

## CHAPTER 7

### DEVELOPMENT OF PRINTED MATERIALS

#### Preamble

Printed materials in form of conference reports, teachers training manuals, workshop reports among others have been developed at CEMASTE. The District Trainers have adapted the training manuals at the district to fit their local needs. Materials produced at the districts are given to teachers for use during training.

#### 7.1 MATERIALS PREPARED AT THE NATIONAL INSET UNIT.

National Trainers have prepared and printed eighteen (18) titles of materials and disseminated more than twenty thousand (20,000) copies of the same to various target groups. Four (4) issues of SMASSE newsletters have been prepared, printed and disseminated between June 2003 and October 2005. A fifth issue is under preparation. These materials include:

- Training manuals.
- Reports on seminars and workshops held.
- Reports on District INSETS among others.

Listed below are the materials that have been prepared, printed and disseminated by National INSET Centre.

**Table 7.1: Materials Prepared, Printed and Disseminated by National INSET**

No.	TITLE	NO. OF COPIES DISSEMINATED BY OCT. 2005.	TARGET NUMBER.	TARGET GROUP
1.	INSET training manuals (1 <sup>st</sup> & 2 <sup>nd</sup> cycles) <ul style="list-style-type: none"> <li>• Biology</li> <li>• Physics</li> <li>• Chemistry</li> <li>• Mathematics</li> <li>• General sessions</li> </ul>	3,000	3,000	All participants
2.	National INSET reports <ul style="list-style-type: none"> <li>• 1<sup>st</sup> (7 groups)</li> <li>• 2<sup>nd</sup> Cycles (13 groups)</li> </ul>	30 30	30 30	SMASSE staff
3.	District INSET Monitoring and Evaluation reports <ul style="list-style-type: none"> <li>• 2004 (April &amp; August)</li> <li>• 2005 (April &amp; August)</li> </ul>	50 50	50 50	SMASSE staff
4.	Newsletter, 4 issues, twice a year. (Nov. 2003 – June 2005)	16,170	16,170	1 copy of each issue for every school in Kenya, a complimentary copy to article authors, DEO's and QASO.
5.	Kenya Secondary Schools Principals workshop (2004 & 2005) <ul style="list-style-type: none"> <li>• Training manual</li> <li>• Reports</li> </ul>	400 12	400 12	All participants. SMASSE staff

6.	Reports on sensitization workshops (stakeholders) Aug.2004	200	200	All participants and District INSET centres.
7.	DEO's workshop (Aug. 2005) <ul style="list-style-type: none"> <li>• Training manual</li> <li>• Reports</li> </ul>	80 Under preparation	80 6	All participants SMASSE staff
8.	QASO workshop (2004 &2005) <ul style="list-style-type: none"> <li>• Training manuals</li> <li>• Reports</li> </ul>	300 6	300 6	All participants SMASSE staff
9.	Third country training manuals <ul style="list-style-type: none"> <li>• 2004</li> <li>• 2005</li> </ul>	120 Under preparation	120 130	All participants
10.	SMASSE-WECSA brochure (2004)	50	50	SMASSE-WECSA member countries
11.	SMASSE-WECSA Conference reports <ul style="list-style-type: none"> <li>• 4<sup>th</sup> (South Africa)</li> <li>• 5<sup>th</sup> (Rwanda)</li> <li>• Pamphlet</li> </ul>	50 Under preparation 1,000	50 50	Member countries Member countries Member countries
12.	Third country training Experts report (Malawi)	10	10	Malawi Education officials, JICA, SMASSE staff.
13.	Impact on Third Country Training report.	Under preparation	20	Target countries, SMASSE staff.
14.	Internal workshop report <ul style="list-style-type: none"> <li>• 2003</li> <li>• 2004</li> </ul>	60 60	60 60	SMASSE staff
15.	SPIAS 2004 <ul style="list-style-type: none"> <li>• vol. 1</li> <li>• vol. 2</li> </ul>	10 10	10 10	SMASSE staff
16.	ASEI lesson plans <ul style="list-style-type: none"> <li>• Biology</li> <li>• Chemistry</li> <li>• Physics</li> <li>• Mathematics</li> </ul>			SMASSE staff
17.	Information and data for mid-term evaluation	Under preparation		SMASSE staff
18.	Homepage ( <a href="http://www.smasse.org">http://www.smasse.org</a> .)			
19.	ADEA WGMSE brochure (2005)	1,000		ADEA WGs and SMASSE-WECSA member countries

## ABBREVIATIONS

**DEO** –District Education Officer

**QASO**- Quality Assurance and Standard Officer

**SPIAS** – SMASSE project Impact Assessment Survey

**ADEA**-Association for the Development of Education in Africa

**WGMSE**-Working Group on Mathematics and Science Education

**WGs**-Working Groups

## 7.2 MATERIALS PREPARED BY THE DISTRICT INSET CENTRES

The district trainers have undergone training on how to prepare training materials during the two cycles. That has enabled them come up with suitable training materials for their District INSETs. The training manuals developed for the INSETs comprise of:

- INSET programmes
- INSET write-ups (adapted from the ones prepared by the National office)

In order to attain and maintain goals set at National Level, the write-ups prepared at the districts go through quality assurance by the national trainers before they are sent back to the District Trainers to be used for facilitation during district INSETs. Basically, the district trainers have been adapting the national INSET materials. Nevertheless, occasionally they have prepared their own original materials on new topics to substitute sessions offered at the National INSETs.

**Table 7.2 Materials Adapted from National INSET Training**

CYCLE ONE				
General	SUBJECT			
	Chemistry	Mathematics	Physics	Biology
<ul style="list-style-type: none"> <li>• Rationale for INSET</li> <li>• Adolescence psychology</li> <li>• Attitude towards mathematics and science</li> <li>• General trends in Science Education</li> <li>• ASEI movement and PDSI approach</li> <li>• Work Planning</li> <li>• Report on baseline studies</li> <li>• Teaching approaches and methods &amp; Trends in science and mathematics</li> <li>• INSET system construction</li> <li>• Student centred teaching/learning</li> <li>• Gender issues in science and mathematics education</li> <li>• Managing learning groups</li> </ul>	<ul style="list-style-type: none"> <li>• Teaching approaches and methods on</li> <li>• Electrochemistry</li> <li>• Organic chemistry</li> <li>• Thermo chemistry</li> <li>• Mole concept</li> <li>• Form one induction</li> </ul>	<ul style="list-style-type: none"> <li>• Form one induction on mathematics</li> <li>• ASEI/PDSI Approach in Mathematics</li> <li>• Syllabus analysis</li> <li>• Teaching/Learning resources/ Text book analysis</li> <li>• Key Concept</li> <li>• Status of Mathematics Classrooms/Difficulties in mathematics</li> <li>• Problem solving/Problem posing</li> <li>• Error Analysis/KCSE analysis</li> </ul>	<ul style="list-style-type: none"> <li>• Pressure</li> <li>• Sound 1&amp;2</li> <li>• Waves 1 &amp;2</li> <li>• Fluid flow &amp; Circular motion</li> </ul>	<ul style="list-style-type: none"> <li>• Resources and facilities and learning Biology</li> <li>• Ecology</li> <li>• Cell Biology</li> <li>• Classification</li> </ul>
CYCLE TWO				
General	Chemistry	Mathematics	Physics	Biology
<ul style="list-style-type: none"> <li>• Instrumental Design (PDSI II)</li> <li>• Rationale for practical work</li> <li>• Team building</li> <li>• Project Design matrix</li> </ul>	<ul style="list-style-type: none"> <li>• Laboratory safety</li> <li>• Rationale for project work</li> <li>• Electrochemistry</li> <li>• Mole concept</li> <li>• Organic chemistry</li> <li>• Non-metals</li> <li>• Station work</li> <li>• Structure and bonding</li> </ul>	<ul style="list-style-type: none"> <li>• Ethno mathematics</li> <li>• Syllabus analysis</li> <li>• Problem posing</li> <li>• Probability and statistics</li> <li>• New trends in the teaching and learning of mathematics</li> <li>• Problem posing &amp; problem solving</li> <li>• Prevention and remediation</li> <li>• Topic centred study</li> <li>• Navigation</li> <li>• Integers</li> <li>• Graphical methods</li> <li>• Open Approach</li> </ul>	<ul style="list-style-type: none"> <li>• Current electricity 1&amp;2</li> <li>• Magnetic effects of current</li> <li>• Electromagnetic induction</li> <li>• Thin lenses</li> <li>• Heating effects of current</li> <li>• Electrostatics 1&amp;2</li> <li>• improvisation</li> </ul>	<ul style="list-style-type: none"> <li>• Preparation of common lab. Reagents</li> <li>• Reproduction</li> <li>• Stimulus &amp; response</li> <li>• Respiration</li> <li>• Excretion and homeostasis</li> <li>• Resources and facilities for teaching Biology</li> <li>• Form one induction</li> </ul>

## CHAPTER 8

### ATTENDANCE OF THIRD COUNTRY TRAINING

#### Preamble

##### a) Third Country Training

The Third Country Training Programme (TCTP) is one of the regional activities of SMASSE-WECSA association through the SMASSE project. Main focus is ASEI & PDSI approach in Secondary Mathematics and Science Education in Africa and the training consists of lectures, demonstration, lesson/peer teaching, discussions and visit/field trips. The curriculum is organised to provide effective training from the view point of both theory and practice on the basis of ASEI & PDSI approach. The training is designed to take 5 weeks.

##### b) Themes of INSET

Training theme is “*Enhancing classroom activities for quality teaching and learning in Africa*”  
The sub-themes of training during the five weeks are as stated below;

Week	Theme
1 <sup>st</sup>	Sharing experience and ASEI paradigm
2 <sup>nd</sup>	Hands on activities and ASEI lesson planning
3 <sup>rd</sup>	Actualisation: Practice in the classroom 1
4 <sup>th</sup>	Actualisation: Practice in the classroom 2
5 <sup>th</sup>	Impact Transfer (Training Summary)

#### Synthesis

With reference to the Project Design Matrix, the following observations were made;

- (1) Third Country Trainings carried out two times in 2004.
- (2) The first one was conducted in CORAT, Nairobi from 18<sup>th</sup> January to 14<sup>th</sup> February.
- (3) The total numbers of participants was 42 and were drawn from 7 countries.
- (4) The second one was done in KUNSTE, Nakuru from 7<sup>th</sup> November to 11<sup>th</sup> December.
- (5) This was attended by 85 participants from 15 countries
- (6) Basic Criteria for the Award of a Participation Certificate

The basic criteria are the same as the Kenya National INSET. The guidelines are:

#### Basic requirements:

- Over 90% attendance during the 5 weeks of training
- Practicing secondary school teacher or teacher trainer or instructional advisor

#### Participation in INSET

- Active participation in all activities during training (discussions, hands on activities, peer teaching etc).
- Active participation/facilitation, in all INSET, Workshop or teaching activities (planning, management, facilitation)
- General conduct

### **8.1 THIRD COUNTRY TRAINING ATTENDANCE**

The table below gives a summary of Third Country trainings conducted;

**Table 8.1: Summary of First Third Country Training Attendance**

<b>No.</b>	<b>Country</b>	<b>B</b>	<b>C</b>	<b>M</b>	<b>P</b>	<b>Total</b>
1	Lesotho	2	2	2	2	8
2	Malawi	0	1	1	0	2
3	Mozambique	2	2	2	2	8
4	Rwanda	1	2	1	2	6
5	Uganda	0	1	1	0	2
6	Zambia	2	2	3	3	10
7	Zimbabwe	1	1	2	2	6
<b>TOTAL</b>		<b>8</b>	<b>11</b>	<b>12</b>	<b>11</b>	<b>42</b>

**Table 8.2: Summary of Second Third Country Training Attendance**

<b>No.</b>	<b>Country</b>	<b>B</b>	<b>C</b>	<b>M</b>	<b>P</b>	<b>Total</b>
1	Botswana	1	2	2	0	5
2	Burundi	2	2	2	2	8
3	Ethiopia	1	1	2	0	4
4	Madagascar	0	1	3	0	4
5	Malawi	4	0	5	2	11
6	Mauritius	1	1	1	2	5
7	Niger	2	2	2	2	8
8	Nigeria	2	1	2	1	6
9	Rwanda	1	1	0	0	2
10	Senegal	0	0	3	0	3
11	Seychelles	1	1	3	1	6
12	Swaziland	2	2	2	2	8
13	Tanzania	2	1	2	2	7
14	Uganda	3	1	1	1	6
15	Zimbabwe	1	1	0	0	2
<b>TOTAL</b>		<b>23</b>	<b>17</b>	<b>30</b>	<b>15</b>	<b>85</b>

## CHAPTER 9

### PRACTICE OF ASEI/PDSI METHOD IN WECSA COUNTRIES

#### Preamble:

##### a) Impact of Third Country Training

The impact of Third Country Training is evaluated using the ASEI/PDSI checklist. This instrument analyses the extent to which a teacher involves the practice of ASEI/PDSI method in the classroom. Evaluation using ASEI/PDSI checklist for Third Country Training participants is one of the verifiable indicators of the achievement of the Project purpose. The indicator requires that by the end of the project period ability of educators from member countries to practice ASEI/PDSI methods of teaching.

