ケニア共和国
理数科教育強化計画プロジェクト
終了時評価調査報告書

平成 26 年 11 月
（2014年）

独立行政法人国際協力機構
人間開発部

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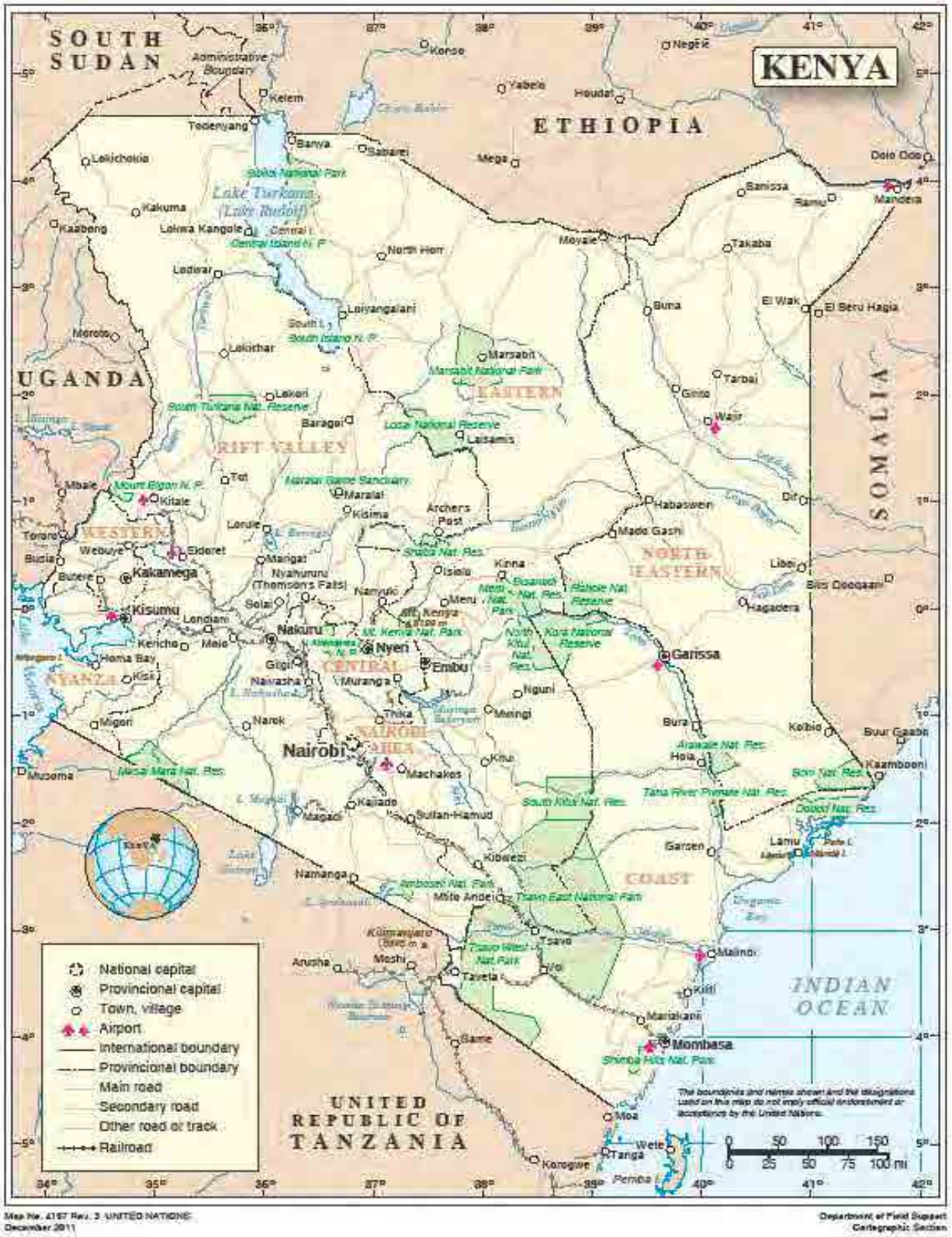

出所：UN Cartographic Section, http://www.un.org/Depts/Cartographic/map/profile/kenya.pdf,

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署名式

略　語　表

略　語	正式名称	日本語
ADEA	Association for the Development of Education in Africa	アフリカ教育開発連合
ASEI/PDSI	Activity, Student-centred, Experiment and Improvisation / Plan, Do, See and Improve	活動・生徒中心・実験・創意工夫/計画・実行・評価・改善（授業改善の理念）
AU	African Union	アフリカ連合
CEMASTEA	Centre for Mathematics, Science and Technology Education in Africa	アフリカ理数科・技術教育センター
COMEDAF	Conference of Ministers of Education of the African Union	アフリカ教育大臣会合
C/P	Counterpart	カウンターパート
CPD	Continuous Professional Development	（教師の）継続的職能開発
DAC	Development Assistance Committee	開発援助委員会
DEO	District Education Officer	ディストリクト教育長
DPC	District Planning Committee	ディストリクト計画委員会
DQASO	District Quality Assurance and Standards Officer	ディストリクト視学官
ICADETA	Institute of Capacity Development of Teachers in Africa	アフリカ教員能力開発研修所
INSET	In-Service Education and Training	現職教員研修
JCC	Joint Coordinating Committee	合同調整委員会
JICA	Japan International Cooperation Agency	国際協力機構
KCPE	Kenya Certificate of Primary Education	ケニア初等教育卒業試験資格
KCSE	Kenya Certificate of Secondary Education	ケニア中等教育卒業資格試験
KESSP	Kenya Education Sector Support Programme	ケニア教育セクター開発計画
KIE	Kenya Institute of Education	ケニア教育機関
KNEC	Kenya National Examinations Council	ケニア国家試験委員会
KNUT	Kenya National Union of Teachers	初等教員組合
KUPPET	Kenya Union of Post-Primary Education Teachers	中等教員組合
M/M	Minutes of Meeting	協議議事録
MOEST	Minisitry of Education, Science and Technology	教育・科学・技術省

略　語	正式名称	日本語
NPC	National Planning Committee	中央計画委員会
PCC	Programme Coordinators Committee	プログラム・コーディネーター委員会
PDM	Project Design Matrix	プロジェクト・デザイン・マトリックス
PO	Plan of Operations	活動計画
PTTC	Primary Teachers Training College	初等教員養成校
R/D	Record of Discussions	討議議事録
R&D	Research and Development	研究開発
RECSAM	Regional Center for Education in Science and Mathematics	理数科教育地域センター
RPC	Regional Planning Committee	地域計画委員会
SMASE	Strengthening of Mathematics and Science Education	理数科教育強化（計画）
SMASSE	Strengthening of Mathematics and Science in Secondary Education	中等理数科教育強化（計画）
SMASE-WECSA	Strengthening of Mathematics and Science Education in Western, Eastern, Central and Southern Africa	理数科教育強化―西部・東部・中部・南部アフリカ（域内連携ネットワーク）
SPIAS	SMASSE Project Impact Assessment Survey	SMASSEプロジェクト・インパクト評価調査
TAC	Teacher Advisory Centre	教員指導センター
TCTP	Third Country Training Program	第三国研修
TICAD	Tokyo International Conference on African Development	アフリカ開発会議
TSC	Teachers Service Commission	教員雇用委員会
WGMSE	Working Group of Math and Science Education	理数科教育作業部会
WS	Workshop	ワークショップ
ZPC	Zonal Planning Committee	ゾーン計画委員会

評価調査結果要約表

1. 案件の概要		
国名：ケニア共和国		案件名：理数科教育強化計画
分野：基礎教育		援助形態：技術協力プロジェクト
主管：人間開発部基礎教育第二課		協力金額（終了時評価時点）：10 億 1,800 万円
協力期間	（R/D）：2009 年 1 月 1 日～2013 年 12 月 31 日（5 年間）	先方関係機関：教育・科学・技術省
		日本側協力機関：-
他の関連協力	「中等理数科教育強化計画（SMASSE）」1998 年 7 月～2003 年 6 月 「中等理数科教育強化計画（SMASSE）フェーズ 2」2003 年 7 月～2008 年 12 月 「理数科教員養成大学機材整備計画」1997 年 「アフリカ理数科・技術教育センター拡充計画」2011 年	

１－１　協力の背景と概要

ケニア共和国（以下、「ケニア」と記す）では、初等教育無償化政策（2003 年）・中等教育無償化政策（2008 年）が実施され、教育へのアクセス拡大が図られた一方、質的な改善は進んでいない。教育の質改善のため、ケニアは日本の協力を受け、1998 年から技術協力プロジェクトの中等理数科教育強化計画（Strengthening of Mathematics and Science in Secondary Education: SMASSE）、同フェーズ 2（以下、「SMASSE フェーズ 2」と記す）を通じ、現職教員研修（In-Service Education and Training：INSET）を推進してきた。

また、このような成果はアフリカ諸国へも普及されるべきという要望が強く、2001 年には域内連携ネットワーク（Strengthening of Mathematics and Science Education in Western, Eastern, Central and Southern Africa：SMASE-WECSA）が発足し、域内各国での理数科教育振興、教員研修制度構築の取り組みが強化された。SMASSE 及び SMASSE フェーズ 2 を通じた成果・実績を踏まえ、ケニア教育・科学・技術省（Minisitry of Education, Science and Technology : MOEST）（以下、「教育省」と記す）は、さらにケニア国内の初等理数科教員研修の実施とアフリカ域内支援強化を柱とした技術協力に対する支援を日本政府に要請した。

理数科教育強化計画（Strengthening of Mathematics and Science Education : SMASE）（以下、「本プロジェクト」と記す）は、教育省及び教育省傘下のアフリカ理数科・技術教育センター（Centre for Mathematics, Science and Technology Education in Africa：CEMASTEA）をカウンターパート（C/P）機関とし、2009 年 1 月より 2013 年 12 月までの 5 年間の予定で実施されている。プロジェクト活動はケニア国内を対象とする「ケニアコンポーネント」と、アフリカ域内の SMASE-WECSA 加盟国を対象とする「WECSA コンポーネント」の 2 つから構成される。

１－２　協力内容

ケニアコンポーネントは、全国の初等理数科教員（6～8 年担当）に対する INSET、中等校長に対する指導監督ワークショップ（Workshop：WS）の実施を通じた初等・中等理数科授業の改善を目標とし、WECSA コンポーネントは、SMASE-WECSA メンバー国の INSET 講師、教育行政官に対するケニアでの研修、ケニア人専門家による技術支援の実施等を通じた各国における研修制度の強化をめざす。

（1）ケニアコンポーネント

1）上位目標：理数科科目についてのケニアの青少年の能力が向上する。

2）プロジェクト目標：現職教員研修（INSET）によりケニアの理数科教育が強化される。

3）成果

成果 1：初等教員養成校教官への中央研修制度が確立する。

成果 2：初等教員養成校にて、地域 INSET 制度が確立する。

成果 3：既存のクラスター（学校群）INSET が強化される。

成果 4：中等教育における理数科教員の ASEI-PDSI[1]授業実践が強化される。

成果 5：CEMASTEA の理数科教育に関するリソースセンターとしての役割が強化される。

（2）WECSA コンポーネント

1）上位目標：SMASE-WECSA メンバー国の理数科教育が改善される。

2）プロジェクト目標：SMASE-WECSA メンバー国において、INSET 指導員の ASEI-PDSI に基づいた研修実践能力が強化される。

3）成果

成果 1：SMASE-WECSA メンバー国の ASEI-PDSI 授業実践指導員が育成される。

成果 2：SMASE-WECSA ネットワークが強化される。

成果 3：CEMASTEA の理数科教育に関するリソースセンターとしての役割が強化される。

（3）ケニア・WECSA コンポーネント共通

投入（終了時評価時点）

1）日本側

長期専門家派遣：7 名

短期専門家派遣：3 名

本邦・第三国研修：136 名

機材供与額：1 億 155 万 4,593 ケニア・シリング（約 1 億 1,272 万 6,000 円）

在外事業強化費（ケニア国内分）：7,936 万 4,693 ケニア・シリング（約 8,809 万 5,000 円）

WECSA コンポーネント経費：3 億 1,730 万 8,219 ケニア・シリング（約 3 億 5,221 万 2,000 円）

2）ケニア側

C/P 配置：教育省　5 名、CEMASTEA　45 名

施設提供：INSET に必要な施設及び設備、プロジェクト事務所等

ローカルコスト負担：4 億 7,232 万 6,270 ケニア・シリング

[1] Activity, Student-centred, Experiment and Improvisation / Plan, Do, See and Improvementの略。教員の創意工夫により、身近で入手可能な材料を教材として活用しながら、実験などの活動を授業に取り入れることで、生徒主体の授業をめざすアプローチ。教員の授業に対する取り組み、態度の変容をめざすもので、計画（教材研究、指導計画案の検討、教具の準備等）、実施（授業実践）、評価（授業の振り返り）、改善の一連の行動様式を定着させることをねらっている。

２．評価調査団概要

	担当分野	氏　名	所　属	
調査者	団長	石原　伸一	JICA人間開発部　参事役	
	協力企画	小森　明子	JICA人間開発部基礎教育第二課主任調査役	
	評価分析 1（ケニアコンポーネント）	長谷川　さわ	株式会社日本開発サービス 調査研究員	
	評価分析 2（WECSA コンポーネント）	坪根　千恵	グローバルリンクマネジメント株式会社 社会開発部	
調査期間	2013 年 7 月 15 日～8 月 11 日（ケニアコンポーネント）			評価種類： 終了時評価
	2013 年 6 月 29 日～8 月 11 日（WECSA コンポーネント）			

３．評価結果概要

３－１　ケニアコンポーネント

３－１－１　実績の確認

（1）アウトプットの達成度

・成果 1（中央研修制度の確立）は、現時点でほぼ達成され、CEMASTEA による初等教員養成校教官（地域研修員）への中央研修実施の制度はほぼ確立されたといえる。

・成果 2（地域 INSET 制度の確立）に関し、初等教員養成校によるクラスター研修員への地域 INSET 制度の仕組みはできたが、クラスター研修員の養成数、地域研修の質に関する指標が目標値に達しておらず、研修制度の十分な確立には至っていない。

・成果 3（クラスターINSET の強化）に関し、クラスター研修員による初等教員への既存のクラスターINSET 制度における SMASE 研修の組み込みはできたが、ASAL（乾燥・半乾燥地域）など、クラスター研修が実施されていない地域があり、研修を実施している地域でも十分な数の教員が研修に参加していないなど、研修の参加教員数が目標値に達しておらず、研修の十分な強化にはまだ時間を要する。

・成果 4（中等レベルの理数科教員の ASEI-PDSI 授業実践強化）に関し、中等レベルの校長を対象とした指導監督 WS が計画よりも少ない回数で実施されており、参加人数も目標値に達していないため、学校現場での理数科教員への ASEI-PDSI 授業実践の強化もまだ限定的な実施であり、達成レベルは限定的である。プロジェクトの外部条件である中等レベルのディストリクト（地方）研修が予定どおりに実施されなかったことも成果 4 の達成レベルに多分に影響している。

・成果 5（CEMASTEA のリソースセンターとしての強化）に係る活動は進行中であり、現在作成中の ASEI-PDSI 実践集や模範授業ビデオなどが完成されれば、成果 5 はプロジェクト終了までに達成される見込みである。

（2）プロジェクト目標の達成度

・初等レベルのプロジェクト目標に関し、3 つの指標（授業改善指数、ASEI-PDSI 授業観察指数、生徒参加指数）は良好な結果を示しており、プロジェクト目標の達成が十分

期待される。ただし、成果 3 の実績で述べたように、クラスター研修を実施していない地域があり、研修に参加した初等教員数も目標値には達していないため、引き続きクラスター研修の実施と学校レベルでの教員間の研修内容の伝達を強化していく必要がある。

・中等レベルのプロジェクト目標に関し、授業改善指数、ASEI-PDSI 授業観察指数の数値結果（生徒参加指数はデータ未収集）にあまり変化はなく、達成レベルは限定的であるといえる。本プロジェクトの外部条件である中等レベルのディストリクト研修が予定どおりに実施されず、校長を対象とした WS も予算の配賦遅延や実施方法の変更等により計画どおりに実施されなかったことが、目標の達成度に大きく影響したと考えられる。

（3）上位目標の達成見込み

・初等レベルの上位目標の設定指標である「全国統一国家試験のケニア初等教育卒業試験資格（Kenya Certificate of Primary Education：KCPE）の成績向上」は、年ごとの平均点の比較ではプロジェクトの効果をみるには適切でない面があるため、他の指標で判断することが望まれる。

・中等レベルの上位目標の設定指標である「SMASSE プロジェクト・インパクト評価調査（SPIAS)」の結果からは、統計的に有効な結果が出ず、現時点での達成見込みの判断は難しい。

３－１－２　評価結果の要約

（1）妥当性：やや高い

・本プロジェクトのターゲットグループである初等・中等レベルの理数科教員の教授技術向上におけるニーズを満たしている。ただし、現行では SMASE 研修への参加が資格取得等には直結していないため、特に初等レベルの教員には、研修参加が昇任・昇給に結びつかないことに不満をもたれている。

・ケニアの長期国家開発戦略である“Vision 2030”、教育関連政策である“Session Paper No. 14 of 2012”“Basic Education Act 2012”“Teachers Service Commission Act 2012”に合致している。

・日本の ODA 政策である「TICAD IV 横浜行動計画」、対ケニア国援助政策である「対ケニア共和国国別援助方針」「対ケニア共和国事業展開計画」に合致している。

・プロジェクトのデザインに関し、フェーズ 3 において初等・中等・WECSA の 3 つのコンポーネントを擁したことは、プロジェクト活動が広範囲に及び、活動の調整等に多大な労力が生じる原因となった。また、初等レベルの研修は最初から全国で実施するのではなく、パイロット地域での試行を踏まえて全国展開した方が、効果的・効率的に実施できた可能性がある。

（2）有効性：中程度

・初等レベルのプロジェクト目標は、指標の結果が良好であり、達成される見込みが高いが、研修に参加した教員が目標値に届いておらず、まだ研修を受けていない教員も

多いため、引き続き研修の実施及び学校レベルでの教員間の研修内容の伝達を通して、ASEI-PDSI を学ぶ教員を増やしていく必要がある。

・中等レベルのプロジェクト目標は、指標の結果にあまり変化がなく、達成レベルは限定的である。プロジェクト実施中の諸々の制約により、中等レベルの研修・WS が計画どおりに実施できなかった影響が大きい。

・上記のプロジェクト目標の達成レベルは、プロジェクト活動が広範囲に及んだ点、予算の不足・配賦遅延等により当初の計画どおりに研修・WS が実施できなかった点、憲法改正に伴う地方行政制度の変更による WS 実施体制の変更、外部条件の影響など、さまざまな要因が影響したことが考えられる。

(3) 効率性：中程度

・投入は、ケニア・日本国側双方でおおむね計画どおりに実施されたが、ケニア側投入について、初等教員養成の経験を有する CEMASTEA スタッフの要員追加が行われなかったことや、一部の研修・WS 実施に係る予算の不足・配賦遅延などが活動の進捗に影響を与えた。このように投入の一部に不足があったものの、各投入は活動の実施にもれなく使用されている。

・上記のプロジェクト目標の達成レベルと同様、各成果の達成レベルも、一部の投入の不足、プロジェクト実施途中の地方行政制度の変更に伴う WS 参加者数や実施体制の変更、外部条件等の影響を受けた。

(4) インパクト：中程度

・プロジェクト終了後の上位目標の達成見込みは、設定指標が適切でなかったり、統計的に有効な結果が出なかったりしたため、現時点では判断がつかない。初等レベルの指標は KCPE などの全国統一試験の平均点の結果ではなく別の指標を使うことが望まれる。しかしながら、理数科科目の能力向上という上位目標達成のためには、プロジェクト目標の達成以外にもさまざまな対策が必要であり、目標の達成には相応の時間がかかると予想される。

・プラスのインパクトとして、いくつかの学校では SMASE 研修の内容を教員間に広めるため、教員同士の授業視察等、独自の工夫をしている例がある。また、ディストリクトレベルで独自の SMASE 研修カリキュラムやコンテンツの作成を計画している例もみられた。

