

# CAPACITY DEVELOPMENT AND INSTITUTIONAL CHANGE IN INTERNATIONAL DEVELOPMENT COOPERATION

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**Summary:** The capacity development approach was proposed by UNDP and European donors as a new approach based upon the African aid failure in the 1980s and the end of the Cold War instead of conventional aid approach. In this paper, capacity development approach comes into collision with institutional studies in social sciences on purpose to accelerate knowledge evolution. This paper presents a new perspective on the development process and on aid policy. It is named an approach of “capacity development and institutional change”. By using this new approach of “capacity development and institutional change”, capacity development is able to cover not only technical cooperation but also lending matters. Moreover, the program approach is realized into development strategy and aid policy. The program approach indicates criteria of selectivity and priority of allocation of development resources including aid resources. Program approach concentrates more on the policy making process or on the top down (upstream) approach. Furthermore, this paper shows the importance of field experiences, meaning the advantages of Japanese aid compared to European aid, especially with regards to making the program approach more effective. The micro (field experience) and macro (top down) loop is a critical factor for aid effectiveness.

## 1. Introduction

During the 1990s, it became apparent that the replacement approach, i.e., the one-sided transfer of knowledge and technology from advanced countries to developing countries was insufficient to deal with the issues of international development assistance. Moreover, a recent study conducted using the capacity development approach (Fukuda-Parr *et al.* 2002) revealed that the self-efforts of the developing countries are necessary to improve their social capacity and enable them to achieve sustainable development performance. Although there has been some progress in the stakeholder and the institutional analyses (see Morgan and Taschereau, 1996; Lopes and Theisohn, 2003), there still exists a need to further intensify the research and development on capacity assessment and institutional change.

The historical background of capacity development is the failure of African development assistance in the 1980s and the end of the Cold War in the late 1980s and early 1990s. Moreover, the academic background of capacity development is the emerging studies of new or modern institutional approach in social sciences in the 1980s and 1990s. Capacity development discussions and institutional studies are different at a glance, but these two have the same orientation when they focus on the social context and institutions which are formulated historically in developing countries.

This paper aims to accelerate the knowledge exchange between capacity development and institutional change, to make a new approach of “capacity development and institutional change” for a new development paradigm.

This paper is divided into seven sections. Section 2 introduces the starting point and historical background of capacity development discussions. Section 3 assesses the concept of capacity of UNDP and describes how to conceptualize the social capacity development process. Section 4 discusses what institutions mean. Section 5 provides a detailed description of the following analytical methods of social capacity assessment: (1) actor-factor Analysis; (2) indicator

development; (3) institutional analysis; (4) path analysis; and (5) development stage analysis. Section 6 discusses the program design for social capacity development and institutional change based on the analytical approaches described in section 5. Finally, section 7 presents the summaries and conclusions of this analysis.

In this paper, the author comes to the conclusion that we should evolve a new approach of “capacity development and institutional change” from the “capacity development approach” and this new approach logically needs to be based on a program approach which stands on a wider scope of operations, bigger budget, more human resources, and longer time period. Moreover, a clear selection criteria of aid allocation promoting aid effectiveness is needed for a new approach of “capacity development and institutional change” as stated in the Paris Declaration in 2005.

## 2. The Starting Point of Capacity Development

The discussion of capacity development has, roughly speaking, been focused on two historical events; one is the failure of African development and the other is the end of the Cold War.

Most Western donors have been mainly implementing their aid activities in African countries. However, many African countries recorded minus economic growth ratios in terms of GDP per capita in the 1980s and the minus growth also meant the failure of African aid by European donors. At the same time, the development society paid more attention to evaluate aid activities from a more comprehensive point of view. Due to these situations, conventional aid approach was criticized for low effectiveness and low efficiency. Donors had to change their conventional approach. This has been discussed extensively in Robert Cassen’s well known book; “Does Aid Work?” (1986).

Moreover, the end of the Cold War meant that the political motivation to assist developing countries in Western countries decreased, and as a result an era of “aid fatigue” came about in European countries.

African aid failure and the end of the Cold War caused many critiques on European donors, especially on technical cooperation.

Fukuda-Parr Sakiko wrote about the following in her edited book in 2002.

“Technical cooperation is still frequently criticized for:

\*Undermining local capacity: Rather than helping to build sustainable institutions and other capabilities, technical cooperation tends to displace or inhibit local alternatives.

\*Distorting priorities: The funding for technical cooperation generally bypasses budgetary processes, escaping the priority-setting disciplines of formal reviews.

\*Choosing high-profile activities: Donors frequently cherry-pick the more visible activities that appeal to their home constituencies, leaving recipient governments to finance the other routine but necessary functions as best they can.

\*Fragmenting management: Each donor sends its own package of funds and other resources for individual programmes, and demands that recipients follow distinctive procedures, formats and standards for reporting, all of which absorb scarce time and resources.

\*Using expensive methods: Donors often require that projects purchase goods and hire experts from the donor country, although it would be far cheaper to source them elsewhere.

\*Ignoring local wishes: the donors pay too little attention either to the communities who are supposed to benefit from development activities, to the local authorities, or to NGOs, all of whom should comprise the foundation on which to develop stronger local capacity.

\*Fixating on targets: Donors prefer activities that display clear profiles and tangible outputs. Successful capacity development, on the other hand is only intrinsically included.” (Fukuda-Parr *et al.* 2002, pp.5-8.)

According to these kinds of criticism, UNDP and the European donors developed the discussion of capacity development (Fukuda-Parr 1996, Fukuda-Parr, Lopes, and Malik 2002).

In Japan, JICA has strongly advocated the capacity development approach from the 2000s and has published many materials and documents such as the “Handbook of Capacity Development” in 2004.

There are several discussion points on the development communities’ discussion of capacity development.

Firstly, the capacity development approach must not focus on technical cooperation. The capacity development approach should cover not only technical cooperation but also concessional loans to build infrastructure. The building of economic and social infrastructure is not only a fiscal matter but it heavily depends on the local capacity and institutions in developing countries.

Secondly, institutions are critically important for the capacity development processes. However, the discussion of capacity development in the past did not fully pay attention to the relationship between the capacity development and the institutional change. The capacity depends on institutions, while institutions depend on the capacity in the society. The development process of the capacity in the society will cause institutional change that means the change of collective actions in the society. Institutional change will develop social capacity in developing countries.

Thirdly, the historical background of capacity development discussion in Japan is quite different from Europe's. As I mentioned already, the European discussion is based upon European donors' experience of giving aid to Africa and the African aid failure in the 1980s. However, the main focus of Japanese aid has been on East Asia and most of East Asian countries developed dramatically in the 1980s and 1990s. The Japanese discussion on the capacity development reflects recent successes of economic development in East Asia. Therefore, it is difficult to make the limitation of conventional Japanese aid approach clear. Since JICA has been successful in their development aid approach as can be seen in their projects in East Asia, they have not felt it important to change their development approach.

For example, JICA aims to transform their operational framework from project management to program management in the "Management Handbook of JICA Operation" in the end of 2007. However, the program management in this document means that a program is based upon a set of several projects in a similar field. Project based program management is a more suitable word for JICA's program management approach.

### **3. What is meant by Capacity?**

In this section, we discuss what capacity is in order to pick up environmental management capacity cases in developing countries.

According to UNDP and JICA, "Capacity is defined as the ability to perform functions, solve problems, and set and achieve objectives" (Fukuda-Parr *et al.* 2002, p.8) and the capacity consists of three levels; individuals, organizations/institutions, and society. However, UNDP's definition on the capacity is not effective to solve micro/macro paradox due to its approach from individual to society. As this paper discusses on institutions in the section 4, UNDP's definition is based upon the methodological individualism. We have to understand dual characteristics of the capacity. Therefore, this paper defines the capacity from a macro view point.

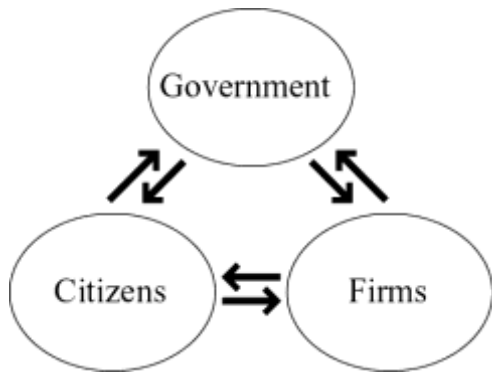
Determining the target capacity level and obtaining information about the system factors of capacity development, i.e., socio-economic factors, environmental quality, and external factors, are the initial problems faced during the assessment of social capacity. Since the SCA has to be applied by the developing countries, it should be inexpensive, simple, and based on scientific research. Moreover, the development of the self-assessment ability of a developing country must also be considered, in order to enable the country to assess its own social capacity.

The Social Capacity for Environmental Management (SCEM) is defined as the capacity to manage environmental problems in a social system composed of three social actors, i.e., government, firms, and citizens and their interrelationships (see Figure 1). The Social Environmental Management System (SEMS) is defined as the system of interaction between the SCEM and institutions (see Figure 2).

Figure 2 also shows the interrelationships between the SEMS, the socio-economic conditions, the environmental qualities, and the external factors in the total system. The SEMS of a country is constrained by the existing socio-economic conditions and the condition of the environmental quality. Furthermore, here we observe the inter-prescribing relations between environmental quality and socio-economic conditions (See, e.g., Matsuoka and Kuchiki 2003, Matsuoka *et al.* 2004 and Matsuoka *ed.* 2007).

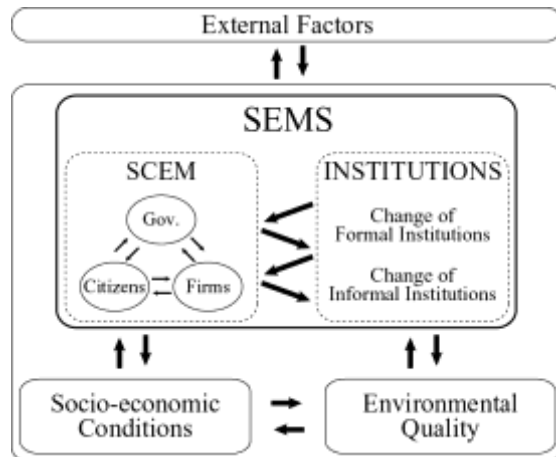
As evident in figure 3, the SCA is designed to analyze the interactions between the SEMS, the socio-economic condition, and the environmental quality of the total system. Apart from this, it is

also designed to analyze the social capacity of each actor and the interactions between all the social actors. Thus, the SCA reveals the current social capacity and the development path of a particular region and/or a country. The SCA includes the following five steps: 1. Actor-Factor Analysis, 2. Indicator Development, 3. Institutional Analysis, 4. Path Analysis, and 5. Developing Stage Analysis. The section 5 provides a brief introduction to these steps.



