Chapter 3  Analysis from a Capacity Development (CD) Perspective

First getting back to the original premise that problem-solving abilities represent a complex conglomerate of capacities, this chapter confirms the following; 1) whether the project has succeeded in strengthening all the capacity factors necessary for the realization of “a sustainable system for improving teachers’ capability to conduct lessons”, including those not specified in the Project Design Matrix (PDM), and 2) how it influenced the realization of CD if the strengthening failed in some of the factors. In addition, this chapter identifies the features and measures to establish In-Service Training for Teachers (INSET) as a system (or to strengthen capacity factors) by reviewing the project approach.

3-1  Has the Overall Problem-solving Capacity of the Partner Country been Strengthened?

The question to be addressed here is whether, without having been planned from a CD perspective in its PDM stage, the project managed to strengthen the capacity (problem-solving abilities) for the “sustainable improvement of in-service teachers’ capability to conduct lessons” as whole. In order to grasp the progress on strengthening capacity at each level and factor, this section identifies the outcomes and pending issues specific to each, based on the capacity factors necessary for establishing “a sustainable system for improving teachers’ capability to conduct lessons (CD indicators)” in table 1-2, Chapter 1.

3-1-1  Capacity Outcomes and Issues at the National Level

(1)  The Contribution to the International Community

Although the contribution to the international society is a component included in Phase II, related outcomes were produced in the early stages of the project. Some analysis says African communities have similar problems in mathematics and science education.169 Based on the analysis, the strategic activities, such as expanding third-country training accessibility or initiating activities in other countries of the area, are being developed by establishing the Strengthening of Mathematics and Science in Secondary Education (SMASSE)-Western, Eastern, Central and Southern Africa (WECSA) association in Phase I and utilizing partnerships with regional organizations in Phase II. These primitive activities, however, have problems with organizational

169 Interview with Mr. Sugiyama, JICA Chief Advisor for SMASSE Project Phase II.
structure as an intraregional institution or sustainability of activities. Regional components are expected to be strengthened in Post-Phase II.  

(2) Societal Level

At the domestic level, great progress has been made in the institutionalization process, including the specification of INSET in policies such as the Education White Paper and the Mid-term Expenditure Framework, and the establishment of the national-level INSET system. However, in the absence of ministerial ordinances or notifications making training attendance compulsory, INSET is still lacking a formal legal framework enforcing its implementation. During the initial period of phase I, in April 1999, without waiting for the issuing of ministerial ordinances, related parties from the 9 districts involved took a realistic approach, putting together the training implementation guidelines, and initiating training not only at the national, but also at the district level. However, training participation is ultimately dependent on decisions of teachers. In order to truly establish INSET as a system, measures including legal “institutionalization” through governmental ordinances and notifications, and a system of certification through training attendance are required in the future.

At the same time, the decision as to how training is to be continued after completion of the currently implemented 4 cycles is still pending. At present, training tailored to the needs of each district is being implemented after the 4 cycles in the Phase I-area, while the role of Center for Mathematics, Science and Technology Education in Africa (CEMASTEA) is limited to approval of training materials, and to monitoring and evaluation activities. It is urgently needed to decide the direction — respecting district-level initiatives and leaving the central office in charge only of the current jobs such as monitoring and evaluation, or standardizing the training by preparing/offering its programs and teaching materials and actively supporting the implementation

170 In the Mid-Term Evaluation Report of Phase II, as 3 recommendations and the amendment of PDM (5), it is stated that “SMASSE-WECSCA activities so far have confirmed that the Activity Student Experiment Improvisation-Plan•Do•See•Improve (ASEI-PDSI) method is effective and beneficial for the improvement of mathematics and science education in African countries. Therefore, it is the responsibility of the Kenyan government and JICA to continue their cooperation and carry out activities through which the knowledge gained from SMASSE can lead to education improvement in other African countries.” (Human Development Department, JICA (2005)).

171 At present, the act enforcing district-level training implementation and participation is the Minutes of the Stakeholders’ Meeting organized by the national INSET center, and attended by related personnel from the various districts.

172 In other words, it lacks legal force. The necessity of securing teacher participation through notification by the Ministry of Education, Science and Technology is highlighted in the Minutes of the Stakeholders’ Meeting (SMASSE (2002)).

173 The Permanent Secretary of the Ministry of Education considers that, the inclusion of INSET into the White Paper on Education, Science and Technology and The Kenya Education Sector Support Program (KESSP), and the fact that more than 100 district level INSET centers have been established, in conjunction with the completion of the currently ongoing procedures for the reformation of CEMASTEA into an independent administrative institution, will also mark the completion of the “institutionalization” of INSET, making ministerial ordinances and notifications unnecessary (interview with Prof. Karega Mutathi, Permanent Secretary of the Ministry of Education). However, the compulsory character of INSET attendance is specified only in the aforementioned Minutes of the Stakeholders’ Meeting (SMASSE (2002)). The Minutes of the fifth Meeting of the Joint Coordinating Committee, signed by the Undersecretary for Education as the representative of the Kenyan side, stipulate that each school principal is responsible for having teachers attend training. In other words, from the perspective of the “institutionalization” of training administration, there is no legal basis for making teacher participation compulsory.
of district-level training.\footnote{Considering the possibility of teachers being employed as government officials nationwide with little economic incentives, the concrete measures to secure training sustainability might be to create an environment where training and its certificates will be standardized by CEMASTEA and its participation becomes a criterion for recruitment without official notices from the Ministry. (although teachers are recruited and remunerated by Teachers Service Commission (TSC), schools select their own teachers through recruitment examinations). For this purpose, it is necessary that usefulness of the training is clearly seen at the classroom-level as well as well recognized by the parents and principals. Such measures can become strong incentives for teachers, equivalent to pay rises and promotions. Additional scenarios need to be developed in case the central office does not become responsible for training standardization.}

(3) \textbf{Organizational Level}

At present, 1,900 district trainers, school principals, district education officers and school inspectors, as well as regional officials involved in mathematics and science education, are trained at CEMASTEA annually. Development of the capacity needed to implement this national-level training represents one of the most significant outcomes of the project.\footnote{In addition, the Kenyan Government raised new issues during the mid-term evaluation for Phase II: 1) implementation of a baseline survey for trainers of primary teacher training institutions and vocational training schools, 2) training implementation for both personnel and 3) promotion of participation of private schools to the training, which the donor community expects.} In addition, the system for monitoring the situation of district-level implementation throughout the country by CEMASTEA itself, and for providing feedback to the Ministry of Education has been consolidated. Training activities have started to spread to other countries of the region. According to the Director of the Department of Quality Assurance and Standards at the Kenya Ministry of Education, the fact that Kenya is bringing its contribution to intraregional relationship-building in the field of education, and that Kenya’s role within Association for the Development of Education in Africa (ADEA), New Partnership for Africa’s Development (NEPAD) and other local unions has been strengthened, while national-level trainers actively participate in intraregional cooperation, serves to enrich trainers’ experience and is expected to produce valuable effects at the domestic level.\footnote{One of the remaining issues is the necessity to strengthen the CEMASTEA’s Management Department, which, in its current state, is unable to keep pace with the expansion of the organization.}

One of the remaining issues is the necessity to strengthen the CEMASTEA’s Management Department, which, in its current state, is unable to keep pace with the expansion of the organization.\footnote{Interview with Mr. Oyaya, Chief Inspector of Schools, Kenya Ministry of Education.} In addition, the Kenyan Government raised new issues during the mid-term evaluation for Phase II: 1) implementation of a baseline survey for trainers of primary teacher training institutions and vocational training schools, 2) training implementation for both personnel and 3) promotion of participation of private schools to the training, which the donor community expects.\footnote{Suggested by a national-level trainer at the workshop held at the completion of Phase I. (Report on SMASSE National Trainers Workshop on SMASSE Project, in JICA Social Development Department (2003)).}

(4) \textbf{Individual Level}

The training of 60 national-level trainers has been completed in terms of knowledge, skills and techniques. These trainers, who were the main target of CD aid during the 5 years of Phase I,
have demonstrated that they have internalized the significance of CD and can carry out cooperative activities on their own, as a supporter to the countries of the region, maintaining the emphasis on the need for ownership and sustainability. The success of the project in fostering CD supporters for third countries may be considered another of its remarkable outcomes.