(5) 持続性：やや高い

・政策・制度面に関し、理数科教育の強化及び SMASE 研修の実施は、ケニア政府により引き続き政策的に支持されることが見込まれる。CEMASTEA の独立行政法人化〔独法後はアフリカ教員能力開発研修所（Institute of Capacity Development of Teachers in Africa：ICADETA)〕も政策的な後押しに貢献すると考えられる。

・組織面に関し、CEMASTEA から ICADETA への実現後、組織的な強化が図られることが期待されるが、特に要員増加は今後の組織的強化のためにも必要。SMASE 研修実施における具体的な強化策は、教育省、教員雇用委員会（Teachers Service Commission：

TSC)、ICADETA の三者で今後十分な議論・調整をしていく必要がある。

・財務面に関し、今後の SMASE 研修予算の安定的な確保のため、中等レベルの“Free Day Secondary Education”を通した SMASSE 研修基金制度にならい、初等レベルでも“Free Primary Education”を通した研修基金の設立が望まれる。

・技術面に関し、CEMASTEA スタッフは SMASE 研修における企画、マネジメント、講義、モニタリング・評価に必要な技能をほぼ身につけている。初等レベル（地域・クラスター研修)・中等レベル（ディストリクト研修）の研修員は、個々の研修員としての技能にはまだ差があるため、引き続き研修を通してスキルを高めていくことが望まれる。

３－１－３　効果発現に貢献した要因

（1）計画内容に関すること

・特になし

（2）実施プロセスに関すること

・政権交代等により、プロジェクトの途中でケニア側 C/P の多くが異動・変更になったが、フェーズ 1 時代からプロジェクトが 15 年続いているため、新任担当者の多くが SMASE プロジェクトの内容について既に知っており、業務の引き継ぎに役立った。

・2011 年に教育省の主導で“Technical Committee on Re-engineering of CEMASTEA”が開催され、CEMASTEA のマネジメント上の問題点や、プロジェクトの停滞状況を打開するための対策等について、関係者の間で真剣に議論がなされた。

３－１－４　問題点及び問題を惹起した要因

（1）計画内容に関すること

・初等レベルの研修実施は、パイロット活動による試行を経ないで全国展開を行ったため、実施運営上の課題を抱えたまま活動を実施・継続せざるを得ない面があった。

（2）実施プロセスに関すること

・教育省からの予算の不足・配賦遅延により、当初の計画どおりに研修・WS が実施できなかった。

・いくつかのディストリクトでは、組合等の反対により、中等レベルのディストリクト研修が実施されなかった。

・教員のなかには、SMASE 研修への参加が資格取得に結びついておらず、昇任・昇給等につながらないため、研修に参加しない教員がいた。

・ケニアでは学校・教員・生徒の数が年々増加しており、また、憲法改正により地方行政制度が変更になったため、WS の参加人数や実施体制等を途中で変更せざるを得ず、活動の計画に沿った実施に影響を及ぼした。

３－１－５　結論

本終了時評価調査での結果、本プロジェクトでは初等教育レベルにおいて、中央・地域・クラスター研修から構成される初等 SMASE 研修制度が新たに設立されたが、制度の仕組みは整ったものの、制度の十分な確立に向けては課題が残る。中等教育レベルにおいては、プ

ロジェクト期間中は諸々の制約により活動が計画どおりに実施できなかったものの、校長に対して行った指導監督 WS を通じ、今後、学校現場における理数科教員への ASEI-PDSI 授業実践の強化が本格的に実施されることが望まれる。

ケニアの初等・中等両レベルにおける SMASE 研修は、プロジェクトの実施により得られた経験・課題等を踏まえ、将来の制度改善に向けて、教育省・CEMASTEA をはじめとした関係者が今後一層努力を重ねていくことが望まれる。

３－２　WECSA コンポーネント

３－２－１　実績の確認

（成果の達成度）

（1）成果 1：SMASE-WECSA メンバー国の ASEI-PDSI 授業実践指導員が育成される

第三国研修（Third Country Training Program：TCTP）は、予定どおり 2013 年 8 月時点で 4 ラウンド実施されており、目標の 500 名を上回る 692 名が参加した。2013 年 9 月から第 5 ラウンドが実施される予定であり、それぞれのコースの研修教材も開発中である。研修の質を測る指標として設定されていた「授業改善指標」は教員能力を測る指標であったため使用できなかったが、研修全体の有益度及びファシリテーションの質は研修参加者より高く評価されており、研修参加者の内容の理解度も高いことが確認された。よって、成果 1 はほぼ達成されており、今後計画どおり TCTP の第 5 ラウンドが実施され、その質が適切なツールで測られ十分なレベルに達していることが証明されることで、本成果は完全に達成されると考えられる。

（2）成果 2：SMASE-WECSA ネットワークが強化される

域内会合/代表者会議は既に目標の 4 回開催されており、現在第 5 回が計画されている。2011 年及び 2012 年の会合では域内活動の持続性が主な議題となり、議論が活発に行われたことから、会議の内容も域内連携ネットワークの強化に貢献するものであったことがうかがえる。技術会合も目標どおり 3 回が実施され、その参加者による評価も高いことが確認された。メンバー国数は 2009 年から 2010 年にかけて 25 カ国から 27 カ国に増えたが、プロジェクト期間中特にメンバー国を増やす方針はとられなかったため、2010 年以降増加はみられなかった。これらの達成度から判断し、成果 2 は達成されたといえる。

（3）成果 3：CEMASTEA のリソースセンターとしての役割が強化される

プロジェクトチームは、プロジェクト終了までに ASEI-PDSI のひな形授業計画案の取りまとめ及び TCTP 教材の改訂及び電子化を行う予定であり、これらは CEMASTEA ウェブサイトに掲載される予定である。プロジェクト前半における活動の遅れにより成果 3 はまだ達成されていないが、残りのプロジェクト期間でこれらの活動に注力することで、今後の成果の達成は可能であると考えられる。

（プロジェクト目標の達成度）

SMASE-WECSA メンバー国において、INSET 指導員の ASEI-PDSI に基づいた研修実践能力が強化される。

（1）研修実践能力強化指標の総合評価が平均 2.5 以上となる

⇒2011 年実績 3.08（標本数 69、17 カ国）、2013 年 3.3（標本数 58、4 カ国）

（2）ASEI-PDSI の概念がメンバー国の研修マニュアル/研修教材に反映されている度合

⇒11 カ国中 3 カ国が ASEI-PDSI の概念の反映は限定的、6 カ国はある程度反映している、1 カ国は今後反映させる予定と回答した。インパクト調査によると、調査を行った 4 カ国すべての研修内容に ASEI-PDSI が反映されていた。しかし、INSET 指導員の能力は、ASEI-PDSI の研修マニュアル/教材への反映の度合では測れないことがわかったため、プロジェクト目標の達成度を表す指標として使用できなかった。

自己評価である上記「研修実践能力強化指標」以外に、インパクト調査では実際に 4 カ国の INSET を観察し、元研修参加者のファシリテーション能力が十分に強化されていることを確認している。加えて評価チームで配付した質問票の結果、約 96%の回答者（標本数 48）が本プロジェクトからの支援により能力が強化されたと答えたほか、メンバー国の日本人専門家 8 名中 7 名もケニアでの研修により C/P の能力が伸びたと回答している。よって、設定された指標のうち 1 つは機能していないが、得られた情報から総合的に判断し、「INSET 指導員の研修実践能力強化」というプロジェクト目標はおおむね達成されたと考えられる。また、この達成にはメンバー国における JICA 支援の理数科 INSET プロジェクトからの貢献もあったと考えられる。

（上位目標の達成度）

SMASE-WECSA メンバー国において INSET システムが確立/強化される。

（1）INSET に係る政策が策定される

⇒評価チームの質問票への回答によると、44.2%が自国が INSET に係る政策を有すると回答した（標本数 77）。

（2）INSET 実施のための行政システムを有している

⇒評価チームの質問票によると、61.0%が行政システムを有すると回答した（標本数 77）。

（3）INSET のための資金メカニズムが存在する

⇒評価チームの質問票によると、53.2%が資金メカニズムを有していると回答した（標本数 77）。

（4）INSET のためのモニタリング・評価システムが存在する

⇒評価チームの質問票によると、53.2%がモニタリング・評価システムを有していると回答した（標本数 77）。

上記指標の明確な定義、ベースラインデータ及び目標値がなく、また同じ国の回答者が異なる回答をしているなど、得られた回答の信頼性も低い。さらに、研修や会合の実施を主たる活動とする本プロジェクトの介入と、メンバー国での政策の策定や体制の整備をめざす上位目標との相関関係も限られている。よって、上位目標の達成度は測定不能である。プロジェクト終了前までに新たな目標及び指標を設定することが必要である。

３－２－２　評価結果の要約

（1）妥当性：高い

アフリカ連合文書“Second decade of education for Africa（2006-2015）”において教員の能力開発及び理数科教育の強化が優先課題とされている点や、本プロジェクトがアフリカ教育開発連合（Association for the Development of Education in Africa：ADEA）のワーキンググループの活動として位置づけられた点から、本プロジェクトはアフリカ各国に関する政策に応えていることが示される。また、日本の対ケニア国別援助方針及び 2013 年 6 月に開催された TICAD V の横浜行動計画とも合致している。

加えて、本プロジェクトは児童中心型教育に関する実践手法の知識を有していなかったメンバー国のニーズに合致していたほか、プロジェクトチームは期間中もメンバー国のニーズに応えるべく、研修内容の改訂、新設研修コースの開設、研修受入れ人数の変更、技術会合の頻度の増加などを行った。

他方、上位目標とプロジェクト目標の間に乖離があること、各成果の質を測る指標が十分に設定されておらず、活動とほぼ同様のものが指標として設定されていることなどから、PDM の論理の適切性は限定的であった。

（2）有効性：おおむねね高い

前述のとおり、プロジェクト目標の達成度は比較的高い。また、プロジェクトにより提供された TCTP、第三国専門家派遣、技術会合も研修参加者により高く評価されている。一方、言語の問題から、仏語圏及びポルトガル語圏の参加者は英語圏からの参加者と比較して学びが少ないと考えられ、これは、英語圏の参加者の方が仏語圏よりも本プロジェクトの支援をより高く評価していることからも裏づけられる。

また、多くの国を一度に対象としたため、研修や技術会合内容が一般的なものにならざるを得なかったこと、JICA プロジェクトを実施していない国に対しては TCTP 後のフォローアップの機会がほとんどなかったことが有効性に関する課題として挙げられる。

（3）効率性：中程度

南南協力の手法を用いた点、過去のケニアへの投入や育成された人材を生かした点、及び他ドナーの支援や他スキームとの連携を生かした点は効率性の向上に貢献した。一方で、成果 3 が達成されていないこと、TCTP 受講者の 40%が教員であったこと、プロジェクトの運営管理体制が複雑でコミュニケーションに課題があったことが効率性を限定的にした要因であるといえる。

（4）インパクト：中程度

前述のとおり上位目標の達成見込みは測定不能である。正の波及効果としては、SMASE-WECSA アソシエーションによるプロジェクト終了を見据えた戦略計画の策定や、決議の採択など、今後の活動を推し進めるための準備が行われていることが挙げられる。また、プロジェクトで構築されたネットワークを活用し、ニジェール、ブルキナファソ及びセネガルが経験共有 WS を行ったほか、セネガルとザンビアは、授業研究に係る WS を共催することを計画している。

（5）持続性：中程度

CEMASTEA スタッフが現在の活動を継続していく能力を十分に有していることや、2014 年中に CEMASTEA がより独立した組織である ICADETA となることは持続性にプラスには働いているが、ケニア政府の今後の方針を明確に示す文書がない点、実務レベルのオーナーシップやモチベーションが比較的低い点、モニタリングやデータ管理が適切に行われていないなどの課題も確認されている。なお、財政面の持続性は確保されていないが、南南協力のプロジェクトであるため、ケニア側の予算の確保が難しいことを考慮し、持続性の判断には財政面の要素は考慮していない。

３－２－３　効果発現に貢献した要因

（1）計画内容に関すること

1）長期にわたる継続的な支援

ケニアの国内研修で蓄積した知見、継続的に強化された C/P の能力、ケニア側と日本側との間に構築された信頼関係、CEMASTEA がアフリカ域内で革新的な INSET を行う機関として広く知られるようになったことが、効果発現にプラスに影響した。

2）メンバー国における JICA プロジェクトの存在

本プロジェクトとメンバー国における JICA の理数科 INSET プロジェクトの相乗効果により、TCTP 参加者/メンバー国 C/P の能力開発が更に強化できた。

（2）実施プロセスに関すること

3）中央計画委員会（National Planning Committee：NPC）及びプログラム・コーディネーター委員会（Programme Coordinators Committee：PCC）の開催

これらの会議開催により、活動の進捗確認や課題の共有等が可能となった。特に、NPC はケニア国教育省が議長を務めることとなったため、教育省とのコミュニケーションも増えた。

３－２－４　問題点及び問題を惹起した要因

（1）計画内容に関すること

1）PDM のロジックの不明瞭さ

プロジェクト目標と上位目標の間の相関関係が限られている、適切でなかったり定義が定まっていない指標がある、などの課題があった。

2）CEMASTEA スタッフ数の不足

本プロジェクト開始時より活動数が増えたにもかかわらず CEMASTEA スタッフ数に変更はなかったため、スタッフは同時並行でいくつも仕事を抱えることとなった。このことにより、締め切りが順守できなかったり、仕事の質が確保できないことがあった。

（2）実施プロセスに関すること

3）情報共有の不足

WECSA コンポーネントの実施が 2 つの委員会に分かれていることなどから、プロ

ジェクトに係る情報共有が十分でなかった部分があった。

３－２－５　結論

プロジェクト目標は、成果 1 及び 2 の達成度が高いことから、ほぼ達成されている。5 項目評価に関しては、妥当性は高く、有効性はおおむね高いが、効率性、インパクト、持続性は中程度である。評価チームは、本プロジェクトは TCTP、第三国専門家派遣、技術会合、域内会合・代表者会議、及びその他の技術交換等の活動をおおむね計画どおりに実施し、参加者もこれらの活動を高く評価しているため、順調に成果を発現してきたと判断した。他方、質を伴った目標の達成や持続性を確保するには、スタッフのオーナーシップやモチベーション、コミュニケーション、モニタリングなどの実施プロセスなどに改善の余地があるといえる。

３－３　提言（当該プロジェクトに関する具体的な措置、提案、助言）

３－３－１　ケニアコンポーネント

(1) 持続可能・効果的・質の高い INSET 制度（初等、中等両方）の確立をめざすため以下を提言

＜継続的 INSET＞

・SMASE INSET の INSET/CPD（継続的職能開発）プログラムとしての義務化
・初等版 SMASE Fund の確立
・初等・中等 SMAS(S)E Fund の透明性の確保
・プロジェクト終了後活動のための予算（2013/2014 年度）の確保
・十分な人員確保

＜効果的 INSET＞

・戦略的モニタリングの実施と実施報告書の提出率の向上
・カスケード型研修の各層の活動のモニタリング・フォローの強化
・質の高い INSET～SMASE スピリットの復活～
・学校現場で実施されている好事例（特に授業研究）の発掘・支援
・CEMASTEA による学校訪問及びニーズ把握をしたうえでの、理数科支援のための新規アプローチの創出
・CEMASTEA によるコーディネーション強化

３－３－２　WECSA コンポーネント

メンバー国に対し技術支援を継続的に提供できる基盤確立のため以下を提言。

・アフリカ域内における理数科のプラットフォームとしての機能強化
・域内活動のための CEMASTEA のステータスの付与
・TCTP への更なる支援
・ニーズ調査の実施、明確なターゲットと指標の設定
・（短期的）TCTP レポートのフォーマット統一化
・（短期的）域内協力に関するレポートの整備、管理職によるモニタリング実施

３－４　教訓

３－４－１　ケニアコンポーネント

（1）初等教育レベル

・本フェーズは、中等理数科教員研修の成功体験・教訓を活用し、全国の初等の既存のクラスターでの研修を再活性化し、最終的には学校レベルでも横のつながりが生まれることをねらって設計された。CEMASTEA の大多数の職員は中等理数科のバックグラウンドのため、初等理数科のバックグラウンドを有する職員の増員がなされるはずであったが、中間評価等を通じてケニア教育省に継続的に申し入れを行ってきたにもかかわらず、人員の追加配置は実現しなかった。このような当初予定と異なった展開に対応するために、案件設計時に、2～3 年程度のパイロット（実証）フェーズを組み込んでおいたことが望ましかったと考える。実証フェーズ後、人員増の課題が明らかになった場合に、JICA としてはその課題の解決を求めることを全国展開の条件として交渉する、あるいは、適切な計画（規模・時期）の修正が可能となったのではなかったかと思われる。

・現職教員の INSET 参加を促し、効果的な INSET を継続させるためには、教員個人のみならず、所属する学校の校長の理解とリーダーシップが重要である。

（2）中等教育レベル

・全初等学校長への意識啓発活動（sensitization）は、INSET 内容の共有化や学校レベルでの取り組みの促進につながった。

・校長 WS でディストリクト視学官（District Quality Assurance and Standards Officer : DQASO）がファシリテーターとしてかかわったことは、ASEI の実践の拡大をもたらし、同時に DQASO の指導力を高めた。

３－４－２　WECSA コンポーネント

（1）個別ニーズに対応した協力

・2009 年に実施された国別特設 TCTP のように、先方ニーズに基づいてオーダーメイドされた TCTP 及びそれに関する第三国専門家の派遣は、各国の INSET に対する意識を高めるとともに、自ら INSET 制度を開発する能力も醸成した。

（2）第三国専門家

・CEMASTEA のスタッフが第三国専門家として推薦を受けた際、そのプロセスに受け入れ国側は加わっていなかった。供給側だけで人選等を行っていたことが、結果的に第三国専門家への関心の低下を招いてしまった。

３－５　フォローアップ状況

ケニア政府は、プロジェクト終了後も、独自に TCTP を実施することや、域内協力に関心を示している。今後、CEMASTEA の研修運営管理力や研修の質を評価したうえで、TCTP を支援していくかどうか判断する必要がある。本 TCTP のフォローアップの位置づけで、SMASE-WECSA 域内会合を実施していくことが、アフリカ域内での知見・経験の共有の促進に

効果的と考えられる。

また、CEMASETEA の域内協力への助言、ADEA 理数科教育ワーキングループの活動の促進等のために、域内協力アドバイザーの派遣を検討する必要がある。

Summary of Terminal Evaluation

I. Outline of the Project		
Country: The Republic of Kenya		**Project title:** The Strengthening of Mathematics and Science Education (SMASE)
Issue/Sector: Basic Education		**Cooperation scheme:** Technical Cooperation
Division in charge: Human Development Department		**Total cost:** 101.8 million yen
Period of Cooperation	**(R/D):** 2009/01/01-2013/12/31	**Partner Country's Implementing Organization:** Ministry of Education, Science and Technology
		Supporting Organization in Japan: -

1. Background of the Project

The Government of Kenya (GOK) introduced Free Primary Education (FPE) in 2003 and Free Day Secondary Education (FDSE) in 2008, which have rapidly expanded access to education in Kenya. However, the quality of education, particularly the learning achievement in mathematics and science has been stagnant. To improve the quality of education, the GOK had requested the Government of Japan (GOJ) to provide a series of technical cooperation projects such as the "Strengthening of Mathematics and Science in Secondary Education (SMASSE) Project (hereinafter referred to as "SMASSE")" and "SMASSE Phase 2," which aimed to promote in-service education and training (INSET) for mathematics and science teachers.

The successful results of SMASSE project in Kenya led 34 African countries to convene to address the current challenges being faced in mathematics and science education and organize the "Strengthening of Mathematics and Science Education in Western, Eastern, Central and Southern Africa (SMASE-WECSA) Association." The activities of SMASE-WECSA contributed to the promotion of mathematics and science education and the establishment of the INSET system in SMASE-WECSA member countries in Africa.

The achievements in mathematics and science education at the secondary education level and the positive influence on other countries in Africa through SMASSE and SMASSE Phase 2, led the GOK to request further technical cooperation with GOJ in order to implement the primary INSET in Kenya and strengthen the SMASE-WECSA network in Africa.