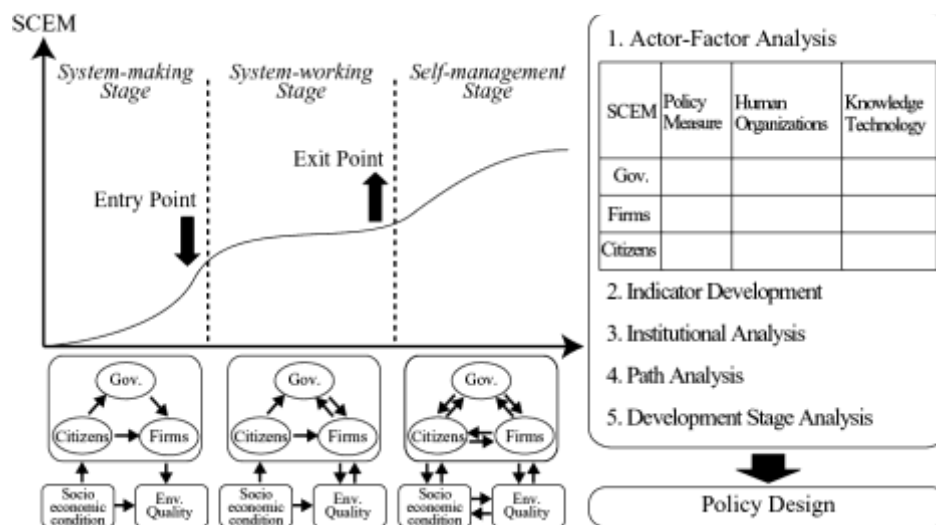
**Figure 1 Social capacity for Environmental Management**

Source: Matsuoka and Kuchiki (2003)



**Figure 2 Social Environmental Management in Total System**

Source: Matsuoka (2005)



**Figure 3 SCEM and Social Capacity Assessment**  
Source: Matsuoka (2005)

#### 4. What is meant by Institutions?

A debate on traditional capacity development has developed from the following: conceptualization of capacity development, the relationship between capacity development and development policy, and the methodology to embody the capacity development (Machida & Hayashi 2006). Even though there are various debates on capacity development, its theorization and embodiment has not necessarily developed because developing countries did not regard institutional change as an essential factor. The previous studies by North and Aoki show the importance of institutional approach. Institutional approach has been studied by not only economics but also

political science and sociology. Putnam, a political scientist and Coleman, a sociologist both develop the theory of social capital, while Rosenau studies institutions related to governance from the discipline of international relations (Hodgson 1998, Williamson 2000, and Isoya 2004).

North (1990) defines institutions as the following. Institutions are the rules of the game in a society or, more formally, the humanly devised constraints that shape human interaction. As a consequence, they structure incentives in human exchange, whether political, social, or economic (North 1990, p.3). Whether it is formal institutions such as law or informal institutions such as social norm, institutions form the way people behave in the society.

Aoki (2001) points out the importance of comparative institutional analysis based on the game-theoretic approach. He defines institutions as self-managed systems shared with groups and analyzes how people play an important role in the game. The economic entity is deeply related to how people make their strategic choices. Therefore, institutions are formed by strategic interaction by economic entities, but their strategic choices are always made under ever-changing environment (Aoki 2001, p.33).

Ostrom (2005), who studies the “commons” phenomenon, broadly defines institutions as the following: Institutions are the prescriptions that humans use to organize all forms of repetitive and structured interactions including those within families, neighborhoods, markets, firms, sports leagues, churches, private associations, and governments at all scales. Moreover, she expresses institutions as rule-structured situations (Ostrom 2005, p.3).

Strictly speaking, there are some differences in the meanings and definitions of institutions that North, Aoki, and Ostrom defined, but their definitions are similar in some respects. Institutions mean that a variety of actors who construct society have their own recurrent activities in their interrelationships. If individual action is regulated by traditional rules or social norms, it will be classified as informal institution, while if it is related to legal laws that people must obey, it will be classified as formal institution.

North regards institutions as patterned objects conducted by social actions of people, while Aoki and Ostrom regard institutions as objects based on methodological individualism, so they insists that these institutions are sometimes re-established, developed, and disappear, in order for people to facilitate their social actions. Institutional change is caused by efficiency such as social transaction cost reduction and its change which is connected to some sort of sustainability. Needless to say, institutions formed throughout history have constructed “a bundle of institutions” which has a characteristic of durability. Therefore it is not easy for institutions to change. In many cases, institutional change is the gradual process characterized by “path dependency”.

On the other hand, Scott (1994) has different opinions regarding institutions. According to his definition, institutions consist of cognitive, normative, and regulative structures which provide a meaning and stability for social actions. Institutions themselves give a meaning and stability to people’s social actions. Where institutions already exist, they are seen as methodological holism. Therefore, the mechanism of institutional change is expressed as the weeding-out or the evolutionary process conducted by collective actions in the society. Scott’s institutions that take the side of methodological holism focus more on the process of social development than North’s institutions do.

Institutions have two characteristics, one as institutions that regulate people’s behavior and two, as institutions that expand the possibility of people’s behavior (Isoya 2004). With regards to the relationships between social capacity and institutions, institutions are prescribed by social capacity, and they can also cause institutional change by the development of social capacity. For that reason, social capacity and institutions have interdependent relationships. Given that institutions have the two characteristics stated above, the “micro/macro loop” will be formed by adopting social capacity at the micro level and institutions at the macro level when human action and social capacity are transmitted by these institutions (Alexander 1987, Imai & Kaneko 1998, and Shiozawa 1999). To make the micro/macro loop, institutions are critically important factors to transport information between the micro and the macro, and to set up the place of knowledge creation.

In order to bring capacity development into place, it is necessary to change people’s behavior by new institutions. The author concludes that institutional changes should be clearly specified in the definitions of capacity development. Therefore the author suggests that the capacity development approach needs to evolve into a new approach, the “capacity development and institutional change approach”.

## 5. Social Capacity Assessment (SCA)

In this section, social capacity assessment method is discussed in detail for realize a new approach “capacity development and institutional change” into international development cooperation.

### 5.1. Actor-Factor Analysis

The actor-factor analysis reveals the level of social capacity by combining the results of both the actors and factors approaches. This provides us with a concrete estimation of the social capacity. The results obtained by the actor-factor analysis enable us to design suitable programs for international development assistance.

In order to appropriately conduct the actor-factor analysis, we propose an actor-factor matrix (see Table 1) of 3 actors and 3 factors, i.e., a 3×3 matrix. The data used to construct this matrix is obtained from statistical tables and through the interview and survey of each social actor. The cells of this matrix indicate the level of social capacity attained by each social actor. Table 1 displays the information regarding the programs and projects designed to compensate for the capacity gap, i.e., the difference between the actual social capacity and the critical minimum of social capacity established for each social actor’s contribution to the designated factors.

**Table 1 Actor-Factor Analysis: The Actor-Factor Matrix**

| Factors \ Actors | Policy & Measure  | Human & Organizations | Knowledge & Technology |
|------------------|-------------------|-----------------------|------------------------|
| Gov.             | Existing Capacity | ↓ Critical Minimum    | Project                |
| Firms            | Capacity Gap      |                       | Project                |
| Citizens         |                   |                       |                        |
| G - F            |                   |                       |                        |
| G - C            |                   |                       |                        |
| F - C            |                   |                       |                        |
| G - F - C        |                   |                       |                        |

Source: Matsuoka *et al.* (2008)

The critical minimum that is obtained for each factor and is assumed to yield good results in terms of the environmental performance is distributed among the actors proportional to the roles they perform in their respective societies. However, this distribution is not always fixed, and changes in the initial situation might induce changes in the distribution of the critical minimum. These changes depend on institutions such as a political system and the relationship between the actors, historical path dependency, and the characteristics of the environmental problem. Moreover, the time required for the transition to the next development stage might also induce changes in the distribution of critical minimum among the social actors. (For details, see section 3.5).

For the purpose of our analysis, we assume the government (G), firms (F) and citizens (C) as the social actors. However, it is also possible to consider a collection of scientists and media as the fourth social actor (Zhang *et al.* 2004). Furthermore, we define the SCEM as the environmental management capacity stipulated by the capacity levels of the social actors and the correlation between them. Table 2 shows the classification of actors that are targeted for assessment. Among previous researches that have contributed to our understanding of the factors of environmental management capacity, the joint work by the UNEP and WHO, which focused on the air quality management capacities in cities, is worth a mention (UNEP/WHO 1996). The above-mentioned

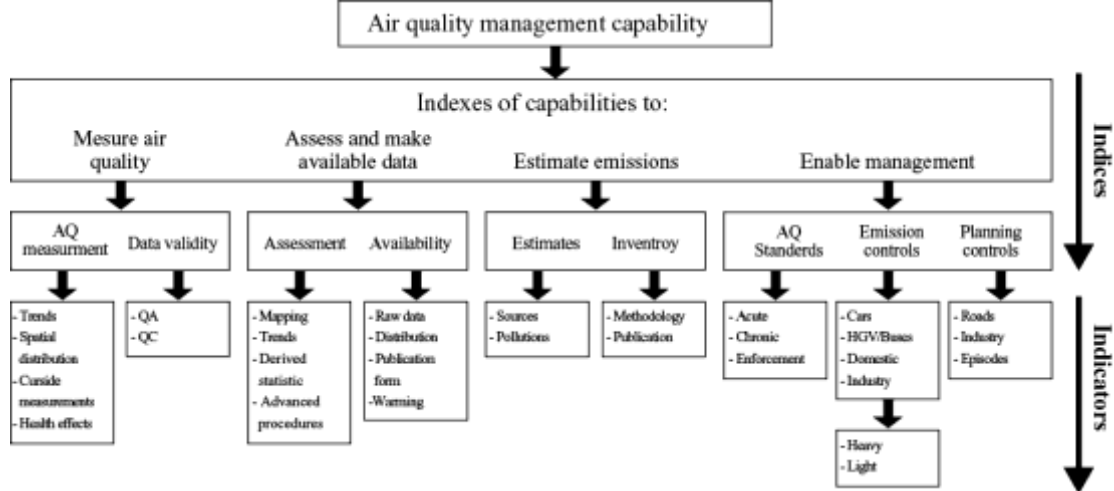
study assumes that the capacity for air quality management comprises four elements (see Figure 4). However, the targets in this study were limited to the capacity of the government and the local administration for managing the air quality. Thus, we focus on extending this parameter of analysis by including the capacities of firms and citizens. Table 3 shows an example of the results of an assessment using the actor-factor analysis for air quality management in China. Considering the capacity of the government in China, we find that the critical minimum for the capacity for air quality management had been achieved during the mid 1990s.

