and Design (Department of Art and Design) in 1993, Ritsumeikan University (College of Science and Engineering) in 1994, The University of Shiga Prefecture (School of Engineering, School of Environmental Science, School of Human Cultures) in 1995, Ryukoku University (Faculty of Intercultural Communication) in 1996, Ritsumeikan University (College of Economics, College of Business Administration) in 1998, Heian Jogakuin (St.

- Agnes') University (Dept. of Modern Culture) in 2000, Nagahama Institute of Bio-Science and Technology (Dept. of Bioscience), Biwako Seikei Sport College (Dept. of Sport), and Seisen University (Dept. of Humanities) in 2003, University of Shiga Prefecture (School of Human Nursing) and Ritsumeikan University (College of Information Science and Engineering) in 2004.
- 3) In Shiga Prefecture, there is also the Northeastern Industrial Research Center of Shiga Prefecture which was established in 1997. This Center is a public research institute which was inaugurated under a new name with the merging of the Textile Industry Research Institute of Shiga Prefecture (Nagahama City) and the Shiga Prefectural Machine and Metal Industry Research Institute (Hikone City).
  - 4) Various means of PR are used such as Homepage, mail magazines, and visits to companies.
  - 5) This is based on the "Current State of Public Research Institutes in Fiscal 2003," by the Japan Industrial Technology Association. The report supports the fact that, in actuality, the Industrial Research Center ranks first in the nation when calculating the number of times equipment is used per establishment in the prefecture and per technician. However, since this national comparison is calculated in order to compare the public research institutes in each prefecture and city, this ranking belongs to both the Industrial Research Center of Shiga Prefecture and the Northeastern Industrial Research Center of Shiga Prefecture.
  - 6) The eleven study groups are the "Shiga Fine Ceramic Forum" (December 1989 to present), "Shiga FA (Factory Automation) Consortium" (September 1993 to March 1998), "Shiga Quality Engineering Study Group" (July 1994 to present), "Design Forum SHIGA" (October 1996 to present), "Shiga Welfare Technohouse (House of nursing care equipment) Study Group" (October 1996 to March 2002), "ISO Study Group" (April 1997 to present), "Shiga Bio-Science Technical Forum (April 2001 to present), "Monozukuri IT Study Group" (June 2001 to present), and the "Sake Brewing Technology Study Group of Shiga Prefecture" (June 2001 to present). They are usually held approximately four times a year.
  - 7) According to a leading medium-sized enterprise, it is the perfect place to collect information, and particularly pertaining to patents, one of the major merits is that the Shiga Office of the Japan Institute of Invention and Innovation is located in the Center's Annex Bldg. (Based on the author's interview of a medium-sized enterprise of Otsu City, Shiga Prefecture, which was conducted from 1:30 pm to 3:00 pm on February 1, 2006.
  - 8) Based on an interview by the author at a leading medium-sized enterprise of Otsu City, Shiga Prefecture conducted from 1:30 pm to 3:00 pm on February 1, 2006. This company operates a business that conducts research, develops, and manufactures functional composite fiber, and it makes full use of the facility's equipment for test research such as the analysis and evaluation apparatus. Furthermore, for the purpose of learning about methods of basic research, it has sent a researcher to the Industrial Research Center for a three-year period.
  - 9) Same as note 8.
  - 10) <http://www.pref.shiga.jp/d/new-energy/ne5/ne5012.htm> (viewed in July 2006). In Shiga Prefecture, the Prefectural Government Office and all other agencies in the prefecture received ISO14001 certification.
  - 11) Shinichi Otsuki, "The Increasingly Important Role of the Industrial Research Center," Industrial Research Center of Shiga Prefecture [2005] p. 107.
  - 12) Same as note 11.
  - 13) The current director of the Industrial Research Center, Hironobu Okuyama, is also a director of the Industrial Support Center of Shiga Prefecture. The Center has also dispatched three staff to the Industrial Support Center of Shiga Prefecture. As a result, networking has been considerably strengthened in terms of human relations. In addition, the Industrial Research Center interacts

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with the Department of Commerce, Industry, Tourism and Labor of Shiga Prefecture in terms of personnel, and currently four staff of the Center work at Department of Commerce, Industry, Tourism and Labor as administrative staff. Therefore, dispatched staff totals seven persons (Based on an interview conducted on February 13, 2006).

- 14) Of course, research development and business support activities on a daily basis can be beneficial towards enhancing staff capabilities.
- 15) Mr. Saburo Takata, President of the Kusatsu Chamber of Commerce at that time, stated, "In order to promote industrial technology in Shiga Prefecture in 1980 when I was the in charge of the Kusatsu Chamber of Commerce, I asked the local government authorities to by all means establish a public agency that would undertake testing, research, and advisory services. The authorities concerned thereafter directed much efforts towards this end, and my request became a reality in 1985..." (Saburo Takata, "On Publication of the Journal Commemorating the 20th Anniversary," Industrial Research Center of Shiga Prefecture [2005] p. 2.
- 16) Refer to URITA [2007] for details.
- 17) Information pertaining to the process of enacting the ordinance which follows is based on a speech given by a staff member of the Yao City Industrial Promotion Section, Citizens and Industrial Department, at the 2nd Meeting on the Charter for SMEs organized by the SME Charter Committee of the Association of Small Business Entrepreneurs of Osaka Prefecture on August 29 (Wed), 2007, in addition to interviews with two staff members of the Yao City Industrial Promotion Section, Citizens and Industrial Department, from 2:00 pm to 4:15 pm on September 12 (Wed), 2007. Reference was also given to UEDA [2007].
- 18) Yao City's approximately 1,100 enterprises are registered in the database of company information.
- 19) For details on the Ordinance, see Yao City's

Homepage as follows:

([http://www.city.yao.osaka.jp/cgi-bin/odb-get.exe?WIT\\_template=AC020000&WIT\\_oid=icityv2::Contents::3341](http://www.city.yao.osaka.jp/cgi-bin/odb-get.exe?WIT_template=AC020000&WIT_oid=icityv2::Contents::3341)) (Viewed in March 2008).

## References

- Commerce and Industry Policies Division Shiga Prefecture [2006] *Industrial Research Development Policies in Shiga Prefecture*. (in Japanese)
- HONDA, Tetsuo [2006] "The Current Situations of *Kosetsushi*" UEDA, Hirofumi and HONDA Tetsuo edit. *Kosetsushi and SMEs*, Sofusha Publishing Co., Ltd., pp.111-142. (in Japanese)
- Industrial Research Center of Shiga Prefecture [2005] *The History of 20 Years after Industrial Research Center of Shiga Prefecture Established*. (in Japanese)
- TANAKA, Mikihiro [2006] "The History of *Kosetsushi*" UEDA, Hirofumi and HONDA Tetsuo edit. *Kosetsushi and SMEs*, Sofusha Publishing Co., Ltd., pp.33-56. (in Japanese)
- UEDA, Hirofumi edit. [2004] *Industrial Agglomeration in the Age of Reduction Tendency*, Sofusha Publishing Co., Ltd. (in Japanese)
- UEDA, Hirofumi [2007] *Local Industry Policies and Small and Medium Enterprise Promotion Basic Regulations by Local Government*, Jichitai Publishing Co., Ltd. (in Japanese)
- URITA, Yasushi [2007] "Basic Measure to Promote SMEs Enacted in 2007" National Conference of Association of Small Business Entrepreneurs Business Environment Research Center, *Business Environment Research Annual Report*, No. 12, pp.95-113. (in Japanese)

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