Thus, the Japan International Cooperation Agency (JICA) and the Ministry of Education (MOE) of Kenya, through cooperation with the Centre for Mathematics, Science and Technology Education in Africa (CEMASTEA), started the five-year-project called the "Strengthening of Mathematics and Science Education (SMASE)" in January 2009, which is expected to be completed in December 2013. The activities of the Project are composed of the following two components: 1) Kenyan Component targeting Kenyan education, and 2) SMASE-WECSA Component targeting SMASE-WECSA member countries.

2. Project Overview

2-1. Kenyan Component

(1) Overall Goal

Capability of young Kenyans in Mathematics and Science is upgraded.

(2) Project Purpose

Quality of Mathematics and Science education at Primary and Secondary school levels in Kenya is strengthened through In-Service Education and Training (INSET).

(3) Outputs

1) A system of National INSET for Regional Trainers is established at CEMASTEA.
2) A system of Regional INSET and Regional workshop is established at Primary Teachers' Training Colleges (PTTCs).
3) Existing system of cluster INSET is strengthened.
4) Secondary Mathematics and Science teachers' "Activity, Student Centred, Experiment, and Improvisation/Plan, Do, See, and Improve (ASEI/PDSI)" practices in classroom are enhanced.
5) Role of CEMASTEA as resource centre for mathematics and science education is strengthened.

2-2. WECSA Component

(1) Overall Goal

Quality of Teaching and Learning of Mathematics and Science in member countries is improved.

(2) Project Purpose

Capability of INSET providers to implement ASEI/PDSI based INSET in member countries is strengthened.

(3) Outputs

1) ASEI/PDSI based INSET providers from member countries are trained.
2) SMASE-WECSA network is strengthened.
3) Role of CEMASTEA is strengthened as resource centre for mathematics and science education in Africa.

2-3. Kenya and WECSA Components

(4) Inputs (at the time of evaluation)

Japanese side

No. of long-term Experts: 7

No. of short-term Experts: 3

No. of trainees received: 136

Equipment: Ksh. 101,554,593 (112,726 thousand yen)

Local cost (Kenya component): Ksh. 79,364,693 (88,095 thousand yen)

WECSA component-related expense: Ksh. 317,308,219 (352,212 thousand yen)

Kenyan side

No. of counterparts: 5 (MOEST), 45 (CEMASTEA), and approx. 6,000 (regional level)

Land and Facilities: Buildings, offices and other facilities necessary for INSET activities

Local Cost: Ksh. 472,326,270

II. Evaluation Team

Members of Evaluation	Mr. Shinichi Ishihara	Leader (JICA)
	Ms. Akiko Komori	Cooperation Planning (JICA)

Team	Ms. Sawa Hasegawa	Evaluation Analysis 1 (Japan Development Service Co., Ltd.)	
	Ms. Chie Tsubone	Evaluation Analysis 2 (Global Link Management Inc.)	
Period of Evaluation	2013/07/15-08/11 (Kenya Component) 2013/06/29-08/11 (WECSA Component)	**Type of Evaluation:** Terminal Evaluation	

III. Results of Evaluation

III-1. Kenya Component

1. Project Performance

1-1. Outputs

(1) Output 1 is considered to be almost achieved and the system of National INSET for Regional Trainers has been almost established at CEMASTEA.

(2) Output 2 is considered to be not achieved to the fullest. Neither the number of Cluster Trainers trained by the Regional INSET nor the numbers of TAC Tutors/Zonal QASOs, County QASOs and Sub-county QASOs trained by the Regional Workshops has reached the target as well as the quality of Regional INSET has not reached the expected level. It is deemed that while the system of Regional INSET and Regional workshops has been established at PTTCs to some extent, the system in terms of the quality and number of participants has a room for improvement.

(3) Output 3 is considered to be achieved, but not to the fullest. The number of primary school teachers trained by the Cluster INSET has not reached the targeted number. It is deemed that while the system of Cluster INSET has been strengthened to some extent, the system in terms of the quality and number of participants has a room for improvement.

(4) Output 4 is considered to be achieved, but not to the fullest. While the reasonable number of secondary school principals has participated in the Principal's Workshops, their supervision on ASEI-PDSI practices has not been enhanced or improved to the expected level during the project period. Only 2 out of expected 4 Principal's Workshops have been conducted so far, due to many factors such as teachers strike, lack of funds by some DPCs and change of modality of training. It is deemed that the secondary M/S teachers' ASEI-PDSI practices in classroom have been enhanced to some extent.

(5) The achievement of Output 5 is in progress and Output 5 is expected to be achieved by the end of the Project. The revised Primary INSET materials (write-ups) for Cycle 1&2 as self-explanatory materials, the booklet on ASEI-PDSI practices and the exemplary lesson video are to be completed by the end of the project period.

1-2. Project Purpose

- The Project Purpose for primary level is expected to be achieved. The results of 3 quantitative indicators for Project Purpose are found to be positive. Meanwhile, the number of primary school teachers who participated in the Cluster INSET has not reached the target number. It is therefore desirable that the SMASE INSET will be continuously conducted at the primary level and more primary school teachers will be trained to reach the target.
- The Project Purpose for secondary level has been achieved to some extent. Some activities for secondary level were not conducted as expected as well as all districts did not conduct the District INSET every year as assumed. It is likely that these issues have affected the achievement of Project Purpose for secondary level.

1-3. Overall Goal

- It would be desirable that the achievement of Overall Goal for primary level be measured by another indicator. In regard to the secondary level, based on the result of indicator, the prospect for achievement of Overall Goal was not clearly identified by the SPIAS results.

2. Summary of Evaluation Results

2-1. Relevance: Moderately high

- The Project meets the needs of its targets, i.e. primary and secondary school teachers who teach mathematics and science. They have been aspired to upgrade their teaching skills. However, this does not meet their demands of career advancement.
- The Project is consistent with the national development strategy as well as educational development policy of the Government of Kenya such as "Vision 2030," "Sessional Paper No. 14 of 2012," "Basic Education Act 2012" and "Teachers Service Commission Act 2012."
- The Project is consistent with the Japan's ODA policy such as "Action Plan adopted in the TICAD IV," "Country Assistance Policy for the Republic of Kenya" and "Japan's ODA: Rolling Plan for the Republic of Kenya."
- The 3-in-1design of the Project, comprising primary, secondary and WECSA components caused some complication in the implementation of project activities. The design also overlooked piloting stage that would have been appropriate. Similarly, targeting only grades 6, 7, or 8 teachers caused a challenge in consistent participation of same teachers since teachers teach different classes year by year.

2-2. Effectiveness: Medium

- The Project Purpose for primary level is expected to be achieved as far as the SMASE INSET, especially the Cluster INSET, will be continuously conducted and school-based training will be developed in schools. The Project Purpose for secondary level has been achieved to some extent.
- The achievement level of Project Purpose for both primary and secondary levels have been affected by factors such as project design, insufficient inputs and issues on the project management. The Project has been also affected by the important assumptions towards Outputs and Project Purpose.

2-3. Efficiency: Medium

- The achievement of Outputs 2, 3 and 4 have been realized, but not to the fullest extent. Output 1 is almost achieved and Output 5 is being achieved once the on-going activities are completed.
- The achievement of Outputs has been affected by the following factors: ambitious project design; a shortage in CEMASTEA personnel and delay in disbursement of fund for conducting the SMASE INSET and Workshops; project implementation affected by the important assumptions; creation of a new administrative structure and transfer of personnel; and change of the implementation system of Principals' Workshops midway through the Project.

2-4. Impact: Medium

- In regard to the prospect for achieving the Overall Goal of the Project, the present level of achievement of Overall Goal was not clearly identified based on the results of indicators.
- In regard to the project impacts, the following developments have been reported: 1) some schools have been trying to exercise some ingenious attempts to improve their teachers' skills in mathematics and science based on the experiences of SMASE INSET and Workshops, one of which is the lesson observation among teachers; 2) the Makueni DPC members recognize the necessity of improving the SMASE INSET based on the needs assessment of teachers and show their high motivation to develop their customized SMASE programme including the training curriculum and contents of SMASE INSET by their own.

2-5. Sustainability: Moderately high

- Concerning the policy and institutional aspects, the strengthening of teacher education as well as the improvement of teaching/learning in mathematics and science is considered to be one of the important strategies for Kenya in order to realise the national development. The plan for upgrading CEMASTEA to one of the Semi-Autonomous Government Agency status, i.e. ICADETA, is an evidence of the commitment of the Kenyan government to achieving the purpose as well as overall goal of the Project.

- Concerning the organizational aspect, the strong government backing described above means that CEMASTEA is expected to play a major role in the strengthening of teacher education in Kenya. Its organizational authority is therefore likely to grow in the coming years. The upgraded ICADETA is planning to continue the SMASE INSET and Workshops, both of which have been developed under the Project.
- Concerning the financial aspect, the proposed SMASE INSET funding for primary level as a part of "Free Primary Education" could strengthen the sustainability to meet the expenses of implementation cost of SMASE INSET, same just as the secondary SMASE funding through "Free Day Secondary Education."
- Concerning the technical aspect, CEMASTEA staffs have enough know-how and skills for planning, execution and management of National INSET and Workshops. The District, Regional and Cluster Trainers have acquired their skills by implementing the INSETs under the Project and it is essential for them to continue to improve their skills through the actual works.

3. Factors that Promoted Realization of Effects

3-1. Factors concerning the Planning

- None

3-2. Factors concerning the Implementation Process

- The SMASSE/SMASE Project has lasted for 15 years in Kenya and succeeded in reaching many project stakeholders who belong to the education sector in Kenya. In spite the changes in administrative personnel both at national and local levels during the Phase 3, the newly assigned persons, including PTTC principals and tutors, CDE and CQASO, DEO and DQASO and TAC tutors have known of and understood the SMASE Project somehow since they had been engaged in the Project in their previous positions.
- MOEST set up the "Technical Committee on Re-engineering of CEMASTEA" in 2011, where key stakeholders of the Project discussed how to improve the management of CEMASTEA and implementation of SMASE Programme.

4. Factors that Impeded Realization of Effects

4-1. Factors concerning the Planning

- The design of conducting the SMASE INSET at primary level across the country would be speed-before-quality decision. It would be more appropriate and effective if the SMASE INSET for the primary level had been introduced to some pilot regions at first and a stable model of primary level, including the guidelines, training manuals and implementation system, had been firmly established through the enough experiences and lessons of pilot regions.

4-2. Factors concerning the Implementation Process

- In Kenya the numbers of schools, teachers and students have been increasing over time. The local administrative system and personnel have also been changed with constitutional revision. This forced the Project to change numbers of some target groups, e.g. DEOs and QASOs. The implementation system of Principals' Workshops was also changed in the middle of project period.
- The delayed disbursement of budget from MOEST has affected the planned implementation of SMASE INSET and Workshops.
- In some districts, the District INSET for secondary level was not conducted due to the interference by Teacher's Trade Union which negatively affected the implementation of INSET.
- Many teachers who participated in the INSET are not satisfied with the fact that SMASE INSET does not lead to their promotion. This interfered with attendance of INSET.

5. Conclusion

- Based on the findings of the Terminal Evaluation, it is concluded that the Project has achieved expected outputs, but not to the fullest extent. Output 1, 2 and 3 is concerned with the newly introduced National, Regional and Cluster INSETs as well as Workshops. These were developed and implemented, though some were behind the schedule. Secondary level activities in Output 4 were implemented, but only to some extent. The achievement of Output 5 is in progress and is expected to be achieved by the end of the Project. The SMASE INSET system both at the primary and secondary levels still has issues to be considered and modified for the future improvement.

III-2. WECSA Component

1. Project Performance

2. Project Performance

1-1. Project Purpose

Project Purpose: Capability of INSET providers to implement ASEI/PDSI based INSET in member countries is strengthened.

- Verifiable indicator (a): INSET providers obtain a mean of 2.5 on a scale of 0-4 in the overall assessment of Capacity Building Index for INSET provision
  ⇒3.08 in 2011 (N=69, 17 countries), and 3.3in 2013 (N=58, 4 countries)
- Verifiable indicator (b): The extent to which the ASEI-PDSI concept is reflected in the training manual/materials in the member countries.

⇒Among 11 countries, training manuals/materials of three countries have limited reflection of the concept of ASEI-PDSI, six countries have certain reflection of the concept, one country has a will to reflect, and one answer was not pertinent to the question. According to the impact survey results, all the four sample countries incorporated the concept in their training contents. However, this indicator does not necessarily prove the degree of capacity developed.

Besides above indicators, the impact survey team observed INSET sessions, and objectively confirmed that the ex-participants' facilitation skills have been developed sufficiently in the four sample countries.

Moreover, 96% of ex-participants assessed that their capacities were developed by assistance provided by the Project (N=48), and seven out of eight Japanese experts in member countries answered that the capacities of their counterparts were developed by TCTP. Therefore, judging from these information and the status of Indicator (a), the Project Purpose was mostly achieved although Indicator (b) was not pertinent.

1-2. Overall Goal

Overall Goal: INSET systems in member countries are established/strengthened.

- Verifiable indicator (a): Existence of policy on INSET
  ⇒According to the results of the questionnaire of the evaluation team, 44.2% responded that their countries own INSET policies (N=77).
- Verifiable indicator (b): Existence of administrative structure on INSET system
  ⇒According to the results of the questionnaire of the evaluation team, 61.0% responded that they have administrative structures (N=77).
- Verifiable indicator (c): Existence of a funding mechanism for INSET
  ⇒According to the results of the questionnaire of the evaluation team, 53.2% responded that they have funding mechanisms (N=77).
- Verifiable indicator (d): Existence of M&E systems of INSET
  ⇒According to the results of the questionnaire of the evaluation team, 53.2% answered that they have M&E structures (N=77).

It is impossible to assess the achievement level of the Overall Goal due to the absence of definitions, baseline data and targets for the indicators, and limited reliability of obtained information. Also, the

causality between the intervention of the Project and the indicators is limited. Therefore, setting new indicators is recommended.

1-2. Outputs

(1) Output 1: ASEI-PDSI based INSET providers from member countries are trained.

- Verifiable Indicator (a): TCTP at CEMASTEA is carried out five times
  ⇒Four rounds of regular TCTP have been carried out to date. The fifth round is planned to be held from September to October 2013.
- Verifiable indicator (b): At least 500 participants attend the TCTP at CEMASTEA
  ⇒In total, 692 participants have attended since January 2009.
- Verifiable indicator (c): At least 15 sets of training materials are produced
  ⇒In total, 12 regular TCTPs, and one customized TCTP were organized, and one set of training material was produced for each course. As the Project plans to conduct three more TCTPs, and is developing a set of material for each, 16 sets of training materials will be developed in total by the end of the Project.
- Verifiable indicator (d): Lesson Innovation Index attains a mean of 2.5
  ⇒The impact survey was conducted by the project team in the Gambia, South Sudan, Uganda and Zambia from March to May 2013, and the team found that the mean of Lesson Innovation Index was 3.06. However, Lesson Innovation Index is not an appropriate indicator because it is a tool to measure the level of practice of ASEI-PDSI in classroom.

Though Indicator (d) could not be used, it was confirmed that the usefulness of training and quality of facilitation are evaluated highly by participants, and the level of understanding of the training contents is satisfactory through project documents and the response to the questionnaire of the evaluation team. Therefore, Output 1 has been mostly achieved. It will be fully achieved by the end of the project period if the planned activities are implemented, and the quality of upcoming TCTPs and the level of knowledge gained by participants, which are to be assessed by more relevant tool, are proved to be satisfactory.

(2) Output 2: SMASE-WECSA network is strengthened.

- Verifiable indicator 2(a): Regional conferences and SMASE-WECSA delegates meetings are held at least four times
  ⇒SMASE-WECSA Regional Conference and Delegates Meeting were held four times. The fifth Regional Conference will be held from October 28 to November 1, 2013, and Delegate Meeting will be held from 28 to 29 October, 2013.
- Verifiable indicator 2(b): Increased number of countries participating in SMASE-WECSA activities and implementing INSET
  ⇒The number has increased from 25 to 27. There was no increase since 2010.
- Verifiable indicator 2(c): Technical workshops organized by Kenya or in collaboration with member countries are held at least three times.
  ⇒Three technical workshops were conducted in Swaziland in 2009, Kenya in 2012 and Zambia in 2013.

Output 2 has been fully achieved judging from the status of the indicators. It was also confirmed that the contents of conferences were appropriate to strengthen the network, and Technical Workshops were

highly appreciated by the participants.

(3) Output 3: Role of CEMASTEA is strengthened as a resource center for Mathematics and Science education in Africa.

- Verifiable indicator 3(a): ASEI/PDSI prototype lesson plans, developed by member countries, are compiled and disseminated.
- Verifiable indicator 3(b): One of the TCTP materials (write-ups) is revised/refined for publication.
- Verifiable indicator 3(c): The revised material is digitized and made available through the CEMASTEA website.

All the three indicators have not achieved yet. The project team plans to finalize all the related activities by the end of the project period. Therefore, Output 3 has not yet been achieved, but it is possible to achieve it if the planned activities are conducted.

3. Summary of Evaluation Results

2-1. Relevance: High

WECSA component is relevant to the needs and policies of African nations as follows:(1) African Union prioritizes teacher development along with mathematics and science education in its recent strategic paper "Second decade of education for Africa (2006-2015)" and (2) the activities of the WECSA component are at the same time activities of working group of mathematics and science education of the Association for the Development of Education in Africa. It is also consistent with Japanese ODA/foreign policy for Kenya, and Yokohama Action Plan (2013-2017) of TICAD V.

The means that the Project adopted, which is South-South Cooperation, was appropriate considering the experiences and knowledge Kenya has accumulated over a decade, and the similarity of context and challenges other African countries have. The Project also matched the needs of the member countries, which do not have practical knowledge about how to practice child-centered teaching in classroom. The Project also revised the contents of the training in response to emerging needs of the member countries. Meanwhile, the appropriateness of logic of PDM was limited due to the gap between the Overall goal and the Project Purpose, and inappropriate indicators.

2-2. Effectiveness: Moderately High

As explained, the achievement level of the Project Purpose is relatively high. Also, TCTP, Third Country Expert Dispatch and Technical Workshop are evaluated highly by participants. Meanwhile, the effectiveness for participants from Francophone and Lusophone countries is considered to be limited due to the barrier of language. Also, the contents of TCTP and Technical Workshop tend to be general to cover interests of all the member countries. It is assumed, from the experience of conducting a special course for South Sudan, that a country-specific TCTP would enhance the effectiveness. Another challenge is the difficulty for ex-participants to adapt and spread ASEI/PDSI without additional support and follow-ups in their own countries. The effectiveness for these countries would have been more visible by leveraging the follow-up activities.

2-3. Efficiency: Medium

While Output 1 and 2 have been mostly achieved, the achievement level of Output 3 is low due to the delay in the activities. The fact that the Project adopt the scheme of South-South cooperation, and utilized past inputs to Kenya, which are Kenyan human resources and experiences strengthened, as well as equipment provided previously contributed to raise the efficiency. In addition, the Project benefitted from the cooperation provided for CEMASTEA by the Belgium NPO. Also, additional buildings being constructed by JICA grant will strengthen Output 3 (establishment of resource center). Meanwhile, the fact that 40% of TCTP participants were teachers, and the system in which the WECSA Component activities were delegated to two different committees decreased the efficiency.

2-4. Impact: Medium

It is impossible to assess the achievement level of the Overall Goal due to unclear definitions, targets, baseline data, and obtained information on the indicators. Also, the causality between intervention of the Project and the indicators is limited. Other impacts include active discussions and initiatives taken by SMASE-WECSA Association to sustain the network after the termination of the Project, COMEDAF's recognition of CEMASTEA as the lead agency for improving science, mathematics and technology in Africa, and active technical exchanges among member countries and ex-participants.