A strong need for quality improvement in the field of mathematics and science education had existed on the part of the Ministry of Education, the Secondary School Heads Association and other stakeholders from the very start. Nevertheless, while 100 % of national trainers highly appreciated Activity/Student/Experiment/Improvisation (ASEI) lessons, some of them expressed their doubts and concerns regarding the present situation which hands responsibility for training over to the districts at the end of the fourth cycle. Such dissatisfaction is partly due to the lack of transparency of the future direction of training. In order to make the future vision of INSET a reality, a system capable of securing the concert efforts of national trainers is highly desirable.

3-1-2 Capacity Outcomes and Issues at the Local Level

(1) Societal Level

Based on the guidelines adopted at the Stakeholders’ Meeting, district education offices and school principals became the de facto authority in making district-level training attendance compulsory. Implementation coordinators seemed to deepen the commitment of the parties involved towards training implementation by formulating implementation mechanisms in a participatory approach. Although the debate concerning the future form of training is still under way, it is expected that the ability to develop training plans at district level will be enhanced.

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179 The current Permanent Secretary, previously a teacher himself, had been fully aware of the indispensability of improving mathematics and science education (interview with Mr. Njuguna, former Head of the INSET unit). An official of the Ministry of Education (currently, the Chief Inspector of Schools) talks about the personal experience which led him to strongly support the project: “As a high school student, I experienced hardships in mathematics and science classes, but I believed it was due to inadequate facilities and equipment. Since this project aims at improving lesson quality through INSET and small initiatives, it serves the interests of schools which cannot rely on financial resources.” (Interview with Mr. Oyaya, Chief Inspector of Schools, Kenya Ministry of Education.) Also, the former Secretary General of the Secondary School Heads Association, a former English teacher, confesses that he not only pointed out students’ poor performance in mathematics and science as a serious problem within the association, but was also aggrieved by his own students’ unsatisfactory results in national examinations at the end of secondary education (interview with Mr. Otieno, former Secretary General of the Secondary School Heads Association). The fact that the necessity of a system for INSET was perceived by related parties from the very start became an essential propelling force for the project.

180 76 % of national-level trainers said they “strongly believed” they would use ASEI in their lessons once returned to their schools, in answer to the questionnaire, while 24 % answered they “believed” they would use the method (questionnaire results of the on-site study).

181 Interview held as part of the on-site study.

182 For example, answers to the question whether “it is necessary for lifetime educators to attend SMASSE INSET” ranged from “I strongly agree” (47 % of national trainers) and “I agree” (24 %) to “I am not sure” (6 %), “I don’t agree” (18 %) and no answer (6 %). Although there was no “I strongly disagree” answer, affirmative responses were limited to 70 %, in contrast to the 100 % for ASEI lessons (questionnaire results of the on-site study).

183 In the Embu district, their original annual action plan was formulated, which effectively applied the 4-cycle training system (interview with the personnel of the Embu district education office).
(2) **Organizational Level**

At the local level, major outcomes included the implementation of INSET training on their own initiative in some part of the target area in Phase I and In-Country Training, as well as the institutionalization of District Implementation body District Planning Committee (DPC)/District In-service Training Center (DIC) and training implementation in the area covered in Phase II.

On the other hand, the remaining local-level issues include the need to increase the number of districts able to implement original training programs and the appropriate management of the SMASSE fund. In order to implement training independently at district level, it is necessary to take into consideration the discontent of teachers towards non payment of the daily allowance, and to secure the trust of guardians, who are the sponsors of INSET. Since the fund is a mechanism which could give rise to new interests in the future, a careful examination of management and auditing methods for the district fund needs to be carried out.

Needless to say, training implementation does not necessarily lead to lesson improvement. Numerous teachers do not start putting into practice the knowledge acquired through training until monitoring is conducted in class. For that reason, systematic district-level guidance and monitoring are critical.

In addition, plans exist for conducting computer practice as part of the monitoring support for district-level trainers, in a computer room set up at CEMASTEA through grant aid.\(^{184}\)

(3) **Individual Level**

**[I have been empowered]**

At the beginning, it was difficult to imagine that my lessons would be watched and commented upon. At the end of the second cycle, I started to feel confident and to invite my colleagues into the classroom. Now, I can observe my colleagues’ lessons, and engage in discussions. I have been empowered by taking part in the project activities.

Source: Interview with trainers from the Maragua and Wahome districts. The change in the awareness of the same person at the start of the project is described in detail in Baba (2002).

Having fostered the ability of district-level trainers to train teachers in their turn, and the ability of school principals’ to organize stakeholders’ meetings may be considered an important achievement from the point of view of the knowledge, skills and techniques involved.

\(^{184}\) Grant Aid Management Department, JICA (2005).
Furthermore, stakeholders who attended training in Japan are transmitting the importance of INSET and of teacher attitude to their districts. Formulation of district-level training implementation guidelines by the related local officials themselves also contributed to strengthening commitment through a participatory approach.

From the point of view of awareness, 100% of district-level trainers consider that introducing ASEI can help to improve students’ understanding,\(^{185}\) and 95% believe it can have a favorable influence on their performance in national examinations.\(^{186}\) It can conclude that district-level trainers realize the significance of implementing INSET. Their discontent is caused by the fact that the district trainer certificate has not been issued yet,\(^{187}\) despite the fact that its necessity was stated in the Minutes of the Stakeholders’ Meeting.

### 3-1-3 Capacity Outcomes and Issues at the School Level

1. **Societal Level**

   While having a problem with its collecting rates, the SMASSE fund has been essentially worked into tuition (development fund). This is a significant outcome which had not been specified in the PDM. The fact that training implementation costs are covered by families (by collection from tuition fees) can be regarded as an instance of guardians assuming responsibility for education. In the context of Kenya’s present situation marked by excessive education-related expenses (compared to other countries) coupled with low taxation capability, the allocation of less than 1% of tuition fees to the SMASSE fund, on a non-incremental basis represents an extremely realistic approach, in compliance with the “beneficiary-payment principle”.

2. **Organizational Level**

   Organizational activities at the school level have not been fully developed yet. Since the number of teachers in charge of the same subject within a single school is relatively small, it is expected that future activities (study group activities, monitoring, etc.) will focus not so much on the school level, but on teacher groups at the district level, following the precedent of the Maragua district.

3. **Individual Level**

   From the point of knowledge, skills and techniques involved, the majority of teachers

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185 Answers to the question whether “student understanding improves as a result of ASEI introduction” were “I strongly agree” (64%) and “I agree” (36%) (Questionnaire for district trainers (mathematics, chemistry, physics) undergoing national-level training).

186 Answers to the question whether “a greater use of ASEI lessons would result in better performance in national examinations” were “I strongly agree” (69%), “I agree” (26%). Of the remaining 5%, 4% said “they were not sure”, while 1% said “they strongly disagreed.” (Questionnaire for district trainers (mathematics, chemistry, physics) undergoing national-level training.)

187 Interviews in the areas where Phase I and the In-Country Training were implemented.
agreed that the training contributes to knowledge and skill acquisition. Not only does it relate to students’ better performance in mathematics and science in national examinations, it also generates changes of lessons which are perceived by students themselves at the class level. Nevertheless, lesson observation at the visited schools revealed that ASEI-PDSI practice is still insufficient in many cases. Adequate incorporation of ASEI-PDSI into teaching methods could result in further improvement in lesson quality in the future.