##### b) Evaluation tools

The extent of practicing ASEI/PDSI methods is determined using the following observation instruments developed by the project.

- ASEI/PDSI Checklist
- Lesson Observation Instrument
- Questionnaire for extent of student participation in lesson

Applying these instruments is one of the verifiable indicators of the achievement of the Project output. The indicator requires that Monitoring and Evaluation tools applicable to member countries are developed and practiced.

##### c) Target countries and evaluation method

This impact evaluation has been done in Malawi, Zambia, Rwanda and Zimbabwe between May and July 2005. The number of target teachers both ASEI/PDSI trained and un-trained are shown the table below. Observed lessons were taught by both trained and un-trained teacher in the same school. This was followed by administering questionnaire to determine the extent of students' participation in the lessons.

**Table 9.1 Number of target teachers**

	ASEI/PDSI Trained teacher	ASEI/PDSI not-trained teacher
Malawi	8	8
Zambia	4	3
Rwanda	2	2
Zimbabwe	7	7
Total	21	20

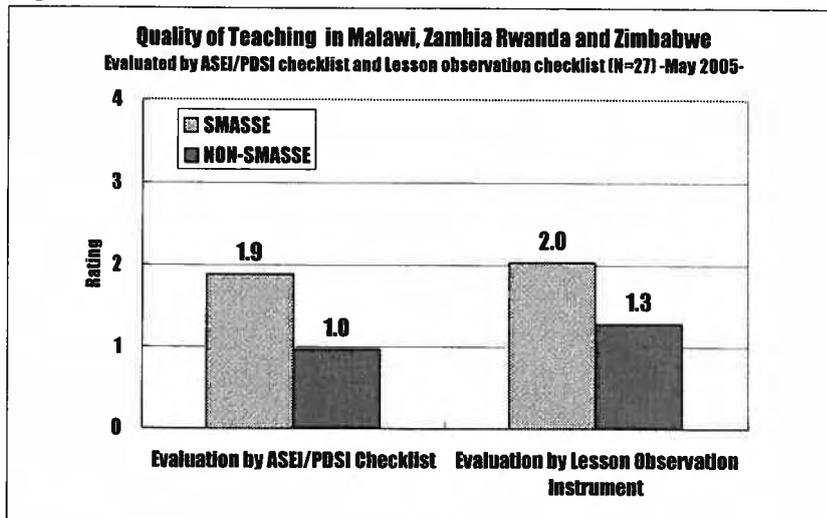
#### Synthesis

The mean for overall assessment of ASEI/PDSI checklist was 1.9 an indication that the practice of ASEI/PDSI in lessons is "attaining". However there is significant deference between ASEI/PDSI trained and un-trained teachers. Observation from actual lessons showed that the sustainability of the attaining status needs strengthening. Activities to strengthen impact transfer to the classroom and quality of Mathematics and Science Education at secondary level in member countries must be put in place and supported.

### 9.1 QUALITY OF TEACHING

Results obtained from ASEI/PDSI Checklist and Lesson Observation Instrument is summarized in the table 9.1. Quality of teaching index measured by ASEI/PDSI evaluation instruments scored a mean of 1.9. The desired quality is “attaining” according to the task’s evaluation. There is need to confirm this quality at the level of transfer from Third Country Training to the classroom. This is also evident from the low mean scores in the lesson observation.

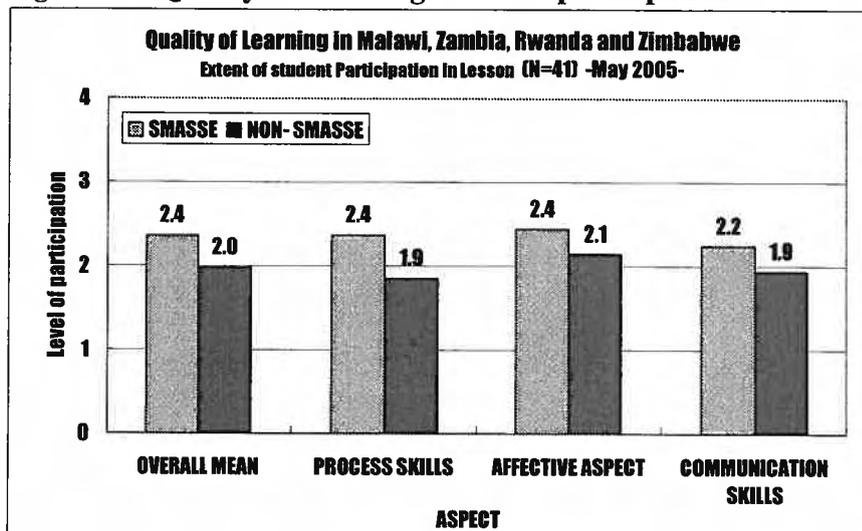
Figure 9.1: ASEI/PDSI Checklist and Lesson Observation Evaluation



### 9.2 QUALITY OF LEARNING

Results obtained from Questionnaire for extent of student participation in lesson is summarized in figure 9.2. Quality of learning index measured by questionnaire for extent of student participation in lesson scored a mean of 2.4. The responses by the students show that the standard is “attaining”. There is need to confirm with further training to sustain and improve this.

Figure 9.2: Quality of Learning: Level of participation



## CHAPTER 10

### TITLES OF PUBLICATIONS AND MANUALS FOR SMASSE-WECSA

**Preamble:**

A number of printed materials have been developed for SMASSE-WECSA. These materials are in the form of training manuals, training reports, workshop reports, lesson plans, and newsletters among other publications.

The publications and manuals can be categorized as below:

- Workshop materials
- Training materials
- ASEI lesson plans
- Newsletters

To this date, a total of 35 workshop materials and training manuals have been developed against the targeted 40 sets by the end of the Project period. The number of ASEI lesson plans developed by member countries currently stand at 104.

**Table 10.1 Workshop materials and Training materials**

SUBJECT		TITLE
Workshop Materials	1	Understanding SMASSE and SMASSE-WECSA
	2	SMASSE-WECSA update
	3	Country Reports
	4	Annual Report from SMASSE-WECSA secretariat
	5	Principles of ASEI movement and PDSI approach
	6	ASEI/PDSI pedagogic paradigm
	7	SMASSE Project progress report
	8	Student centred teaching and learning
	9	Use of teaching/learning resources in practical activities
	10	Interactive classroom communication skills
	11	INSET system construction
	12	Monitoring and evaluation instruments
	13	The role of assessment in the teaching/learning process
	14	Impact of third country training
Training Manuals Biology	15	The practice of ASEI/PDSI
	16	Classification
	17	Ecology
	18	Resources and facilities for teaching and learning Biology
	19	Notes on preparation of common laboratory Reagents
	20	Cell Biology
Chemistry	21	The practice of ASEI in Chemistry
	22	ASEI/PDSI in Chemistry
	23	Improvisation and Small-Scale Experiments
	24	Laboratory Management, Safety and Techniques
	25	Reflections on Practice ASEI/PDSI in Kenya's
Physics	26	The practice of ASEI in Physics
	27	Pressure
	28	Circular motion



	29	Fluid flow
	30	Waves/Sound
Mathematics	31	The practice of ASEI in Mathematics
	32	Geometry
	33	Algebra
	34	Integers
	35	Probability

**Table 10.2 Lesson Plans developed by Member countries**

Topic Topic-Sub		Presenter	Country
<b>Mathematics</b>			
1	Opposite angles of a parallelogram	Mr. Akoto	STM-Ghana
2	Factor theorem	Mr. Mpholo Leoisa	Lesotho
3	Sequence and sequence	Ms Erica Viviers	MSSI-South Africa
4	Surface areas of prisms	Mr. Oyuga J. O.	SMASSE-Kenya
5	Indices; Introduction	Ms Francesca Haizel	STM-Ghana
6	Inéquation du 1 <sup>er</sup> degré a une inconnue	Ms Christine Uwimana	Rwanda
7	Algèbre : Décomposition des facteurs par méthode si noire Estatistique : Tableau groupe ; Histogramme	Ms Agnes Nyirabagabe	Rwanda
8	Exponential function, -Introduction	Berta Matavel	Mozambique
9	Systems of two linear equations with two unknowns - Solving of systems with graphical methods	Berta Matavel	Mozambique
10	Geometry -Area of a plane surface: triangle	Ms Christine Uwimana	Rwanda
11	Algebra Order in the set R: properties of inequalities	Ms Christine Uwimana	Rwanda
12	Rectangular Cartesian Co-ordinates in two dimensions. -The Cartesian plane	Mr. Aubrey Fredie Wabwire	Uganda
13	Measurement and mensuration -Area of a circle	Mr. Mpholo Leoisa	Lesotho
14	Transformation -Area under enlargement	Mr. Mpholo Leoisa	Lesotho
15	Statistics -Measure Of Central Tendency: Median	Mr. Elias Mulenga	Zambia
16	Trigonometry -The Sine Ratio	Mr. Elias Mulenga	Zambia
17	Inequalities -Graphical representation of linear inequalities	Ms Ruth Mwanza Mvula	Zambia
18	Probability -Theoretical Probability	Ms Ruth Mwanza Mvula	Zambia
19	Statistics and probability -Drawing statistical graphs	Ms Sithokozile Nyathi	Zimbabwe
20	Statistics and Probability -Experimental Probability	Ms Sithokozile Nyathi	Zimbabwe
21	Mapping and Functions -Domain and Ranges	Mr. Albert Msekandiana	Malawi
22	Sets -Set language	Mr. Albert Msekandiana	Malawi
23	Earth Geometry -Parts of the earth's sphere	Mr. Wicliith Sakala	Zambia
24	Measurement and constructions -Construction of a perpendicular bisector of a straight line	Mr. Wicliith Sakala	Zambia
25	Statistics -Calculation of mean	Zongezile Dlangamandla	Lesotho
26	Algebra -Change of Subject	Zongezile Dlangamandla	Lesotho
27	Quadrilateral. -Theorem about the sum of interior angles	Ms. Perpetua Michangula	Mozambique
28	Quadratic inequations. -Graphical solution of Quadratic inequation	Ms. Perpetua Preciosa	Mozambique
29	Linear equations -Linear equations in one unknown	Group work	1 <sup>st</sup> Third country training participants
30	Coordinates and graphs -Linear graphs	Group work	
31	Similarity and enlargement -Enlargement	Group work	
32	Angle and plane figures -Angle properties of polygons	Group work	
<b>Chemistry</b>			
33	Nitrogen and Its compounds -Solubility of Ammonia	Mr. Munguni M.	MSSI-South Africa
34	Kinetic theory of matter	Mr. Kilonzo B.M	SMASSE-Kenya
35	Kinetic theory of matter -Introduction	Mr. Bruno Musinguzi	Rwanda
36	Combustion of substances; Burning of Non-Metals	Mr. Ndolo P.R.	Malawi
37	Physical & chemical; Mixtures and Compounds	Mr. Gachuhi S. K.	SMASSE-Kenya
38	La pollution atmosphérique	Mr. Habimana Fabien	Rwanda
39	Les carbonates – Expériences	Mr. Rutayisire Origène	Rwanda