2-5. Sustainability: Medium

(1) Policy: CEMASTEA is mandated by MOEST to conduct WECSA Component activities. There are indications, through the bill to convert CEMASTEA to ICADETA and the commitment of MOEST to COMEDAF that CEMASTEA will serve as a lead agency for improving science, mathematics and technology, that the Kenyan government will continue to support WECSA activities.
(2) Finance: No alternative funding has been confirmed to run WECSA Component activities after the project period.
(3) Institutional/ Personnel/Organizational: The bill to convert CEMASTEA to the Institute of Capacity Development of Teachers in Africa (ICADETA) is expected to be approved by the parliaments within this year. It will be easier, under this more autonomous system, to create a section solely in charge of WECSA Component. Meanwhile, it was pointed out, through interviews, that ownership and motivation for routine activities such as TCTP is limited among working-staff levels. Also, the documentation and the quality of reports need significant improvement so that information and lessons learned can be shared and retained.
(4) Technical: CEMASTEA staff have sufficient capacities to continue the current activities. Meanwhile, it is important to keep upgrading their capacities in order to further improve the current activities and to meet the needs of the member countries. Moreover, their capacities to conduct quality evaluation and impact studies need to be further improved.

4. Factors that promoted realization of effects

There are several contributing factors of the Project, which includes: (1) long-term and continuous assistance and collaboration between Kenya and JICA, (2) existence of JICA projects in member countries, and (3) establishing NPC and PPC meetings

5. Factors that impeded realization of effects

4-1. Inadequate logic of PDM

The definition of the narrative summary of the Project Purpose, logic between the Project Purpose and the Overall Goal, and definitions as well as relevance of some of the indicators were not sufficient. Moreover, common understandings regarding the PDM among the project team are missing.

4-2. Inadequate number of staff at CEMASTEA

Efforts were made by CEMASTEA staff to implement project activities as scheduled. However, due to the limited number of staff, they have been occupied with competing tasks, and observance of deadlines and the quality of work may have been compromised.

4-3. Inadequate information sharing on the WECSA Component activities

Sharing of information regarding WECSA Component between a temporary committee and WECSA Committee, as well as among WECSA Committee is not sufficient. Because results of activities such as Regional Conference, Technical Workshop, and other WECSA activities are not sufficiently shared with the committee members, it was sometimes difficult for them to pursue allocated tasks without information resulted from these activities.

6. Conclusion

The Project Purpose was mostly achieved mainly by the high achievement levels of Output 1 and 2. Regarding evaluation by the five criteria, while Relevance is high and Effectiveness is moderately high, Impact, Efficiency and Sustainability are medium.

The evaluation team concluded that the Project has made steady progress towards the target by conducting TCTP, Technical Workshop, Regional Conference/Delegates Meeting, and other technical supports and exchanges, which have been highly appreciated by the member countries. Meanwhile, the implementation process, which includes ownership/motivation regarding routine WECSA activities, communication, and monitoring requires further improvement in order to achieve the target with quality and to ensure sustainability of the component.

6. Recommendations

6-1. Kenya Component

6-1-1. For Sustainable INSET

(1) SMASE INSET at all levels as Mandatory INSET/Continuous Professional Development (CPD) Program
(2) Establishment of Primary SMASE Fund
(3) Reinforcement of Accountability for SMASE Fund
(4) Securing CEMASTEA budget for FY2013/14.
(5) Providing adequate staffing level
(6) Institutional sustainability

6-1-2. For Effective INSET

(1) Implementation of strategic monitoring
(2) Effective follow-up on SMASE activities at cascaded levels

6-1-3. For Quality INSET

Re-vitalizing SMASE Spirits – Learning from the Ground

6-2. WECSA Component

6-2-1 CEMASTEA's function as a platform for Mathematics and Science Education in Africa
6-2-2 Legal Status for CEMASTEA for Regional Activities for further regional cooperation
6-2-3 Further Enforcement of the Support of Regional Activities
6-2-4 Improvement in TCTP procedures; Improvement of TCTP Report, and Record Keeping, monitoring, indicators, needs analysis

7. Lessons Learned

7-1. Kenya Component

(1) Primary Level

- Pilot approach must be considered when the target level was changed from Secondary to Primary. It would be more effective if the SMASE INSET at primary level had been introduced to some pilot regions to develop the adjusted model for nation-wide INSET including guidelines, training manuals and implementation system. The experiences and lessons of pilot activities may contribute to minimize various challenges for the scaling-up as well as to improve training contents based on the ground needs.
- Involvement of Head teachers was quite effective. Facilitation of the ASEI-PDSI concepts with broad coverage produced the certain impacts.

(2) Secondary Level

- Involvement of sensitization for all principles (instead of only one in Phase 1) led to enhanced support at the school level. It was acknowledged and appreciated by many stakeholders.
- The use of lesson study at the school level goes along with the understanding of ASEI practice.
- Use of DQASO as facilitators in Principals WS helped them internalize ASEI practice which in turn enhance their supervision.

5-2. WECSA Component

(1) Effectiveness of Customized Assistance

For South Sudan, a customized TCTP course was developed based on the country needs, and it was conducted attended by 73 participants in 2009. At the same time, Third Country Experts were dispatched three times to provide assistance for project formulation, development of training curriculum/ modules, and tools for evaluation and baseline survey. It was proved, by the observation of INSET sessions by the impact survey team, that this country-specific assistance was effective to develop their INSET capacities.

(2) TCE

When the staffs of CEMASTEA were nominated as TCE, beneficiary country was not involved the nomination of the staff. This could be one of the reasons for the declining number of TCE mission. This service should be assessed to take into account the interest of the beneficiary countries.

第１章　評価調査の概要

１－１　調査団派遣の経緯と目的

ケニア教育セクターでは、初等教育無償化政策（2003 年）に続いて、中等教育無償化政策（2008 年）が実施され、教育へのアクセス拡大が図られた結果、初等教育純就学率は 68.8%（1999 年）から 91.4%（2010 年）へ、また中等教育純就学率は 13.7%（1999 年）から 32.6%（2010 年）（EMIS 教育省）へと増加し、量的拡大が進んだ。一方、初等、中等教育修了資格試験（特に中等理数科）では、受験者の半数以上が成績下位 2 ランクに集中するなど非常に低く、教育の質的な改善は進んでいない。

ケニア教育セクター開発計画（Kenya Education Sector Support Programme : KESSP）（2005～2010 年）では、理数科の成績が低い理由として「教科書保有率の低さ」「教員の教授技術や理解度の低さ」が指摘されている。また、長期開発計画（Vision 2030）では、「ケニアの経済の持続的発展には産業構造の工業化が不可欠」であり、その原動力として「教育・研究の質的向上」が重点課題の 1 つとされている。

教育の質的改善を進めるため、ケニアは日本の協力を受け、1998 年から一連の技術協力プロジェクトの中等理数科教育強化計画（Strengthening of Mathematics and Science in Secondary Education: SMASSE）、同フェーズ 2（以下、「SMASSE フェーズ 2」と記す）を通じて、ケニアにおける現職教員研修（In-Service Education and Training : INSET）を推進してきた。これらの協力の結果、SMASSE フェーズ 2 終了時評価調査においては、INSET 制度の構築、その有効性、持続発展性が確認された。

このような成果は、理数科教育においてケニアと同様の問題を抱えるアフリカ諸国へも、普及されるべきであるという要望が高く、2001 年には域内連携ネットワーク（Strengthening of Mathematics and Science Education in Western, Eastern, Central, and Southern Africa : SMASE-WECSA）が発足し、定期的な域内関係者会合、ケニアでの中核人材育成研修が実施されるなど、域内各国での理数科教育振興、教員研修制度の構築の取り組みが強化された。SMASSE 及び SMASSE フェーズ 2 を通じた中等教育レベルでの、理数科教育強化による成果、アフリカ域内への成果普及の実績を踏まえ、ケニア政府は、さらにケニア国内の初等理数科教員研修の実施、及びアフリカ域内支援強化を柱とした技術協力に対する支援を日本政府に要請した。

理数科教育強化計画（SMASE）（以下、「本プロジェクト」と記す）は、ケニア教育・科学・技術省（Minisitry of Education, Science and Technology）（以下、「教育省」と記す）及び教育省参加のアフリカ理数科・技術教育センター（Centre for Mathematics, Science and Technology Education in Africa : CEMASTEA）をカウンターパート（Counterpart : C/P）機関として、2009 年 1 月より 2013 年 12 月までの 5 年間の予定で実施されており、プロジェクト活動はケニア国内を対象とする「ケニアコンポーネント」と、アフリカ域内の SMASE-WECSA メンバー国を対象とする「WECSA コンポーネント」の 2 つから構成される。

本終了時評価調査は、教育省と合同でプロジェクトの目標達成度や成果等を確認するとともに、プロジェクト終了後を含む今後の課題及び方向性について議論し、その結果を合同評価報告書に取りまとめ、関係者間で合意することを目的とする。本調査団の主な調査項目は以下のとおり。

（1）プロジェクト・デザイン・マトリックス（Project Design Matrix：PDM）に沿って、プロジェクト活動の進捗状況や成果の達成度、実施プロセスを確認する。

(2) 計画達成度、実施プロセスを踏まえ、評価 5 項目（妥当性、有効性、効率性、インパクト、持続性）の観点から、プロジェクトの成果、実施上の課題を確認し、プロジェクトチーム及びケニア側関係者とともにプロジェクトの評価を行う。
(3) 評価結果に基づき、プロジェクト終了（2013 年 12 月）までに取り組むべき課題を明確にするとともに、より長期的なケニア側の自主的な取り組みの方向性についてもプロジェクトチーム及びケニア側関係機関と協議し、提言として取りまとめる。また、今後 JICA がケニアあるいは他国において実施する類似の教育支援案件に役立つ教訓があれば取りまとめる。
(4) 評価・協議結果を合同報告書として取りまとめてケニア側と合意する（合同評価報告書は、付属資料 1 のミニッツを参照)。

１－２　調査団の構成

担当分野	氏　名	所　属
団長	石原　伸一	JICA 人間開発部　参事役
協力企画	小森　明子	JICA 人間開発部基礎教育第二課　主任調査役
評価分析 1 （ケニアコンポーネント）	長谷川　さわ	株式会社　日本開発サービス 調査部研究員
評価分析 2 （WECSA コンポーネント）	坪根　千恵	グローバルリンクマネジメント株式会社 社会開発部

１－３　調査日程

調査日程は、次のとおりである。
2013 年 6 月 29 日（土）～8 月 11 日（日）　（評価分析 2）
2013 年 7 月 15 日（月）～8 月 11 日（日）　（評価分析 1）
2013 年 7 月 28 日（日）～8 月 11 日（日）　（団長）
2013 年 7 月 31 日（水）～8 月 11 日（日）　（協力企画）
詳細は付属資料 2 の Annex 1 及び付属資料 3 の Annex 5 を参照。

１－４　主要面談者

調査団は、ケニア教育省、CEMASTEA、地方教育事務所、初等教員養成校、プロジェクト活動で能力強化された教員が働いている初等学校、中等学校等の視察、関係者との協議、インタビューを行った。（面談者リストは付属資料 2 の Annex 2 及び付属資料 3 の Annex 6 を参照)。

第２章　プロジェクトの概要

２－１　基本計画

本プロジェクトはケニア国内を対象とする「ケニアコンポーネント」と、アフリカ域内のSMASE-WECSA メンバー国を対象とする「WECSA コンポーネント」の 2 つから構成されており、それぞれのコンポーネントについて、PDM を作成している。ケニアコンポーネントは、初等教員を対象とする活動と中等教員に対する活動とに大別される。

【ケニアコンポーネント】

名称	ケニア国　理数科教育強化計画プロジェクト Strengthening of Mathematics and Science Education（SMASE）
協力期間	2009 年 1 月～2013 年 12 月まで（5 年間）
上位目標	理数科目についてのケニアの青少年の能力が向上する。
プロジェクト目標	INSET によりケニアの初等及び中等教育レベルの理数科教育が強化される。
期待される成果 （アウトプット）	（1）初等教員養成校教官への中央研修制度が確立する。 （2）初等教員養成校にて、地域 INSET 制度が確立する。 （3）既存のクラスターINSET が強化される。 （4）中等教育における理数科教員の ASEI/PDSI 授業実践が強化される。 （5）CEMASTEA のリソースセンターとしての役割が強化される。

【WECSA コンポーネント】

名称	同上
協力期間	同上
上位目標	SMASE-WECSA メンバー国の理数科教育が改善される。
プロジェクト目標	SMASE-WECSA メンバー国において、INSET 指導員の ASEI/PDSI に基づいた研修実践能力が強化される。
期待される成果 （アウトプット）	(1) SMASE-WECSA メンバー国の ASEI/PDSI 授業実践指導員が育成される。 （2）SMASE-WECSA ネットワークが強化される。 （3）CEMASTEA のリソースセンターとしての役割が強化される。

２－２　PDM

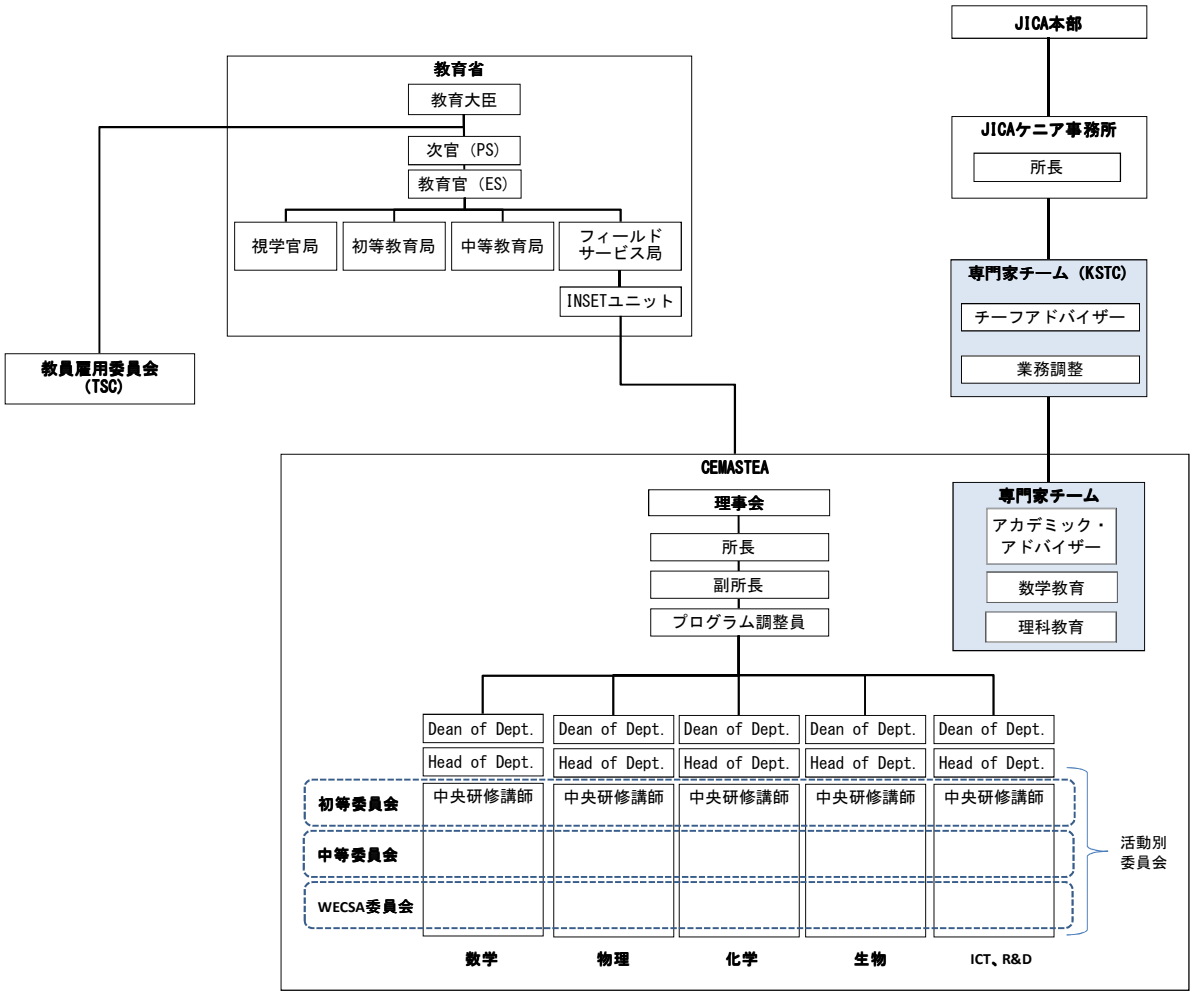
本プロジェクトの計画概要表である PDM は、中間レビューの提言を踏まえ、2011 年 11 月に改訂合意された。初版からの主な改訂点及びその理由は以下のとおり。本終了時評価は改訂版 PDM（Ver.2.1）に基づき実施した。

２－３　プロジェクト実施体制

本プロジェクトは、ケニア教育省及びその傘下の CEMASTEA を実施機関として実施されている。教育省の責任部局はフィールド・その他のサービス局（Field and Other Services : FS）である。

実施体制は図－1 のとおり。CEMASTEA は、理科、数学、技術分野におけるケニア及びアフリカ地域の人材育成を担う組織として、2004 年に設立された。

設立以来、主に理数科教員に対する研修の企画、教材開発、行政官、校長等に対する研修を実施している。約 50 名のアカデミックスタッフ、32 名のノンアカデミックスタッフが配置されており、プロジェクト活動に携わる研修実施部門は数学、物理、化学、生物及び情報通信技術（ICT）、研究開発（Research and Development：R&D）の 5 課からなる。アカデミックスタッフはいずれかの課に所属するが、実際のプロジェクト活動は課をまたがって組織される「委員会（Committee）」単位で行われることが多い。日本人専門家のうち、チーフアドバイザー及び業務調整員は、ナイロビ大学ケニア・サイエンス・キャンパス内にあるプロジェクトオフィスにて日常業務を行っている[2]が、プロジェクト活動は、主に CEMASTEA で行われている。



図－１　プロジェクト実施体制図

[2] フェーズ 1 及び 2 の経緯からこのような配置になっていた。CEMASTEA への関与を強化するために、2012 年 7 月以降、チーフアドバイザーも CEMASTEA に常駐。

２－４　協力内容

２－４－１　プロジェクトのロジックモデル

本プロジェクトの基本的なロジック（活動と期待される効果の因果関係）は、理数科教員に対する INSET の実施を通じて、授業実践力の向上を図り、将来的に生徒の理数科学力の向上をめざす構造となっている。また、教員に対する研修に加えて、INSET の実施を支援する地方教育行政官（ディストリクト教育長、ディストリクト視学官）や教員養成校校長などに対するワークショップ（Workshop：WS）を実施し、INSET の意義や必要性、研修実施にあたって各自に期待される役割、職務等に関する理解促進をねらっている。