In their awareness, 30% of teachers have a negative attitude towards attending training, resulting from dissatisfaction due to nonpayment of daily allowance in parallel with training becoming mandatory. This attitude needs to be taken into consideration. Teachers’ motivation to take INSET is related to their perception of training as an important capacity factor for “the sustainable improvement of teachers’ capability to conduct lessons”. Teachers are willing to attend training as long as they recognize its value in relationship with all monetary and time considerations. It is therefore necessary to take steps in order to raise teachers’ satisfaction levels, and to work for the improvement and enhancement of training content, through methods other than the payment of daily allowance. Responses to questionnaires indicate that the majority of teachers are positive about training content, as shown in Table 3-1. This suggests that their reluctance to attend training is not directly related to the training content. Therefore, logistic steps such as a reconsideration of the training schedule and the dormitory facilities become an important factor in effecting a change in awareness.

### Table 3-1 Evaluation of Teachers on ASEI Lessons

<table>
<thead>
<tr>
<th></th>
<th>I strongly disagree</th>
<th>I disagree</th>
<th>I am not sure</th>
<th>I agree</th>
<th>I strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using the ASEI method in class will help improve students’ understanding.</td>
<td>0 %</td>
<td>0 %</td>
<td>2 %</td>
<td>52 %</td>
<td>45 %</td>
</tr>
<tr>
<td>Increased use of ASEI lessons will result in better performance in national examinations.</td>
<td>0 %</td>
<td>0 %</td>
<td>5 %</td>
<td>48 %</td>
<td>48 %</td>
</tr>
</tbody>
</table>

Source: Questionnaire for teachers (see Attachment 4).

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188 Questionnaire for teachers.
189 Ibid.
190 Baba and Iwasaki (2001) analyze the “classroom revolution” in terms of its formal and economic factors at the societal and organizational level, and of its attitude and spiritual factors at the individual level. They consider that, for the INSET system to yield results at the classroom level and to secure its sustainability, the education administration level and the individual level should operate in close cooperation: in order for the system to maintain its vitality and sustainability, it is necessary to produce specific behavior patterns at the individual level within the institutionalization process”. “Prioritizing the former may lead to participation by coercion, or motivated by economic considerations, while prioritizing the latter may lead to vulnerability to atmosphere and instability”. Activities aimed at producing changes in the teachers’ attitude and spirit are indispensable for a true “institutionalization” of INSET. The project under study endeavored to improve training quality through sustained efforts. Further steps need to be taken to stimulate teachers’ proactive involvement through on-site guidance and creation of training mechanisms facilitating participation.

191 Teachers’ wishes expressed in questionnaires included an adoption of single-day schedule, and a shorter training period (responses to the on-site study questionnaire). In addition, a creative system enabling national-level trainers, district-level trainers and general trainers to switch duties according to their performance also needs consideration (On-site questionnaire for teachers).
In this manner, the capacity necessary for “the sustainable improvement of teachers’ ability to conduct lessons” in mathematics and science secondary education have been consolidated not only at the national training center (CEMASTEA), or the direct beneficiary of the project, but also at the local and school levels. The importance of INSET for strengthening mathematics and science education was acknowledged by policymakers, which led to the establishment of a training implementation system covering the whole country. Furthermore, as shown by the Kenyan personnel who used the CD approach to establish a sustainable training system in other countries of the region as part of the interregional cooperation in Phase II, the project also enabled the Kenyan counterparts (C/Ps) to internalize the CD perspective. The project thus supported the recipient country to develop capacity not only to solve their own problems but also support other countries’ CD.

Capacity factors expected to be strengthened in the future still remain. Ongoing training can be seen as a booster shot for the revitalization of mathematics and science education in Kenya. INSET should ideally become rooted into the Kenyan education system as a permanent feature for education quality to continue improving in the future. Measures such as making training mandatory through governmental ordinances and notifications, or establishing a certification system can help to promote training attendance. An increase in teachers’ willingness to actively and continuously engage themselves in the process of lesson improvement is also highly desirable. To this end, it is first necessary to design training in such a way as to stimulate teachers’ willingness to participate in it. Studies of teachers’ opinions have shown that, even though they might be satisfied with training content, their discontent is related to the training schedule, dormitory facilities, and other logistic issues which are relatively easy to solve. Future efforts should be aimed not only at the continuous improvement of training content, but also at creating an environment that facilitates participation. Moreover, as previous experience has shown that in many cases training attendance does not necessarily result in direct application of acquired knowledge at the classroom level, appropriate on-site guidance and monitoring are necessary. Problems which might surface in the future, including those related to adequate fund management at local level, also need to be effectively dealt with. Level-specific outcomes and issues are shown in Table 3-2.
### Table 3-2 Level-specific Outcomes; Issues and Aspects for Further Consideration

<table>
<thead>
<tr>
<th>National level</th>
<th>International contribution</th>
<th>Societal Policies</th>
<th>Institutional Policies</th>
<th>Organizational Policies</th>
<th>Individual Skills and Techniques</th>
<th>Awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Through the medium of NEPAD, ADEA, the necessity for the strengthening of mathematics and science in secondary education has been recognized by the countries of the region and by donors, resulting in the creation of SMASSE-WECAS. • Third-country training was implemented in cooperation with intraregional organizations. • Kenya has developed a sense of self-awareness as CD facilitator as a result of its experience in intraregional cooperation.</td>
<td>• The necessity of mathematics and science INSET and the activities of CEMASTEA have been clearly specified in the Education White Paper. • As a result of the reflection into the Mid-term Expenditure Framework, budgetary steps have become feasible and donor activities have gained public acknowledgment. • Commitment for intraregional activities has been secured as part of the Mid-term Expenditure Framework.</td>
<td>• The INSET system for mathematics and science in secondary education has been standardized for nationwide application. • National-level training costs have been budgeted by the Ministry of Education. • The minimum qualification for becoming a district-level training coordinator has been set at the completion of the four-cycle system.</td>
<td>• The training center has been established. • Teaching materials and aid necessary for training implementation have been created. • It has become possible to systematically implement national-level training as a four-cycle system. • The system for monitoring and evaluation by CEMASTEA, and for improvement by turning evaluation results into lesson content has been consolidated.</td>
<td>• The ability necessary for the development of curricula and teaching materials in line with the findings of the baseline study has been acquired. • 60 teachers acquired the capacity to organize national INSET.</td>
<td>• Attitudes have changed as a result of monitoring and evaluation activities. • Continuous efforts have been made to improve training quality.</td>
</tr>
<tr>
<td></td>
<td>• Consideration of cooperation approaches based on country-specific issues and needs • Institution-strengthening at the intraregional level • Consolidation of Kenya’s role and functions as a cooperation implementing country</td>
<td>• A sustainable INSET budget operation.</td>
<td>• Legal action for the reformation of CEMASTEA into a Semi-Autonomous Government Agency. • Making training truly mandatory through governmental decrees, etc. • Establishing a certification framework for trainers. • Discussion and establishment of the training system following completion of the 4 cycles, and of the certification system.</td>
<td>• Strengthening of the CEMASTEA Management Department. • Clarification of the future role of CEMASTEA (training standardization, support for district-level training, etc.) • Consideration for the possibility to implement training for primary education and vocational training.</td>
<td>• Further contribution of the subject team to the improvement of training quality. • Establishment of training methods for French-speaking countries.</td>
<td>• Clearer self-awareness for each role and function.</td>
</tr>
</tbody>
</table>
### Local level

**Societal (institutions)**
- The procedures for making the four-cycle INSET system mandatory are under way.
- The fund raising system has been set up.