**Table 2 Classification of Actors in the Actor-Factor Analysis**

| Classification         |   |
|------------------------|---|
| <b>G: Gov.</b>         | Central government                                      |
|                        | The government offices concerned                        |
|                        | The sections concerned                                  |
|                        | The government  |
| <b>F: Firms</b>        | Industry  |
|                        | Industry fields (Major groups, Medium groups)           |
|                        | Firms (Big business, Small and medium-sized businesses) |
|                        | Industrial unions                                       |
| <b>C: Citizens</b>     | Civil Society Organization (NGO, NPO, CBO)              |
|                        | Citizens  |
| G: Gov. - F: Firms     |   |
| G: Gov. - C: Citizens  |   |
| F: Firms - C: Citizens |   |

Source: Matsuoka *et al.* (2008)

**Figure 4 Air quality management capacities**



Source: UNDP/WHO (1996)

**Table 3 Actor-Factor Analysis: Air Quality Management in China**

|   | P: Policy & Measure  | H: Human & Organizations  | K: Knowledge & Technology  |
|---|--|---|--|
| G   | <i>Critical Minimum</i><br>Command and control<br>-environmental law are developed.  | Organization<br>-environmental Administration is developed.   | Research, investigation<br>-air pollution monitoring stations are installed.<br>-environmental information is disclosed. |
|   | 1979 Environmental protection law (trial version)<br>1987 Air pollution control law<br>1989 Environmental protection law<br>1995 Environmental protection law<br>1996 The ninth five year plan | 1988 National Environmental Protection Administration (NEPA)<br><br>1998 State Environmental Protection | 1990 The China Environmental Yearbook<br>1995 Upgrade its quality  |
| In the mid-1990s, Critical Minimum was achieved ( <i>System-working</i> ) |  |   |  |
| F   | <i>Critical Minimum</i><br>Command and control<br>-obey the law  | Equipment, facilities<br>-install end-of-pipe technology<br><br>a questionnaire etc.                    | research, investigation<br>-self-monitoring for emission source  |
| C   | <i>Critical Minimum</i><br>Command and control<br>-lodge a complaint, make demands, lobbying   | Organization<br>-NGO, NPO activity<br><br>a questionnaire etc.  | Research, investigation<br>-recognize air quality  |

Source: Matsuoka *et al.* (2008)

## 5.2. Indicator Development

We develop two SCEM indicators using the following different statistical approaches: (1) Frontier/Tobit approach and (2) Factor Analysis approach. This section describes the methodology and the empirical applications of both these approaches.

### 5.2.1. Frontier/Tobit Approach

This approach is based on the Total System conceptual framework. In this framework, the SCEM as well as socio-economic conditions are included as a single component influencing the environmental performance (see Figure 2). Our analytical framework is as follows: First, the directional distance function estimates the emission-based environmental efficiency as environmental performance (of air quality). The Tobit model is then applied and the estimated environmental efficiency is used to identify the SCEM variables affecting the efficiency scores. Finally, the SCEM indicator is calculated as the weighted average of the SCEM variables.

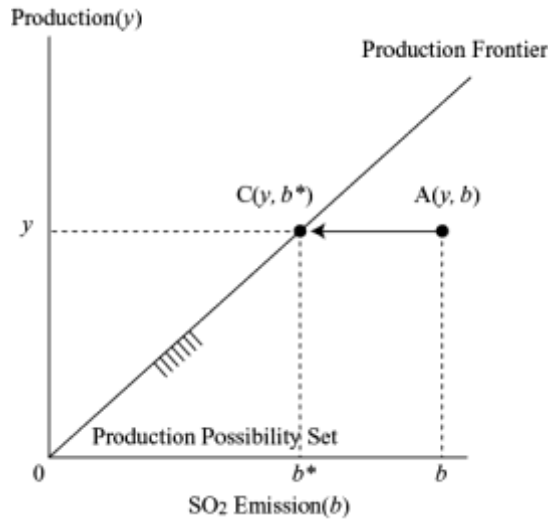
We begin our analysis with the measurement of the environmental efficiency. Figure 5 illustrates the relationship between production ( $y$ ) and the corresponding  $SO_2$  emissions ( $b$ ). Suppose that the current level of production of a firm  $i$  is  $y$ , while the observed  $SO_2$  emission level is  $b$ . However, if this firm incorporates and operates with the best practice technology, then the  $SO_2$  emission can be reduced to  $b^*$  with the output remaining constant. The production frontier line indicates the efficient (i.e., minimum feasible)  $SO_2$  emission at the given output. We define environmental efficiency as the distance between observed and efficient levels of  $SO_2$  ( $b, b^*$ ); the smaller the distance the greater is the efficiency. In this study, the environmental efficiency is empirically estimated by using the directional distance function (Fare *et al.* 1994).

Once the environmental efficiency is estimated, the next step is to evaluate the role of the SCEM using the Tobit model. In this study, the Tobit model selects one SCEM variable for each of the three actors, The identified variables are used to construct the indicator for the SCEM. This is defined as follows:

$$S_{it} = (\omega_g \tilde{G}_{it} + \omega_f \tilde{F}_{it} + \omega_c \tilde{C}_{it}) \quad (1)$$



where  $S_{it}$  is the level of SCEM for province  $i$  in year  $t$ .  $\tilde{G}_{it}$ ,  $\tilde{F}_{it}$ ,  $\tilde{C}_{it}$  represent the environmental management capacities of the government, the firms, and the citizens, respectively.  $\omega_g$ ,  $\omega_f$ , and  $\omega_c$  represent their weights. These are adjusted such that  $\omega_g + \omega_f + \omega_c = 1$ . Thus, our indicator proves to be a convenient measure because it always ranges between 0 and 1.

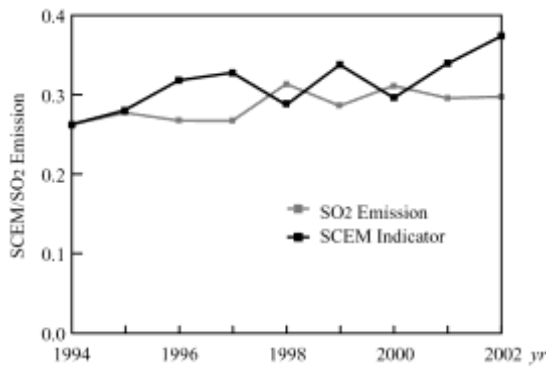


**Figure 5 Production frontier and environmental efficiency**  
Source: Tanaka and Watanabe (2005)

An empirical application of this framework is conducted by using the province-level data of China's manufacturing industry from the period 1994–2002. Using the Tobit model, we identify the total number of monitoring stations as the government's capacity and the ratio of SO<sub>2</sub> reduction as the firms' capacity. However, due to limited data, we are unable to include the citizens' capacity as a part of our model. Thus, the SCEM in this application refers only to the capacities of the government and the firms.

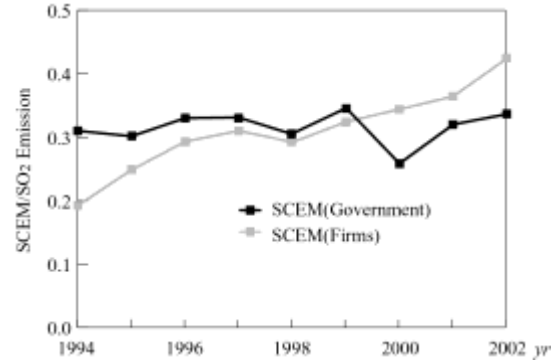
Figure 6 depicts the SCEM and the normalized SO<sub>2</sub> emissions in China's manufacturing sector for the period 1994–2002. The figure indicates a significant increase of nearly 40% in the SCEM - from 0.25 in 1994 to 0.35 in 2002 - during the estimation period. In addition, the SO<sub>2</sub> emission is shown to be fairly responsive to the SCEM. Figure 7 illustrates the environmental management capacities for the government and the firms during the same estimation period. The firms' capacity (SO<sub>2</sub> reduction rate) increased from 0.19 in 1994 to 0.42 in 2002 - an increase of more than 120%. On the other hand the government's capacity (total number of monitoring stations) development rate improved by a mere 8%, i.e., from 0.31 in 1994 to 0.34 in 2002. Thus, the SCEM development in this period is largely due to an improvement in the firms' capacity, while the contribution by the government is rather limited.

In this section, we developed the indicator for the SCEM using the Frontier/Tobit approach. We observed a rapid increase in the SCEM in China for the period 1994–2002. Moreover, the results indicated a significant contribution of the firms in the development of the SCEM, while suggesting a limited contribution of the government. However, in order to provide future suggestions and recommendations, a further interpretation of these results is required. Finally, this approach can be extended to conduct an international comparison using international panel data. In future studies, we will use the same approach to analyze the SCEM development in Asian countries.



**Figure 6 SCEM indicator and SO<sub>2</sub> emission in China's manufacturing Sector**

Source: Tanaka and Watanabe (2005)



**Figure 7 Actor-specific environmental management capacity**

Source: Tanaka and Watanabe (2005)

### 5.2.2. Factor analysis approach

Factor analysis is a statistical analysis technique that is used to uncover the latent relationships between many observed variables. This approach allows numerous correlated variables of air quality management policy to be summarized by fewer

**Table 4 Factor Loading and Contribution of Factor Loading (1) (Kitakyushu-city)**

| Data  | factor 1 | factor 2 | factor 3 | factor 4 | elements of capacity       |
|---|----------|----------|----------|----------|----------------------------|
| budget for the Environmental Research Center (ERC)                                | 0.933    | -0.182   | 0.000    | 0.058    |                            |
| budget for Environmental protection (City)  | 0.819    | -0.080   | 0.380    | 0.342    | "policy resource"          |
| number of personnel * average employment period (ERC)                             | 0.733    | 0.310    | 0.411    | 0.347    | management                 |
| number of monitoring stations   | 0.692    | 0.172    | 0.502    | 0.408    |                            |
| number of personnel * average employment period (City)                            | 0.096    | 0.915    | -0.076   | 0.216    | "command and control"      |
| number of investigations into emission source (City)                              | -0.229   | 0.855    | 0.167    | 0.024    | policy enforcement         |
| number of inspections of a sample from emission source (ERC)                      | 0.133    | 0.707    | -0.033   | 0.450    |                            |
| amount of finances provided by gov. to the firms for air pollution control (City) | -0.198   | 0.073    | -0.818   | -0.100   | "financial support" policy |
| number of finances provided by gov. to the firms for air pollution control (City) | -0.571   | -0.372   | -0.603   | -0.286   | enforcement                |
| number of presentations in academic society (ERC)                                 | 0.394    | 0.253    | 0.170    | 0.864    | provision of "scientific   |
| number of articles published in academic journal (ERC)                            | 0.193    | 0.420    | 0.271    | 0.526    | knowledge"                 |
| eigenvalue  | 3.363    | 2.508    | 1.821    | 1.594    |                            |
| contribution(%)   | 52.0     | 21.4     | 6.9      | 4.2      |                            |
| cumulative contribution(%)  | 52.0     | 73.4     | 80.2     | 84.4     |                            |