40	Organic chemistry -Structures and names of Alkenes	Mr. M. Nyenye	Lesotho
41	Oxygen, Oxides and Combustion -Physical and chemical properties of oxygen	Mr. Lucio Augusto	Mozambique
42	Carbon and carbon compounds -Laboratory preparation and tests on ethyne gas	Mr. Lucio Augusto	Mozambique
43	Thermochemistry -Enthalpy of neutralization	Mr. Lebuso	Lesotho
44	Mixtures and compounds -Separation of mixtures	Mr. N. O. Ringtho	Uganda
45	Oxygen, Oxides and Hydroxides -Physical properties of oxygen	Mr. Musinguzi Bruno	Rwanda
46	Mole concept -Concentration of solutions	Mr. Chikande	Zimbabwe
47	Chemical reactions -Balancing chemical equations	Group work	Burundi
48	Stoichiometry and the mole concept – Determination of moles of water of cristalization in copper II sulphate crystals	Mr. P. R. Ndolo	Malawi
49	Structure of the Atom and the Periodic table – Simple structure of the atom	Mr. Marko Chigondo	Zimbabwe
50	Structure of the Atom and the Periodic table – Names and symbols of ferst 20 elements	Mr. Marko Chigondo	Zimbabwe
51	Structure of the Atom and the Periodic table – Structure of the atom, atomic number and mass number	Mr. Mbazi Njema	Tanzania
52	Salts - Preparation of salts by direct method	Mr. Mbazi Njema	Tanzania
53	Structure of the Atom and the Periodic table – simple balanced chemical equations	Mr. Simon Joshua	Tanzania
<b>Physics</b>			
54	Light -Dispersion of white light	Ms Mwaura M.	SMASSE Kenya
55	Electromagnetic induction	Ms Nthabiseng Mobe	Lesotho
56	Waves -Production and properties	Mr. Siphon Sambo	MSSI-South Africa
57	Lenses; Types of Lenses & Refraction in Lenses	Mr. Mboya T.O.	SMASSE Kenya
58	Diffusion of Liquids and Gases	Mr. Mathew Malata	Zambia
59	Les états de la matière	Mr. Mpozeriniga	Burundi
60	Densité par rapport a' l'eau	Mr. Habyarimana	Rwanda
61	Electrostatics -Charging by rubbing	Ms Martha Minde	Tanzania
62	Electrostatics I -Leaf electroscope	Dr. Y. Ramma	Mauritius
63	Electrostatics I -Charging by friction	Dr. Y. Ramma	Mauritius
64	Electrostatics I -Charging by induction	Mr. B. Ange Jolicoeur	Seychelles
65	Electrostatics - Units of charge and leaf electroscope	Mr. B. Ange Jolicoeur	Seychelles
66	Mechanical properties of matter -Problems on Hooke's law	Mr. George Chithila	Malawi
67	Mechanical properties of matter -Construction and calibration of simple balance	Ms Grace Jakko	Nigeria
68	Mechanical properties of matter -Spring constant of a spring	Mr. George Chithila	Malawi
69	Mechanical properties of matter -Force constant of a spring	Ms Grace Jakko	Nigeria
70	Liquid flow -Equation of continuity and Bernoullis Effect	Mr. Ewald S Mateshi	Tanzania
71	Thermal expansion -Thermometers	Mr. Felix Mpozeniga	Burundi
72	Thermal expansion -Measurement of temperature	Mr. Ben D.D. Enjiku	Uganda
73	Liquid flow -Types of fluid flow	Mr. Ben D.D. Enjiku	Uganda
74	Rectilinear propagation of light -Eclipses	Mr. Eustance Kuzemba	Malawi
75	Reflection at mirrors -Laws of reflection	Mr. Abdoukdri Bolmey	Niger
76	Waves -Formation of waves	Mr. Abdoukdri Bolmey	Niger
77	Waves -Transverse and longitudinal waves	Mr. Sabelo Tsabedze	Swaziland
78	Electrostatic -Leaf electroscope	Mr. Ousseini Hassane	Niger
79	Linear motion -Determination of gravitational acceleration using a simple pendulum graphically	Mr. Ousseini Hassane	Niger
80	Linear motion -Distance – time graph	Ms Hilaire Baransharitse	Burundi
81	Linear motion -Acceleration of free fall	Mr. Mahun Cyparsade	Mauritius
<b>Biology</b>			
82	Plants -Phylum Mycophyta-sexual and asexual reproduction	Mr. Muzirambi J. M.	Zimbabwe
83	Parts of a flower	Ms F. Hanyuma	SMASTE-Zambia
84	Plant tissues -Introduction	Ms Amina Sharbaidi	SMASSE-Kenya
85	Animals; Vertebrates Animals	Mr. Musinguzi Bruno	Rwanda

86	Nutrition; Food test	Mr. Muraya Daniel	SMASSE-Kenya
87	L'appareil respiratoire : Description	Ms Umubyeyi Brigitte	Rwanda
88	Physiologie e l'appareil digestif	Ms Mukagatsinzi Charlotte	Rwanda
89	Transport in animals -Structure and functions of the heart	Ms Mphetsile Mabuza	Swaziland
90	Nutrition in animals -Meaning and types of heterotrophism	Mr. Peter Mwavella	Tanzania
91	Characteristics of living things	Group work	Nigeria
92	Plant and water relations -Osmosis	Ignations Imbayago	Zimbabwe
93	Protein synthesis -Transport- package- export of proteins	Ndikumana P Vyumvuhore F	Burundi
94	Photosynthesis -Adaptation of a leaf for photosynthesis	Ms Darryl Esparon	Seychelles
95	Transport and circulation -The heart	Group work	Botswana
96	The diversity of life and classification -Division Angiosperm	Mr. Eyayu M Fetene	Ethiopia
97	Human nutrition -Food test	Group work	Tanzania
98	Reproduction in plants -Reproductive parts of a flower	Group work	Swaziland
99	The structure of the flowering plant – Leaf modifications	Group work	Uganda
100	Sexual reproduction in flowering plants – Insect and wind pollinated flowers	Group work	Mauritius
101	Nutrition in mammals -Digestion of starch in the mouth	Group work	Malawi
102	Constituents of green plants	Group work	Niger
103	Characteristics of living things	Group work	Nigeria
104	Nutrition in plants -Testing for starch	Umubyeyi Brigitte	Rwanda

## CHAPTER 11

### SMASSE-WECSA SECRETARIAT

#### 11.1 SMASSE –WECSA SECRETARIAT

##### **Establishment:**

SMASSE-WECSA secretariat based at the Centre for Mathematics, Science and Technology Education in Africa (CEMASTEA) in Nairobi Kenya, was established by the regional committee of the Association in accordance with article 5.1 of the SMASSE-WECSA constitution as the regional Secretariat and Administrative centre of the Association. The Japanese Government retaliated the same during the World Summit on Sustainable Development in South Africa (August 2002). The regional committee forwards the working proposals to the secretariat for its activities.

This chapter gives the number of personnel who have been and are involved in SMASSE – WECSA activities since its inception in 2002. It also spells out the roles and responsibilities of personnel.

##### **Synthesis**

The establishment for the SMASSE-WECSA secretariat consist of all academic staff at CEMASTE A (Kenyans and Japanese). It has offices as follows:

1 Executive Chairman

1 Treasurer

1 Secretary

##### **11.1.1 SMASSE-WECSA Secretariat Staff**

1. Mr. Bernard Njuguna	Executive chairman
2. Ms. Lynette G. Kisaka	Secretary
3. Mr. T. Sugiyama	Treasurer
4. Mr. Michael Waititu	Subject Administrator, Physics
5. Mr. Obadiah Maganga	Subject Administrator, Mathematics
6. Ms. Peula Lelei	Subject Administrator, Biology
7. Mr. Patrick Kogolla	Subject administrator, Chemistry
8. Mr. Berege Cherutich Chesire	Academic Head, Physics
9. Mr. Kithaka Njogu	Academic Head, Mathematics
10. Mr. Daniel Matiri	Academic Head, Chemistry
11. Ms. Nancy Wambui Nui	Mathematics
12. Mr. Lukongo Matembo	Mathematics
13. Mr. John Owuor Oyuga	Mathematics
14. Mr. Paul Waibochi	Mathematics
15. Mr. Kamau Mwangi	Mathematics
16. Mr. Fred Odindo	Mathematics
17. Ms. Priscila Ombati	Mathematics
18. Ms. Rahab Ciira	Mathematics
19. Mr. Mugo Simon	Mathematics
20. Mr. Ogwel Ateng	Mathematics
21. Ms. Mary N. Wakhaya	Mathematics
22. Mr. Paul Cheruiyot Ruto	Physics
23. Mr. George Gitau	Physics

24. Mr. Muyanga Mutua	Physics
25. Ms. Serah Njeri Mburu	Physics
26. Mr. Leornard Omondi Opel	Physics
27. Mr. Kibanya Paul Gathitu	Physics
28. Mr. Ngeny Ernest Kiprono	Physics
29. Mr. Maate Phillip	Physics
30. Mr. Mboya Tom Okaya	Physics
31. Mr. Rabari Joseph	Physics
32. Mr. Makanda Livingstone	Physics
33. Mr. Ndelela Masoka	Chemistry
34. Ms. Grace Nyandiwa Orado	Chemistry
35. Mr. Benjamin Kilonzo	Chemistry
36. Mr. Kamau Joseph Mathenge	Chemistry
37. Mr. Samuel K. Gachuhi	Chemistry
38. Ms. Gladys Alivisia Masai	Chemistry
39. Mr. Stephen E. Oduor	Chemistry
40. Mr. Michael Kimani Gacohi	Chemistry
41. Mr. David Kireru	Chemistry
42. Mr. Isaac Gathambiri	Chemistry
43. Ms. Mercy Wangui Macharia	Chemistry
44. Mr. Okeyo Jackomanyo	Chemistry
45. Mr. Edmond Makoba Kizito	Biology
46. Mr. David M. Arimi	Biology
47. Ms. Mary Kariuki	Biology
48. Mr. George Kiruja	Biology
49. Ms. Amina Sharbaidi	Biology
50. Mr. Joseph Odhiambo	Biology
51. Mr. Stanslus Nyamai	Biology
52. Ms. Lydia Muriithi	Biology
53. Mr. Joseph K. Thuo	Biology
54. Mr. Albert Kisangi Kayesa	Biology
55. Mr. Daniel Muraya	Biology
56. Mr. Keiichi Naganuma	Project Coordinator
57. Prof. Shigekazu Takemura	Academic Advisor
58. Mr. Hiromasa Hattori	Monitoring and Evaluation
59. Mr. Tomoki Tokuda	Mathematics Education
60. Mr. Hazuki Uchiyama	Science Education

### 11.1.2 Duties of Office bearers

#### Head of the regional secretariat

The Head of the regional secretariat is the chief executive officer of SMASSE–WECSA on behalf of the association and deals with all the correspondence of the association, policy matters of the Association in consultation with the other members of the committee, issue notices of all meetings of the committee and of general meetings of the association, chairs such meetings; and in consultation with the regional committee; organize all activities of the association