**Organizational**
- DPCs have been established across the country.
- DICs have been established across the country.
- Centers have been supplied with the teaching materials and aid necessary for training implementation.
- The capabilities required for district-level training implementation and management have been improved.
- Independent training costs are met through the SMASSE fund.
- In some of the districts, original training programs have been developed on the basis of the needs assessment.

**Individual Knowledge Skills Techniques**
- The know-how necessary for both the implementation of district-level training and the organization of the Stakeholders' Meeting has been acquired.
- In some of the districts, original activities are unfolding after completion of the 4 cycles.
- The ASEI-PDSI method is used at the classroom level.

**Awareness**
- Trainers feel empowered.

### School level

**Societal (institutions)**
- The SMASSE fund was budgeted in real terms.

**Organizational**
- Although organizational-level activities are still at an early stage of development, an informal exchange between teachers is unfolding at schools where district-level trainers operate.

**Individual Knowledge Skills Techniques**
- Most mathematics and science educators are aware of the significance of the ASEI-PDSI approach and are willing to apply it in the classroom.
- After training, interaction between mathematics and science educators has intensified in some districts.

**Awareness**
- School principals acknowledge training outcomes.
- Teachers acknowledge the significance of training and of applying it to their lessons.

Source: Table drawn by the author of the report based on the on-site study.

### 3-2 Project Features and Initiatives Which Led to the Institutionalization of INSET

While the project essentially succeeded in establishing “a sustainable system for improving teachers’ capability to conduct lessons”, a few issues have remained unsolved, particularly in terms of developing each individual teacher’s skills and other aspects at the school level. Such an outcome was predictable from the fact that project planning focused on the establishment of INSET implementation mechanisms at the national and local levels, while school-levels activities were not included in the
PDM objectives. However, capacity enhancement at the school level is an indispensable condition for the sustainability of the INSET system and for its ability to yield results in the classroom. Thus, this project analysis serves to confirm the importance of the complexity approach, which is emphasized from a CD perspective (and of the validity of CD indicators).

On the other hand, we have been able to identify other significant outcomes, which had not been included among the PDM activities, such as the reflection of INSET into education policies, and training budgeting SMASSE fund at the school level. Moreover, the fact that the direct C/Ps of the project (national trainers), could turn into domestic CD providers, demonstrates the internalization of capacity by the recipient country. This section will put together those project features and measures which led to outcomes exceeding those originally anticipated for the CD of the recipient country, while leaving the issue of strengthening capacity at the school level for future consideration.

3-2-1 Perceiving Needs on Multiple Levels

(1) Perceiving Needs Common to a Variety of Levels

The first reason for the success of the project is to be found in the fact that the needs shared by a variety of stakeholders were identified and taken into consideration in the implementation process. Kenya is an education-conscious society, in which attending college is a shortcut towards success, and the difficulties experienced in mathematics and science in national examinations were a real bottleneck for many young people. From this point of view, the need to improve students’ performance in mathematics and science was a major one, shared by school personnel and parents. On the other hand, for the officials of the Ministry of Education, strengthening mathematics and science education was a national objective inscribed in the National Development Program. There is a real need here. School officials realized that improving teacher quality could be a key to solving the problem. Thus they also knew what had to be done to meet this need.

(2) The Cooperation Linking Political Intention and School Needs

The next step towards success is political intention. Sometimes, even if there is a clear grasp of what the needs are, little can be done to solve the problem. That is where Japanese cooperation can play an important role. It is a catalytic role, speeding up changes which are meant to occur. The key persons identified at first were one of the officials of the Ministry of Education (Deputy Chief Inspector of Schools; currently, Director of the Department of Quality Assurance and Standards), the Principal of the Kenya Science Teachers’ College (KSTC), where the project was based, and the Secondary School Heads Association.\(^{193}\) The last one was especially regarded as

\(^{193}\) Interview with Mr. Sugiyama, JICA Chief Advisor. Training in Japan has been effectively used for the establishment of cooperative relations with the key persons.
the key to extending the training for in-service teachers nationwide. Appointment of full-time C/Ps, one of the keys to the success of the project, has become possible by reminding top education officials of the need through the first two key persons. In addition, calling the full-time C/Ps’ attention to those needs made it possible to virtually institutionalize district-level training and secure its financial resources.

Furthermore, after the government change in 2002, the newly appointed Permanent Secretary of the Ministry of Education successfully promoted the project in opinion exchanges during the official visits he made to other African countries with the aim of expanding the project area, and is currently the key supporter of the project.

3-2-2 Building a System Contributing to Sustainable Development

(1) The Imperative of Sustainable Development

Cooperation must link the needs of stakeholders belonging to multiple levels. However, the success of cooperation is not guaranteed by focusing on that aspect alone. What made possible the success of the project was the consistent emphasis on the “imperative of sustainability”. All the strategies and tactics in the project have been formulated with the awareness that they should also serve to secure sustainability. Approaches were examined from the viewpoint of sustainability as early as 1995, through the joint needs assessment and the study of the institutional, financial and human basis as part of the project formulation process. A realistic approach based on the thorough analysis of existent capacity, and taking into consideration external conditions was selected as a result.

(2) Appointment of Full-Time C/Ps

The appointment of full-time C/Ps represented the first key to sustainability. Eight C/Ps were assigned as a prerequisite for launching the project. The C/P group was composed not of officials of the Ministry of Education, but of KSTC, educators directly involved in the in-service teacher system. This way of selection of the C/Ps enabled them to find incentives within the day-to-day tasks, which ultimately contributed to the establishment and maintenance of INSET. During the implementation stage, further motivating incentives were given to the C/Ps, who then actively involved a variety of stakeholders.

(3) Utilization of Existing Resources

Effective use was made of teachers and existent administrative structures in order to develop

\[194\] Interview with Mr. Sugiyama, JICA Chief Advisor.

\[195\] The Unit head stated that he would refer to the project in all kinds of meetings (Interview with Mr. Njuguna, former coordinator of the INSET unit).
the training implementation mechanism. A good understanding of the partner country’s context, combined with setting up an implementation system utilizing existent resources, resulted in a smooth implementation free of unnecessary institutional tension (see Figure 3-1). At present, INSET, which started as a unit within KSTC, is expected to be reformed as a Semi-Autonomous Government Agency under the umbrella of the Ministry of Education.\(^\text{196}\)

### Figure 3-1  An Implementation System Utilizing Existing Organizations

Kenya’s low ability to bear the operating costs for the training was a concern from the start. The use of non-project grant aid was suggested several times during the preliminary study stage, and it was actually used for the funding of needs assessment and monitoring / evaluation activities. In addition, in Phase I, JICA “local adjustment budget” was used for the implementation of the In-Country Training activities.

The project secured stakeholder support in order to establish the SMASSE fund for district-level training implementation. The fund uses a mechanism by which a part of the “development fund” paid by parents to schools as tuition is used. The development fund is used to cover the various needs of school management based on the principal’s decision, and had been previously allocated to the curriculum training organized by the Secondary School Heads’ Association. Making use of less than 10 % of the development fund, and about 1 % of the entire

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\(^{196}\) CEMASTEA has become a Semi-Autonomous Government Agency under the Ministry of Education since April 2006.
tuition amount, the SMASSE fund met with little resistance from the parties involved. Finding such modalities of using the existent financial base of the partner country may be considered an innovative aspect of the project. Since it is raised and managed by DPCs in compliance with the guidelines for district-level training management, the fund is also a model for the way it fosters ownership.

(5) Building an Institutional Basis for Nationwide Expansion

In addition to securing the human resources and financial basis described above, measures had to be taken in order to establish the 3rd requisite for sustainability — an institutional basis. Given the centralized character of the Kenyan government, the generalization of training at the national level is an indispensable condition for sustainability. By adopting the “cascade approach”, and appealing to the influence of key persons such as the Secretary General of the Secondary School Heads Association, it became possible to extend the project area to the entire Kenyan territory. Thus, Phase II was launched.