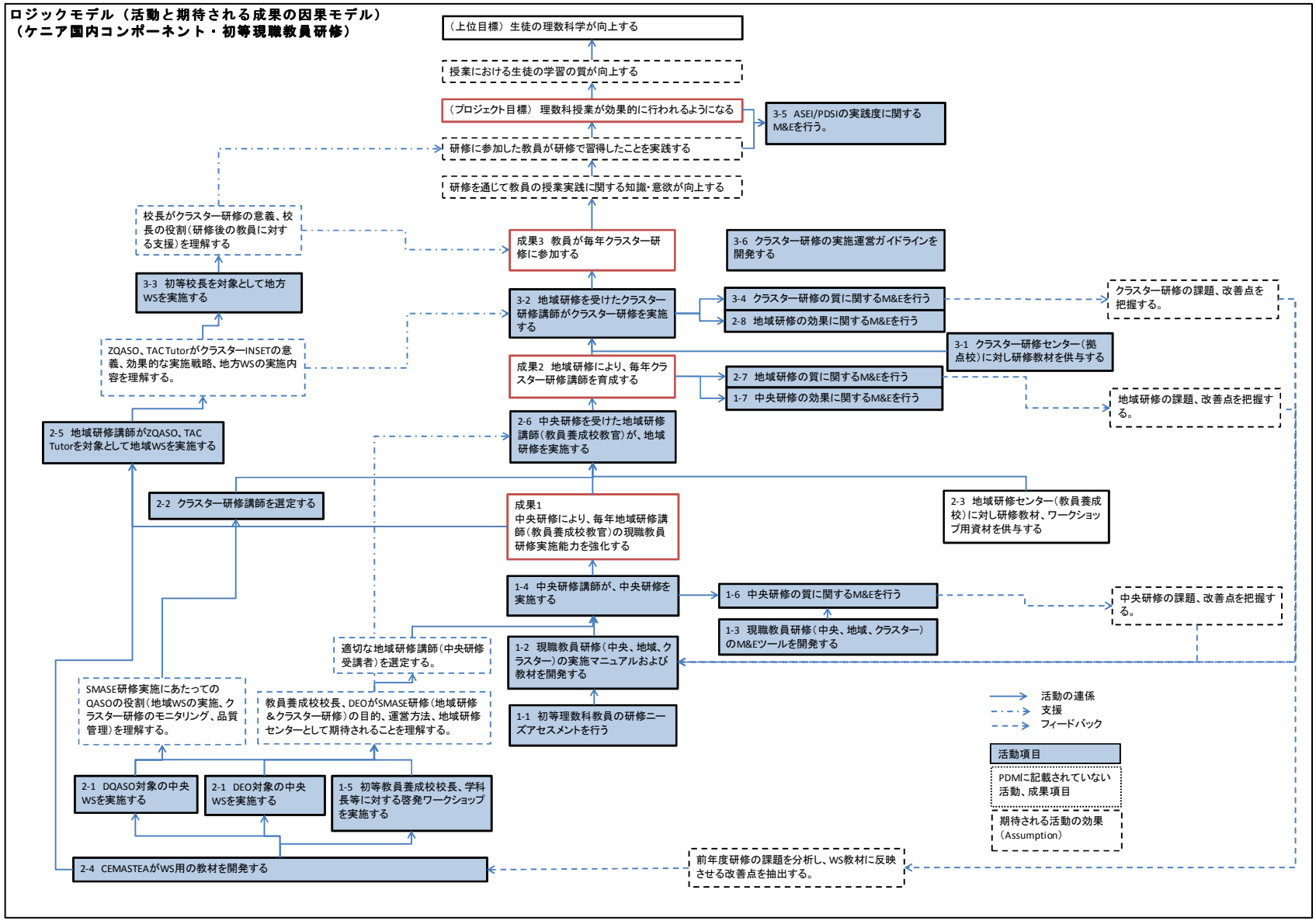
PDM に示される活動及び期待される効果について示した詳細は、図－２　初等 INSET のロジックモデル、図－３　中等 INSET のロジックモデルのとおりである。

初等レベルでは、研修制度の構築（地域研修講師及びクラスター研修指導員の育成、教材開発、研修実施ガイドラインの開発）に関する活動が多く設定されている。

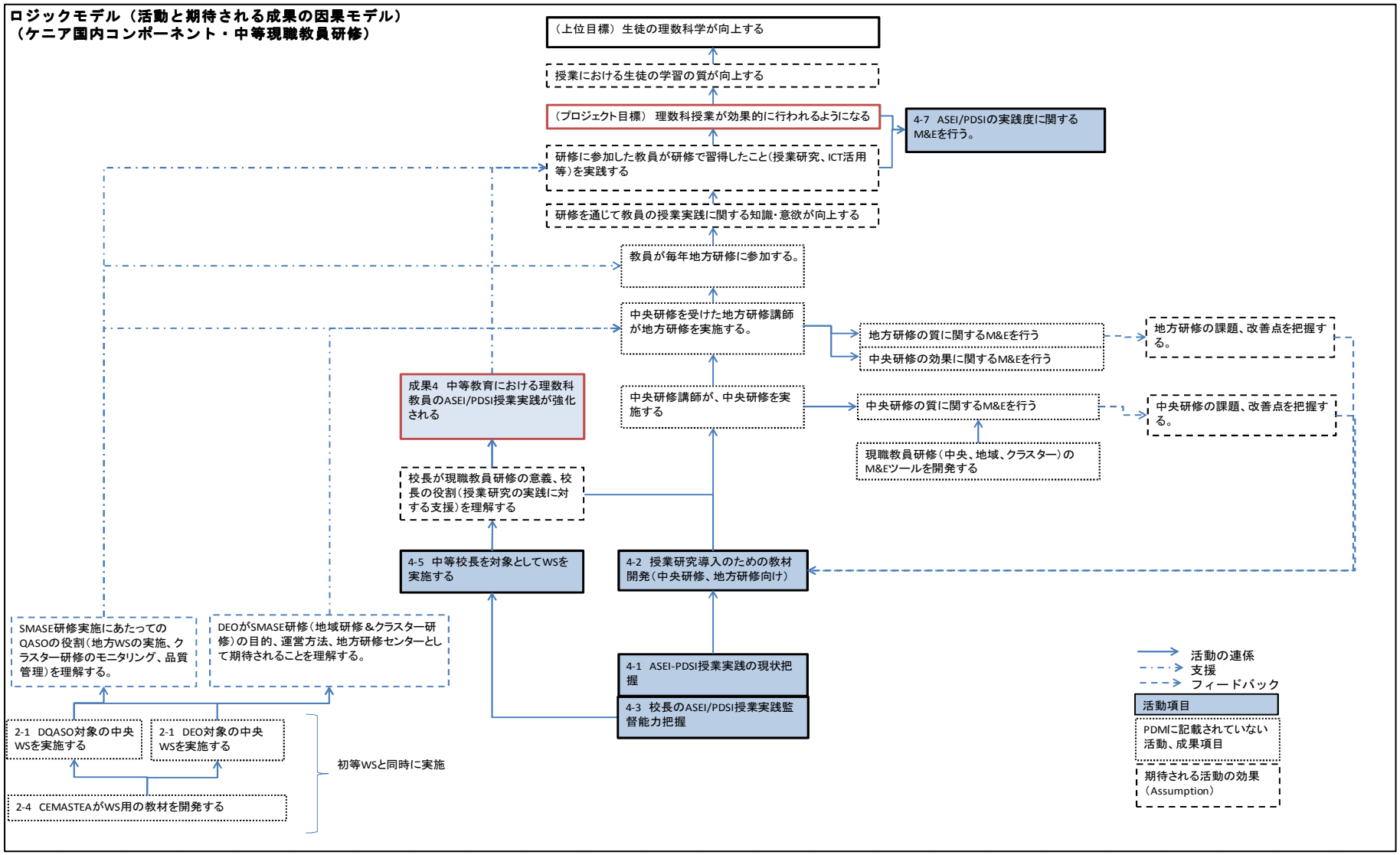
一方、中等レベルでは、INSET はケニア側主体の活動として実施され、プロジェクト活動のなかでは教員による授業改善活動の 1 つである授業研究導入のための参考教材（中央、地方研修の教材として利用）の開発、及び校長に対する WS の実施に対する支援を行っている。

SMASSE/SMASE による INSET は、単発の研修ではなく、1 年を 1 サイクルとして同じ教員を対象として一定期間継続的に研修が実施されることをねらって計画されており、地域研修やクラスター（学校群）研修の実施報告やモニタリング結果等から確認された課題や教訓、改善事項などは次年度の研修教材や関係者向け WS の内容にフィードバックされる仕組みとなっている。特に、関係者向け WS は CEMASTEA からの一方的な情報伝達ではなく各研修センターや地方での前年度の研修実施結果を踏まえ改善策を検討する場としても機能している。

INSET 及び行政官や校長を対象とする WS の仕組み、目的、対象者等の詳細は後述する。



図－２　初等 INSET のロジックモデル



図－３　中等 INSET のロジックモデル

２－４－２　授業改善アプローチとしての ASEI-PDSI

本プロジェクトでは、めざす授業改善のアプローチを「ASEI-PDSI（Activity, Student-centred, Experiment, Improvisation/ Plan, Do, See, Improve）」という標語で表している。

ASEI-PDSI アプローチは、第 1 フェーズのときに SMASSE C/P と当時の日本人専門家との議論のなかから生み出されたものであり、生徒の積極的な参加を通じて、生きた知識をともに育てるとともに、科学的・論理的思考の発達と科学的態度の育成を促す授業に変えていこうという授業改善の方向性とそのための方法論を表したものである[3]。

プロジェクトでは、教員研修を通じてこの ASEI-PDSI アプローチに基づく授業実践に関する教授技術、理数科授業での ASEI/PDSI アプローチの実践方法を教員が習得することをめざしている。

Box 1：ASEI-PDSI アプローチとは

・めざす授業：ASEI 授業
　○Activity：活動に基づいて知識を得る授業へ
　○Student Centred：教師中心の授業から生徒中心の授業へ
　○Experiment：講義中心から実験や実習を取り入れた授業へ
　○Improvisation：身近な教材を使った簡易実験のある授業へ
・授業改善のプロセス：PDSI アプローチ
　○Plan：授業の計画作成、準備
　○Do：実践
　○See：評価
　○Improve：フィードバック、改善

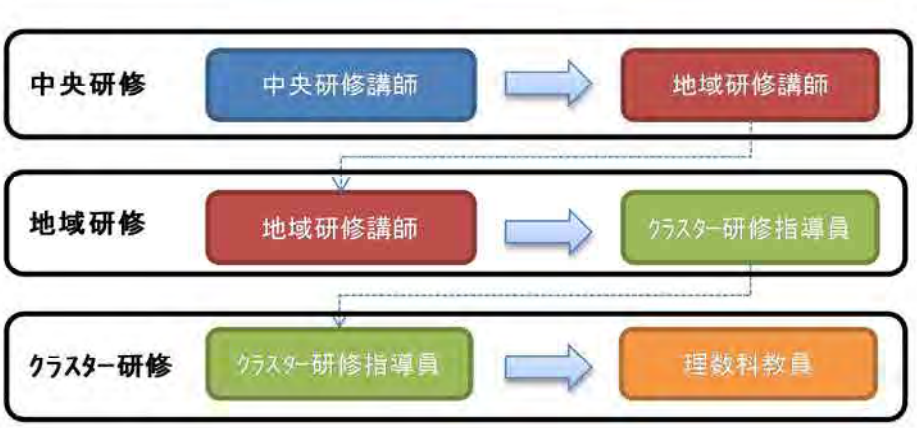
２－４－３　初等 INSET〔研修及びワークショップ（WS)〕の概要

（1）初等 INSET

1）研修の仕組み

初等レベルの INSET は、図－４で示すように中央、地域、クラスターレベルで順々に行われる三段階のカスケード式研修である。中央研修は地域研修の、地域研修はクラスター研修の講師・指導員育成を主眼とする。中央研修講師は全員 CEMASTEA アカデミックスタッフ、地域研修講師は教員養成校教官（理科、数学担当教官)、クラスター研修指導員は現職教員のなかから選定される。

[3] 詳細は JICA 国際協力総合研修所（2007)『キャパシティ・ディベロップメントに関する事例分析　ケニア中等理数科教育強化計画プロジェクト』p.20 を参照。



図－４　初等 INSET の基本的な構造

2）研修の対象者、実施場所、研修期間等

各段階における INSET の対象者、実施責任機関等は表－1 のとおりとなっている。下表は、当初計画[4]を基に調査時点での現状を踏まえ、一部修正を加えたものである。

表－１　初等 INSET 概要

研修	対象者	対象計画数	研修場所	研修期間	責任機関
中央研修	教員養成校教官	320	CEMASTEA	2 週間/年	CEMASTEA
地域研修	クラスター研修指導員	5,600	教員養成校（18 校）	2 週間/年	ディストリクト教育長（District Education Officer：DEO）及び教員養成校[5]
クラスター研修	理数科教員（6～8 年生担当）	60,000	クラスター拠点校（4,293 校）[6]	5 日間/年	DEO、クラスター拠点校、教員指導センター（Teacher Advisory Centre：TAC）教官[7]

3）研修カリキュラム、研修教材の開発方法

2009 年に実施したベースライン調査を基に、教員の研修ニーズを把握し、合計 4 年間の研修計画を策定した。各年度の研修は以下の当初策定されたグランドデザインに沿って作成されている。各年度の研修教材はいずれの段階の研修についても CEMASTEA が中心となって作成し、配付している。

[4] プロジェクトドキュメントに記載のもの。

[5] 計画では運営責任機関はディストリクト計画委員会（District Planning Committee：DPC）となっているが、教員への通知、財務管理は DEO が担当、研修施設の運営や研修の実施管理は教員養成校校長が担当している。

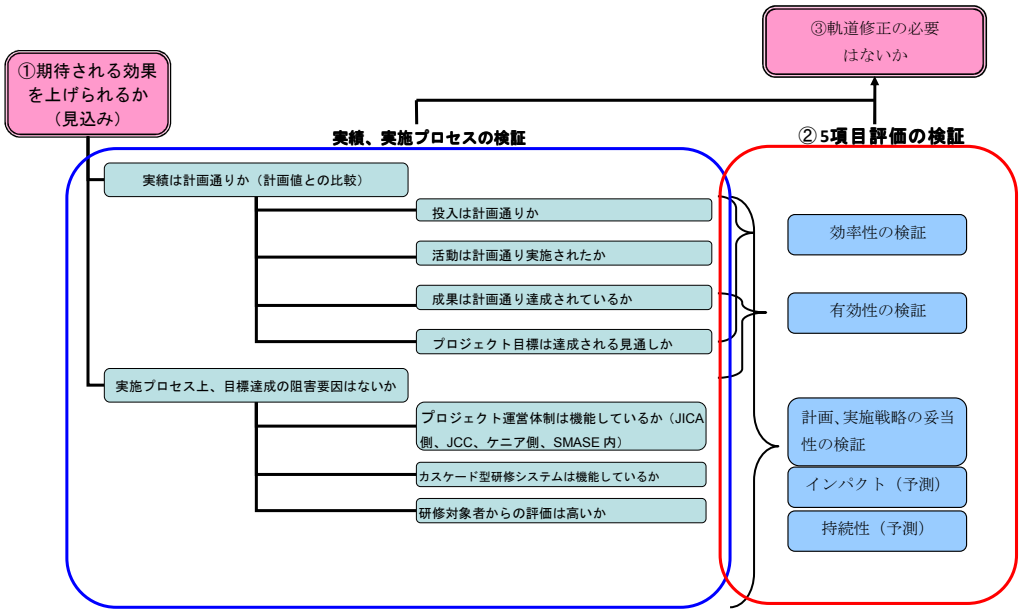
[6] 2010 年実績（出所：SMASE Project Information for Mid-Term Evaluation 2011）

[7] 計画では、クラスター研修についても地域研修同様に DPC が運営責任機関となっているが、教員に対する通知等は DEO、研修施設の運営、研修実施管理はクラスター拠点校の校長、クラスター研修講師に対するサポートは校長や TAC 教官が行っている。

第３章　評価の方法

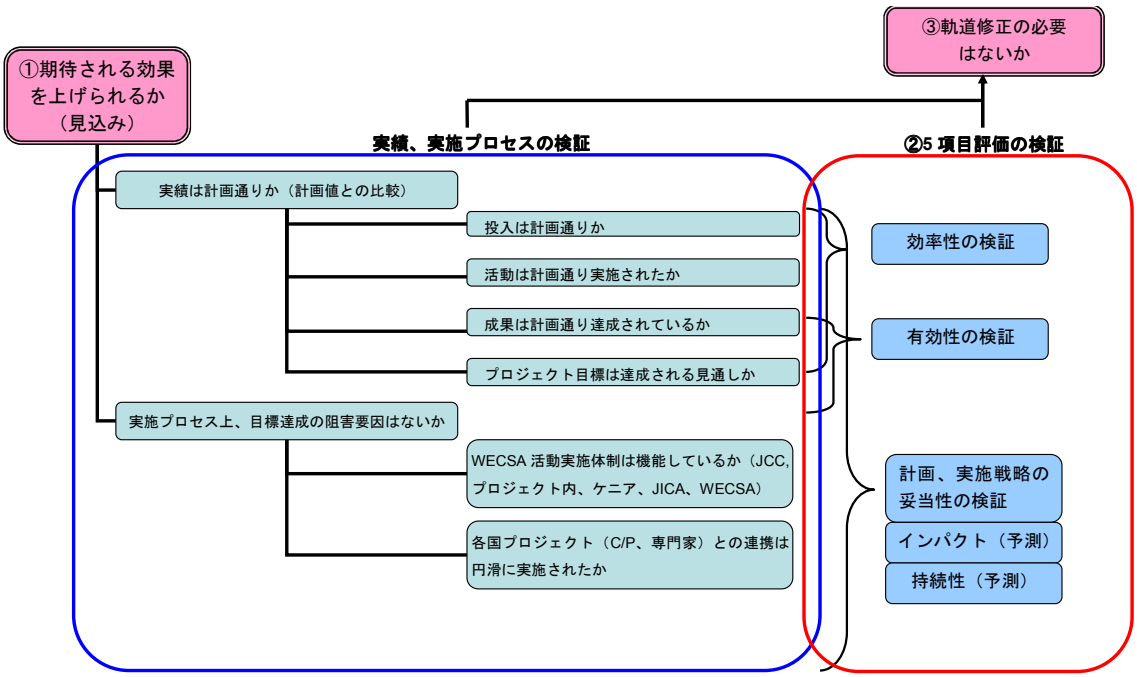
３－１　評価設問と必要なデータ・評価指標

本終了時評価調査のため、ケニア国内コンポーネントを対象とした評価フレームワーク（図－５）と WECSA コンポーネント評価フレームワーク（図－６）が作成された。同フレームワークに従い、調査は、①プロジェクトの現状把握・検証（実施協議で合意された活動計画（PO）に即して活動が実施されており、PDM に定められた期待される効果を上げられる見込みか）、②Development Assistance Committee（DAC）評価 5 項目（妥当性、有効性、効率性、インパクト、持続性）[8]の評価基準からの判断、③プロジェクトの軌道修正の必要はないかの検討、④提言や教訓の導出という手順で行われた。また、調査実施のために必要なデータ・評価指標が検討され、評価グリッドが作成された（ケニア国内コンポーネントは付属資料 2 の Annex 6、WECSA コンポーネントは付属資料 3 の Annex 4 参照）。



図－５　ケニアコンポーネント評価フレームワーク

[8] 妥当性とは、「開発援助と、ターゲットグループ・相手国・ドナーの優先度並びに政策・方針との整合性の度合い」。有効性とは、「開発援助の目標の達成度合いを測る尺度」。効率性とは、「インプットに対するアウトプット（定性並びに定量的）を計測する。開発援助が期待される結果を達成するために最もコストのかからない資源かを確認するため、通常、他のアプローチとの比較を必要とする」。インパクトとは、「開発援助によって直接または間接的に、意図的または意図せずに生じる、正・負の変化。開発援助が、地域社会・経済・環境並びにその他の開発の指標にもたらす主要な影響や効果を含む」。持続性とは、「ドナーによる支援が終了しても、開発援助による便益が継続するかを測る。開発援助は、環境面でも財政面でも持続可能でなければならない」（JICA評価部（2010）『新JICA事業評価ガイドライン第1版』）。



図－６　WECSA コンポーネント評価フレームワーク

３－２　評価実施体制

本終了時評価実施のため、日本・ケニア国側双方による合同評価委員会が設置された。合同評価委員会のメンバーは、以下のとおりである。

	氏　名（担当）	所　属
ケニア側	Mr. Milton M. Mokah	教育・科学・技術省シニア副教育長
	Mr. Darius Mogaka	教育・科学・技術省フィールド・その他サービス局
	Mr. Charles Kanja	教育・科学・技術省フィールド・その他サービス局
	Mr. Moses O. Kawa	CEMASTEA 所長
	Ms. Lydia Muriithi	CEMASTEA 副所長
	Mr. Patrick Kogolla	CEMASTEA アカデミック・プログラム・コーディネーター
	Mr. Joseph Kamau Mathenge	CEMASTEA アカデミック・プログラム・副コーディネーター
	Ms. Nancy Nui	CEMASTEA 中等委員会コーディネーター
	Mr. Ernest Ng'eny	CEMASTEA R&D 委員会コーディネーター
	Mr. George Kiruja Kiria	CEMASTEA 初等委員会副コーディネーター
	Mr. Makanda J. L	CEMASTEA WECSA 委員会副コーディネーター
	Mr. Makobu Kizito	CEMASTEA ICT 委員会メンバー
日本側	石原 伸一　（団長）	JICA 人間開発部 参事役
	小森 明子　（協力企画）	JICA 人間開発部 基礎教育第二課 主任調査役
	長谷川 さわ（評価分析 1）	株式会社日本開発サービス 調査部 コンサルタント