Source: Murakami and Matsuoka (2005)

**Table 5 Factor Loading and Contribution of Factor Loading (2) (Osaka-city)**

| Data  | factor 1 | factor 2 | factor 3 | factor 4 | elements of capacity       |
|---|----------|----------|----------|----------|----------------------------|
| number of monitoring stations   | 0.971    | 0.189    | -0.034   | 0.002    |                            |
| number of personnel * average employment period (City)                                | 0.832    | 0.443    | 0.220    | 0.216    | "policy resource"          |
| number of personnel * average employment period (ERC)                                 | 0.687    | 0.629    | 0.225    | 0.213    | management                 |
| budget for the Environmental Research Center (ERC)                                    | 0.665    | 0.604    | 0.257    | 0.317    |                            |
| budget for Environmental protection (City)  | 0.613    | 0.542    | 0.381    | 0.409    |                            |
| amount of finances provided by the gov. to the firms for air pollution control (City) | -0.225   | -0.952   | -0.046   | -0.049   | "financial support" policy |
| number of finances provided by the gov. to the firms for air pollution control (City) | -0.492   | -0.827   | -0.052   | -0.108   | enforcement                |
| number of articles published in academic journal (ERC)                                | 0.068    | -0.029   | 0.992    | -0.091   | provision of "scientific   |
| number of presentations in academic society (ERC)                                     | 0.389    | 0.496    | 0.580    | 0.230    | knowledge"                 |
| number of investigations into emission source (City)                                  | 0.020    | -0.383   | -0.503   | -0.568   | "command and control"      |
| number of inspections of a sample from emission source (ERC)                          | -0.212   | -0.103   | 0.043    | -0.489   | policy enforcement         |
| eigenvalue  | 3.538    | 3.479    | 1.995    | 0.891    |                            |
| contribution(%)   | 42.6     | 30.3     | 10.7     | 4.9      |                            |
| cumulative contribution(%)  | 42.6     | 72.9     | 83.5     | 88.4     |                            |

Source: Murakami and Matsuoka (2005)

dimensions, i.e., factors. In the context of this research, the factors are interpreted as the elements of

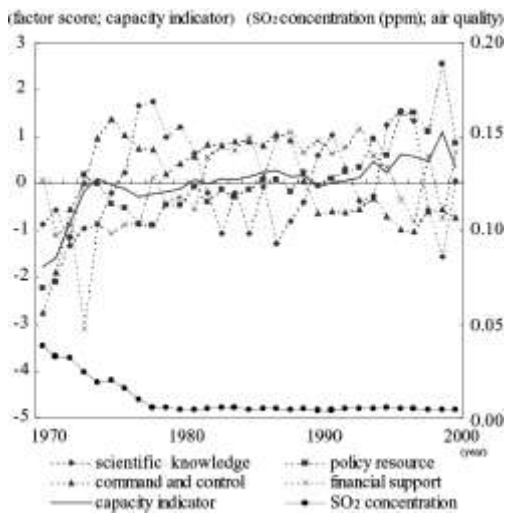
capacity for air quality management that contribute to the environmental performance. Murakami and Matsuoka (2005) estimate the factors of government capacity for air quality management in Kitakyushu and Osaka cities by using the factor analysis. In this study, the capacity for air quality management is assumed to be equal to the factor scores and to the contribution of factor loadings that are estimated by using the data on air quality management policies in Kitakyushu and Osaka cities from 1970 to 2000. Tables 4 and 5 show the results of factor analysis for each city. The screen test for factor analysis reveals four elements of capacity in each city. The four elements are further arranged into three factors, i.e., Policy & Measure, Human & Organization, and Knowledge & Technology (see Table 6).

By using the factor scores and the contribution of factor loadings, we estimate the weighted average for all the four elements. This is assumed to be an indicator of the capacity for air quality management in each city. The contribution of factor loadings is assumed to be the weights for capacity elements. The average weights of the factors of capacity of the two cities are as follows: Knowledge & Technology is 7.5%, Human & Organization is 47.3%, and Policy & Measure is 31.8%.

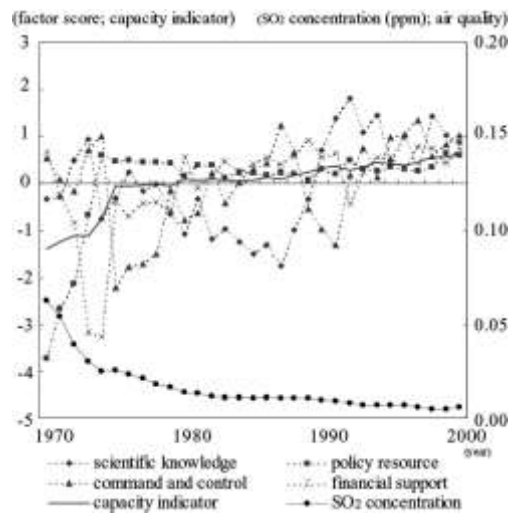
**Table 6 Correlation of the Three Actors and Critical Minimum**

| Actors<br>Factors      | Gov.  | Firms | Citizens          | G<br>•<br>F | G<br>•<br>C | F<br>•<br>C | G<br>•<br>F<br>•<br>C |
|------------------------|-------|-------|-------------------|-------------|-------------|-------------|-----------------------|
|                        |       |       |                   |             |             |             |                       |
| Policy & Measure       | ----- |       | -----             |             |             |             | ←                     |
| Human & Organizations  | ----- |       | -----             |             |             |             | ←                     |
| Knowledge & Technology | ----- |       | -----             |             |             |             | ←                     |
|                        |       |       | ↓Critical Minimum |             |             |             |                       |

Note: The State of Correlation of the Three Actors has an effect on the Critical Minimum Level.  
Source: Matsuoka *et al.* (2008)



**Figure 8 Trend of government capacity quality management (Kitakyushu-city in Japan)**  
Source: Murakami and Matsuoka (2005)



**Figure 9 Trend of government capacity for air quality management (Osaka-city in Japan)**  
Source: Murakami and Matsuoka (2005)

Figure 8 and 9 show the change in the government's capacity for air quality management from 1970 to 2000. It can be observed that the rapid improvement in government capacity in the early 1970s resulted in a dramatic reduction in the SO<sub>2</sub> concentration. Additionally, the effects of each indicator of capacity on the SO<sub>2</sub> concentration are estimated by a simple regression analysis.

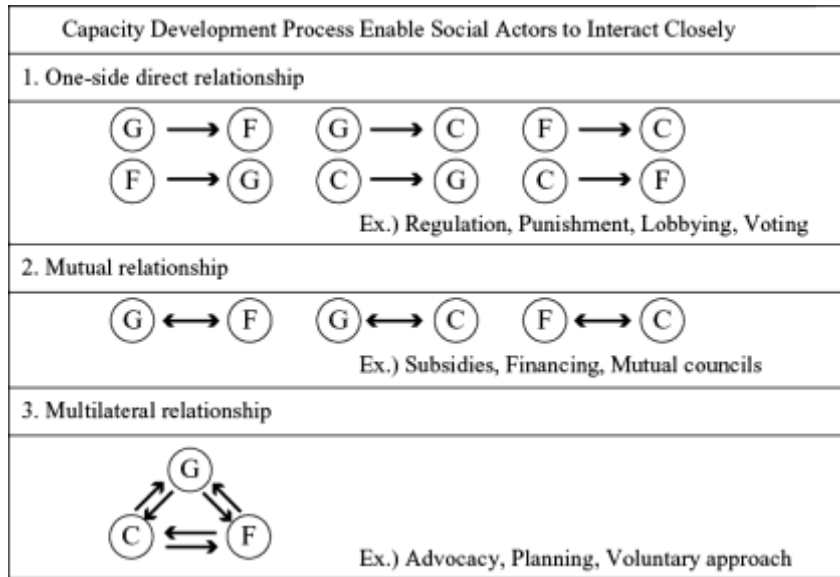
### 5.3. Institutional Analysis

The institutional analysis of the SCA investigates a group of institutions (see, e.g., Aoki and Okuno, 1996) that constrain social actors' activities and capacities. It also regulates the current capacity level and affects the future formulations of social capacity. Therefore, this study will focus on the role of the individual institutions and the group of institutions as well as the processes of transitions among them. For this purpose, we will classify the institutions into two categories: principal institutions and secondary institutions, and then, we will classify each category into two subcategories, i.e., formal and informal institutions.

The method of classifying an institution as a principal or a secondary institution is based on analyzing them according to the level of their incentive or disincentive, i.e., the upper levels are principal institutions, and the lower levels are secondary institutions. Further, in order to classify the institutions into the subcategories, i.e., formal and informal institutions, this study follows North's study (1990) and defines formal institutions as public formalized rules, such as state laws, and informal institutions as unspoken rules, such as social norms and customs that influence the behavior of social actors.

While investigating informal institutions, we pay close attention to the changes in the relationships between the social actors. Figure 10 indicates the basic concepts for analyzing the informal institutions. Based on these concepts, we identify three types of relationships between the social actors: one-side (or direct) relationships, mutual relationships, and multilateral relationships (partnership). As shown in table 6, each relationship has an effect on the critical minimum capacity of each actor. Thus, the next step is to analyze the impact of each relationship between the actors on their critical minimum capacities.

In order to conduct this analysis, we introduce a case study wherein we have analyzed the institutional changes in Ube City. Ube City, often referred to as the "Ube Model" or the "Ube System" (Nose, 1996), is a model Japanese city that has succeeded in effectively managing the problem of air pollution. The most important characteristic of the Ube model is that the decision-making process is not solely dependent on government regulations; rather, it is a joint exercise carried out by a committee comprising representatives from industry, government, educational system, and general population. It is therefore believed that the spirit of the Ube model can be replicated by formally institutionalizing the informal institutions, however, keeping in mind, the specific culture and customs of a city (see Table 7).