Moreover, since previous cooperation in the field of secondary education had been limited among donor agencies, it was possible to contribute to the substantial “institutionalization” of the training system without incurring adjustment costs.

3-2-3 Nurturing Ownership

“As ‘donor fatigue’ and ‘the limitations of development aid to Sub-Saharan Africa’ are becoming more and more apparent, failing to produce results through implementation in line with Organization for Economic Co-operation and Development (OECD)-Development Assistance Committee (DAC) principles would mean that development in Africa is a lost cause”. In the project formulation stage, the project strategy was almost completely established as the result of a detailed preliminary study. Partner country ownership was recognized as one of the most important considerations, and Japanese staff devoted themselves to their role as partners of Kenya’s efforts.

What is Ownership?

Ownership means identifying problems and finding solutions by oneself. (Own the problems, own the solution.)

Source: Interview with Mr. Muraya, national-level trainer.

(1) Own the Problems

Although strategies were formulated by Japanese experts, C/Ps visited the districts themselves in order to assess the needs. This was a good opportunity for elite officials to

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[197] Interview with Mr. Sugiyama, JICA Chief Advisor.
familiarize themselves with the situation at the school level, and to perceive problems as their own.

(2) **Own the Solution**

Premised on the joint needs assessment, ASEI-PDSI was born out of the dialogue with the Japanese experts, and the C/Ps formulated the training plan themselves. In the absence of budget provision from the government, local governments and school-level stakeholders took the initiative of establishing the SMASSE fund. Thus, in the implementation process, Kenyan officials explored problem-solving methods by themselves and made all the “decisions”. By taking part in the decision-making process, stakeholders cultivated a feeling of responsibility and became enthusiastically involved in activities. Through having local C/Ps make decisions and thus allowing a sense of owning the decision to grow, ownership towards the decisions can be nurtured.

Moreover, a monitoring and evaluation unit was established as part of the project, and managed progress autonomously. This gave birth to a cycle in which new implementation methods were designed on the basis of the outcomes, and responsibility for the results was assumed by the Kenyan side. These activities had an influence on the awareness and attitude of partner country officials, leading to a dramatic improvement in the national-level training quality.

(3) **Incentives**

**Work as Incentive**

| • I enjoyed my work on the project almost as much as I had enjoyed the time when I was a college student. What I learned from my work is that “anything can be done”. SMASSE started from nothing, but now it has grown so much it is spreading to other African countries (Mr. Njuguna, former head of the INSET unit). |
| • The incentive for national-level trainers is “challenge”. On a regular basis, we must find ways of addressing the problems we are faced with, and to decide what the next step will be. I also enjoy a lot exchanging opinions with my colleagues in meetings in order to raise the quality of our work. (Mr. Kogolla, CEMASTEA representative). |

Source: On-site interview.

For national-level trainers, training in Japan and in third countries, as well as field trips to other countries of the region as third-country experts, represent significant incentives because they improve the trainers’ career prospects. At the same time, new challenges inherent in the day-to-day expansion of the project scope, such as conducting activities as third-country experts, or introducing training for primary and vocational schools, are part of the excitement of work, and therefore important incentives. By having incentives for work, the level of motivation rises and thus ownership towards work can be nurtured.
Based on the notion that “paying allowances kills a project”, no C/P allowances or daily allowance for the training period was provided. Since daily allowance paid by aid agencies is a routine in Africa, the project met various difficulties at its start. However, this spirit is now understood and shared by the Ministry of Education and by national-level trainers.

(4) **Leadership**

Between the project-launching stage and December 2005, the Head of the INSET unit played an essential part in promoting the project. The efforts made under his leadership to introduce lesson study and teachers' criticism of one another's lessons in a culture which completely lacked such background, helped increase the sense of Kenyan ownership.

The head's role was also the product of the relationship between him and the JICA Chief Advisor, the two spending a considerable amount of time together daily after working hours, frankly exchanging views on the project. The Chief Advisor considers that as a result of these exchanges, the unit leader developed a stronger sense of professionalism, and the patience necessary for giving others opportunities and guiding them when they lack adequate professional skills, while expressing his own vision and commitment.

(5) **Rising Presence of Kenya**

For the officials of the Kenyan Ministry of Education, strengthening the presence of the Ministry through partnerships with NEPAD and ADEA and through cooperation provided to other countries of the region, represented one of the keys to fostering ownership. National pride helped to strengthen the sustainability of the activities.

Expansion of regional activities was made possible by the fact that the parties shared a vision for the future. The 1st project formulation study report already mentions the possibility for the project to become a model case in Africa. Prior to the formulation of the strategic scenario, discussions regarding the expansion of the covered area to surrounding African countries, led to the creation of the project which had the internal potential for expansion, a potential which later materialized as Phase II.

(6) **Stipulation of INSET in Education Policies, and Budgetary Measures**

The stipulation of INSET for mathematics and science secondary education, and the budgetary measures necessary for long-term implementation, were the direct result of having fostered such ownership.

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The Kenyan Ministry of Education is expected to develop an awareness of the possibility of leading not only Kenyan development but also development in Africa (a manifestation of ownership) (JICA Kenya Office (2005)).
3-2-4 **Tangible Outcomes**

(1) **What the Tangible Outcomes Produced**

Although developing individual teachers’ capacity at the school level is still a pending issue, a wide range of positive outcomes have been achieved, including an improvement in students’ performance and an increase in their interest in the subjects. Needless to say, such achievements are part of the ultimate target of the project. The emergence of cooperation outcomes has also led to an intensification of support from teachers and national and local level officials, generating a positive cycle. (See Figure 3-2)

![Figure 3-2 Project Approach (Domestic Components)](image-url)

Note: Factors with limited effect on outcomes are indicated by a dotted frame.
Source: Created by the author.

(2) **The Focus of Cooperation**

The fact that the project focused on cooperation in “the field of mathematics and science in secondary education” helped to make outcomes even more apparent. Secondary education in Kenya is characterized by little intervention from teachers’ unions and uniform teacher capability. Moreover, having limited the scope of cooperation to mathematics and science made outcomes more clearly noticeable from comparisons with other subjects, thus proving the efficiency of cooperation.
(3) Monitoring, Evaluation and Public Relations (Efforts to Publicize Outcomes)

While classroom-level outcomes could be perceived through student observation and performance in national examinations, the changes in teachers’ skills and attitudes which produced such outcomes formed the continuous object of study of the project monitoring and evaluation unit, who also had the role to publicize their findings. The recognition arising from constantly connecting project activities with classroom-level results was instrumental in stimulating the commitment of Kenyan officials.

(4) Content Development and Standardization

Ongoing efforts for content optimization, ranging from ASEI-PDSI development to the introduction of lesson study, resulted in the steady enhancement of training quality and ultimately contributed to lesson improvement. An emphasis on training quality is essential in order to motivate teachers to attend the program.

The standardization of training content and sessions also contributed to ensuring training quality. On the other hand, the development of training implementation guidelines for the government administrators in charge of implementation played an important part in simplifying their work.

3-2-5 Support from Japanese Staff

(1) The “Waiting” Stance and the Long-Term Perspective

Japanese staff of the project know that results cannot be produced in the short term, and therefore they take their time. With this in mind, the Chief Advisor pointed out that the process of training content development, carried out by the 2 countries, took longer than the time usually needed for study and development by Japanese experts working by themselves, but this time was necessary for the Kenyan side to reach their own decisions in order to secure their ownership of training content.

Such a “waiting” stance is rooted in the attitude of the Japanese team to act as “kuroko”, discussed in 2-2-1 (2). While placing emphasis on the role of “kuroko”, the Japanese staff adopted a long-term perspective when considering issues together with their Kenyan partners.