	氏　名（担当）	所　属
	坪根 千恵　（評価分析 2）	グローバルリンクマネジメント㈱ 社会開発部

３－３　評価実施方法

本終了時評価調査の実施プロセスと評価方法は、以下のとおりである。

３－３－１　評価実施プロセス

（1）ケニアコンポーネント

1）当初計画（PDM 第 2 版）に沿って、投入実績、活動実績、計画達成度を確認する。

2）計画達成度を踏まえ、評価 5 項目（妥当性、有効性、効率性、インパクト、持続性）の観点から、プロジェクトの目標達成度及び成果等を評価する。

（2）WECSA コンポーネント

1）ケニアとの二国間合意（R/D）に基づき、WECSA コンポーネント PDM（第 1 版）に沿って、投入実績、活動実績、計画達成度を確認する。

2）計画達成度を踏まえ、評価 5 項目（妥当性、有効性、効率性、インパクト、持続性）の観点から、プロジェクトの目標達成度及び成果等を評価する。なお、5 項目評価の評価項目については WECSA コンポーネントの特性に照らして、評価項目として適当と考えられる項目について、限定的に評価を行う。

（3）共通

1）上記の評価結果に基づき、プロジェクト終了までの課題及び今後の活動計画についてプロジェクトチーム、ケニア側関係機関と協議し、提言、教訓を取りまとめる。

2）評価・協議結果を評価報告書（英語）として取りまとめる。

3）調査結果を踏まえプロジェクト基本計画の修正点に関する協議を行い、必要に応じて R/D、Minutes of Meeting（M/M）（プロジェクトドキュメント）、PDM、PO の関連部分の変更について合意する。

３－３－２　評価方法

（1）ケニアコンポーネント

1）文献レビュー

2）プロジェクト作成モニタリング・評価報告書等、既存報告書の分析

3）CEMASTEA 関係者、地方教育行政官、教員に対する質問票調査

4）関係者ヒアリング

（2）WECSA コンポーネント

1）文献レビュー（プロジェクト月報、プロジェクト事業進捗報告書、TCTP 報告書、TCTP マニュアル、カントリーレポート、第三国専門家派遣報告書、オンライン調査報告書、インパクト調査報告書、技術交換報告書、メンバー国 WS 参加報告書、技術会合報告書、地域会合報告書、関連会合参加報告書、ニュースレター等）

2）WECSA 活動の裨益者、関連プロジェクト専門家に対する質問票調査

表－２　質問票回収数

	回収数	回答を得た国の数
CEMASTEA スタッフ	8	--
ケニア国日本人専門家	5	--
WECSA コンポーネント活動参加者	77	16 カ国（エチオピア、ウガンダ、ガーナ、カメルーン、ザンビア、シエラレオネ、ジンバブエ、スワジランド、セネガル、ナミビア、ナイジェリア、ニジェール、ボツワナ、マラウイ、ルワンダ、レソト）
メンバー国日本人専門家	8	8 カ国（エチオピア、ガーナ、ザンビア、セネガル、ナイジェリア、ニジェール、シエラレオネ、マラウイ）

3）WECSA 活動関係者ヒアリング

本調査では、セネガル及びカメルーンを訪問し、両国において、本プロジェクトの研修参加者にインタビューしたほか、セネガルでは、「理数科教育改善プロジェクトフェーズ 2」の日本人専門家より聞き取りを行った。ケニアにおいては、日本人専門家、CEMASTEA スタッフ及び教育省担当官に聞き取りを行った(詳細は付属資料 3 の Annex 6 を参照のこと)。

３－４　評価調査の制約・限界

本終了時評価調査実施にあたり、以下の制約・限界があった。

３－４－１　ケニアコンポーネント

（1）調査日数の制約

ケニアコンポーネントの現地調査期間中に充てられた情報分析・報告書作成期間は、WECSA コンポーネントと比較して限定的であった。ケニア国内における調査期間は WECSA コンポーネントの 30 日間に対し、ケニアコンポーネントは 24 日間であり、情報分析・報告書作成期間は WECSA コンポーネントの 14 日間に対し、ケニアコンポーネントは 6 日間であり、ケニアコンポーネントの調査日数に制約があった。

３－４－２　WECSA コンポーネント

（1）調査対象国数の制約

WECSA メンバー国は 27 カ国であるが、今回の評価では、2 カ国のみを訪問調査することができた。これを補完するため、この 2 カ国以外に 13 カ国より質問票回答を得て、分析材料としたが、他の 12 カ国からは回答が得られなかった。特にポルトガル語圏からは回答が得られておらず、調査の制約となった。

(2) 時間の制約と質問票による情報収集の限界

時間の制約のため、質問票のプレテスト[9]ができなかった。これにより、上位目標の指標に関し、同じ国からの回答者であるのに異なる回答が得られるなど、得られた回答の信頼性が低かった。また、各国で質問票の回答を確認するインタビューが行えなかったため、正しい回答を得たり、深く状況を把握・分析する機会がなかった。

[9] 質問票案を試験的に少数の回答者に配付し、回答を収集・分析することで、質問文や解答欄などに問題がないか確認する作業。

第４章　プロジェクトの実績

４－１　実績の確認（ケニアコンポーネント）

４－１－１　投入実績

日本・ケニア国側双方の投入は、おおむね計画どおり実施されたが、以下のケニア側からの投入に一部不足があった。

・初等教育のバックグラウンドをもつ CEMASTEA スタッフが追加されなかった。

・2009/2010 年度予算において、初等教育レベルの研修予算が教育省の予算として年度計画に計上されておらず、研修の予算確保に相当の労力を要した。また、プロジェクト開始当初に合意した予算計画のうち、ケニア側の予算は、インフレや地方レベルの教育事務所数増加に伴うコスト増などが反映されておらず、食費や宿泊費以外の費目（研修参加者の交通費、視学官のモニタリング実施のための交通費、研修会場が遠方にある地域における宿泊研修の費用等）が含まれていなかったため、必ずしも十分な積算ではなかった。2012/2013 年度予算から、一部の費目が加算された。

両者の投入実績の概要を、以下に示す（各項目の詳細は、付属資料 2 の Annex 5 を参照）。

（1）日本側投入

項　目	実　績
長期専門家派遣	7 名の以下の担当分野の長期専門家が派遣された。 1）チーフアドバイザー 2）副総括/WECSA 域内協力 3）理科教育 4）数学教育 5）業務調整 1 6）業務調整 2/INSET 運営管理 7）アカデミック・アドバイザー 派遣専門家のリストは、付属資料 2 の Annex 5-1 を参照。
短期専門家派遣	3 名の以下の担当分野の短期専門家が派遣された。 1）アカデミック・アドバイザー 2）教育評価 3）カリキュラム開発 派遣専門家のリストは、付属資料 2 の Annex 5-1 を参照。
本邦研修・TCTP	計 136 名のケニア人 C/P が本邦研修及び TCTP に参加した（本邦研修 124 名、マレーシア研修 12 名）。研修参加者のリストは、付属資料 2 の Annex 5-2 を参照。
INSET 活動用の研修教材及び機材の供与	計 1 億 155 万 4,593.03 ケニアシリング（約 1 億 1,272 万 6,000 円[10]）（2009 年 1 月～2013 年 6 月実績）。研修教材・供与機材のリストは、付属資料 2 の Annex 5-3 を参照。

[10] 1ケニアシリング＝1.11円（2013年8月為替レート）で換算。

項　目	実　績
プロジェクトの運営経費	計 7,936 万 4,692.56 ケニアシリング（約 8,809 万 5,000 円[11]）（2009 年 1 月～2013 年 6 月実績）。経費支出の年度ごとの内訳は、付属資料 2 の Annex 5-4 を参照。

（2）ケニア側投入

項　目	実　績
INSET 活動に必要な施設･設備及びCEMASTEA 施設の修理・維持・改善費用	INSET に必要な施設及び設備等は、CEMASTEA により提供された。施設等の修理・維持・改善費用も CEMASTEA 側から提供された。提供された施設・設備のリストは、付属資料 2 の Annex 5-5 を参照。
CEMASTEA のフルタイムのアカデミック C/P の配置	45 名のアカデミック･スタッフが CEMASTEA に配置された。だが、当初の計画では、初等教育のバックグラウンドをもつスタッフが増員される予定であった。また、各アカデミック・スタッフはプロジェクト活動に専従ではなく、CEMASTEA 職員としての他の業務を兼任していた。教育省及び CEMASTEA C/P のリストは、付属資料 2 の Annex 5-6 を参照。
CEMASTEA の適切なノンアカデミック C/P の配置	適切な人数（32 名）のノンアカデミック・スタッフが CEMASTEA に配置された。
ケニアで実施されるプロジェクト活動に必要な経費	計 4 億 7,232 万 6,269.80 ケニアシリング（2009 年 7 月～2013 年 6 月実績、2009 年 1～6 月期の実績額は不明）。経費支出の年度ごとの内訳は、付属資料 2 の Annex 5-7 を参照。

４－１－２　活動実績

プロジェクト活動は、おおむね PDM 及び PO に沿って実施されているが、上記の投入実績でも述べたように、SMASE 研修及び WS 実施に係る予算の不足及び配賦遅延等があったことや、プロジェクトの実施過程で起きた不測の事態等により、主に以下の活動が影響を受け、当初の計画どおりには実施されなかった。

・2013 年に実施された初等教育レベルの地域 INSET が当初のスケジュールより遅れて実施された。また、地域 INSET 及びクラスター研修は、当初の計画より少ない参加者数で実施されている。
・中等教育レベルの各 WS も、それぞれ当初のスケジュールより遅れて実施されている。また、校長を対象とした指導監督 WS は、計画策定が 1 年以上遅れたうえ、カスケード方式による実施から CEMASTEA による直接実施方式に変更されたことや、教員によるストライキの影響などにより、当初計画の 4 回ではなく 2 回のみ実施されている。

活動実績の詳細は、付属資料 2 の Annex 3 を参照。

11 同上。

４－１－３　成果の達成状況

終了時評価調査時点でプロジェクトの各成果がどの程度達成されているかについて、主にPDM で各成果に設定された指標の結果から、その達成状況を判断する。なお、成果指標の目標値の設定については、プロジェクト資料に明確な算出根拠が記載されていないため、目標値の数字の設定が適切であったかの判断は困難となっている。

各成果における指標と現時点での結果を、以下に示す。

成果 1：地域研修指導員（初等教員養成校教官）を対象とする中央研修制度が確立する。

<table>
<tr><th>指　標</th><th>結　果</th></tr>
<tr><td>1（a）4 サイクル分の初等教育向け中央研修教材とプログラムが開発される。</td><td>4 サイクル分の初等教育向け中央研修教材とプログラムが開発された。</td></tr>
<tr><td>1（b）250 名以上の地域研修指導員が毎年 CEMASTEA で研修を受ける。</td><td>各サイクルの中央研修を受講した地域研修指導員の数は、以下のとおり。

<table>
<tr><th>サイクル</th><th>実施期間</th><th>地域研修指導員数</th></tr>
<tr><td rowspan="4">サイクル 1</td><td>2010 年 2 月 14～27 日</td><td>82 名</td></tr>
<tr><td>2010 年 2 月 28 日～3 月 13 日</td><td>73 名</td></tr>
<tr><td>2010 年 3 月 14～27 日</td><td>117 名</td></tr>
<tr><td>計</td><td>272 名</td></tr>
<tr><td rowspan="4">サイクル 2</td><td>2011 年 2 月 13～26 日</td><td>87 名</td></tr>
<tr><td>2011 年 2 月 27 日～3 月 12 日</td><td>79 名</td></tr>
<tr><td>2011 年 3 月 13～26 日</td><td>120 名</td></tr>
<tr><td>計</td><td>286 名</td></tr>
<tr><td rowspan="4">サイクル 3</td><td>2012 年 2 月 12～25 日</td><td>69 名</td></tr>
<tr><td>2012 年 2 月 26 日～3 月 10 日</td><td>87 名</td></tr>
<tr><td>2012 年 3 月 11～24 日</td><td>128 名</td></tr>
<tr><td>計</td><td>284 名</td></tr>
<tr><td rowspan="4">サイクル 4</td><td>2013 年 1 月 28 日～2 月 8 日</td><td>58 名</td></tr>
<tr><td>2013 年 2 月 11～22 日</td><td>83 名</td></tr>
<tr><td>2013 年 3 月 11～22 日</td><td>116 名</td></tr>
<tr><td>計</td><td>257 名</td></tr>
</table>

上記のとおり、毎年 250 名以上の地域研修指導員が中央研修を受講した。</td></tr>
<tr><td>1（c）中央研修が研修評価指数において 0～4 段階で</td><td>中央研修の各サイクルにおける研修評価指数の結果は、以下のとおり。</td></tr>
</table>

<table>
<tr><th>指　標</th><th>結　果</th></tr>
<tr><td>平均 3.0 以上を得る。</td><td>
<table>
<tr><th>科目</th><th>サイクル 1
（2010 年）</th><th>サイクル 2
（2011 年）</th><th>サイクル 3
（2012 年）</th><th>サイクル 4
（2013 年）</th></tr>
<tr><td>数学</td><td>1.9</td><td>2.3</td><td>3.6</td><td>3.8</td></tr>
<tr><td>理科</td><td>2.3</td><td>2.4</td><td>3.4</td><td>3.5</td></tr>
</table>
上記のとおり、指数の結果は毎年上昇しており、サイクル 3 及び 4 の結果は、数学・理科ともに 3.0 以上になっている。
</td></tr>
<tr><td>1（d）100%の中央研修及び WS の実施報告書(出席者リスト・研修報告）が期限内（1 カ月以内）に CEMASTEA スタッフにより提出される。</td><td>本指標はプロジェクトの中間レビュー調査後に追加されたため、該当結果は中間レビュー調査後に実施された中央研修及び WS からの分が当てはまる。中央研修及び WS の実施報告書の提出率は、以下のとおり。
<table>
<tr><td>2012 年、2013 年に実施された中央研修の数</td><td>2</td></tr>
<tr><td>期限内（1 カ月以内）に CEMASTEA スタッフにより提出された実施報告書の数</td><td>0</td></tr>
<tr><td>提出率</td><td>0%</td></tr>
<tr><td>2012 年、2013 年に実施された中央ワークショップの数</td><td>8</td></tr>
<tr><td>期限内（1 カ月以内）に CEMASTEA スタッフにより提出された実施報告書の数</td><td>2</td></tr>
<tr><td>提出率</td><td>25%</td></tr>
</table>
上記のとおり、両提出率とも 100%には届いていないが、実施報告書自体は期限後に提出されている。
</td></tr>
</table>

上記の各指標の結果から判断すると、成果 1 はほぼ達成され、CEMASTEA における地域研修指導員（初等教員養成校教官）を対象とする中央研修制度はほぼ確立されたといえる。4 サイクル分の初等教育向け中央研修教材とプログラムが開発され、すべてのサイクルにおいて目標数の地域研修指導員が中央研修を受講し、中央研修の質に関する研修評価指数も目標レベルに達した。

成果 2：初等教員養成校における地域 INSET 制度が確立する。

指　標	結　果
2（a）クラスター研修指導員への地域 INSET が 4 回実施される。	各サイクルの地域 INSET を受講したクラスター研修指導員の数は、以下のとおり。サイクル 4 は 2013 年 8 月に実施予定。

<table>
<tr><th>指　標</th><th>結　果</th></tr>
<tr><td>2（b）4,500 名（少なくとも 4,400 名）のクラスター研修指導員が毎年研修を受ける。</td><td>
<table>
<tr><th>初等教員養成校</th><th>サイクル 1（2010 年）</th><th>サイクル 2（2011 年）</th><th>サイクル 3（2012 年）</th></tr>
<tr><td>Asumbi</td><td>331 名</td><td>325 名</td><td>288 名</td></tr>
<tr><td>Baringo</td><td>170 名</td><td>96 名</td><td>220 名</td></tr>
<tr><td>Bondo</td><td>-</td><td>-</td><td>190 名</td></tr>
<tr><td>Egoji</td><td>213 名</td><td>233 名</td><td>112 名</td></tr>
<tr><td>Eregi</td><td>329 名</td><td>308 名</td><td>292 名</td></tr>
<tr><td>Garissa</td><td>82 名</td><td>67 名</td><td>31 名</td></tr>
<tr><td>Kaimosi</td><td>396 名</td><td>382 名</td><td>217 名</td></tr>
<tr><td>Kamwenja</td><td>219 名</td><td>186 名</td><td>143 名</td></tr>
<tr><td>Kericho</td><td>284 名</td><td>360 名</td><td>294 名</td></tr>
<tr><td>Kigari</td><td>272 名</td><td>145 名</td><td>198 名</td></tr>
<tr><td>Kilimambogo</td><td>79 名</td><td>213 名</td><td>202 名</td></tr>
<tr><td>Machakos</td><td>307 名</td><td>317 名</td><td>187 名</td></tr>
<tr><td>Meru</td><td>136 名</td><td>94 名</td><td>119 名</td></tr>
<tr><td>Migori</td><td>337 名</td><td>399 名</td><td>352 名</td></tr>
<tr><td>Mosoriot</td><td>260 名</td><td>279 名</td><td>216 名</td></tr>
<tr><td>Murang’a</td><td>225 名</td><td>122 名</td><td>181 名</td></tr>
<tr><td>Shanzu</td><td>265 名</td><td>240 名</td><td>252 名</td></tr>
<tr><td>Tambach</td><td>302 名</td><td>117 名</td><td>276 名</td></tr>
<tr><td>Thogoto</td><td>213 名</td><td>265 名</td><td>251 名</td></tr>
<tr><td>計</td><td>4,420 名</td><td>4,164 名</td><td>4,021 名</td></tr>
</table>
注：Bondo 初等教員養成校では、サイクル 1 及び 2 は実施されていない。

上記のとおり、サイクル 2 及び 3 を受講したクラスター研修指導員の数は、4,400 名以下になっている。</td></tr>
<tr><td>2（c）1,200 名以上の教員指導センター教官/ゾーン視学官、47 名のカウンティ視学官、285 名のサブカウンティ視学官が研修を受ける。</td><td>各年の地域 WS に参加した教員指導センター（TAC）教官/ゾーン視学官の数は、以下のとおり。

<table>
<tr><th rowspan="2">初等教員養成校</th><th colspan="4">TAC 教官/ゾーン視学官</th></tr>
<tr><th>2009 年</th><th>2010 年</th><th>2011 年</th><th>2012 年</th></tr>
<tr><td>Kericho</td><td>123 名</td><td>192 名</td><td>163 名</td><td>61 名</td></tr>
<tr><td>Egoji</td><td>136 名</td><td>211 名</td><td>166 名</td><td>75 名</td></tr>
<tr><td>Kamwenja</td><td>95 名</td><td>-</td><td>-</td><td>75 名</td></tr>
<tr><td>Shanzu</td><td>55 名</td><td>-</td><td>36 名</td><td>50 名</td></tr>
<tr><td>Garissa</td><td>29 名</td><td>-</td><td>29 名</td><td>-</td></tr>
<tr><td>Migori</td><td>160 名</td><td>-</td><td>-</td><td>184 名</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>指　標</th><th>結　果</th></tr>
<tr><td></td><td>
<table>
<tr><td>Kilimambogo</td><td>-</td><td>-</td><td>-</td><td>93 名</td></tr>
<tr><td>Kaimosi</td><td>160 名</td><td>129 名</td><td>166 名</td><td>77 名</td></tr>
<tr><td>Tambach</td><td>184 名</td><td>137 名</td><td>184 名</td><td>135 名</td></tr>
<tr><td>Thogoto</td><td>171 名</td><td>228 名</td><td>88 名</td><td>91 名</td></tr>
<tr><td>計</td><td>1,113 名</td><td>897 名</td><td>832 名</td><td>841 名</td></tr>
</table>
注：表中の「-」は、当該年における地域 WS が当該初等教員養成校では実施されなかったことを意味する。地域 WS が行われた初等教員養成校は年によって異なる。

上記のとおり、参加者数は毎年 1,200 名以下になっている。しかしながら、プロジェクト関係者によると、「1,200 名以上」という数は目標値として適切かどうか議論の余地があるとの意見があった。

中央 WS に参加したカウンティ視学官及びサブカウンティ視学官（ディストリクト視学官）の数は、以下のとおり。2013 年のディストリクト視学官用の中央 WS は、今後実施される予定。