#### Secretary and Treasurer

The secretary and treasurer carry out their specific duties under the guidance of the Head of the secretariat. All other matters of the association and daily operations of the Association are the responsibility of the secretariat. The secretariat also registers new members, receives membership fees and maintains a bank account and the Association's accounts on behalf of the Association

### 11.2 SMASSE-WECSA MEMBER COUNTRIES

The following is the list of SMASSE-WECSA member countries as of June 2005

**Table 11.1 List of Member Countries as of June 2005**

<b>PAID MEMBERS</b>	<b>UNPAID MEMBERS</b>
1. Botswana	1. Benin
2. Burundi	2. Burkina Faso
3. Ghana	3. Cameroon
4. Kenya	4. Congo(Brazzaville)
5. Malawi	5. Cote D'Ivoire
6. Mozambique	6. Egypt
7. Niger	7. Ethiopia
8. Nigeria	8. Lesotho
9. Rwanda	9. Madagascar
10. Senegal	10. Mauritius
11. Swaziland	11. Namibia
12. Tanzania	12. Sierra Leone
13. Uganda	13. Seychelles
14. Zambia	14. South Africa
15. Zimbabwe	15. Zanzibar

**SMASSE-WECSA Countries**



## CHAPTER 12

### SMASSE-WECSA CONFERENCES AND ACTIVITIES

#### 12.1 SMASSE-WECSA CONFERENCE

**Preamble:**

Three Regional conferences have so far been held between 2003 and 2005. The conferences have been held under the theme *'Enhancing classroom activities for quality teaching and learning of mathematics and science in Africa'*

**Table 12.1 Summary of SMASSE-WECSA Conference**

	Year	Dates	Venue	No. of Participants	Participating countries
3 <sup>rd</sup> Regional Conference	2003	30 <sup>th</sup> Jun-3 <sup>rd</sup> July	Accra, Ghana	66	18
4 <sup>th</sup> Regional Conference	2004	31 <sup>st</sup> May-4 <sup>th</sup> June	Nelspruit, South Africa	76	21
5 <sup>th</sup> Regional Conference	2005	29 <sup>th</sup> May -3 <sup>rd</sup> June	Gitarama, Rwanda	60	30

#### 12.2 SMASSE-WECSA ACTIVITIES

##### 12.2.1 Sensitization Member Countries

SMASSE-WECSA Secretariat organizes sensitization workshops for its member countries through joint workshops, technical exchange visits, and Regional conferences and through National INSET. These visits provide opportunity for information exchange on matters of education and networking. Countries that have been involved in technical exchange visits and joint workshops include Kenya, Malawi, Mozambique, Senegal, South Africa, Uganda, Zambia, Tanzania, Zimbabwe, Niger, Gambia, Cameroon, Swaziland, Botswana, Namibia, Ethiopia, Nigeria, Ghana, Rwanda and Sudan. Table 12.2 shows the various sensitization activities carried out by SMASSE Kenya under the auspices of SMASSE-WECSA.

**Table 12.2 Summary of Sensitization for Member Countries**

Category	Country/ Organization	Date	No.	Personnel
National INSET	Malawi	24/04/2005	32	Core Trainers
	Zambia	10/04/2005	4	JOCV Teachers
DEO W/Shop	Malawi	14/08/2005	2	DEO and another
Principals' W/shop	Malawi	12/09/05	6	Principals
	Uganda	12/09/2005	4	National Trainers
	Uganda	21/08/2005	4	OJT for National Trainers SESEMAT
Visits to CEMASTEAM	NEPAD	22/06/2004	2	Prof. Mboya and another
	Malawi)	5/07 2004	1	JICA Malawi
	Honduras	13/09/2004	3	JICA
	Uganda	6/12/2004	7	Permanent Secretary and others



	Nigeria	14/02/2005	11	Director Education and others
	Egypt	21/02/2005	3	JICA Project
	Malawi	10/04/2005	4	PS Education, Principal DCE
	Nigeria	1/05/2005	11	Directors of Teacher T. Colleges
	Uganda	24/04/2005	2	Uganda SESEMAT
	Senegal	6/06/2005	7	PS Education

### 12.2.2 Project formulation and Baseline survey

A major thrust for sensitization in this area is for countries that intend to start up INSET activities based on the SMASSE Project model in their countries. Members exchange views on way to generate capacities for developing project designs (systems and curriculum) implementation and evaluation of INSET activities. SMASSE-WECSA secretariat has been involved in project development in the following countries

**Table 12.3 Sensitization Member Countries**

Country	Dates	Activity
Uganda	22/08 to 16/09/2005	INSET Curriculum Development
Nigerian	26/10 to 29/10/2005	Development of baseline survey instruments and formulation of a PDM
	9/10/2005-3/11/2005	Baseline survey

### 12.2.3 Third Country Experts (TCEs')

In the months of July and August 2005 SMASSE-WECSA Secretariat sent four National trainers (one from Chemistry, Mathematics, Biology and Physics) to Malawi under the Third Country Experts scheme. They assisted SMASSE INSET Malawi in capacity developing its Core Trainers in matters related to planning, implementation and evaluating of INSET. In Malawi they guided Malawians and participated in needs assessment survey, developing training programme, conducting the training together with their counterparts and evaluated the training. Other TCE are currently in Nigeria for similar work.

### 12.2.4 Collaboration with other Organizations

In its efforts to spread its influence as a leading programme in the provision of quality capacity development SMASSE-WECSA collaborates and creates linkages with other organizations. Such organizations include:-

**Association for Development of Education in Africa (ADEA):** On 30<sup>th</sup> March 2004, ADEA in collaboration with SMASSE-WECSA launched a working group for Mathematics and Science Education (WGMSE) in sub Saharan Africa. The broader aim of the working group is to contribute through capacity development, networking, advocacy, analytical work and information dissemination the improvement of Mathematics and Science education programmes in sub Saharan Africa and to promote regional cooperation in matters of education. The activities of the working group are sponsored by JICA and Ministry of Education Science and Technology (MoEST). The WGMSE is coordinated at CEMASTE. Table 12.4 shows the various activities carried out by SMASSE-WECSA Secretariat under this collaboration with ADEA.

**Table 12.4 Activities (ADEA)**

Date	Location	Personnel	Activity
03/12/2003	Mauritius	Mr. Njuguna	Biennial ADEA conference
15/04/2004	Geneva	Mr. Njuguna	ADEA Steering committee Seminar
15/11/2004	Rwanda	Mr. Sugiyama, Mr. Njuguna	ADEA Steering committee Seminar
16/01/2005	Paris	Mr. Sugiyama, Mr. Njuguna	Orientation for working groups
30/03/2005	Nairobi	Dr. Mamadou Ndoye	Launching of ADEA WGMSE
24/05/2005	Paris	Mr. Sugiyama, Mr. Njuguna	ADEA Steering committee Seminar
30/05/2005	Rwanda	14 Secretariat members	5 <sup>th</sup> Regional Conference
28/09/2005	Paris	Mr. Njuguna	ADEA Steering committee Seminar

**New Partnership for Africa's Development (NEPAD):** During the fourth SMASSE-WECSA conference in Nelspruit, South Africa, NEPAD participated as an observer. This later culminated in NEPAD signing a Letter of Understanding (LOU) with SMASSE-WECSA in which the later organization function as flagship for NEPAD in the enhancement and promotion of Mathematics and Science Education in Africa. The table below shows the various activities carried out by SMASSE Kenya under the auspices of SMASSE WECSA

**Table 12.5 Activities (NEPAD)**

Date	Location	Personnel	Activity
31/05/2004	South Africa	Prof. Mboya	4 <sup>th</sup> Regional Conference
	Kenya	2 NEPAD Delegates	Discussions on collaboration
24/08/2004	South Africa	Prof. Karega Mutahi, Njuguna, Sugiyama, Saito	Singing of LOU
30/03/2005	Nairobi	Prof. Mboya	Launching of ADEA WGSME
30/05/2005	Rwanda	Prof Mboya	5 <sup>th</sup> Regional Conference

**Southern African Consortium for Monitoring Education Quality (SACMEQ):** On 21<sup>st</sup> February 2005, SMASSE-WECSA secretariat team visited Zimbabwe to discuss memorandum of understanding with the Ministry of Education, Sports and Culture (MoESC) and SACMEQ which is located in Zimbabwe. Outcomes of the discussions led to the signing of MOU marking the start of formal relationships between the two organizations in monitoring of the quality education in Mathematics and Science particularly in secondary school level. Table 12.6 shows the various activities carried out by SMASSE Kenya in regard to SACMEQ under the auspices of SMASSE-WECSA

**Table 12.6 Activities (SACMEQ)**

Date	Location	Personnel	Activity
20 <sup>th</sup> 02 2005	SACMEQ Zimbabwe	Mr. Njuguna, Mr. Sugiyama Mr. Hattori, Mr. Waititu	Discussion and Signing of MOU
30 <sup>th</sup> 05 2005	Rwanda	Mr. Saul Murimba	5 <sup>th</sup> Regional Conference

## CHAPTER 13

### INPUTS FROM KENYAN AND JAPANESE GOVERNMENTS

#### 13.1 INPUTS FROM KENYAN SIDE

##### 13.1.1 Building and other Facilities Necessary for the Project

**Table 13.1 Buildings and other Facilities Necessary for the Project**

No.	Building / Facilities	Venue
1	One Office	Ministry HQ
2	One Storehouse	KSTC
3	Five staff houses	KSTC
4	Water and Electricity Supply	CEMASTEА, KSTC & Ministry HQ
5	Land for SMASSE-WECSA Secretariat Office	KSTC
6	New National INSET Centre (CEMASTEА)	CEMASTEА
7	SMASSE Office/Store at District Centres	Listed below

**Table 13.2: List of SMASSE District Centres (Newly established from 2003 July)**

No.	Venue of District Centre	District	Province
1	Nyamonye Girls High School	Bondo	Nyanza
2	Asumbi High School	Homa Bay/Suba	Nyanza
3	Kisumu Girls High School	Kisumu	Nyanza
4	Bishop Okoth Ojolla	Kisumu	Nyanza
5	Ulanda High School	Migori/Kuria	Nyanza
6	Kebirigo High School	Nyamira	Nyanza
7	Nyansiongo High School	Nyamira	Nyanza
8	Sironga Girls High School	Nyamira	Nyanza
9	Kebirigo High School	Nyando	Nyanza
10	Agoro Sare High School	Rachuonyo	Nyanza
11	Ng'iya Girls High School	Siaya	Nyanza
12	Rang'ala	Siaya	Nyanza
13	Kyeni Girls High School	Embu	Eastern
14	Nguvu Boys High School	Embu	Eastern
15	Muthale Girls High School	Kitui	Eastern
16	Mulango Girls High School	Kitui	Eastern
17	Machakos Girls High School	Machakos	Eastern
18	Masinga Girls High School	Machakos	Eastern
19	Tala Girls High School	Machakos	Eastern
20	Consolata, Gitaraka	Mbeere	Eastern