As for the firm establishment of the training content, the Academic Advisor considers that

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199 The JICA staff states that “for CD to include changes in the perspective pf values, we need a project structure that makes ‘waiting’ possible. To that end, it is necessary to have a project design capable of covering a relatively long time span, and flexible enough to allow for approach adjustments as progress makes them necessary” (interview with a former staff in charge of the project at JICA Headquarters).
“although the introduction of ASEI may be considered a breakthrough, it will need 20 to 30 years to spread to classrooms throughout the country”. Voicing a conviction shared by the Japanese staff, he points out that “Japan needed 100 years after the Meiji period to become a leader in science and technology. As teachers change on a 10 to 20-year basis, the goal of this project is to “sow the seeds” for changes which will become visible in two generations’ time”.

(2) **The Belief in Sustainability, and the Importance of Being Bold and Flexible**

Other factors which speeded up project progress were the negotiation skills required to secure the institutional, financial and human resource basis indispensable for sustainability, and the determination and flexibility of the Japanese team in understanding the president’s political concerns and in initiating the In Country Training. The unwavering conviction that “cooperation is meaningless without sustainability” ultimately led to the C/Ps growth.

(3) **Support from JICA Personnel**

There is no project success right from the start. The perception of project success is built through the efforts of those involved. The first step in the project was to foster trust for JICA’s project through active public relations, and efficient operation and fund management. The next step consisted of positively introducing the project to key persons and officials of the Ministry of Foreign Affairs through JICA Kenya Office. At the same time the JICA Headquarters constantly referred to the project as representing JICA activities, not only through advertising media, but also on the occasion of intraregional expansion and aid intensification. The project site was visited by officials of the Ministry of Foreign Affairs and JICA officials, who acknowledged outcomes and made the decision of implementing Phase II. The project gained further recognition and support after the launch of Phase II, when it was granted the JICA Award, while the Academic Advisor received the Award of the Japan Society for the Study of Education and the International

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200 The Academic Advisor explains the reason as follows: “Japan needed 20 years to make the transition from the teacher-centered teaching system of the 1950s to the student-centered lessons of the 1970s. One of the driving forces behind the change was the establishment of democracy, and the generalization in the 60s of the mentality which no longer praised submissive students and reprimanded those who voiced their own opinions like in the 50’s, but instead started to appreciate students who spoke up in class. At the moment, the Kenyan teaching system is characterized by hierarchical relations, in which teachers are viewed as a superior entity, instructing the students, and in which submissive students are considered good students. Students lack the experience of studying by themselves or in groups. Another cause of the change in Japanese education was economic growth. It took 20 years to complete the transition from teacher-conducted experiments to experiments which were conducted by students. The period around the 1960s was a time of high economic growth for Japan, and schools suddenly had the possibility to purchase experiment equipment not only for the teacher’s use, but for students’ individual use as well” (interview with Mr. Takemura, Academic Advisor).

201 Interview with Mr. Tsutaoka, former JICA expert, Hiroshima University Professor. “If we consider Japan’s experience, we realize that, during Meiji and the 1st years of the Taisho era, few experiments were conducted in the classroom, and that budget differences among prefectures were reflected in the laboratory equipment they could afford. After the war, legislation designed to promote mathematics and science education led to the establishment of education centers, which in their turn stimulated spectacular growth. The fact that it took Japan so long to internalize the lessons learned from the West demonstrates once again that changes in the educational system are like changes in technology, which needs time to mature, just as it took 30 years for transistors to finally be used in practice. Another important thing to bear in mind is that, even if we train the staff for mathematics and science education, the field will not see any major development in the absence of approaches addressing social and administrative aspects.” (interview with Mr. Tsutaoka, former JICA expert, Hiroshima University Professor.)
Contribution Award and the Chief Advisor received the Foreign Minister’s Award.

This chapter analyzes the project from a CD perspective. In accordance with the hypothesis put forward in Chapter 1, the fact that the project was not initially formulated from a CD standpoint resulted into a number of capacity factors being left out of the scope of improvement. Outcomes not specified in the initial plan included, in the project formulation stage, the establishment of an implementation system aimed at “sustainability”, which was the product of (1) having planned cooperation in such a way as to address multiple-level needs and (2) having secured political backup. In the implementation process, (3) special attention was paid to nurturing the ownership of full-time C/Ps and government officials, while (4) tangible outcomes attracted further support. Moreover, (5) these processes were sustained by a commitment to “waiting” on the part of Japanese experts, who maintained trust relationships with the rest of the Japanese personnel and secured their indirect support. These are some of the approaches not recorded in the PDM which we could observe in our analysis. On the basis of these findings, the following chapter will formulate a number of suggestions for future technical cooperation in general, and for cooperation in the field of INSET for mathematics and science secondary education in particular.
Chapter 4  Aid Management Based on a Capacity Development (CD) Perspective

In the previous chapters, we examined how the Strengthening of Mathematics and Science in Secondary Education (SMASSE) project succeeded in establishing a “sustainable system for improving teachers’ capability to conduct lessons” as capacity of the recipient country.

Table 4-1 gives an overview of the way in which a CD perspective was present in the Japanese approach during the various stages of the project, starting with the project formulation stage.

| Table 4-1  The Japanese Approach from the CD Perspective During the Various Stages of the Project |
|--------------------------------------------------|--------------------------------------------------|
| Formation stage                                    | Implementation management                        | Cooperation content                        |
| JICA personnel                                    | • Placement of personnel capable of grasping the real needs of the recipient country, and of developing a strategic scenario in accordance with a vision for the future. | • Grasping country context.                  |
|                                                   | • Nurturing of Kenyan government ownership through a participatory approach, etc. | • Understanding real needs.                 |
|                                                   | • Building trust with government officials of the recipient country through the long-term commitment of the personnel involved. | • Establishing the project focus in a way that makes effects clearly visible with respect to the needs. |
|                                                   | • Taking into consideration other donors and establish strategic partnerships with them for smooth implementation. | • Developing strategies and tactics.         |
| Project experts                                   | • Foresight in examining mid- and long-term prospects. | • Facilitating institutionalization (area expansion) through easily understandable slogans and standardization of content |
|                                                   | • Development of short- to mid-term strategies. | • Academic support.                        |
|                                                   | • Support to the partner country during the execution stage. | • Avoiding an instructing attitude and fostering ownership through joint activities (aid donors as facilitators). |
|                                                   | • Fund management. | • Utilization of existing capacity and localization of cooperation content. |
|                                                   | • Effective use of training in Japan for key-person involvement. | |
|                                                   | • Public relations / publicity in the recipient country and Japan. | |
| Domestic personnel                                | —                                                  | • Academic support (dispatch of experts/ acceptance of trainees). |
|                                                   | —                                                  | • Fostering experts to act as partners in joint activities. |
| JICA personnel                                    | • Acting as a hub for the Japanese side, with contact and coordination functions. | • Organization of meetings for experts from relevant fields and other activities aimed at coordination with related projects, as well as the accumulation of knowledge and experience. |
|                                                   | • Inter-donor adjustment to support project activities. | |
| Project experts                                   | • Providing Kenyan partners with a variety of practical opportunities (learning by doing). | • Strengthening the academic aspect.         |
| Domestic personnel                                | —                                                  | • Acceptance of trainees.                   |
| Expansion stage                                   | JICA personnel                                    | |
|                                                   | • Adjustment of country-specific cooperation plans in collaboration with the Ministry of Foreign Affairs and embassies in the context of regional expansion. |
|                                                   | • Contact and coordination among local offices in the context of area expansion. |
|                                                   | • Data gathering for the safety of Japanese and third-country experts in the context of regional expansion. |
| Source: Created by the author based on on-site interviews etc. |
This chapter will draw on the above analysis to highlight the lessons learned from the project, not only in the field of education but also in that of technical cooperation in general, and will relate them to the 2 key concepts of CD, “complexity” and “endogenuity”, in order to propose recommendations for JICA's implementation system.