**Figure 10 The Benchmarks for the social actor's relationship**  
 Source: Matsuoka *et al.* (2008)

**Table 7 The Benchmarks for The Social Actor's Relationships**

|                      | Principal Institution   | Secondary Institution |
|----------------------|---|-----------------------|
| Formal Institution   | Ube Model   |                       |
| Informal Institution | Institution based on the specific culture and customs of Ube City |                       |

Source: Matsuoka *et al.* (2008)

**Table 8 Environmental Policy and the Characteristics in Ube City**

|                       | Dust pollution   | SO <sub>2</sub> pollution   |
|-----------------------|--|---|
| Main Events           | 1949<br>(Dust control measure was initiated)<br>Ube City Dust Fall Control Committee<br>1952 - 54<br>The citizens held large-scale Anti-dust pep rallies<br>1956<br>Ube Pozzorran Cement<br>1957<br>The mayor and important business owners set numerical targets for dust control measures and each factory decided to make a plan, including time limits and expenditures, in order to accomplish the goals that were laid down. | 1960<br>Ube City Air Pollution Control<br>1962<br>SO <sub>2</sub> monitoring devices were set up in 19 area<br>1968<br>Enactment of the Air Pollution Control Law<br>1969<br>The first official warning was announced in Ube City<br>1970<br>The first air pollution alarm in Yamaguchi prefecture was officially announced in Ube City<br>1971<br>Ube city concluded the pollution control agreement<br>1972<br>The full-scale work on SO <sub>2</sub> measures began after finalizing the enforcement details of the pollution control agreement  |
| Principal Institution | Ube Model  | Pollution Control   |
| Characteristics       | The dust control measures were adopted promptly and social capacity was formed.  | The institutions of the Ube model did not function efficiently for the SO <sub>2</sub> control measures. Social capacity did not improve and sufficient pollution control measures were not adopted. Eventually, institutional change in Ube City accelerated under the external pressure of the increased restrictions that were instituted at the national level. The improvement of social capacity was achieved through the institutional change that was instituted after the finalization and implementation of the pollution control agreement in 1971. This resulted in an improvement in the efficiency of the SO <sub>2</sub> control measures. |

Source. Matsuoka *et al.* (2004)

Table 8 indicates the environmental policies and their characteristics in Ube City. Figure 11 shows the relationship between institutional changes (formal and informal) and the SCEM of Ube City, while figure 12 shows the systemic change and the formulation of SCEM in Ube City. Thus, we observe that as compared with the policy for dust pollution, the measures for controlling SO<sub>2</sub> in Ube City were delayed until the enactment of the pollution control agreement in 1970. According to this investigation, we conclude that (1) the knowledge and technology were not sufficient to control SO<sub>2</sub> pollution in Ube City, and (2) the characteristics of the Ube Model. Thus, these conclusions highlight the following:

- (1) The institutions needed for controlling pollution differ on a case by case basis and depend on the type of pollution;
- (2) The efficiency of the performance of the institutions is closely related to the SCEM in the region.

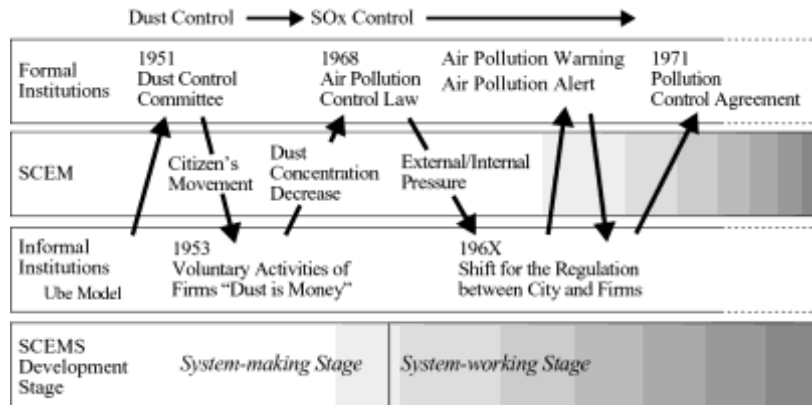
Therefore, in order to achieve a higher capacity level for a country, it is important to analyze the nature of the existing institutions, i.e., whether they are principal/secondary and formal/informal. Moreover, it is also important to ascertain whether the actors' capacities of environmental management satisfy the efficient performance requirement of the institution.

#### 5.4. Path Analysis

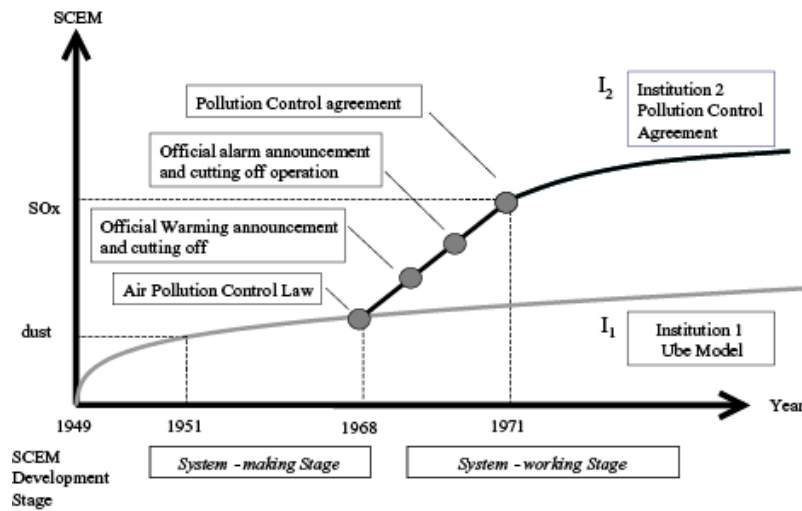
The path analysis clarifies the information and the conditions that are prerequisites for setting a rational capacity level target. Moreover, an analysis of the path (strategy or program) adopted for the current social capacity level helps in identifying the ideal path toward achieving the set target.

As discussed in the previous section, social capacity is developed through the interactions between the actors and the institutions. In a broader sense, we can consider the capacity level as defined by the interrelationship among the capacity level, the socio-economic levels and the performance levels (environmental quality). First, the path analysis deals with the development

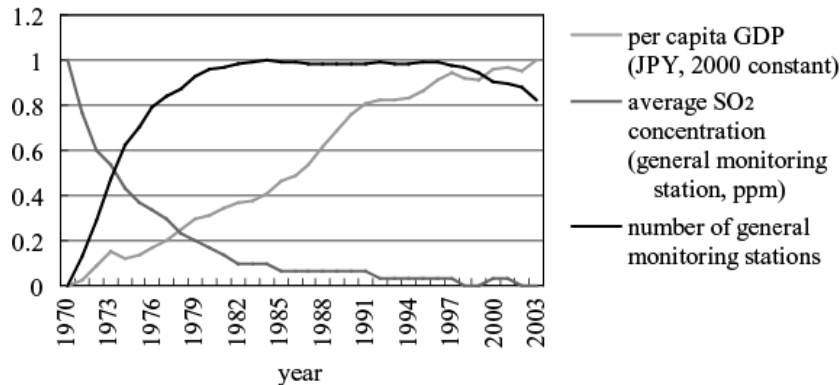
process of the total system, which consists of three components.



**Figure 11 Institutional change and social capacity environmental management**  
Source: Matsuoka *et al.* (2004)

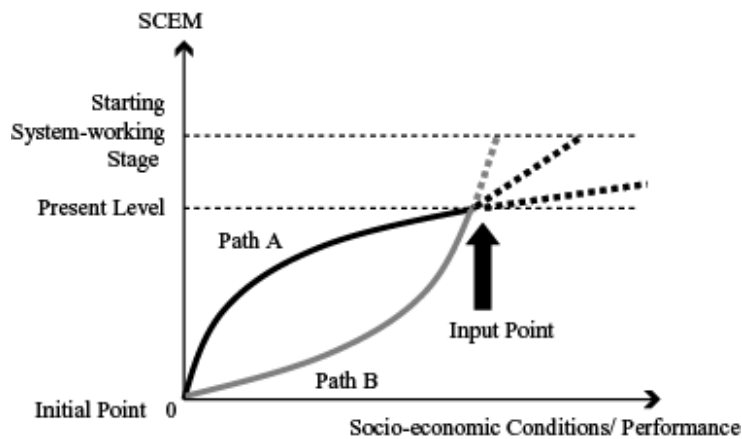


**Figure 12 Social capacity for environmental management in Ube City**  
Source: Matsuoka *et al.* (2004)



**Figure 13 Transition of SCEM, socio-economic conditions, and environmental performance: The case of SO<sub>2</sub> in Japan**

Source: Ministry of Environment, Japan (2005)



**Figure 14 Path analysis**

Source: Matsuoka *et al.* (2008)

Figure 13 informs us about the indicators pertain to SO<sub>2</sub> in Japan. We adopted the SO<sub>2</sub> general monitoring stations as the capacity level, per capita GDP as the socio-economic level, and the performance level as the average monitoring data at the stations; although, due to limited information, this data was compiled after the peak of the observed SO<sub>2</sub> value. According to the figure, we observe that until the mid 1980s all the three components improved (capacity and socio-economic level increased, while the performance level decreased). However, post the 1980s the socio-economic level continued to improve, while the capacity level remained almost constant and the performance level stabilized at a low level. Based on this information, it can be said that until the mid 1980s the system operated efficiently resulting in an improvement in the environmental performance. However, since then the system continues to operate at a necessary minimum capacity, irrespective of any improvement in the socio-economic level.

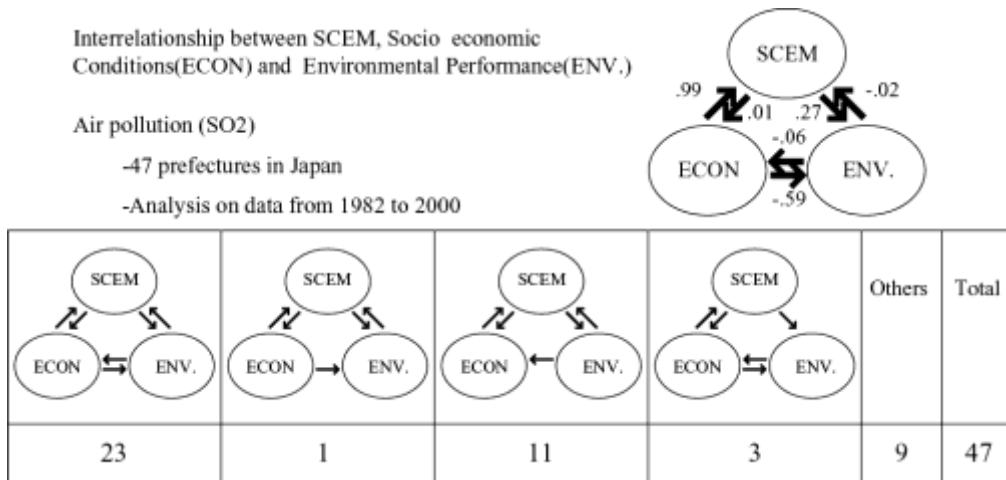
By conducting a thorough analysis of the cases of different countries and their environmental issues, we can identify the characteristics responsible for the improvement of the environmental performance in each case. For example, figure 14 clearly demonstrates the differences between the cases wherein the adopted path changes from SCEM-led to socio-economic conditions-led and vice versa. Moreover, such a path analysis enables us to identify the course that we must adopt for improving environmental performance in the future.