21	Kanjalu GSS	Meru North	Eastern
22	Kaaga Girls High School	Meru Central/Moyale	Eastern
23	St. Mary's Girls High School	Tharaka/Marsabit	Eastern
24	Isiolo Boys High School	Isiolo	Eastern
25	Migwani	Mwingi	Eastern
26	Moi, Siongiroi Girls High School	Bomet/T Mara	Rift Valley
27	Tenwek Secondary School	Bomet/T Mara	Rift Valley
28	Kaplong Girls High School	Bureti	Rift Valley
29	Tengecha Girls High School	Bureti	Rift Valley
30	Kaptagat Girls High School	Keiyo	Rift Valley
31	Moi Girls Kapsowar	Marakwet	Rift Valley
32	Moi Girls Eldoret	Uasin Gishu	Rift Valley
33	Loreto Matunda	Uasin Gishu	Rift Valley
34	Bhati Girls High School	Nakuru	Rift Valley
35	Mary Mount Girls High School	Nakuru	Rift Valley
36	Menengai High School	Nakuru	Rift Valley
37	Naivasha Girls High School	Nakuru	Rift Valley
38	Njoro Boys High School	Nakuru	Rift Valley
39	St. Mary Girls High School	Narok	Rift Valley
40	St. Brigid's Girls High School	Tans Nzoia	Rift Valley
41	Nasokol Girls High School	Turkana/West Pokot	Rift Valley
42	Njonjo Girls High School	Laikipia/Samburu	Rift Valley
43	Londiani Girls High School	Kericho	Rift Valley
44	Moi Tea Girls High School	Kericho	Rift Valley
45	Kapsabet Girls High School	Nandi North	Rift Valley
46	St. Mary's, Tachasis	Nandi South	Rift Valley
47	Kerugoya Girls High School	Kirinyaga	Central
48	Kianyaga Boys High School	Kirinyaga	Central
49	Karima Girls High School	Nyandarua	Central
50	Nyandarua High School	Nyandarua	Central
51	Chinga Girls High School	Nyeri	Central
52	Nyeri High	Nyeri	Central
53	TumuTumu Girls High School	Nyeri	Central
54	Kangubiri Girls High School	Nyeri	Central
55	Gatanga Girls High School	Thika	Central
56	Karinga Girls High School	Thika	Central
57	Maryhill Girls High School	Thika	Central
58	Wajir Boys	Wajir/Ijara/Mandera/Garissa	North Eastern
59	BuruBuru Girls High School	Nairobi	Nairobi
60	Kenya High School	Nairobi	Nairobi

61	Statehouse Girls High School	Nairobi	Nairobi
62	St. George's Girls High School	Nairobi	Nairobi
63	Moi Girls High School Vokoli	Vihiga	Western
64	Bunyore Girls High School	Vihiga	Western
65	Lugulu Girls High School	Bungoma	Western
66	Cardinal Otunga Girls High School	Bungoma	Western
67	Bungoma High School	Bungoma	Western
68	Friends School Kamusinga	Bungoma	Western
69	Kolango Girls High School	Teso/Mt Elgon	Western
70	St. Cecilia Girls High School Nangina	Busia	Western
71	Coast Girls High School	Mombasa	Coast
72	Matuga Girls High School	Kwale	Coast
73	Malindi High School	Malindi/Lamu/Tana River	Coast

**Table 13.2: List of SMASSE District Centres (Pilot and In-Country District)**

No.	Venue of District Centre	District	Province
1	Sengera Girls High School	Gucha	Nyanza
2	Kisii High School	Kisii	Nyanza
3	Makueni Boys High School	Makueni	Eastern
4	St. Joseph Kibowezi Secondary School	Makueni	Eastern
5	Precious Blood Girls Kilungu	Makueni	Eastern
6	Chuka Girls High School	Meru South	Eastern
7	Sacho High School	Baringo	Rift Valley
8	Solian Girls High School	Koibatek	Rift Valley
9	Moi Girls High School Isinya	Kajiado	Rift Valley
10	Kahuhia Girls High School	Murang'a	Central
11	Murang'a High School	Murang'a	Central
12	Kamahuha Girls High School	Maragwa	Central
13	Njiri High School	Maragwa	Central
14	St. Joseph High School Githunguri	Kiambu	Central
15	Kiambu High School	Kiambu	Central
16	Ngarariga Girls High School	Kiambu	Central
17	Kirangari High School	Kiambu	Central
18	Bishop Njenga High School	Lugari	Western
19	Kakamega High School	Kakamega	Western
20	Mukumu Girls High School	Kakamega	Western
21	Butere Girls High School	Butere Mumias	Western
22	Dr. Krapf Memorial Secondary School	Kilifi	Coast
23	Bura Girls High School	Taita Tabeta	Coast



### 13.1.2 Assignment of Kenyan Personnel

**Table 8.2: SMASSE Current Members**

1.	Mr. Bernard M. Njuguna	Admin.	Head of National INSET Centre
2.	Mr. Michael Waititu	Physics	Subject Administrator
3.	Mr. Obadiah Maganga	Mathematics	Subject Administrator
4.	Ms. Peula Lelei	Biology	Subject Administrator
5.	Mr. Patrick Kogolla	Chemistry	Subject Administrator
6.	Mr. Berege Cherutich Chesire	Physics	Academic Head
7.	Mr. Kithaka Njogu	Mathematics	Academic Head
8.	Ms. Lynnet G. Kisaka	Biology	Academic Head
9.	Mr. Daniel Matiri	Chemistry	Academic Head
10.	Ms. Nancy Wambui Nui	Mathematics	National Trainer
11.	Mr. Lukongo Matembo	Mathematics	National Trainer
12.	Mr. John Owuor Oyuga	Mathematics	National Trainer
13.	Mr. Paul Waibochi	Mathematics	National Trainer
14.	Mr. Kamau Mwangi	Mathematics	National Trainer
15.	Mr. Fred Odindo	Mathematics	National Trainer
16.	Ms. Priscila Ombati	Mathematics	National Trainer
17.	Ms. Rahab Ciira	Mathematics	National Trainer
18.	Mr. Mugo Simon	Mathematics	National Trainer
19.	Mr. Ogwel Ateng	Mathematics	National Trainer
20.	Ms. Mary N. Wakhaya	Mathematics	National Trainer
21.	Mr. Paul Cheruiyot Ruto	Physics	National Trainer
22.	Mr. George Gitau	Physics	National Trainer
23.	Mr. Muyanga Mutua	Physics	National Trainer
24.	Ms. Serah Njeri Mburu	Physics	National Trainer
25.	Mr. Leonard Omondi Opel	Physics	National Trainer
26.	Mr. Kibanya Paul Gathitu	Physics	National Trainer
27.	Mr. Ngeny Ernest Kiprono	Physics	National Trainer
28.	Mr. Maate Phillip	Physics	National Trainer
29.	Mr. Mboya Tom Okaya	Physics	National Trainer
30.	Mr. Rabari Joseph	Physics	National Trainer
31.	Mr. Makanda Livingstone	Physics	National Trainer
32.	Mr. Ndelela Masoka	Chemistry	National Trainer
33.	Ms. Grace Nyandiwa Orado	Chemistry	National Trainer
34.	Mr. Benjamin Kilonzo	Chemistry	National Trainer
35.	Mr. Kamau Joseph Mathenge	Chemistry	National Trainer
36.	Mr. Samuel K. Gachuhi	Chemistry	National Trainer
37.	Ms. Gladys Alivisia Masai	Chemistry	National Trainer
38.	Mr. Stephen E. Oduor	Chemistry	National Trainer
39.	Mr. Michael Kimani Gacui	Chemistry	National Trainer
40.	Mr. David Kireru	Chemistry	National Trainer
41.	Mr. Isaac Gathambiri	Chemistry	National Trainer

42.	Ms. Mercy Wangui Macharia	Chemistry	National Trainer
43.	Mr. Okeyo Jackomanyo	Chemistry	National Trainer
44.	Mr. Edmond Makoba Kizito	Biology	National Trainer
45.	Mr. David M. Arimi	Biology	National Trainer
46.	Ms. Mary Kariuki	Biology	National Trainer
47.	Mr. George Kiruja	Biology	National Trainer
48.	Ms. Amina Sharbaidi	Biology	National Trainer
49.	Mr. Joseph Odhiambo	Biology	National Trainer
50.	Mr. Stanslus Nyamai	Biology	National Trainer
51.	Ms. Lydia Muriithi	Biology	National Trainer
52.	Mr. Joseph K. Thuo	Biology	National Trainer
53.	Mr. Albert Kisangi Kayesa	Biology	National Trainer
54.	Mr. Daniel Muraya	Biology	National Trainer
55.	Ms. Jane Marete	Admin.	Secretary
56.	Mr. Alfred Mureithi	Admin.	Office Assistant
58.	Mr. John Thairu	Admin.	Driver
59.	Mr. John Kinyanjui	Admin.	Driver
60.	Mr. Ezekiel Njoroge	Admin.	Driver
61.	Mr. Kusimba Simiyu	Admin.	Driver
62.	Mr. Nelson Mugalla	Admin.	Driver
63.	Mr. Nahashon Ng'eno	Admin.	Driver
64.	Ms. Ann Wairimu	Admin.	Office Assistant
65.	Mr. J. Kihara Mwai	Admin.	Ag. Administrative Officer
66.	Mr. Jacson A. Muniale	Admin.	Ag. Maintenance Officer
67.	Ms. Dorollosa Okumu	Admin.	Housekeeper/Cateress
68.	Ms. Florence Mbaiya	Admin.	Cook
69.	Ms. Margaret Abing'o	Admin.	Laundry Assistance
70.	Ms. Jane Mwega	Admin.	Senior Support staff
71.	Ms. Wilkester Kemunto	Admin.	Support staff
72.	Mr. Henry Nyange	Admin.	Support staff
73.	Mr. Makarios Nyagwachi	Admin.	Watchman
74.	Mr. Julius Kibusi	Admin.	Cleaner/grounds man
75.	Ms. Alice M. Malesi	Admin.	Copy typist
76.	Mr. David N. Mwangi	Admin.	Artisan
77.	Mr. Joseph N. Thuku	Admin.	Watchman
78.	Mr. Tom N. Makwae	Admin.	Watchman
79.	Mr. Jacob K. Nkoroi	Admin.	Watchman
80.	Mr. N. Nyaga Ng'o	Admin.	Watchman



## **13.2 INPUTS BY JAPANESE SIDE**

### **13.2.1 Dispatch of Japanese Experts**

**Table 13.5 List of Japanese Experts Dispatched to SMASSE Project from July 2003**

<i>No.</i>	Name		From	To	FY	MM	
1	Mr. Sugiyama Takahiko	Chief Advisor	1998/7/5	2005/9/30	1998	86.9	L
2	Prof. Takemura Shigekazu	Academic Advisor	1999/6/9	2005/9/30	1999	74.7	L
3	Mr. Naganuma Keiichi	Project Coordinator	2001/6/26	2005/9/30	2001	50.2	L
4	Mr. Tokuda Tomoki	Mathematics Education	2001/10/20	2005/9/30	2001	47.4	L
5	Mr. Hattori Hiromasa	Monitoring & Evaluation	2002/4/6	2005/9/30	2001	41.8	L
6	Mr. Inoue Tsunehiko	INSET Management	2003/8/24	2003/9/8	2003	1	S
7	Mr. Hamano Hiroshi	Education Evaluation	2004/4/1	2004/4/19	2003	1	S
8	Ms. Uchiyama Hazuki	Science Education	2004/10-	2005/9/30	2004	11.7	L