<table>
<tr><td></td><td>2012 年</td><td>2013 年</td></tr>
<tr><td>カウンティ視学官</td><td>-</td><td>47 名</td></tr>
<tr><td>ディストリクト視学官</td><td>242 名</td><td>-</td></tr>
</table>
上記のとおり、47 名のカウンティ視学官が WS に参加したが、ディストリクト視学官の参加者数は 285 名以下になっている。
</td></tr>
<tr><td>2（d）地域研修指導員が能力強化指数のすべての項目において 0～4 段階で平均 2.5 以上を得る。</td><td>各サイクルにおける地域研修指導員の能力強化指数の結果は、以下のとおり。

<table>
<tr><td>サイクル 1
（2010 年）</td><td>サイクル 2
（2011 年）</td><td>サイクル 3
（2012 年）</td></tr>
<tr><td>2.5</td><td>2.4</td><td>2.1</td></tr>
</table>
上記のとおり、指数の結果は年々下降しており、サイクル 3 時点での結果は 2.5 以下になっている。</td></tr>
</table>

<table>
<tr>
<td>2（e）地域研修が研修評価指数において0～4段階で平均2.5以上を得る。</td>
<td>地域研修の各サイクルにおける研修評価指数の結果は、以下のとおり。

<table>
<tr><th>サイクル1
（2010年）</th><th>サイクル2
（2011年）</th><th>サイクル3
（2012年）</th></tr>
<tr><td>2.1</td><td>2.5</td><td>2.0</td></tr>
</table>

上記のとおり、サイクル3時点での指数の結果は2.5以下になっている。</td>
</tr>
<tr>
<td>2（f）100％の地域研修及びWSのM&E報告書が期限内（1カ月以内）にCEMASTEAスタッフにより提出される。</td>
<td>本指標はプロジェクトの中間レビュー調査後に追加されたため、該当結果は中間レビュー調査後に実施された地域研修及びWSからの分が当てはまる。地域研修及びWSのM&E（モニタリング・評価）報告書の提出率は、以下のとおり。

<table>
<tr><td>2012年に実施された地域研修の数（年回数）</td><td>1</td></tr>
<tr><td>期限内（1カ月以内）にCEMASTEAスタッフにより提出されたM&E報告書の数</td><td>1</td></tr>
<tr><td>提出率</td><td>100％</td></tr>
<tr><td>2012年に実施された地域WSの数（年回数）</td><td>1</td></tr>
<tr><td>期限内（1カ月以内）にCEMASTEAスタッフにより提出されたM&E報告書の数</td><td>0</td></tr>
<tr><td>提出率</td><td>0％</td></tr>
</table>

上記のとおり、地域研修のM&E報告書提出率は100％であるのに対し、地域WSの提出率は0％になっている。だが、地域WSのM&E報告書も期限後には提出された。</td>
</tr>
<tr>
<td>2（g）100％の地域研修及びWSの実施報告書（出席者リスト・研修報告）が期限内（1カ月以内）に初等教員養成校により提出される。</td>
<td>本指標はプロジェクトの中間レビュー調査後に追加されたため、該当結果は中間レビュー調査後に実施された地域研修及びWSからの分が当てはまる。地域研修及びWSの実施報告書の提出率は、以下のとおり。

<table>
<tr><td>2012年に各初等教員養成校で実施された地域研修の数</td><td>19</td></tr>
<tr><td>期限内（1カ月以内）に各初等教員養成校により提出された実施報告書の数</td><td>0</td></tr>
<tr><td>提出率</td><td>0％</td></tr>
<tr><td>2012年に各初等教員養成校で実施された地域WSの数</td><td>9</td></tr>
</table>
</td>
</tr>
</table>

	期限内（1 カ月以内）に各初等教員養成校により提出された実施報告書の数	2
	提出率	22%
	上記のとおり、両提出率とも 100%には届いていないが、実施報告書は期限後に提出されている。	

上記の各指標の結果から判断すると、成果 2 に係るほとんどの指標の結果が十分な達成には至っておらず、初等教員養成校における地域 INSET 制度の確立は、十分な達成には至っていないといえる。地域研修を受講したクラスター研修指導員数、地域 WS に参加した TAC 教官/ゾーン視学官数、サブカウンティ視学官数とも目標数には達しておらず、地域研修の質に関する能力強化指数・研修評価指数とも目標レベルには達しなかった。よって、各初等教員養成校における地域 INSET の仕組み自体は確立されたが、研修参加者数及び研修の質において課題があり、制度としてまだ改善の余地があると判断される。

成果 3：既存のクラスター研修制度が強化される。

<table>
<tr><th>指　標</th><th>結　果</th></tr>
<tr><td>3（a）初等教員への効果的な理数科 INSET 実施に関するガイドライン・マニュアルが開発される。</td><td>初等教員用の理数科 INSET 実施に関するガイドライン及びマニュアルのドラフト最終案が作成され、プロジェクト終了までに完成される予定。</td></tr>
<tr><td>3（b）少なくとも 60,000 名の 6、7、8 学年の理数科を担当する初等教員が毎年クラスター研修に参加する。</td><td>各サイクルのクラスター研修を受講した初等教員の数は、以下のとおり。サイクル 4 は 2013 年 8 月に実施予定。
<table>
<tr><th></th><th>サイクル 1（2010 年）</th><th>サイクル 2（2011 年）</th><th>サイクル 3（2012 年）</th><th>サイクル 4（2013 年）</th></tr>
<tr><td>クラスター数</td><td>4,249</td><td>4,253</td><td>4,132</td><td>4,196</td></tr>
<tr><td>初等教員数</td><td>55,393 名</td><td>46,933 名</td><td>43,006 名</td><td>-</td></tr>
</table>
注：サイクル 4（2013 年）のクラスター数は、推定値。

上記のとおり、すべてのサイクルにおいて、クラスター研修を受講した初等教員の数は 60,000 名を下回っており、数も年々減少している。受講者数が目標値に届かなかった原因は、クラスター研修が一部地域（「ASAL」と呼ばれる乾燥・半乾燥地域）において実施されなかったことや、一部の地域において組合の反対により教員が研修に参加しなかったことなどが挙げられる。</td></tr>
</table>

<table>
<tr><th>指　標</th><th>結　果</th></tr>
<tr><td>3（c）100%のクラスター研修の M&E 報告書が期限内（1 カ月以内）に CEMASTEA スタッフにより提出される。</td><td>本指標はプロジェクトの中間レビュー調査後に追加されたため、該当結果は中間レビュー調査後に実施されたクラスター研修からの分が当てはまる。クラスター研修の M&E 報告書の提出率は、以下のとおり。

<table><tr><td>2012 年に実施されたクラスター研修の数（年回数）</td><td>1</td></tr><tr><td>期限内（1 カ月以内）に CEMASTEA スタッフにより提出された M&E 報告書の数</td><td>0</td></tr><tr><td>提出率</td><td>0%</td></tr></table>
上記のとおり、提出率は 100%ではないが、報告書は期限後に提出されている。</td></tr>
<tr><td>3（d）100%のクラスター研修の実施報告書（出席者リスト・研修報告）が期限内（3 カ月以内）にディストリクト教育長により提出される。</td><td>本指標はプロジェクトの中間レビュー調査後に追加されたため、該当結果は中間レビュー調査後に実施されたクラスター研修及び校長用ディストリクト WS からの分が当てはまる。クラスター研修及び校長用ディストリクト WS の実施報告書の提出率は、以下のとおり。

<table><tr><td>2012 年に各ディストリクトで実施されたクラスター研修の数</td><td>287</td></tr><tr><td>期限内（3 カ月以内）に各ディストリクト教育長により提出された実施報告書の数</td><td>227</td></tr><tr><td>提出率</td><td>79%</td></tr><tr><td>2012 年に各ディストリクトで実施された校長用ディストリクト WS の数</td><td>287</td></tr><tr><td>期限内（3 カ月以内）に各ディストリクト教育長により提出された実施報告書の数</td><td>27</td></tr><tr><td>提出率</td><td>9%</td></tr><tr><td>2013 年に各ディストリクトで実施された校長用ディストリクト WS の数</td><td>287</td></tr><tr><td>期限内（3 カ月以内）に各ディストリクト教育長により提出された実施報告書の数</td><td>167</td></tr><tr><td>提出率</td><td>58%</td></tr></table>
上記のとおり、提出率はどれも 100%に届いていない。</td></tr>
</table>

上記の各指標の結果から判断すると、成果 3 の既存のクラスター研修制度の強化は、十分な

強化には至っていないといえる。初等教員用の理数科 INSET 実施に関するガイドライン及びマニュアルは開発されたが、成果 3 に係る他の指標の結果が十分な達成には至っておらず、特にクラスター研修を受講した初等教員数が目標数に達しなかった。よって、既存のクラスター研修制度はある程度強化されたが、研修参加者数及び報告書の提出等において、制度はまだ強化すべき余地があると判断される。

成果 4：中等教育における理数科教員の ASEI-PDSI 授業実践が強化される。

<table>
<tr><th>指　標</th><th>結　果</th></tr>
<tr><td>4（a）授業研究導入のための研修と WS の内容が開発される。</td><td>授業研究導入のための研修と WS の内容が開発された。</td></tr>
<tr><td>4（b）授業研究のガイドブックが開発される。</td><td>授業研究に関するガイドブックのドラフトが開発され、プロジェクト終了までに完成される予定。</td></tr>
<tr><td>4（c）少なくとも 90%の中等学校校長が授業研究を含む教育学的リーダーシップの研修を受ける。</td><td>中等学校校長を対象にした授業研究を含む教育学的リーダーシップに係る WS は、2010 年から毎年実施される計画になっていたが、WS の実施計画の策定が遅れ、WS 自体の実施方式も、当初計画のカスケード方式による実施から CEMASTEA による直接実施方式に変更された。その結果、第 1 回目の WS が 2010 年、2011 年、2012 年にかけて実施され、82%の中等学校校長（6,125 名中 5,040 名）が参加した。第 2 回目の WS は当初 2012 年 9 月から実施される予定であったが、教員のストライキにより延期され、2013 年 1 月から順次実施されている。</td></tr>
<tr><td>4（d）47 名のカウンティ教育長及びカウンティ視学官、285 名のディストリクト教育長及びディストリクト視学官が校長用ディストリクト WS に参加する。</td><td>中央 WS に参加したカウンティ教育長及び視学官、TSC カウンティ長、ディストリクト教育長及び視学官の数は、以下のとおり。2013 年のディストリクト教育長及び視学官用の中央 WS は、今後実施される予定。

<table>
<tr><th></th><th>2012 年</th><th>2013 年</th></tr>
<tr><td>カウンティ教育長</td><td>-</td><td>47 名</td></tr>
<tr><td>カウンティ視学官</td><td>-</td><td>47 名</td></tr>
<tr><td>TSC カウンティ長</td><td>-</td><td>42 名</td></tr>
<tr><td>ディストリクト教育長</td><td>258 名</td><td>-</td></tr>
<tr><td>ディストリクト視学官</td><td>242 名</td><td>-</td></tr>
</table>

上記のとおり、カウンティ教育長及び視学官の参加者数は目標数に達しているものの、ディストリクト教育長及び視学官の参加者数は目標数より少ない。</td></tr>
</table>

<table>
<tr><td>4（e）80%以上のカウンティが授業研究の経験を共有するための中等学校校長向け WS を開催する。</td><td>中等学校校長を対象にした授業研究の経験を共有するための WS は、毎年実施される計画であったが、2013 年まで実施されなかった。2013 年には 80%の地域（クラスターディストリクト単位、59 地域中 47 地域）が WS を実施した。</td></tr>
<tr><td>4（f）校長の ASEI-PDSI 実践に関する指導が現状分析調査時の結果に比べて 10%向上する。</td><td>校長の ASEI-PDSI 実践指導に関する結果は、以下の 3 点の質問項目に対し、「いつも」「時々」と回答した校長の割合によって判断した。2009 年の現状分析調査時及び 2013 年時の割合、それらの差の結果は、以下のとおり。

<table><tr><th>項　目</th><th>2009 年</th><th>2013 年</th><th>差</th></tr><tr><td>プロフェッショナルツールのチェック</td><td>87.5%</td><td>83.3%</td><td>-4.2</td></tr><tr><td>理数科授業の視察</td><td>24.3%</td><td>33.3%</td><td>+9.0</td></tr><tr><td>教授/学習リソースの効果的活用のチェック</td><td>60.6%</td><td>64.8%</td><td>+4.2</td></tr><tr><td>平均</td><td>57.5%</td><td>60.5%</td><td>+3.0</td></tr></table>
上記のとおり、2009 年と 2013 年時の割合の差は 3.0 であり、10%には届かなかった。2013 年の調査時には関連するワークショップがまだ 1 回のみ実施されただけであるので、このような結果になったといえる。</td></tr>
<tr><td>4（g）100%の校長 WS の M&E 報告書が期限内（1 カ月以内）に CEMASTEA スタッフにより提出される。</td><td>本指標はプロジェクトの中間レビュー調査後に追加されたため、該当結果は中間レビュー調査後に実施された校長用 WS からの分が当てはまる。WS は 2012 年には教員のストライキにより実施されず、2013 年はいくつかのカウンティにおいてまだ WS が実施中であり、CEMASTEA スタッフによる M&E 報告書はすべての WS が完了してから提出されることになっている。</td></tr>
<tr><td>4（h）少なくとも 50%の校長 WS の実施報告書が期限内（3 カ月以内）に DPC により提出される。</td><td>上記の指標と同様に、該当結果は 2013 年に実施された校長用 WS の分が当てはまる。2013 年実施の WS はまだ継続中であるが、現時点で 18 カウンティにおいて実施報告書の提出期限が過ぎているものの、提出された報告書の数は 0 である。</td></tr>
</table>

上記の各指標の結果から判断すると、成果 4 の中等教育における理数科教員の ASEI-PDSI 授業実践の強化は、十分な達成には至っていないといえる。授業研究導入のための研修と WS の内容及び授業研究に関するガイドブックのドラフトは開発されたが、成果 4 に係る他の指標の結果は十分な達成には至っていない。

中等学校校長を対象にしたWSにはほぼ目標数の校長が参加したが、彼らのASEI-PDSI実践に関する指導は、プロジェクト期間中にはまだ目標のレベルまで強化・向上されていない。これは、当初4回実施する予定だった校長用のWSが、教員のストライキやディストリクトの予算不足、WSの実施方式の変更等、さまざまな理由により2回しか実施されなかったことが大きく影響している。

他方、中等学校教員へのインタビュー結果から、教員同士で互いの授業を観察してディスカッションを行うチーム・ティーチング（team teaching）やピア・ティーチング（peer teaching）の実施等、中等教員のASEI-PDSIの現場での実践は改善されてきていることも確認された。よって、中等教育における理数科教員のASEI-PDSI授業実践の強化は、限定的であると判断される。

成果5：CEMASTEAの理数科教育リソースセンターとしての役割が強化される。

指　標	結　果
5（a）サイクル1及び2の初等教育向けINSET教材が改訂され、初等教員用に出版される。	サイクル1及び2の初等教育向けINSET教材が、初等教員の自習用に改訂され、300コピーがパイロット地域の初等教員に配付された。
5（b）改訂されたサイクル1及び2の初等教育向けINSET教材がCEMASTEAのウェブサイトに掲載される。	改訂されたサイクル1及び2の初等教育向けINSET教材は、今後CEMASTEAのウェブサイトに掲載される予定。
5（c）少なくとも1つのASEI-PDSI実践集が作成され、配付される。	ASEI-PDSI実践集は、2013年7月に開催されたシンポジウムでの結果を踏まえ、発行・配付される予定。
5（d）少なくとも1つの模範授業ビデオが作成され、配付される。	模範授業ビデオも、2013年7月に開催されたシンポジウムでの結果を踏まえ、作成・配付される予定。

上記の各指標の結果から判断すると、成果5に係る活動は進行中であり、成果5はプロジェクトの終了までに達成されることが見込まれる。サイクル1及び2の初等教育向けINSET教材が初等教員の自習用に改訂され、今後CEMASTEAのウェブサイトに掲載される予定であり、ASEI-PDSI実践集及び模範授業ビデオもプロジェクト終了までに完成される予定である。

４－１－４　プロジェクト目標の達成状況

プロジェクト目標の達成状況についても、成果の達成状況と同様、主にPDMでプロジェクト目標に設定された指標から、その達成状況を判断する。

プロジェクト目標における各指標と現時点での結果を、以下に示す。

プロジェクト目標：INSETにより、ケニアの初等・中等教育レベルの理数科教育が強化される。

＜初等教育レベル＞

<table>
<tr><th>指　標</th><th>結　果</th></tr>
<tr><td>(a) 授業改善指数が 0～4 段階で 3.3 以上になる。</td><td>2009 年、2011 年、2013 年における授業改善指数の結果は、以下のとおり。

<table><tr><th>科　目</th><th>2009 年</th><th>2011 年</th><th>2013 年</th></tr><tr><td>数学</td><td>3.17</td><td>3.25</td><td>3.31</td></tr><tr><td>理科</td><td>3.28</td><td>3.20</td><td>3.26</td></tr></table>サンプル数：数学 111 名、理科 82 名（2009 年）、数学 78 名、理科 78 名（2011 年）、数学 38 名、理科 38 名（2013 年）

2013 年の数学の結果は 3.3 以上であるが、理科の結果は 3.3 をやや下回った。</td></tr>
<tr><td>(b) ASEI-PDSI 授業観察指数が 0～4 段階で 2.0 以上になる。</td><td>2009 年、2011 年、2013 年における ASEI-PDSI 授業観察指数の結果は、以下のとおり。

<table><tr><th>2009 年</th><th>2011 年</th><th>2013 年</th></tr><tr><td>1.54</td><td>2.14</td><td>2.34</td></tr></table>サンプル数：202 名（2009 年）、62 名（2011 年）、62 名（2013 年）

2011 年、2013 年の結果はともに 2.0 以上であり、2009 年の結果と比べて順調に上昇している。</td></tr>
<tr><td>(c) 生徒参加指数が 0～4 段階で 2.5 以上になる。</td><td>2009 年、2011 年、2013 年における生徒参加指数の結果は、以下のとおり。なお、生徒参加指数のデータは 0～4 段階ではなく 0～2 段階で収集され、2009 年時のデータは数学と理科の平均データのみ入手可能であった。

<table><tr><th>科　目</th><th>2009 年</th><th>2011 年</th><th>2013 年</th></tr><tr><td>数学</td><td rowspan="2">1.33</td><td>1.51</td><td>1.71</td></tr><tr><td>理科</td><td>1.57</td><td>1.75</td></tr></table>サンプル数：2,302 名（2009 年）、1,406 名（2011 年）、1,033 名（2013 年）

2011 年、2013 年の数学と理科の結果はともに 0～2 段階で 1.5 以上であり、2009 年の結果と比べて順調に上昇している。</td></tr>
</table>

上記の各指標の結果から判断すると、初等教育レベルのプロジェクト目標は達成されることが期待される。上記のとおり、初等教育レベルにおける 3 つの量的指標が良好な結果を示している。しかしながら、上記成果 3 の結果で述べたように、一部の地域においてクラスター研修が実施されておらず、クラスター研修を受講した初等教員の数も目標数には達していない。よ

って、初等教育レベルで引き続き SMASE 研修が実施され、目標数を達成するためより多くの初等教員が今後も研修を受講することが望まれる。

＜中等教育レベル＞

<table>
<tr><th>指　標</th><th>結　果</th></tr>
<tr><td>（a）ASEI-PDSI 授業観察指数が 0～4 段階で 3.0 以上になる。</td><td>2009 年､2013 年における ASEI-PDSI 授業観察指数の結果は、以下のとおり。

<table><tr><td>2009 年</td><td>2013 年</td></tr><tr><td>2.7</td><td>2.9</td></tr></table>サンプル数：72 名（2009 年)、134 名（2013 年）

2013 年の結果は、2009 年の結果に比べてわずかに上昇しているが、3.0 以下である。</td></tr>
<tr><td>（b）授業改善指数が 0～4 段階で 3.0 以上になる。</td><td>2009 年、2013 年における授業改善指数の結果は、以下のとおり。

<table><tr><td>2009 年</td><td>2013 年</td></tr><tr><td>2.8</td><td>2.9</td></tr></table>サンプル数：232 名（2009 年)、140 名（2013 年）