Thus far, we have focused on the change in the level of the three components of the total system. However, in order to understand the development process of the system, it is necessary to bear in mind that these changes do not occur independently; rather, they undergo a transition in the context of the interrelationship between the three components. Honda *et al.* (2004) analyzed the relationship between these three components for 47 prefectures in Japan. From among these analyses related to several environmental issues, let us present the case of SO<sub>2</sub>. The analysis is carried out using the Granger Causality Test and is based on the data for the period ranging from 1982 to 2000. Figure 15 confirms the existence of interrelationships between the three components for 23 out of 47 prefectures. In order to complete the path analysis, we need to verify the hypothesis that the change would occur from a state of weak or partial interrelationship at an early stage to that of a strong interrelationship with an interactive impact on all the three components (we do not exclude the possibility of plural paths to achieve the target). Thus, we shall now investigate the methodology and pursue these analyses.

In addition, the development processes of the capacities of social actors and their relationships also form a part of the path analysis' targets. In this case, we assume a certain level of substitutability among the actors; for instance, part of the government's role can be borne by a firm or a citizen. Future efficient capacity development paths are different for cases with different paths, such as government-led and citizen-led; however, they have the same level of social capacity as a whole. Regarding aid policy, this proposition implies that there should be cases wherein firms or



citizens would not rely on the government to government approach and would be the direct beneficiaries of the aid.



**Figure 15 Interrelationship between SCEM, socio-economic conditions, and environmental performance**

Source: Honda *et al.* (2004)

### 5.5. Development Stage Analysis

The development stage analysis that is conducted on the basis of the actor/factor analysis, the indicator development, the institutional analysis, and the path analysis, aims at specifying the development stage based on the benchmarks and then presenting the development process and the direction for further development. The analytical results highlight certain preconditions that clarify appropriate quantity, quality, and timing of input in order to enable development and aid policies to be implemented as programs.

Matsuoka and Kuchiki (2003), bearing in mind industrial pollution, assumed the following three development stages for the SEMS: system-making stage, system-working stage, and self-management stage. Table 9 indicates the stages and the benchmarks of SEMS.

**Table 9 The Stages and Benchmarks of Social Environmental Management System**

|   | <i>System-making stage</i>   | <i>System-working stage</i>   | <i>Self-management stage</i>  |
|---|--|---|---|
| Definition                                | Period in which the bases of SEMS, especially governmental institutions, are developed.  | Period in which the regulations between the government and firm sectors become stronger through the setting the incentives for pollution abatement and industrial pollution improves after reaching its peak. | Period in which a comprehensive environmental policy is needed, since new types of environmental issues emerge, and the firms and citizens sectors take leading roles through voluntary approaches for environmental management. Harmonious relations between government, firms, and citizens accelerate the efficient social environmental management. |
| Environmental Issues                      | Poverty related issues and issues related to industrial pollution.   | Issues related to Industrial pollution.   | Consumption-related issues.   |
| Issues related to Industrial Pollution    | Degradation.   | Turning point (peak of the Environmental Kuznets Curve).  | Improvement.  |
| The Role of the Three Actors              | -Government (system-making)<br>-Firms (efforts for pollution reduction)<br>-Citizens (pressure on the government and firms and research cooperation) | -Government (pollution control regulation)<br>-Firms (pollution reduction)<br>-Citizens (pressure on the government and firms and research cooperation)   | -Government (proposal of comprehensive policy)<br>-Firms (voluntary approach)<br>-Citizens (voluntary approach)   |
| The Relationship between the Three Actors | Government - Firms<br>Government - Citizens  | Government - Firms<br>Government - Citizens<br>Firms - Citizens (through government)  | Firms - Citizens<br>Government - Firms<br>Government - Citizens   |
| Benchmarks (Essential)                    | -Environmental Law<br>-Environmental Administration<br>-Environmental Information (Monitoring Data)  | -Regulation<br>-Reaching the peak of pollution level and improvement  | <First phase> (In the case of developing countries)<br>-Graduation / Independence from ODA<br><Second phase><br>-Comprehensive Environmental Management   |
| Benchmarks (Important)                    | - Negotiations between Government-Firms,<br>Government-Citizen<br>- Mass media   | - Negotiation, adjustment, and cooperation between Firms and Citizens   | Voluntary approach of Firms and Citizens (Environmental Accounting, Environmental Reporting, Green Consumption, and Advocacy Planning)  |

Source: Matsuoka and Kuchiki (2003)

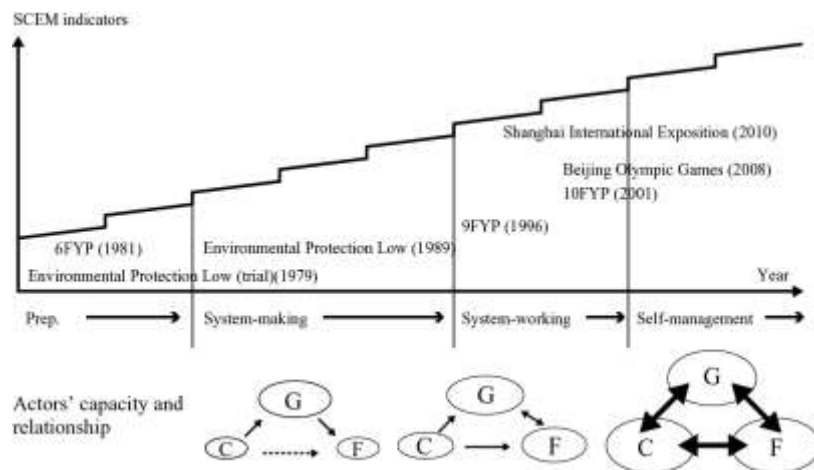
The system-making stage focuses on the development of the fundamental functions of the SEMS. Since this stage particularly focuses on the capacity development in the government sector, the benchmarks in this stage should be the development of the environmental law (basic law and acts for specific pollution control mechanisms), environmental administration, and environmental information. With regard to the environmental information benchmark, it is important to arrange the data by networking, understanding the environmental status, and then presenting the policy measures. Thus, we use not only the number of monitoring stations but also the first publication of the State of the Environment and the like as specific evaluation indicators.

In the system-working stage, the system actually starts functioning to improve the environmental quality. This occurs in response to the improvement of the basic environmental administrative institutions. As the pollution trend changes—from increasing to decreasing—a turning point of the so-called environmental Kuznets curve is observed. With reference to this, we focus upon the results of the implementation of government regulation (reduction of pollution by firms) and the consequent change to a decrease in pollution levels. In order to evaluate the achievement of pollution reduction measures, the standard achievement ratio of SO<sub>x</sub>—a typical industrial pollutant—will be observed as the indicator. If the achievement ratio for all the monitoring stations in the country is higher than 90%, then it is considered to be an indication of the end of SO<sub>x</sub>

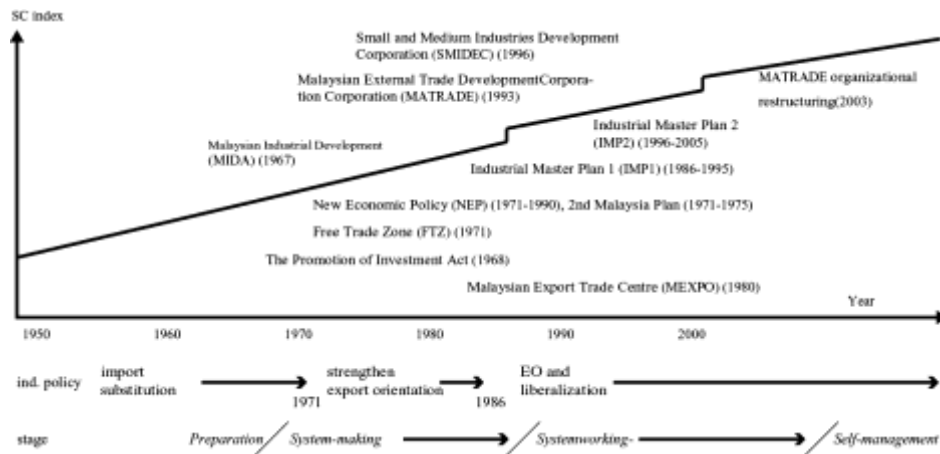
pollution. In developed countries, the Command and Control (CAC) has played a significant role in pollution reduction at the system-working stage. The CAC requires the government to utilize its administrative capacity in order to understand the state of pollution, set regulation standards, and ensure that those responsible for pollution are complying with the regulations. It is observed that as compared to the governments of developed countries, the governments of developing countries lack this administrative capacity and are therefore ineffective in implementing the CAC. However, pollution reduction can be realized efficiently by effectively introducing the market based instruments (MBIs) for environmental regulation and utilizing the market mechanism (Matsuoka, 2000).

The self-management stage is the stage wherein the system develops in a sustainable manner through the strong interrelations between the government, firms, and citizens, and a comprehensive environmental policy is enforced. At this stage, firms and citizens voluntarily adopt and participate in initiatives for environmental management. For instance, firms voluntarily upgrade their facilities in order to obtain the ISO 14000 certification as an in-house environmental management program, and in order to increase the efficiency of environmental management, they adopt environmental accounting. Moreover, they highlight their environmental management achievements in order to court consumer appreciation and thus gain a competitive advantage in the market. With regard to international cooperation, at this stage, a developing country becomes less dependent on donor's assistance and utilizes its own financial and human resources.

As a country experiences the development of SEMS, the roles and relationships of the three actors also evolve. The government sector plays an important role in managing and coordinating issues at the system-making and system-working stages; however, at the self-management stage, its responsibility evolves to supporting the firms and the citizens by designing a framework for comprehensive environmental management.



**Figure 16 Development stages of SCEM: The case of China**  
 Source: Japan Society for International Development (2004)



**Figure 17 Social capacity development in trade: Malaysian case**  
 Source: Hiroshima University - Mitsubishi Research Institute Inc. Joint Venture (2005)

Figure 16 shows the development of SCEM with the stages and benchmarks mentioned above (China's case). Considering economic indicators or passage of time as the horizontal principal and SCEM index (a group of indicators) as the vertical principal, it can be presumed that, by and large, China adopted the capacity development process that is shown in the figure. After the enactment of the Environmental Protection Law as the starting point of system-making, China entered a full-scale system-working stage during the 9th Five Year Plan (1996–2000). The 10th Five Year Plan (2001–2005) further accelerated this process. It is expected that China will be able to lay the foundation for initiating the self-management stage between the period of the Beijing Olympic Games in 2008 and the Shanghai Expo in 2010.