**Table 13.6: Summary Dispatch of Experts**

FSY	Long term	Short term	Total
2003	5	2	7
2004	6	0	6
2005	6	0	6
Total	17	2	19

### 13.2.2 Training of Kenyan Counterpart Personnel

**Table 13.7: Kenyan Counterpart Trainee from July 2003 to Oct 2005**

No.	Name	Subject	Venue	From	To	FY
1	Mr. Muyanga Mutua	Physics Education	Hiroshima	8/20/03	10/13/03	2003
2	Ms. Grace Orado	Chemistry Education	Hiroshima	8/20/03	10/13/03	2003
3	Ms. Peula Lelei	Biology Education	Hiroshima	8/20/03	10/13/03	2003
4	Mr. Ngoju Kithaka	Mathematics Education	Hiroshima	8/20/03	10/13/03	2003
5	Ms. Mary Wangechi Gaturu	Local Educational Administration	Sapporo	1/20/04	2/22/04	2003
6	Ms. Jane Jepkemboi Mtange	Local Educational Administration	Sapporo	1/20/04	2/22/04	2003
7	Mr. David Arimi	Biology Education	UP-NISMED	2/2/04	3/13/04	2003
8	Mr. Kipchumba K. Turmet	Biology Education	UP-NISMED	2/2/04	3/13/04	2003
9	Ms. Grace Wanjiku Matu	Biology Education	UP-NISMED	2/2/04	3/13/04	2003
10	Mr. Geoffrey G. Momanyi	Biology Education	UP-NISMED	2/2/04	3/13/04	2003
11	Ms. Lydia Muriithi	Biology Education	UP-NISMED	2/2/04	3/13/04	2003
12	Mr. Jeremia Ndirito Gitahi	Chemistry Education	UP-NISMED	2/2/04	3/13/04	2003
13	Ms. Ruth Wangechi Kamau	Chemistry Education	UP-NISMED	2/2/04	3/13/04	2003
14	Ms. Gladys Aliviza Mwugushi	Chemistry Education	UP-NISMED	2/2/04	3/13/04	2003
15	Mr. Joseph Mathenge Kamau	Chemistry Education	UP-NISMED	2/2/04	3/13/04	2003
16	Mr. Peter Omutiti	Chemistry Education	UP-NISMED	2/2/04	3/13/04	2003
17	Ms. Rahab Wangari Chiira	Mathematics Education	UP-NISMED	2/2/04	3/13/04	2003
18	Ms. Gachahi Lilian Wairimu	Mathematics Education	UP-NISMED	2/2/04	3/13/04	2003
19	Mr. Matembo Lukongo	Mathematics Education	UP-NISMED	2/2/04	3/13/04	2003
20	Mr. Mnengwa Evans	Mathematics Education	UP-NISMED	2/2/04	3/13/04	2003
21	Mr. Paul Ndirangu Mwangi	Mathematics Education	UP-NISMED	2/2/04	3/13/04	2003
22	Mr. Aggre A. Machanule	Physics Education	UP-NISMED	2/2/04	3/13/04	2003
23	Mr. Samuel E. Maduguda	Physics Education	UP-NISMED	2/2/04	3/13/04	2003
24	Mr. George Gitau	Physics Education	UP-NISMED	2/2/04	3/13/04	2003
25	Mr. John W. Kagika	Physics Education	UP-NISMED	2/2/04	3/13/04	2003
26	Mr. John L. Makanda	Physics Education	UP-NISMED	2/2/04	3/13/04	2003
27	Mr. J. M. Chahilu,	INSET Management	Hiroshima	2/24/04	3/28/04	2003
28	Mr. Wilson Chelagat	INSET Management	Hiroshima	2/24/04	3/28/04	2003
29	Ms. J. Kariuki	INSET Management	Hiroshima	2/24/04	3/28/04	2003
30	Mr. Solomon Katembu	INSET Management	Hiroshima	2/24/04	3/28/04	2003
31	Mr. Lawrence Kiwara	INSET Management	Hiroshima	2/24/04	3/28/04	2003
32	Mr. Albert Thirika	INSET Management	Hiroshima	2/24/04	3/28/04	2003
33	Ms. Lilian Mwalekwa	INSET Management	Hiroshima	2/24/04	3/28/04	2003
34	Mr. G. M. Njoroge	INSET Management	Hiroshima	2/24/04	3/28/04	2003
35	Mr. Jonathan M. Nyamai	INSET Management	Hiroshima	2/24/04	3/28/04	2003
36	Mr. Christopher Omosa	INSET Management	Hiroshima	2/24/04	3/28/04	2003
37	Mr. T. O. Opot	INSET Management	Hiroshima	2/24/04	3/28/04	2003
38	Mr. Mbugua Kabaki	INSET Management	Hiroshima	2/24/04	3/28/04	2003
39	Mr. Ernest K. Ngeny	Physics Education	Hiroshima	8/10/04	10/10/04	2004
40	Mr. Benjamin Kilonzo	Chemistry Education	Hiroshima	8/10/04	10/10/04	2004
41	Ms. Mary W. Kariuki	Biology Education	Hiroshima	8/10/04	10/10/04	2004

42	Mr. John Muiruri	Mathematics Education	Hiroshima	8/10/04	10/10/04	2004
43	Ms. Margaret N. MBAE	Teachers' Training Policy	Tokyo	9/5/04	9/18/04	2004
44	Ms. Rita Wamuyu Wahome	Biology Education	UP-NISMED	1/17/05	2/25/05	2004
45	Ms. Rita Nyokabi Kiarie	Biology Education	UP-NISMED	1/17/05	2/25/05	2004
46	Mr. Goffrey Musili Kalola	Biology Education	UP-NISMED	1/17/05	2/25/05	2004
47	Mr. Humphrey Kaluli Nengo	Biology Education	UP-NISMED	1/17/05	2/25/05	2004
48	Ms. Joyce Karauna Kimiti	Biology Education	UP-NISMED	1/17/05	2/25/05	2004
49	Mr. Ropkoi Joel Kiprono	Chemistry Education	UP-NISMED	1/17/05	2/25/05	2004
50	Ms. Jane Wambui Kariuki	Chemistry Education	UP-NISMED	1/17/05	2/25/05	2004
51	Mr. Moses Kahindi Kashuru	Chemistry Education	UP-NISMED	1/17/05	2/25/05	2004
52	Ms. Janet Kanja Muriithi	Chemistry Education	UP-NISMED	1/17/05	2/25/05	2004
53	Mr. David K. Kireru	Chemistry Education	UP-NISMED	1/17/05	2/25/05	2004
54	Mr. Kamau Muchiri	Mathematics Education	UP-NISMED	1/17/05	2/25/05	2004
55	Mr. Mohamed Abdinoor Dahir	Mathematics Education	UP-NISMED	1/17/05	2/25/05	2004
56	Mr. Benson Somba Manoo	Mathematics Education	UP-NISMED	1/17/05	2/25/05	2004
57	Mr. Francis Kamau Mwangi	Mathematics Education	UP-NISMED	1/17/05	2/25/05	2004
58	Mr. Katana Kapombe	Mathematics Education	UP-NISMED	1/17/05	2/25/05	2004
59	Mr. Leonard Wamalwa Wafula	Physics Education	UP-NISMED	1/17/05	2/25/05	2004
60	Ms. Jacinta Kathure Mung'atia	Physics Education	UP-NISMED	1/17/05	2/25/05	2004
61	Mr. Paul Gakuru Maina	Physics Education	UP-NISMED	1/17/05	2/25/05	2004
62	Mr. Joseph A. Rabari	Physics Education	UP-NISMED	1/17/05	2/25/05	2004
63	Mr. Eliud Kipkorir Menjo	Physics Education	UP-NISMED	1/17/05	2/25/05	2004
64	Mr. Apollo Apuko	Local Educational Administration	Sapporo	1/18/05	2/20/05	2004
65	Mr. Mosbei Daniel Keen Kibor	INSET Management	Hiroshima	2/22/05	3/27/05	2004
66	Mr. Owino Ouma John	INSET Management	Hiroshima	2/22/05	3/27/05	2004
67	Mr. Francis Mubia Muraya	INSET Management	Hiroshima	2/22/05	3/27/05	2004
68	Mr. Joseph Kiplangat Koech	INSET Management	Hiroshima	2/22/05	3/27/05	2004
69	Ms. Tomeyan Masaren Rosalyne	INSET Management	Hiroshima	2/22/05	3/27/05	2004
70	Ms. Catherine Kananu Irungu	INSET Management	Hiroshima	2/22/05	3/27/05	2004
71	Ms. Benta Achieng Akech	INSET Management	Hiroshima	2/22/05	3/27/05	2004
72	Ms. Mwanahamisi H. Bilashaka	INSET Management	Hiroshima	2/22/05	3/27/05	2004
73	Ms. Theresia Khabetsa Mbelase	INSET Management	Hiroshima	2/22/05	3/27/05	2004
74	Ms. Consolata Muthoni Kimuya	INSET Management	Hiroshima	2/22/05	3/27/05	2004
75	Ms. Assumpta Nekesa Obore	INSET Management	Hiroshima	2/22/05	3/27/05	2004
76	Ms. Mathenge Beatrice Wairimu	INSET Management	Hiroshima	2/22/05	3/27/05	2004
77	Mr. Kibanya Paul Gathito	Physics Education	Hiroshima	8/9/05	10/9/05	2005
78	Mr. Oduor Stephen Edwin	Chemistry Education	Hiroshima	8/9/05	10/9/05	2005
79	Mr. Kiria Felix George Kiruja	Biology Education	Hiroshima	8/9/05	10/9/05	2005
80	Mr. Odindo Fredrick Oseno	Mathematics Education	Hiroshima	8/9/05	10/9/05	2005
81	Ms. Ombati Priscilla Kemunto	Mathematics Education	Hiroshima	8/9/05	10/9/05	2005
82	Mr. Omodi Opel	Master in Physics Education	Hiroshima	9/25/05	3/31/08	2005
83	Mr. Ogwel J. Carilus Ateng	Mathematics Education	Hiroshima	4/1/04	4/1/06	2004
84	Mr. Kisangi Albart Kayesa	Biology Education	Hiroshima	4/1/04	4/1/06	2004