4-1 Complexity: Building a Sustainable System and the Concept of Complexity in CD Achievement

4-1-1 A Plan Considering Sustainability from the Project Formulation Stage, and Building Trust Relationships with Local Counterparts (C/Ps)

As previously mentioned, the project had not been initially designed from a CD perspective. However, examination of the project approach shows that adequate planning based on a substantial preliminary study attached great importance to “sustainability”, and that this plan was thoroughly implemented.

This was made possible through the direct participation of implementors, including the Chief Advisor, experts and domestic personnel, from the early stages of the project, which led to the formulation of a feasible plan, as well as through the solid trust relationships with the recipient country.

4-1-2 Perceiving Needs on Multiple Levels through Capacity Assessment

Grasping the organizational, institutional and societal capacity of the recipient country represents the 1st step in selecting a sustainable cooperation approach. This is because these existing capacities influence the choice of the approach to be adopted by the project. Therefore, although a particular project may have proven successful in the context of a given country, the same approach will not be effective in a context of different country.

The SMASSE project analyzed existing capacity in the recipient country in terms of the institutional basis, the financial basis and human resources basis, at the national, local and school levels.

202 The Chief Advisor's responsibilities covered, in the project formulation study: education planning, in the 2nd project study: education planning, in the preparatory study: team leader/general affairs, in the implementation study: team leader/general affairs (report drafting for each study). The Chief Advisor points out that, although Kenyan society "seems at first sight to have modernized, features of the traditional society are still present, such as the leaders' patronizing role in relation to other society members, and the lack of a strong sense of the notion of corruption in financial transactions. It is a society in which sharing in the authority and benefits of others is a defining characteristic of leadership”. The Academic Advisor joined the project from the one-year preparatory study prior to implementation, while Domestic Support Committee members, who were in charge of coordinating the dispatch of experts and trainee acceptance during Phase I, joined at the time of the basic study in January 1997.
Table 4-2 illustrates the perspectives which should be used in capacity assessment from the project formulation / preliminary study stage.

**Table 4-2 Capacity Assessment Perspectives (Example)**

<table>
<thead>
<tr>
<th>Perspective</th>
<th>Institutional basis</th>
<th>Financial basis</th>
<th>Human resources</th>
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</thead>
<tbody>
<tr>
<td>Central government</td>
<td>Regulatory authorities</td>
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<td>Implementing agencies</td>
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<td>Cooperation targets</td>
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Source: Created by the author.

Capacity assessment taking into consideration 3 perspectives and 3 levels can define the problems and cooperation needs specific to each area, from those related to governmental policies to those of the project site.

4-1-3 Selecting a Cooperation Approach Aimed at Nurturing Sustainability (Application of CD Process Indicators)

Once multi-level needs are grasped through the above assessment, it becomes possible to secure the commitment of recipient country officials with respect to various elements of the project, and to generate a sustainable cooperation approach.

The preliminary study process used by the project to build a sustainable system is shown in Figure 4-1.

**Figure 4-1 The Pursuit of Sustainability Leads to CD Realization**

Securing the support of relevant parties

- Grasping needs
- Determining the capacity to be improved
- Context analysis
- Approach selection
- Negotiation of the implementation system
- Implementation

- Specification of political and societal needs
- Selection of a cooperation form for which results are clearly visible
- Participatory approach
- Effectiveness of the 3 perspectives (institutional basis/financial basis/human resources)
- Selection of the approach in accordance with the 3 perspectives
- Application of CD indicators
- Identification and involvement of key persons

Source: Created by the author.

Nevertheless, it is not easy to formulate an entire project plan based on the concept of “complexity” in the preliminary study stage. For an adequate project formulation and implementation,
it is desirable to develop progress indicators for a variety of cooperation areas, targeting the whole series of processes, from the preliminary study to the subsequent implementation and evaluation stages.

4-1-4 Involvement of Key Personnel and the Negotiation Stance (Positioning)
The next step after the selection of the most suitable cooperation approach is the negotiation with recipient country officials. Key person identification and involvement functioned effectively in the case of the project under study. Without being limited to the staff of C/P organizations, key persons range from national-level policy makers to school-level officials, different negotiation content and approaches being needed for each category.

4-2 Endogeneity: Indirect Support Stimulating Developing Country-led Efforts

4-2-1 Ownership-building Mechanisms
Government officials of the recipient country often adopt a passive attitude, expecting things to be done for them. However, the SMASSE project made use of a variety of incentives in the course of its implementation process, aiming to instill motivation in Kenyan partners and thus to foster recipient ownership.

At the start, the Ministry of Education did not show a particularly strong commitment with respect to the establishment of local full-time C/Ps. Faced with this situation, the Japanese side adopted an uncompromising attitude, not excluding even the possibility of delaying or discontinuing the project, and ultimately obtained the desired effect, given the strong need for cooperation in mathematics and science education.

In addition, various self-thinking mechanisms were contrived in order to foster C/P ownership in terms of needs assessment and content development, monitoring and evaluation activities.

A significant result of the ownership-building process as part of CD support can be seen in the fact that Kenyan national trainers could turn into third-country trainers during the regional activities in Phase II, and act as facilitators fully aware of the importance of local ownership.

This would not have been possible without the determination of the Japanese side to leave initiative and decision-making in the hands of Kenyan partners, even if it meant accepting certain detours, and to adopt a “waiting” stance, which was understood and supported by JICA personnel.

Project management has to be result-based. While balance is important and limits do exist, flexible operation management which makes “waiting” possible has the potential to contribute significantly to the CD of developing countries.
4-2-2 Identification of Actor-specific Incentives

Incentives can be divided roughly into economic and non-economic ones. Economic incentives are generally believed to be detrimental to the realization of sustainable cooperation. This is due to the fact that, in most cases, the government of the recipient country has limited financial resources at its disposal after the end of cooperation. It can be said, therefore, that “allowances (economic incentives) kill the project”. It is important to consider carefully what sort of incentives can be created for each actor, and to provide them based on the criterion of cooperation sustainability.

The non-economic incentives functioned within the project as “challenge” - for local full-time C/Ps, “prestige” - for district trainers, improvement in student performance and changes at the classroom level - for school officials, response to needs and a greater presence - for officials of the Ministry of Education, improved networking and the possibility of promotion (once the project has reached a successful conclusion) - for district administrators (see Figure 4-2). Creating and providing effective incentives represents a key to cooperation success.

Training in Japan and third-country training can be effectively used as incentives and opportunities leading to future career success.

Figure 4-2 Various Actors and Their Possible Incentives (In the Case of the SMASSE Project)

<table>
<thead>
<tr>
<th>Economic Incentives</th>
<th>Central government (administrative official)</th>
<th>Implementing agencies (project sites) (C/Ps)</th>
<th>Local administrative structures (administrative official)</th>
<th>Local implementing agencies (district-level training)</th>
<th>School principals</th>
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Non-economic Incentives

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Note: Upper cells indicate economic incentives, while the thick black frame around lower cells highlights non-economic ones. A detailed analysis of roles at each organizational level, including the school level, is believed to contribute to an even more effective use of incentives.

Source: Created by the author.
4-2-3  Mechanisms Conducive to Tangible Outcomes

The Advantage of Technical Cooperation

Sector-Wide Approach (SWAP) involves financial support, but rarely succeeds in effecting change. Projects conducted by the staff of the Ministry of Education are targeted only at the Ministry of Education itself. On the other hand, since technical cooperation introduces new ideas, it has the power to radically alter part of the education sector.

Source: Interview with Mr. Njuguna, former Head of SMASSE INSET Unit.