In terms of relationship between the three actors, the SEMS in China has changed drastically. As shown in figure 16, the government had exclusively performed all the functions and roles at the system-making stage. However, during the system-working stage, although the government continued to institute vigorous steps, the firms did render some important tangible contributions to curtail pollution. In addition, the relationships between the actors, particularly between the government and the firms grew stronger. Based on this, we can expect that during the self-management stage, a more balanced relationship, entailing the promotion of environmental industry and self-sustained growth of an environment-oriented market will be developed.

Moreover, we have also begun to apply the development stage analysis beyond the field of environmental management. Figure 17 describes the development stage analysis of social capacity development for trade (particularly export promotion) in Malaysia. The research is conducted for the JICA evaluation project (Thematic Evaluation: Economic Partnership). We observe that it is possible to conduct the analysis based on a similar format of benchmarks and stage setting; nevertheless, the trade capacity has its peculiar characteristics, such as the limited role of citizens and the vulnerability of performance level to external conditions.

This section introduced and discussed the basic designs of specific analytical methods that form the components of the SCA. The methodology enabled developing countries themselves to understand the current state of pollution and the problem of social capacity. Adopting the analytical method mentioned here as a precondition, the final section deals with the following question: How to transform development and aid policies into effective programs for attaining the capacity level that developing countries regard as their target.

## 6. Designing the Program for Social Capacity Development and Institutional Change

This section describes the program design for social capacity development and institutional change. Based on the SCA framework, the author develops the program approach to identify the target level of capacity, and to provide specific strategies to achieve the target. The program presents an overall package consisting of: (1) the relationship between social actors, (2) the input

resources—their quantity and timing, and (3) the institutional changes.

The program approach differs from the conventional stand-alone projects in many respects. This approach considers the following: (a) wide and systematic approach; (b) recognition of mutual dependence of society, economy, and culture; (c) long-term project implementation; (d) the harmonization of system development and its process; (e) focus on the capacity of the recipient countries; and (f) cost reduction by avoiding redundant aid projects (Bolger 2000). Table 10 shows a detailed comparison between stand-alone projects and the program for social capacity development.

Sector-wide approaches (SWAPs) for social capacity development can be classified as one of the approaches of the program. The SWAPs are primarily carried out in basic education and healthcare sectors in the African countries. Jones and Lawson (2000) characterize the SWAPs as follows: (i) the harmonization of policies between the donor and recipient countries (policy alignment), (ii) efficiency improvement in internal and external resource allocations, (iii) developing partnerships with local stakeholders, and (iv) emphasis on ownership. This characterization, however, is insufficient. According to the new definition discussed in this paper, the program is defined as a program involving three actors (government, firms, and citizens) and three factors (policy and measure, human and organizations, and knowledge and technology). Thus, the new social capacity development approach always takes the form of the program.

**Table 10 Programs and Stand-alone Projects**

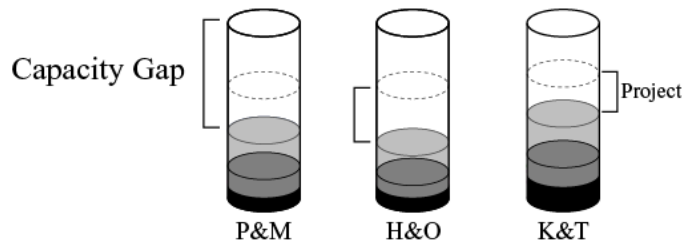
| Principles   | Stand-Alone Projects  | Programs  |
|--|---|---|
| Local Ownership  | Projects are often supply-led.  | Based on locally owned programs, involving a community of stakeholders.   |
| Donor Coordination   | Limited donor collaboration, leading to inefficiency.   | A high level of donor coordination, ideally involving all of the donor community, under national leadership   |
| Partnerships   | Projects are often managed directly by executing agencies or project implementation units.  | Programs are intended to involve movement towards the use of local procedures and controls.   |
| Attention to institutional development, governance issues, and civil society participation | Projects attempt to ensure success by establishing project-specific control mechanisms. They thus attempt to bypass, rather than solve, certain institutional weakness. | Attention is brought to bear on institutional, governance, and participation issues necessary to ensure success and the accountability of local institutions to their constituents. |
| Results-based Approach   | Attention is focused on the success of the projects themselves, even though other conditions necessary to the achievement of development results may not be met.        | The focus is on results at the program level such as those identified in the Millennium Development Goals or in the PRSs.   |

Source: Lavergne and Alba (2003)

1. Assess the Current Capacity, and Required Capacity to Work Program

| Factors \ Actors | Policy & Measure  | Human & Organizations | Knowledge & Technology |
|------------------|-------------------|-----------------------|------------------------|
| Gov.             | Existing Capacity | Critical Minimum      |                        |
| Firms            | Capacity Gap      |                       |                        |
| Citizens         |                   |                       | Project                |
| G - F            |                   |                       |                        |
| G - C            |                   |                       |                        |
| F - C            |                   |                       |                        |
| G - F - C        |                   |                       |                        |

2. Design Projects which cover the Capacity Gap in each factor level.  
Capacity can be a complement or substitution among actors.



**Figure 18 SCA and Program Design**

Source: Matsuoka *et al.* (2008)

The program design begins with social capacity assessment based on the actor-factor matrix presented in figure 18. When analyzing the pollution problem, the matrix is used to evaluate: (1) the current capacity for pollution abatement, (2) the critical minimum capacity during the system-working stage, and (3) the gap between current and critical minimum capacities.

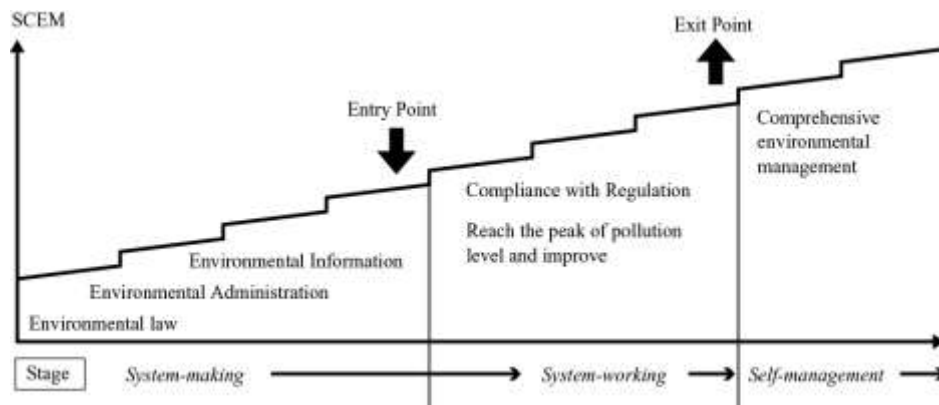
It should be noted that in this paper, it is assumed that capacities are substitutable between the actors, but not between the factors, i.e., the capacities are complements between the factors. For instance, suppose that the critical minimums for policy and measure, human and organizations, and knowledge and technology are 30, 50, and 10, respectively. Then, the critical minimum of policy and measure (30) can either be accepted solely by the government or it can also be accepted by the government and the firms jointly. Any combination of actors is possible in order to achieve the critical minimum; however, this is not true in the case of factors. Thus, the “Substitutability of actors” and “complementarities of factors” are equally important in our framework. The capacity gaps identified through the actor-factor matrix are expected to be filled by the projects. These projects are the ones based on the program (referred to as program-based projects) and are different from the conventional stand-alone projects.

Entry and exit points of the program and the projects themselves can be determined through the development stage analysis of social capacity. Figure 19 illustrates the brown issue example. The figure shows the following institutional milestones during the system-making stage: (1) enacting environmental law, (2) the establishment of environmental administration, and (3) environmental information disclosure. Technical aids, such as the environmental center, are commonly provided by the JICA and can be effective in the latter half of the system-making stage (i.e., developing the system of environmental information disclosure).

In the system-working stage, it is important to focus on environmental business planning,

resource allocation and organizational development, and research and development pertaining to pollution reduction. In addition to these, the pollution control management certification system, compliance with regulations, and financial assistance for developing environmental technologies are also important. Aid programs/projects can generally reach their exit point when the level of pollution decreases as per the target. In this stage, the environmental cooperation is horizontal, such as technology exchange, research exchange, and civil exchange. At the same time, the environmental policy measures take the form of economic instruments and self-regulation. Once this is achieved, the recipient countries will gradually move toward the self-management stage.

Based on the basic design of the SCA studies, Figure 19 shows an entry and exit point of aid in the case of social capacity and institutional change of environmental management in developing countries.



**Figure 19 Entry, Exit Point, and the Development Stages**

Source: Matsuoka *et al.* (2007)

## 7. Conclusions

Considering the previous sections, what does a new approach to “capacity development and institutional change” mean as a development aid policy? Considering that the new JICA will embody the aid approach, what does it mean? From Oct. 1<sup>st</sup>, 2008, yen loans by JBIC and grant aids by the Ministry of Foreign Affairs will be integrated into the new JICA. Therefore, this paper will focus on this point in conclusion.

According to a new approach of “capacity development and institutional change”, and considering what the new JICA should do and how integration (synergy) effect is generated, the need and inevitability to convert to the “program approach” as a new paradigm of development aid is evident.

The embodiment of a new approach of “capacity development and institutional change” logically requires a target which development aid should keep in mind and further, the enlargement of a scope which includes relationships with social actors, relevance among capacities, and a time frame as shown in Fig. 18 should also be kept in mind. This logic clearly shows how the “project approach” can be converted to the “program approach”. The author defines the program approach as a target and scope of framework as introduced in Fig. 18. Based on the program approach in Fig. 18, individual projects, even though they are the developing countries’ own projects or donor-supported projects, will be allocated in Fig. 18. These projects based on the program generally have large dimensions and long-term performances.

The new JICA (Japan) should be a leading donor, which aggressively moves ahead to effective aid in accordance with the Paris Declaration in 2005, promoting not only public private partnerships (PPP) with comprehensive operation of grant, technical cooperation and yen loans but also public sectors like CSOs/NGOs or private firms, and it should furthermore cooperate with developing countries and/or donors.

However, these suggestions should be simultaneously considered while a new approach of “capacity development and institutional change” is converted to the program approach. In order to expand the input scale within the range of constraints of financial or human aid resources from the donor’s side, it is important to select programs (including the selection of aid allocation to recipient countries) based on certain priority. It is imperative that the criteria and methods for these evaluations be established.