### 13.2.3 Provision of equipment

**Table 13.8: List of Equipment provided by JICA**

Item	Specification (for Tender)	Qty	KES			JPY		Delivery	Sight
			Unit Price	Sub Total	Rate (KES/JPY)	Unit Price	Sub Total		
Desktop PC	Compaq EVO D310 (P4/ 2.4G/ 40G-HDD/ 15Mon/ WinXP/	125	63,457	7,932,125	1.683	106,798	13,349,766	Sep-03	CEMASTEA & 30 District Centres (DC)
Laptop PC	P4/ 1.6G/ 20G-HDD/ WinXP/ MSOffice	4	110,872	443,488	1.683	186,598	746,390	Sep-03	CEMASTEA
Printer	Laser, B&W	40	18,000	720,000	1.683	30,294	1,211,760	Sep-03	CEMASTEA & 30 District Centres (DC)
Photocopier	A4 Digital PhotoCopy, Auto Document Feeder, 45ppm or faster	1	463,000	463,000	1.683	779,229	779,229	Sep-03	CEMASTEA
Photocopier	A4 Digital PhotoCopy, Auto Document Feeder, 18 ppm or faster.	1	126,000	126,000	1.683	212,058	212,058	Sep-03	CEMASTEA
Copy Printer	Gestetner Copy Printer 5308b (with Ink 15, Master 10)	31	227,000	7,037,000	1.683	382,041	11,843,271	Sep-03	CEMASTEA & 30 District Centres (DC)
Velo Binder	Gestetner BMV270	1	160,000	160,000	1.683	269,280	269,280	Sep-03	CEMASTEA
Multimedia Projector	EPSON EMP 52	3	106,594	319,782	1.683	179,398	538,193	Sep-03	CEMASTEA
OHP	Ordinary Buisiness Use	30	17,112	513,360	1.683	28,799	863,985	Sep-03	30 District Centres
OHP Screen	Tripod 70" x 70"	30	10,695	320,850	1.683	18,000	539,991	Sep-03	30 District Centres
Video Player	SONY ED323	30	10,000	300,000	1.683	16,830	504,900	Sep-03	30 District Centres
TV	SONY WEGA 34" XA34	30	90,195	2,705,850	1.683	151,798	4,553,946	Sep-03	30 District Centres
Cabinet	Metallic, Heavy Duty, 6x3ft, Double Door	60	12,000	720,000	1.683	20,196	1,211,760	Sep-03	30 District Centres
Microscope	Leica BME Monocular 10 x 40	120	22,388	2,686,560	1.683	37,679	4,521,480	Sep-03	30 District Centres
Math/Science Books (Local)	1 set = 75 items. Book list can be obtained by SMASSE Office.	70	47,501.90	3,325,133	1.531	72,725	5,090,779	Mar-04	70 District Centres
4WD Vehicle	Station Wagon Type, 1800cc - 2000cc, preferably 4WD	1	1,701,950	1,701,950	1.531	2,605,685	2,605,685	Mar-04	CEMASTEA
Desktop PC	CPU=P4, 2.4GHz/ 40G-HDD/ 15Monitor/ Software=WinXP/	90	69,000	6,210,000	1.531	105,639	9,507,510	Mar-04	30 District Centres
Copy Printer	with Ink 15, Master 10, A4 Paper, Black & White	30	175,000	5,250,000	1.531	267,925	8,037,750	Mar-04	30 District Centres
Video Player	VHS, PAL & NTSC	30	10,450	313,500	1.531	15,999	479,969	Mar-04	30 District Centres
OHP	Ordinary Business Use	30	25,200	756,000	1.531	38,581	1,157,436	Mar-04	30 District Centres
OHP Screen	70" x 70" Screen with Tripod	30	15,500	465,000	1.531	23,731	711,915	Mar-04	30 District Centres
Cabinet	for Secondary School Laboratory, Metallic, Heavy Duty, 6 x 3 ft.	60	8,250	495,000	1.531	12,631	757,845	Mar-04	30 District Centres
Microscope	for Secondary School Laboratory, Monocular 10 x 40	120	26,000	3,120,000	1.531	39,806	4,776,720	Mar-04	30 District Centres
4WD Vehicle	4WD, 4200cc Diesel, 7 seater or above, Purchased in Japan	2					7,234,500	Mar-04	CEMASTEA
Bus	Bus, 30 seats with all safety requirements by GOK	2	3,136,800	6,273,600	1.531	4,802,441	9,604,882	Jul-04	CEMASTEA
Laser Printer	Windows PC Compatible, Black & White, USB connection	30	15,500	465,000	1.531	23,731	711,915	Jul-04	30 District Centres
TV	34 inch Flat Screen	30	115,500	3,465,000	1.531	176,831	5,304,915	Jul-04	30 District Centres
Rehabilitation of CEMASTEAs	Laboratory, Classroom, Dining Room, Dormitory, Tendered for	1						Dec-04	CEMASTEA
Cabinet	for Secondary School Laboratory, Metallic, Heavy Duty, 6 x 3 ft.	60	8,000	480,000	1.339	10,712	642,720	Feb-05	30 District Centres
Laser Printer	Windows PC & Mac Compatible, A4, Full Colour, 16ppm or faster.	1	154,000	154,000	1.339	206,206	206,206	Feb-05	CEMASTEA
Desktop PC	CPU=P4, 2.4GHz/ 20G-HDD/ 15-LCD Monitor/ USB/	90	78,500	7,065,000	1.339	105,112	9,460,035	Feb-05	CEMASTEA & 30 District Centres (DC)
Laser Printer	Windows PC Compatible, A4, Black & White, 20ppm or faster, USB	30	19,500	585,000	1.339	26,111	783,315	Feb-05	30 District Centres
Photocopier	with Auto Sheet Feeder, A4 Digital, Black & White, 45ppm or faster	1	336,580	336,580	1.339	450,681	450,681	Mar-05	CEMASTEA
Multimedia Projector	Input: Video, PC / Output: XGA, 2000 ANSI lumens or brighter	1	183,150	183,150	1.339	245,238	245,238	Mar-05	CEMASTEA
Public Address System	for Conference Room (pax 200). Amplifier, Mixer, 2 Wireless Microphones, 1 Fixed Microphone	1	135,690	135,690	1.339	181,689	181,689	Mar-05	CEMASTEA
Copy Printer	with Ink 15, Master 10, A4, Black & White, 100ppm or faster, Paper	31	199,786	6,193,366	1.339	267,513	8,292,917	Mar-05	CEMASTEA & 30 District Centres (DC)

### **13.3 INPUTS BY BOTH GOVERNMENTS**

#### **13.3.1 Budget Expenditure from Both Sides**

**Table 13.9: Budget Expenditure (Operational Cost) for SMASSE**

	2003/4	2004/5	2005/6	<b>Total</b>
GOK	20,000,000	20,000,000	40,000,000	<b>80,000,000</b>
Districts	N/A	N/A	80,355,437	<b>80,355,437</b>
JICA (Kenya)	12,952,895	43,831,525	57,979,656	<b>114,764,076</b>
Total	-	-	178,335,093	-
% of Kenyan side	-	-	<b>68%</b>	-

**Table 13.10: Budget Expenditure by JICA**

	2003/4	2004/5	2005/6	<b>Total</b>
JICA (Kenya)	12,952,895	43,831,525	57,979,656	<b>114,764,076</b>
JICA (WECSA)	5,551,240	18,782,082	24,028,344	<b>48,361,666</b>
JICA Total	18,504,135	62,613,607	82,008,000	<b>163,125,742</b>

## CHAPTER 14

### DAC EVALUATION CRITERIA

#### **14.1 RELEVANCE**

##### **14.1.1 Relevance with National Policies**

The Overall Goal and Project Purpose are consistent with the national policy of Kenya Government. GOK, in its Economic Recovery Strategy (ERS), identifies four pillars one of them being education and health. Within the context of poverty reduction and economic growth, education is seen not only as welfare indicator but also as a key determinant of earnings and, therefore, an important exit route from poverty. GOK further states that Kenya will be industrialised by the year 2020. In addition, the shorter (popular) version, of ERS document, (pg 25) GOK states its commitment to conducting in-service training for teachers annually.

The Ministry of Education, Science and Technology domesticated ERS through the Sessional Paper No. 1 of 2005 on Policy Framework for Education, Training and Research. In this document, the Ministry states that secondary education is characterised by poor performance in national examinations especially in core subjects such as Mathematics and Sciences (pg 43). The Ministry recognises high pupil-textbook ratios as a causative factor. Other explanatory factors for poor performance are indicated as teacher shortages and pre-service training which combines methodology and subject mastery at the expense of both pgs 43 and 44).

In order to address the challenge of teacher factor, the Ministry (sessional paper pg 45) states a policy to restructure secondary school teacher training programme so that teacher trainees attain basic qualification in their respective subjects and subsequently undertake post-graduate training in pedagogy or extend Bachelor of Education degree to five years.

As a strategy to implement the policy on Mathematics and Sciences, the Ministry (sessional paper pg 47) will in-service teachers to improve the teaching of these subjects by upgrading the Centre for Mathematics, Science and Technology Education in Africa (CEMASTEIA) at Karen to a fully-fledged institution for in-service training for Mathematics, Science and Technical teachers.

As a sequel to Policy Framework for Education, Training and Research, the Ministry has developed roadmap for education sector development contained in the Kenya Education Sector Support programme (KESSP, 2005–2010) whose investment programmes have been prioritised and costed. KESSP is linked to Medium Term Expenditure Framework (MTEF). In the KESSP document (pg x) the Ministry states areas attracting highest levels of investment include in-service and teacher education. Further, KESSP identifies 23 investment programmes and secondary Mathematics and Science teachers in-service is one of these investment programmes (pg 181-6). The budget for this investment programme over the next five years is estimated at KSh.1,475.3m (pg 184). This commitment INSET goes beyond project phase.

Moreover, MoEST converted the former Centre for Research and Training (CRT), Karen to CEMASTEAs as a means to institutionalise SMASSE INSET activities at National level. MoEST through TSC has strengthened the academic personnel at the SMASSE project to 61 academic staff and 11 non-academic staff. These are clear signs of GOK's commitment toward INSET implementation. The budget for SMASSE has also been doubled to KSh.40m in the 2005/6 financial year.

Therefore, the overall goal, project purpose, and the results of SMASSE are definitely consistent with the government policy especially because improving quality in secondary education will impact positively in free primary education in terms of quality and completion.

On the African scene, relevance is manifested in the interest shown on SMASSE by regional organisations. In August 2004, SMASSE-WECSA was approached by NEPAD to become NEPAD's flagship project in Mathematics and Science. Moreover, NEPAD presented a proposal to be implemented by SMASSE-WECSA for post conflict countries during the official launching of ADEA's Working Group on Mathematics and Science Education in Sub Sahara Africa. ADEA has given SMASSE-WECSA a Working Group on Mathematics and Science Education in Sub Sahara Africa. SACMEQ has joined ADEA and NEPAD by signing an MOU with SMASSE-WECSA on impact monitoring.

From the above, it is clear that SMASSE is in line with aspirations of African countries. This reasoning is further strengthened by the increase in the number of high level visits to CEMASTEAs by African countries to learn from SMASSE experience.

#### **14.1.2 Relevance to target groups**

1. The number of Mathematics and Science teachers attending INSET is large. This is despite the fact that no allowance is given during the training. It, therefore, means that teachers find the INSET relevant to their work.
2. The financing of district INSET is by heads association. The increasing funds collected for SMASSE is a clear indication that heads feel that INSET being offered is relevant.
3. Although the candidature in Physics is on the overall low, there has been an increase in the number of students registering in the subject at KCSE.
4. Other educators in secondary sub sector (DEOs, QASOs, Principals, Pre-service lecturers) are attending SMASSE INSET which means the project activities are relevant.
5. Thus, the overall goal, project purpose, and the results of this project are still consistent with the needs of the target groups.

### **14.1.3 Relevance with Japanese Policies**

1. Enhancing basic education in developing countries is one of the major policies of Japanese Government.
2. Japanese Government also puts high priority on human resource development in developing countries. In particular Tokyo International Conference for African Development (TICAD II) in 1998 emphasized the importance of basic education. Further, the current focus as at TICAD III, 2003 in Tokyo, the Japanese government outlined among other pillars of assistance to Africa to be “Human-centred development” through education.
3. The Japanese Government registered capacity development for mathematics and science education for the African region under type-2 partnership initiatives during the Johannesburg 2002 World Summit on Sustainable Development. SMASSE Kenya was indicated as the Administrative Centre for the network. This is further indication that the project is consistent with Japanese policy on human capacity development.
4. Thus, the overall goal, project purpose, and results of this project are definitely consistent with the Japanese Official Development Assistance (ODA) policies.