Once cooperation outcomes become visible, commitment of the recipient country is guaranteed. The area of secondary education, which formed the focus of the project, is characterized by minimal interference from teachers’ unions. At the same time, the fact that mathematics and science education is confronted with persistent problems makes outcomes easier to perceive. Selecting a specific subject also made comparisons with other subjects possible. Needless to say, performance in national examinations at the end of secondary education is a matter of national interest. All these factors were instrumental in stimulating therefore sustained commitment to the project, once outcomes became visible. It need scarcely be said that publicizing such “tangible results” played an extremely important role.

The cooperation content of the project was determined on the basis of the experience and lessons gained from cooperation in the Philippines. Not only is the Academic Advisor an expert in physics teaching methodology, he also has vast experiences in the education system, evaluation methods and textbook development. Aiming to promote Kenyan CD through cooperative activities, young curriculum specialists and education evaluation experts brought their contribution to content

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203 The Package Cooperation for the Development of Elementary and Secondary Mathematics and Science Education in the Philippines, the first Japanese project for cooperation in the field of mathematics and science education, was launched at a time when Japan lacked solid know-how regarding this type of cooperation activities (interview with Mr. Ikeda, former member of the Domestic Support Committee, Hiroshima University Professor). The experience Hiroshima University staff had gained from their cooperation in the Philippines was extremely valuable to the project. Moreover, Hiroshima University acquired rich experience in simple experiments during the period of material shortage following the atomic bomb. Thanks to the contribution of educators now in their 50s, the last generation to have received instruction in simple experiments, the development of cooperation content adequate to the context of developing countries proceeded smoothly and effectively (interview with Mr. Ikeda, former member of the Domestic Support Committee, Hiroshima University Professor).

204 The following table shows the main employment background and academic society affiliations of the Academic Advisor (dispatch period: June 9, 1999 – June 30, 2006 (scheduled)).

<table>
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<tr>
<th>Year</th>
<th>Employment/Position</th>
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<tr>
<td>1977 – 1999</td>
<td>Professor, councilor, etc. (1981 – Ph. D. Hiroshima University, Faculty of Education)</td>
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<tr>
<td>1996 –</td>
<td>Councilor, Society of Japan Science Teaching.</td>
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<td>1997 –</td>
<td>Professor, the United Nations Educationalational, Scientific and Cultural Organization (UNESCO) Core University Program on Science Education.</td>
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<tr>
<td>1997 –</td>
<td>President of World Council for Curriculum and Instruction</td>
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<tr>
<td>1997 –</td>
<td>Head, Japan Curriculum Research and Development Association</td>
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</table>

Source: Adapted from Takemura (1999).
improvement. Eventually, the high quality of cooperation content became the driving force that yielded tangible outcomes.

Given that cooperation for In-Service Training for teachers (INSET) in mathematics and science is under way in a large number of regions, exchanges between projects in terms of content development are expected in the future. Although planned content varies according to the differences in social and economic development and in human resources, trial-and-error components are common to all projects, and there are many things which can be shared. As project-related knowledge and experience accumulate, they can be used in the formulation and implementation of future projects.

4-2-4 Institutionalization Defining the Role of Endogenous Initiatives

Sustainability of recipient country ownership needs to be secured through an institutional setup which ensures that activities within the projects are undertaken as endogenous efforts on the part of the recipient country.

The project has succeeded in institutionalizing training at the district level through the establishment of the SMASSE fund, creating a sustainable financial basis which places relatively little burden on the interested parties. The extension of the INSET system to cover the whole country in Phase II contributed to institutionalization, as a result of appealing visible outcomes to the Secondary School Heads Association and other key players.

Thus, promotion of institutionalization within a project period will stimulate developing country-initiated efforts to maintain and expand project outcomes on its own.

4-3 Lessons Learned as CD Facilitators with Respect to the Implementation System

4-3-1 The Network Linking the Headquarters, Country Offices and the Project

The discussions on project-area expansion were held at an early stage with the participation of the JICA Headquarters and the Ministry of Foreign Affairs. The project has been characterized throughout by prompt decision-making and implementation on the Japanese side. This was made possible by the Chief Advisor’s intimate knowledge of JICA’s decision making processes, as an expert in technical cooperation and international cooperation, and also by his sound grasp of the key points of activity implementation. Effective networking between JICA headquarters which provided adequate and prompt support, country offices which made efforts to coordinate themselves with the headquarters, and the project also played a crucial role in regional extension.

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205 Interview with Mr. Takemura, Academic Advisor.
206 Interview with JICA Headquarter staff currently in charge of the project.
207 Interview with former JICA Headquarters personnel.
The sustained commitment on the part of the Japanese experts may be said to have had a positive impact on the project. Nevertheless, it is not easy for a particular member to stay involved in a project for a long period of time. The establishment of a system connecting headquarters, country offices and the project, in which relevant departments grasp the needs of the field and provide prompt and adequate support, from the formulation to the implementation and evaluation stages, is highly desirable.

4-3-2 Further Training of Japanese Personnel and the Dispatch of Experts to Act as Policy Advisors

While JICA personnel are responsible for project formulation, the actual technical cooperation is carried out by dispatched experts. For Japan to continue contributing to the CD of developing countries, it will be necessary to dispatch personnel responsible for (1) implementation management: project managers who are capable of understanding the needs of the recipient country, of developing and implementing strategic scenarios in accordance with a vision for the future, as well as activity coordination experts able to put those strategic scenarios into practice, and (2) cooperation content: experts to act as policy advisors, and other experts to participate in joint activities for the CD of the partner country.

The presence of the project manager (chief advisor) is expected to become even more important in the future, not only as administrative core of technical cooperation projects, but also in the implementation of CD assistance at the societal level, including policymaking and institution building, which are vital factors of cooperation. As for policy advisors, it is recommended to make use of the knowledge of experts with a rich experience in policy formulation and curriculum development in the education sector.\(^{208}\)

In parallel with fostering young domestic personnel, efforts need to be made to train competent foreign personnel who can contribute to international CD in the way Kenyan C/Ps act as third-country experts, and to provide them with opportunities to carry out their activities.\(^{209}\) JICA and its related personnel are expected to recruit, strengthen and train such competent human resources.

4-3-3 Program-based Approach

In conclusion, we may say that securing and fostering experts able to formulate strategic scenarios based on recipient needs, in cooperation with local C/Ps, is indispensable for efficient CD assistance.

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\(^{208}\) Interview with Mr. Takemura, Academic Advisor. Specifically, “the Kenyan curriculum is designed on the premise that mathematics and science education should be part of general culture, and a condition for entering university. It is not founded on the idea that it might serve to acquire the practical knowledge necessary for industrial development. It is therefore necessary to develop a curriculum which addresses daily issues such as industry, agriculture, health-care, AIDS and nutrition. This means that we must revolutionize the curriculum from its foundations, and to change the mentality of those in charge of its development. The dispatch of Japanese experts with experience in curriculum development can have a significant catalytic effect in the process.”

\(^{209}\) Interview with Mr. Sugiyama, Chief Advisor.
The SMASSE succeeded in creating a synergic effect of not only such human resources but also a variety of activities not originally in the Project Design Matrix (PDM), which led to its sustainability and nation-wide extension.

While great importance has been attached to fostering sustainability, the 2nd Kennedy Round (2KR) C/P fund and non-project grant aid have been used to cover the initial cost (initial investment), given that it is difficult to put too great a burden on the partner country from the start. During the implementation of Phase I, the stepping stone towards extension to the country level was set by organizing training in locations other than the pilot areas, as the In-Country Training. As training spread across the country in Phase II, grant aid was used again for remodeling the national-level training center which forms its base.

Thus, while maximizing the use of local resources, JICA’s various activity menus have been systematically built into the program in order to achieve the goal of sustainability, and to ensure a comprehensive impact of CD assistance.

### 4-3-4 Evaluation Mechanisms

It is desired to develop a project management methodology which enables the simultaneous evaluation of the outcomes pursued in the project in parallel with the degree of CD achievement.