According to the Paris Declaration (MOFA 2005), it is obvious that a conversion to the “program approach” by donors (new JICA) demands a program based approach (PBA) as a development plan (including budgetary plan) in developing countries. However, the problem is that there are some shortcomings in the planning capacity of developing countries. The planning capacity is divided into four factors: plan-making capacity, plan implementing capacity, plan evaluating capacity, knowledge of plans, and planning techniques. Those are important points that developing countries should engage in, in order to improve their planning capacity. In this regard, the “program approach” has characteristics to expand input scale, time frame and emphasize upstream (on the top side).

In order to effectively work the program approach based on a new approach of “capacity development and institutional change” as a top-oriented and a upper oriented approach, it is indispensable for not only the top-down approach (macro level) as planning oriented, but also for the bottom-up approach (micro level) to make a full use of the plan based on information from the field.

Institutions for the “macro/micro loop” connected to the macro and micro play an important role and fulfill important functions. Utilizing an advantage of the Japanese-style of aid, a new approach of “capacity development and institutional change” can be considered as an approach which makes the new JICA produce integrative effects. The new JICA includes grant aid, technical cooperation, and yen loans.

Conversion to the “program approach” as an embodiment of a new approach of “capacity development and institutional change” has a characteristic which focuses on total managed plan by a top-down approach, while information in the field is also important to carry out the program and increase the effectiveness with which institutions work.

The “Feedback systems of macro and micro”, the so-called institutions of the “macro/micro loop”, is considered as a decisively important factor for effective program implementation and effective aid as stated in the Paris Declaration. Information from the field, which has been considered as one of JICA’s strongest points, should be utilized in the process of the program in the future.

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### ***References***

- Alexander, J. C. *et al. eds.* (1987), *the Micro-Macro Link*, Univ. of California Press, Berkley
- Aoki, M. and Okuno, M. *eds.* (1996), *Comparative Institutional Analysis of Economic Systems*, Tokyo University Press, (in Japanese).
- Aoki, M. (2001), *Towards a Comparative Institutional Analysis*, MIT,
- Bergs, E. and UNDP (1993), *Rethinking Technical Cooperation: Reforms for Capacity-Building in Africa*, UNDP
- Bolger, J. (2000) Capacity Development: Why, What and How, *Capacity Development Occasional Series*, No. 1, Canadian International Development Agency.



- Brown, S. ed. (2002), *Developing Capacity through Technical Cooperation*, Earthscan, London.
- Cassen, R. (1986), *Does Aid Work?*, Oxford University Press, Oxford,
- Evaluation Team on Environmental Cooperation, Japan Society for International Development (JASID) (2004) *Thematic Evaluation (Environment) by External Party, Environmental Center Approach: Development of Social Capacity for Environmental Management in developing Countries and Japan's Environmental Cooperation*, Japan International Cooperation Agency, (in Japanese).
- Fare, R., Grosskopf, S., Norris, M., and Zhang, Z. (1994) Productivity Growth, Technical Progress, and Efficiency Change in Industrialized Countries, *American Economic Review*, Vol. 84, Issue 1: 66–83.
- Fukuda-Parr, S. (1996) ,”Beyond Rethinking Technical Cooperation”, *Journal of Technical Cooperation*, 2(2), pp.145-157
- Fukuda-Parr, S. et al. ed. (2002) *Capacity for Development: New Solutions to Old Problems*, Earthscan.
- Hiroshima University-Mitsubishi Research Institute Inc. Joint Venture (2005), JICA Asia Region Thematic Evaluation “Economic Partnership”, Briefing Material for 4th Review Meeting, (in Japanese).
- Honda, N., Matsuoka, S. and Tanaka, K. (2004) Causal and Structural Analysis on Social Capacity Development for Environmental Management in Japan’s Air Pollution Problems, *HICEC Discussion Paper Series* Vol. 2004–7, (in Japanese).
- Jones, S. and A. Lawson (2000), Moving from Projects to Programmatic Aid, *OED Working Paper Series*, 5.
- Lavergne, R. and Alba, A. (2003) *CIDA Primer on Program-Based Approaches*, Canadian International Development Agency (CIDA).
- Lopes, C. and Theisohn, T. (2003), *Ownership, Leadership and Transformation: Can We Do Better for Capacity Development*, Earthscan.
- Matsuoka, S. (2000) Environmental policy in Developing Countries: Instruments and Efficiency of Regulations. *Journal of International Development Studies*, 9.2:17–37, (in Japanese).
- Matsuoka, S. and Kuchiki, A. ed. (2003), *Social Capacity Development for Environmental Management in Asia: Japan’s Environmental Cooperation after the Johannesburg Summit 2002. IDE Spot Survey*, IDE-JETRO.
- Matsuoka, S., ed. (2004), *International Development Studies*, Toyo-Keizai-Shinpo-sha, (in Japanese).
- Matsuoka, S., Okada, S., Kido, K. and Honda, N. (2004), Development of Social Capacity for Environment and Institutional Change, *Journal of International Development Studies*, 13(2), 31–50, (in Japanese).
- Matsuoka, S. (2005), Social Capacity Development for Environmental Management and International Cooperation, in the second research report. *Incubation Research Project 31 “Total Changes in Environment and building the society for regional environmental cooperation in East Asia”*, (in Japanese).
- Matsuoka, S. ed. (2007), *Effective Environmental Management in Developing Countries: Assessing Social Capacity Development*, Palgrave-Macmillan, London.
- Matsuoka, S. et al. (2008), Capacity Development and Social Capacity Assessment (SCA), *Journal of Evaluation Studies*, 8(2), pp.3-23.
- Ministry of Environment, Japan (2005) *Quality of the Environment*
- Morgan, P. and Taschereau, S. (1996), *Capacity and Institutional Assessment; Framework, Methods and Tools for Analysis*, Canadian International Development Agency (CIDA).
- Murakami, K. and Matsuoka, S. (2005), Evaluation of Social Capacity for Environmental Management, *Submitted to the Japanese Journal of Evaluation Studies*, (in Japanese).
- North, D.C. (1990), *Institutions, Institutional Change, and Economic Performance*, Cambridge University Press.
- Nose, Y. (1996) *Ecological Community-Roles of Public Health Scholars for the 21st Century*. Kindai-bungeisya, (in Japanese).

- Ostrom, E. (2005), *Understanding Institutional Diversity*, Princeton U. P., Princeton
- Scott, W. R. (1995), *Institutions and Organizations*, Sage Publications, Thousand Oaks
- Tanaka, K. and Watanabe, M. (2005), Social Capacity for Environmental Management and its Indicator Development: Environmental Efficiency Approach, *Presented at the Japan Society for International Development, 16th Conference*, November 26–27, 2005, Kobe, Japan, (in Japanese).
- Taylor, p. and P. Clarke (2008), *Capacity for Change*, IDS  
[http://content.undp.org/go/cms-service/stream/asset/?asset\\_id=1531706](http://content.undp.org/go/cms-service/stream/asset/?asset_id=1531706) (2008/5/7)
- UNDP (1994), *Capacity Development: Lessons of Experience and Guiding Principles*, UNDP
- UNDP (1998), *Capacity Assessment and Development in a Systems and Strategic Management Context*, UNDP
- UNDP (2006), *Institutional Reform and Change Management: Managing Change in Public Sector Organizations*, UNDP
- UNEP /WHO (1996) , *Air Quality Management and Assessment Capabilities in 20 Major Cities*, MARC, London
- UNDP/WHO (1996), *Air Quality Management and Assessment Capabilities in 20 Major Cities*, the Monitoring and Assessment Research Center.
- UNDP (1998), *Capacity Assessment and Development in a Systems and Strategic Management Context*, UNDP/BDP/Management Development and Governance Division.
- Williamson, O. E. (2000), “the New Institutional Economics: Taking Stock, Looking Ahead”, *J. of Economic Literature*, 38(3), pp.593-613
- World Bank (2007), *Capacity Development in the World Bank Group: A Review of Nonlending Approaches*,  
<http://siteresources.worldbank.org/INTCDRC/Resources/CDBrief23.pdf>  
 (2008/03/18)
- Yeager, T. J. (1999), *Institutions, Transition Economies, and Economic Development*, Westview Press.
- Zhang, J., Fujiwara, A., Tanaka, K., Senbil, M., and Nagashima, K. (2004), Methodology of Developing Social Capacity Indicators for Environmental Management: State-of-Art and Future Directions, *Proceedings of the Second Expert Meeting on SCEM Capacity Indicators and Development Process Modeling*, (in Japanese).
- (日本語, Japanese materials)
- 今井賢一・金子郁容 (1998), 『ネットワーク組織論』, 岩波書店
- 磯谷明德 (2004) 『制度経済学のフロンティア』, ミネルヴァ書房
- 国際協力銀行 (2005) 『海外経済協力業務実施方針』, JBIC  
<http://www.jbic.go.jp/japanese/oec/policy/index.php> (2008/3/18)
- 国際協力機構 (2004) , 『キャパシティ・ディベロップメント・ハンドブック : JICA 事業の有効性と持続性を高めるために』, JICA  
[http://www.jica.go.jp/kokusouken/enterprise/chosakenkyu/cd/200403\\_b.html](http://www.jica.go.jp/kokusouken/enterprise/chosakenkyu/cd/200403_b.html) (2008/6/18)
- 国際協力機構 (2006) , 『途上国の主体性に基づく総合的課題対処能力の向上を目指して/キャパシティ・ディベロップメント (CD) ～CD とは何か、JICA で CD をどう捉え、JICA 事業の改善にどう活かすか～』, JICA

- [http://www.jica.go.jp/kokusouken/enterprise/chosakenkyu/cd/200603\\_aid.html](http://www.jica.go.jp/kokusouken/enterprise/chosakenkyu/cd/200603_aid.html) (2008/6/18)  
国際協力機構 (2007), 『事業マネジメント・ハンドブック』, JICA
- [http://www.jica.go.jp/kokusouken/enterprise/chosakenkyu/field/200712\\_aid.html](http://www.jica.go.jp/kokusouken/enterprise/chosakenkyu/field/200712_aid.html)  
(2008/02/13)
- 町田陽子・林泰史 (2006), 『国際援助機関並びに二国間援助機関によるキャパシティ・ディベロップメント支援の動向 (平成 17 年度キャパシティ・ディベロップメント研究報告書)』, FASID
- 松岡俊二・本田直子 (2002) 「開発援助における能力開発とは何か」『国際開発研究 (国際開発学会)』, 11 (2), pp.149-172
- 塩沢由典 (1999), 「ミクロ・マクロ・ループについて」, 『経済論叢』, 164 (5), pp.1-73.