## 14.2 EFFECTIVENESS

### 14.2.1 KENYA

<p>Project purpose</p> <p>“Quality of Maths and Science education at secondary level is strengthened through In-Service Training (INSET) of teachers.</p>	<ol style="list-style-type: none"> <li>1. Quality of mathematics and science in terms of lesson innovative index and learning attainment has been improving with time as illustrated in chapter 2 (Lesson innovative index for district trainers and Quality of learning)</li> <li>2. Student participation in the process of learning is improving (illustrated in chapter 2)</li> <li>3. INSET attendance at the National level and the districts is very high. Since INSET is regularised and will continue then the project purpose will definitely be attained.</li> <li>4. Achievement test results tend to be in good harmony with that of KNEC results, predicting INSET impact will be positively reflecting the KNEC performance with time.</li> <li>5. Three project outputs have been successfully produced. This is mainly due to effective activities and adequate inputs hence the positive sign of attaining the project purpose can be attributed to this fact.</li> </ol>
<p>Output 1</p> <p>A system of training for the District trainers in Mathematics and Sciences will be strengthening at the national INSET centre.</p>	<ol style="list-style-type: none"> <li>1. There is in place four INSET syllabi/curricula developed on the basis of baseline findings, putting an emphasis on Lesson Innovation in Mathematics and Science classrooms.</li> <li>2. Training materials have been developed and produced on the basis of SMASSE INSET curricula.</li> <li>3. 19 INSET (7 at K.S.T.C, Kagumo TTC and Taborhill and 12 at CEMASTE A) were functionally and effectively conducted using those materials.</li> <li>4. 1 Stakeholders Workshop was conducted at KSTC for sensitisation on efficient and effective INSET management with special emphasis on self-help effort, ownership and partnership, cost-sharing, and eventual sustainability.</li> <li>5. The National Staff conducted INSET for Quality Assurance Officers.</li> <li>6. The National Staff conducted INSET for principals.</li> <li>7. Monitoring and Evaluation Task Force has been working to examine the effectiveness of INSET at all levels.</li> <li>8. The Task Force developed locally adaptable monitoring and evaluation tools and has been using them for monitoring and evaluation activities.</li> <li>9. By using monitoring and evaluation tools developed by the Task Force, the evaluation of effectiveness of INSET has been carried out every April and August.</li> <li>10. The establishment of Kenyan academic staff has increased to 54.</li> <li>11. In order to accommodate increased number of national staff, and to be able to offer INSETs through out the year SMASSE National INSET Centre has acquired new premises at CEMASTE A with MoEST and JICA assistance. With this expansion, laboratory work can be done more effectively and training of District Trainers can be done any time of the year, leading to increased efficiency and effectiveness.</li> </ol>
<p>Output 2</p> <p>A system of INSET in Mathematics and</p>	<ol style="list-style-type: none"> <li>1. Over 900 District trainers were trained using lesson innovation-oriented programmes and over 200 administrative personnel were trained through several sensitisation workshops.</li> </ol>

<p>Science will be established in the Districts.</p>	<ol style="list-style-type: none"> <li>2. District Trainers were evaluated using the tools developed by the Project Monitoring and Evaluation Task Force.</li> <li>3. District trainers actively participated in District INSET as facilitators.</li> <li>4. Capacity of District Trainers in planning INSET and developing write-ups for INSET has been further strengthened through INSETs.</li> <li>5. SMASSE District Planning Committees (DPC) is in place in all SMASSE Districts in Kenya.</li> <li>6. Capacity in INSET management by DPCs has been strengthened.</li> <li>7. DEB has been supportive and approved DPC collection of SMASSE fund in all Districts.</li> <li>8. As illustrated in <i>earlier chapters</i>, Collection of SMASSE fund has been improved in most districts.</li> <li>9. District Trainers have also been strengthened in planning, doing, seeing and improving district INSETs. Their teaching methodology based on ASEI lesson plan is highly appreciated by fellow teachers.</li> </ol>
<p>Output 3 Role of SMASSE National INSET centre and District INSET centres as resource centres will be strengthened.</p>	<ol style="list-style-type: none"> <li>1. Necessary equipment was supplied to the districts without delay.</li> <li>2. The National INSET Centre publishes newsletters, twice a year and sends them to all the schools in the republic. Other materials like calendars are also printed and distributed to schools.</li> <li>3. The Project has established 96 District INSET centres (73 new and 23 pilot) in all Districts. Each centre has been equipped with teaching and learning equipment and materials in mathematics and science subjects as listed in chapter 13.</li> <li>4. Management of the centre is left to the school management headed by the principal. However the project and principal of each centre have an agreement to ensure access to facilities at the centre by District Trainers.</li> </ol>

#### 14.2.2 SMASSE-WECSA

<p>Project Purpose</p> <p>ASEI/PDSI lessons are practiced in teacher training institutions and secondary schools in member countries.</p>	<ol style="list-style-type: none"> <li>1. Quality of mathematics and science in terms of lesson innovative index and learning attainment has been improving with time as illustrated in chapter 9. (Lesson innovative index for district trainers and Quality of learning)</li> <li>2. Student participation in the process of learning is improving (illustrated in chapter 9)</li> <li>3. Two (2) Third Country Trainings were conducted in Kenya for trainers in ASEI/PDSI. Since the training is regularised and will continue then the project purpose will definitely be attained.</li> </ol>
<p>Output 1</p> <p>Trainers for ASEI/PDSI based INSET will be produced in member countries</p>	<ol style="list-style-type: none"> <li>1. SMASSE-WECSA participants have attended INSETs in Kenya. There have been two INSETs (Third Country training) the first one held from 18<sup>th</sup> January to 14<sup>th</sup> February 2004 and the second was held in November the same year. The third will be held as from 7<sup>th</sup> November 2005. With this trend then before the end of the project period such INSET will be carried out for at least 5 times.</li> <li>2. Already 127 participants from 22 WECSA Countries have been trained.</li> <li>3. Training materials have been developed and produced on the basis of SMASSE-WECSA INSET curricula.</li> <li>4. Appropriate monitoring and evaluation tools applicable to member countries have been developed.</li> </ol>

<p>Output 2 SMASSE National INSET Centre will be consolidated as resource centre for Mathematics and Science in Africa.</p>	<p>1. During training the participants from member countries developed prototype ASEI/PDSI lesson plans 2. CEMASTEIA is fully functional for INSET and other related activities</p>
<p>Output 3 SMASSE National INSET Centre will function as secretariat of SMASSE – WECSA</p>	<p>1. CEMASTEIA in Karen, Nairobi was established as a regional centre for SMASSE–WECSA. 2. SMASSE–WECSA secretariat organised the following 3 regional conferences. 3. SMASSE–WECSA secretariat is manned by CEMASTEIA staff. 4. SMASSE–WECSA is coordinating the following 30 member countries: Ghana, South Africa, Mozambique, Malawi, Uganda, Zambia, Rwanda, Lesotho, Zimbabwe, Nigeria, Niger, Seychelles, Madagascar, Mauritius, Burundi, Tanzania, Ethiopia, Botswana, Senegal, Swaziland, Benin, Burkina Faso, Cameroon, Congo (Brazzaville), Egypt, Namibia, Cote D’Ivoire, Sierra Leone, Zanzibar and Kenya.</p>

## **14.3 IMPACT**

### **Kenya chapter**

#### **A) Expected positive impact**

From the results of monitoring and evaluation, positive expected impact is indicated as follows:

- (1) The attitude of teachers who have attended INSET is slowly but steadily changing to positive towards the teaching profession and subjects they teach
- (2) Majority of trained teachers are accepting the INSET and use of ASEI/PDSI
- (3) Capacity of DPC to implement SMASSE activities has increased
- (4) Impact of ASEI/PDSI on students is being realised as observed through increased participation in lessons.
- (5) Increased candidature in Physics
- (6) Phase I districts continue with INSET activities
- (7) Apart from mathematics and science education, school management is improving in terms of teaching and learning environment through SMASSE sensitisation

#### **C) Unexpected positive impact**

- (1) At secondary level, teachers of other subjects (Languages, Arts and Technical) are asking to be included in the program. In some schools, they have formed "SALTS" (Strengthening of Arts, Languages and Technical Subjects).
- (2) Demand for ASEI/PDSI based INSET by pre-service institutions arose.
- (3) Similar demand also arose from primary teachers training colleges.
- (4) Pre-service institution like KSTC started ASEI/PDSI based INSET.
- (5) Institutes of science and technology have shown interest in INSET activities.
- (6) INSET offered by the project is becoming a social issue in Kenya either positively or negatively.
- (7) Stakeholders in SMASSE districts are asking other INSET providers to rationalize funding for these activities the SMASSE way which they think is affordable compare to others.
- (8) Other donors and organisation are keen on the SMASSE approach

#### **D) Negative expected Situations;**

- (1) Some district trainees were reluctant to attend INSET during the school holiday due to lack of monetary incentives (allowances). However, it is now a government policy that all science and mathematics are to attend INSET from 2004.

### **Regional chapter**

#### **A) Expected positive impact**

- (1) INSET effect on attitude of participants toward promoting quality of teaching and learning has been observed.
- (2) ASEI/PDSI lessons were well accepted by participants in the Third Country Training.
- (3) Number of countries which show interest to join SMASSE-WECSA Association is increasing.

**B) Unexpected positive impact**

- (1) SMASSE-WECSA association was given a working group on Mathematics and Science Education in Sub-Saharan Africa by ADEA in November 2004.
- (2) Collaboration with NEPAD
- (3) Collaboration with SACMEQ
- (4) Use by JICA of SMASSE-WECSA secretariat staff as Third Country Experts.
- (5) It was found that ASEI/PDSI approach could be applicable in Honduras.

## **14.4 SUSTAINABILITY**

### **14.4.1 Kenya Chapter**

Since the project's inception, sustainability has been a major concern to both GOK and JICA. All stakeholders in the project have concentrated in ensuring the sustainability of the project after 2008. As a result of concerted efforts, the sustainability for Kenyan chapter can be summarised as shown below.

#### **14.4.1 Government of Kenya (GOK) Policy**

SMASSE Project activities are within the existing GOK policy framework as contained in various policy documents mentioned above. It is evident that SMASSE will continue even after 2008. With the policy support by MoEST, SMASSE INSET is now more or less enjoying the support of all mathematics and science teachers at secondary school in Kenya. This is a clear indication that SMASSE shall not die.

#### **14.4.2 Financing**

##### **14.4.2.1 National Level**

The MoEST budget on recurrent estimates between 2003 and 2005 has been actualised to enhance sustainability through timely disbursement and increased allocation. The INSET budget for the future is already factored in the KESSP. Assuming that the current trend on financing INSET will continue, SMASSE should be financially sustainable. As for the expenditure, the project is strictly following the government procedures. This is backed by the financing system established at the national level during the project period.

##### **14.4.2.2 District Level**

The system of collection of DPC (District Planning Committee) funds has been fully established in all districts with profound understanding of DEB. There are some discrepancies on the fund collection among districts due to economic variations which are beyond SMASSE's control.

As far as financial management is concerned, because of close guidance and supervision by the National office, DPC's capacity on the financial management has been generally strengthened. It is, therefore, possible to sustain SMASSE district INSET even after 2008.

#### **14.4.3 Human Resources**

##### **14.4.3.1 National Level**

At the National level the establishment is in place with 62 full time Kenya counterparts. CEMASTE is now fully operational despite limitation in its capacity, number of non-academic staff and legal order.

##### **14.4.3.2. District Level**

At the district level there are 96 established District INSET Centres in the country. These centres are manned by at least 16 District Trainers (four in subject) per centre. Replacement of District Trainers who leave the project because of natural attrition, transfer etc is usually through recruitment of competent teachers. The newly identified Trainers are trained at national level to maintain the human resources at the districts.

The District Trainers' management is done by the District Planning Committee (DPC) in collaboration with the national office and TSC/MoEST.

#### **14.4.3.3 Phase I districts**

The Phase I districts have continued to conduct INSET on their own. This may be used as an indicator that Phase II districts will follow suit in sustainability.

#### **14.4.2 SMASSE-WECSA (Regional) Chapter**

##### **14.4.2.1 Policy**

The GOK policy on regional cooperation can be seen in its involvement in peer review on governance by NEPAD, in consolidating EAC and in arbitrating various conflicts in neighbouring countries. Creation of CEMASTEIA by MoEST can be recognised as a series of GOK's commitment of its regional policy.

##### **14.4.2.2 Financing**

Since substantial activities have just started, it is rather difficult to foresee financial sustainability after 2008. Currently, MoEST is contributing on the regional activities through provision of human resources and provision of training facilities while JICA is contributing to material and recurrent supports. Consequently, it is necessary to have clear mid- and long-term plan of regional activities among MoEST, JICA and the project.

It is also necessary to explore possible ways to generate income for the regional activities probably by having tailor made courses for paying participants.

##### **14.4.2.3 Human Resources**

So long as SMASSE staff will be maintained, SMASSE-WECSA can be sustained. However, to be more international, possible way of deploying non-Kenyan staff should be explored as long term perspective.