2013 年の結果は、2009 年の結果に比べてわずかに上昇しているが、3.0 以下である。</td></tr>
<tr><td>（c）生徒参加指数が 0～4 段階で 3.0 以上になる。</td><td>2009 年、2013 年は教員の視点から見た生徒の参加度、2011 年は生徒本人に対し参加度を聞いている。調査対象が異なるので比較対象ができず、本指標の達成度は判断できないが、一貫して生徒の参加度を見ている。</td></tr>
</table>

上記の各指標の結果から判断すると、中等教育レベルのプロジェクト目標の達成状況は、限定的であるといえる。成果 4 の結果で述べたように、中等教育レベルではプロジェクト活動である校長用の WS が計画どおりに実施されず、プロジェクト外の活動であるディストリクト研修も当初計画していたように毎年は実施されなかった。よって、これらの要因が中等教育レベルのプロジェクト目標の達成度に大きく影響したと考えられる。

４－１－５　上位目標の達成状況（見込み）

上位目標の達成見込みについても、成果とプロジェクト目標の達成状況と同様、主に PDM で上位目標に設定された指標から、その達成見込みを判断する。

上位目標における各指標と現時点での結果を、以下に示す。

上位目標：理数科目についてのケニアの青少年の能力が向上する。

<table>
<tr><th>指　標</th><th>結　果</th></tr>
<tr><td>初等教育レベルの国家試験（KCPE）の成績が向上する。</td><td>2008 年、2009 年、2010 年、2011 年における KCPE（Kenya Certificate of Primary Education）の数学と理科の平均点は、以下のとおり。2012 年の平均点の結果はまだ公表されていない。

<table>
<tr><td>科目</td><td>2008 年</td><td>2009 年</td><td>2010 年</td><td>2011 年</td></tr>
<tr><td>数学</td><td>47.16</td><td>49.56</td><td>53.80</td><td>52.18</td></tr>
<tr><td>理科</td><td>55.24</td><td>59.92</td><td>60.86</td><td>67.48</td></tr>
</table>

上記のとおり、数学と理科両方の平均点は年々上昇している。しかしながら、KCPE の試験内容は毎年変わるため、その平均点もその年の試験の難易度によって変わることが考えられ、経年変化を表しているとはいえない。よって、初等教育レベルの国家試験の成績向上は、KCPE の平均点ではなく、中等教育レベルの SPIAS のようなツールによって判断することが必要である。もしくは、他の適切な指標を設定することが望ましい。</td></tr>
<tr><td>中等教育レベルの SMASSE プロジェクト・インパクト評価調査（SMASSE Project Impact Assessment Survey：SPIAS）の結果がフェーズ 2 終了時の結果と比べて向上する。</td><td>2008 年と 2012 年に実施された中等教育レベルの SPIAS の調査内容のうち、生徒の変化に関する調査項目についての結果は、以下のとおり。

<table>
<tr><td>調査項目：生徒の態度、授業参加、成績に関しての変化</td></tr>
<tr><td>・生徒の ASEI-PDSI に対する態度及び ASEI-PDSI 実践に関する認識は、2008 年と 2012 年とを比較してわずかに向上した。
・生徒の ASEI-PDSI 授業への参加は、2008 年と 2012 年とを比較してわずかに向上した。
・生徒の生物と物理における成績は、2008 年と 2012 年とを比較してわずかに下降しているが、化学と数学は 2008 年と 2012 年とを比較してわずかに上昇している。</td></tr>
</table>

上記の生徒の成績に関し、各科目の具体的な試験の結果は、以下のとおり。</td></tr>
</table>

<table>
<tr><th>指　標</th><th>結　果</th></tr>
<tr><td></td><td>
<table>
<tr><th>科目</th><th>2008 年</th><th>2012 年</th><th>差</th></tr>
<tr><td>生物</td><td>50.56</td><td>48.54</td><td>-2.02</td></tr>
<tr><td>化学</td><td>50.49</td><td>52.74</td><td>+2.25</td></tr>
<tr><td>物理</td><td>51.61</td><td>50.37</td><td>-1.24</td></tr>
<tr><td>数学</td><td>46.15</td><td>46.18</td><td>+0.03</td></tr>
<tr><td>平均</td><td>49.70</td><td>49.46</td><td>-0.24</td></tr>
</table>
上記のとおり、SPIAS の結果からはほとんど顕著な変化が確認できず、本指標の達成度についてははっきりした傾向が表れなかった。
</td></tr>
</table>

上述のように、初等教育レベルの上位目標の達成見込みは、他の指標で判断するのが望ましい。中等教育レベルに関しては、指標である SPIAS の結果からははっきりした傾向が表れなかったため、上位目標の達成見込みは現時点で判断がつかない。

４－１－６　外部条件の影響

PDM に示された外部条件のうち、本プロジェクトでは以下の影響がみられた。

＜成果達成に向けての外部条件＞

外部条件	結　果
CEMASTEA C/P や養成された研修指導員が仕事を続けるだけの十分な動機づけを得る。	プロジェクト関係者へのインタビューによると、ほとんどの CEMASTEA スタッフは SMASE プロジェクトにフェーズ 2 から引き続き従事しているものの、本プロジェクトにおいて、スタッフの増員が図られることなく中等教育に加えて初等教育レベルの活動も増えたため、彼らの業務量が多大になったことから、彼らの本プロジェクトに対するモチベーションは、フェーズ 2 のころに比べて下がってきている。

＜プロジェクト目標達成に向けての外部条件＞

外部条件	結　果
他のプログラムが教員の研修への参加を阻害しない。	一部の教員は、SMASE 研修よりも、教員としての職階の昇格につながる教員資格付与研修（Teacher Proficiency Course）や学位取得プログラムへの参加を優先させている。
すべての中等理数科教員を対象としたディストリクト研修が毎年実施される。	2009 年と 2010 年には、一部のディストリクトのみでディストリクト研修が実施された。だが、2011 年と 2012 年にはすべてのディストリクトにおいて、中央からのカスケード方式による SMASE 研修が実施された。

４－１－７　実施プロセスに関する特記事項

実施プロセスに関する特記事項として、①マネジメント体制の適切性、②モニタリング体制の適切性、③研修システムの適切性、④その他の実施プロセス上の課題、の 4 点について現状を確認し、課題を抽出した。

（1）マネジメント体制の適切性

本プロジェクトのマネジメント体制に関し、初等教育・中等教育レベルにおいて、研修やワークショップ等のさまざまな活動を実施・管理するために、以下の 6 つの委員会がプロジェクトの下で設立された。中央レベルにおいては、合同調整委員会（Joint Coordinating Committee：JCC）、中央計画委員会（National Planning Committee：NPC）、プログラム・コーディネーター委員会（Programme Coordinators Committee：PCC）が設立され、地方レベルにおいては、各地域に地域計画委員会（Regional Planning Committee：RPC）、ディストリクト計画委員会（District Planning Committee：DPC）、ゾーン計画委員会（Zonal Planning Committee：ZPC）が設立された。本プロジェクト全体の実施体制、初等教育・中等教育各レベルの研修及び WS の実施体制については、付属資料 2 の Annex 4 を参照。

中央レベルにおいて、JCC は、教育省、TSC、CEMASTEA、JICA、他の関係機関の関係者で構成され、プロジェクトに係る全体の方針決定を行う責任機関として設立されている。NPC は、教育省、CEMASTEA、JICA の関係者で構成され、最初は CEMASTEA 幹部と JICA 専門家のみであったが、教育省の関与を高めるため、中間レビュー調査後に教育省関係者をメンバーに追加して再編された。PCC は、CEMASTEA のアカデミック・プログラム・コーディネーター、各プログラム・コーディネーター、JICA 専門家から構成され、CEMASTEA の中核人材と JICA 専門家間の情報共有・連携機能を高め、プロジェクトの運営管理を向上させるため、中間レビュー調査後に新たに設立された。

地方レベルにおいて、RPC は、カウンティ教育長、カウンティ視学官、初等教員養成校の校長により構成され、各カウンティにおいて設立されている。DPC は、ディストリクト教育長、ディストリクト視学官、他のディストリクトレベルの関係者によって構成され、初等教育・中等教育レベルそれぞれにおいて設立されている。初等教育レベルでは 289 の DPC があり、中等教育レベルでは 80 の DPC が存在する。ZPC は、ゾーン視学官、TAC 教官及び他の関係者から構成され、初等教育レベルの各ゾーンで設立されている。ZPC は 1,455 存在する。

本プロジェクトにおけるマネジメント体制に関し、以下の点が課題として挙げられる。

1）本プロジェクトは初等教育・中等教育レベルとも全国を対象規模としていたため、地方レベルで設立された委員会の数が 1 プロジェクトにしては多く、限られた人数の CEMASTEA スタッフでプロジェクト活動を効率的に実施し、適切に管理するには限界があった。本プロジェクトにおいて設立された地方レベルの委員会の数は約 1,870 委員会であり、C/P 数も 4,000 名を超える。対象が全国規模となっていれば、関係機関・関係者の数が多くなるのは必然のことではあるが、これによりプロジェクトがマネジメント・調整業務に多大な労力を割かざるを得なくなった。

2）CEMASTEA は SMASE 研修や WS の実施に係る実務を担っているが、研修の予算配賦

の責任機関は教育省であり、CEMASTEA スタッフの雇用についての責任機関は TSC であるため、予算の不足や配賦遅延、スタッフの増員等に関しての決定権が CEMASTEA にはなく、プロジェクト活動を実施するうえで複雑化を招いた。

3）CEMASTEA 内部の実施体制として、現在 CEMASTEA には 3 つの実施部署が存在する。1 つ目は科目ごとの部署（生物、化学、数学、物理の 4 部門）、2 つ目はプログラム委員会（初等、中等、ICT、SMASE-WECSA、R&D の 5 委員会）、3 つ目は“Specialized Committees”と呼ばれる委員会（ISO やジェンダー等、ケニアにおける公的機関として配慮すべき事項を取り扱い、10 事項以上の委員会から成る）である。CEMASTEA のすべてのアカデミック・スタッフは、これら 3 つの実施部署に兼任して所属し、それぞれの業務に従事している。この影響もあり、アカデミック・スタッフの一部、特にプログラム・コーディネーターの業務量が多大になっているとの意見が CEMASTEA スタッフから複数寄せられた。この複合的な業務の実施が、プロジェクト活動の効果的な調整や多岐にわたる活動の効率的な進捗管理、バランスのとれた業務配分を阻害し、JICA 専門家と CEMASTEA スタッフとの間の効果的なコミュニケーションも阻害している。

上記の課題等に対処するため、教育省は 2011 年 6 月に「CEMASTEA の改革に関する技術委員会（Technical Committee on Re-engineering of CEMASTEA）」を設置し、CEMASTEA のマネジメント上の課題や SMASE プログラムの活動の停滞状況を改善させるための対策について、プロジェクトの関係者が真剣に議論を重ねた。

（2）モニタリング体制の適切性

本プロジェクトのモニタリング体制に関し、JCC 会合は当初、少なくとも年 1 回開催される計画になっていたが、2009 年と 2010 年には開催されなかった。このため、JCC メンバーがプロジェクトの抱えていた課題等を認識するのが遅れ、関係者間で長期にわたって課題が共有されないなど、プロジェクト運営上の支障が生じた。プロジェクトの開始から中間レビュー調査時点までで、2011 年 5 月に第 1 回会合が開催されたが、会合で提起されたプロジェクト運営上のさまざまな課題については、上述の「CEMASTEA の改革に関する技術委員会」を設置して議論することとなり、解決が先送りされ、2011 年 11 月に第 2 回会合が開催された。中間レビュー調査以後、JCC 会合は年 2 回開催されるように計画されたが、これまで 2012 年 1 月と 2013 年 3 月の 2 回開催され、年 2 回ではないものの、年 1 回の頻度で開催されている。

第 2 フェーズから継続されていた NPC 会合は本来、プロジェクトの運営管理に関する事項を議論する場であったが、今フェーズに入ってからは実際には CEMASTEA スタッフの人事や福利厚生等、CEMASTEA の運営体制等に係る議論に多くの時間が割かれ、事実上 CEMASTEA という組織の管理職会議になっており、プロジェクト活動に特化した議論が十分にできなかった。さらに、そのような背景から NPC の実施も CEMASTEA 側が一方的に決めることが多くなり、当初の計画では NPC 会合の開催頻度を明確に規定していなかったことから、期待される頻度では開催されていなかった。

そこで、中間レビュー調査以後、それまでの NPC を CEMASTEA マネジメント会議とし、プロジェクトに特化して事案を議論する場として NPC を再編した。新 NPC には、メンバ

ーとして教育省関係者及び JICA 事務所関係者を加え、会合の開催頻度も月 1 回と規定された。その後、月 1 回の頻度で会合が開催されており、プロジェクトの進捗状況や課題等が教育省や JICA 事務所などプロジェクト関係者間で共有されるようになった。加えて、PCC 会合も、中間レビュー調査後に設立されて以降、月 2 回の頻度で定期的に開催されており、プロジェクトの進捗状況や課題等が CEMASTEA 内の管理職レベルで共有されるようになった。

地方レベルにおける各 RPC、DPC、ZPC の活動状況は、各委員会によって異なる。積極的に会合を行い関係者間で情報共有が行われている委員会もあれば、ほとんど集まっていない委員会もある。

本プロジェクトのモニタリングに関しての課題として、報告書の提出が挙げられる。上記の成果の達成状況でも述べたように、CEMASTEA スタッフによる報告書の提出は期限を過ぎることが頻繁にあり、また、報告書の内容の質にも向上の余地がある。

上記に加えて、本プロジェクトでは、PDM 指標のデータの記録・管理がケニア・日本国側双方によって適切に行われていなかったことが大きな課題として挙げられる。いくつかの指標データは収集されていなかったり、指標の設定とは異なる形でデータが収集されていたりした。結果として、指標結果に基づくプロジェクトの進捗状況が効果的にフォローされていなかった。

さらに、ディストリクトレベルで運営・管理する中等教育レベルのケニア側による SMASSE 研修基金[12]が適切に使用されているかについて、プロジェクト関係者の間で大きな懸念事項となっており、基金に対するケニア国内での会計監査の必要性が求められている。中等教育レベルにおけるディストリクト研修の実施はケニア側独自の活動とされ、プロジェクト外の活動となっているが、ディストリクトレベルにおける中等教育研修用の資金の会計監理について適切な注意が払われず、CEMASTEA と教育省によって、ディストリクトレベルでの資金使途をモニタリングするための適切なアレンジが行われなかった。

（3）研修システムの適切性

本プロジェクトにおける研修アプローチは、理数科分野の教員の教授法を向上させる目的で、カスケード方式によって SMASE 研修を実施することである。このアプローチは比較的短期間で多くの理数科教員を訓練するのに有効である一方、カスケード方式を含む研修全体の内容に関して、以下の課題が指摘されている。

1）カスケード方式による研修の実施は、カスケードの最下層、つまり教員に研修の正確な内容が伝わりにくくなるという課題がある。

2）SMASE 研修の主な目的は、ASEI-PDSI アプローチを基に、理数科科目の教授法や教授スキルを向上させることであるが、各年の研修によってカバーされる単元は限られており、すべての単元において ASEI-PDSI の方法論を扱うことは難しい。

3)ディストリクト視学官や TAC 教官へのインタビューによると、一部の教員にとっては、SMASE 研修に参加して ASEI-PDSI アプローチの内容を理解できても、そのアプローチ

[12] 各学校の授業料の一部をディストリクト研修実施のための徴収し、積み立てている基金。1998年開始のフェーズ1のときよりケニア側による持続的な財政基盤の1つとして制度化されているもの。

を実際の授業で適用することが難しいとのことである。研修内容は適切でも、担当クラスのサイズやカリキュラムで規定されている単元の範囲等の制約により、授業でのASEI-PDSI 実践に困難を抱える教員もいる。

4）ケニアでは、学校・教員・生徒の数が年々増加している。さらに、憲法の改正により、プロジェクトの途中で地方行政システムやディストリクト教育行政官も変更された。これにより、ディストリクト教育長や視学官等のターゲット数や、校長用 WS の実施体制などをプロジェクト期間の途中で変更せざるを得なかった。

（4）その他の実施プロセス上の課題

上記のほか、本プロジェクトでは以下の課題が指摘された。

1）クラスター研修では、1 日 1 人当たり 200 シリングがランチ代として研修参加者に支払われている。初等教員や地方関係者へのインタビューによると、ランチ代の支払いが後払いのうえ、交通費が支払われないためランチ代を交通費に充てている参加者も多いため、この金額は多くの参加者にとって十分でなく、金額の少なさから研修に参加することを辞める教員もいるとのことである。

2）すべてのディストリクト教育事務所は、クラスター研修で使用する教材をナイロビの倉庫まで引き取りに来るようになっている。しかし、各事務所から CEMASTEA に伝えられる教材の必要数が正確でないことがたびたびあり、CEMASTEA から各事務所に伝えられた教材の数や大きさ等に関する情報を各事務所がきちんと把握していなかったこともあり、車両の容量が不足し、教材の運搬・配付に支障が生じた。

3）中等レベルに関しては、プロジェクト関係者へのインタビューを総合すると、SMASE 研修への参加と ASEI-PDSI 授業実践のモチベーションの両方において、継続性の欠如が指摘されている。教員は、初めは SMASE 研修や ASEI-PDSI アプローチに対して興味を示すが、研修のサイクル（回数）を重ねるごとに、研修が「マンネリ状態」であると感じたり、研修コンテンツの内容に新鮮さを感じなくなったりするなど、段々と興味を失い、ついには研修に参加しなくなる例が報告されている。また、教員が授業で ASEI-PDSI を実践することが面倒だと感じ、実践しなくなる例も報告されている。

4）NPC と PCC は、中間レビュー調査後、プロジェクトのマネジメント体制を強化するために新たに組織・設立され、それに従いプロジェクトにおける関連会議の数が増加した。その結果、プロジェクトの進捗管理に関して一定の改善はみられたものの、会議のための準備や参加で特に CEMASTEA のプログラム・コーディネーターに負担がかかり、彼らのプロジェクト活動の実施に支障を来たすようになっている。

5）中間レビュー調査時の合意では、ケニア・日本国側双方はプロジェクトのマネジメント面の強化を図る必要性を認識した。このため、特に中間レビュー調査以降、JICA 専門家は CEMASTEA の技術面の強化よりもマネジメント機能を強化させることを優先させた。このアプローチは CEMASTEA のマネジメント強化の面においては有効であったが、CEMASTEA スタッフのなかには、フェーズ 1 や 2 のときのように JICA 専門家から直接技術的なサポートを望む声も聞かれた。

6）本プロジェクトでは、プロジェクトの広報が効果的に行われなかった。プロジェクトのニュースレターやパンフレット等が発行されず、関係者に効果的に情報を伝えるため

の広報活動は不十分であった。

４－２　実績の確認（WECSA コンポーネント）

４－２－１　投入実績

本プロジェクトのほとんどの人的、物的投入はケニアコンポーネントと WECSA コンポーネントに共通の投入である。WECSA コンポーネントに限定した投入は、日本側からの予算及びケニア側の海外出張費上乗せ分のみであり、これら投入は、おおむね計画どおり行われた。

(1) 日本側投入実績

1) 専門家の投入

専門家のすべてが、ケニアコンポーネントと WECSA コンポーネントの双方の活動に従事している。

2) 予算

2013 年 6 月 30 日時点の日本側の支出実績は約 3 億 1,728 万ケニアシリングに上る。これらは、主として、TCTP、第三国専門家派遣、WECSA 域内会合・代表者会合、技術会合の費用として支出された。

3) 機材供与

日本側が CEMASTEA に供与した資機材は、ケニアコンポーネント、WECSA コンポーネント共通で利用されている。

4) 本邦研修

2012 年 1 月 29 日から 2 月 4 日にかけて、南南協力における研修実施能力強化の本邦研修に CEMASTEA スタッフ 2 名が参加した。

(2) ケニア側投入実績

1) C/P の配置

すべての CEMASTEA スタッフが WECSA コンポーネントの活動に従事したが、特に以下の 2 つの委員会が WECSA コンポーネントの活動の計画・実施のために特別に組織され、活動にあたった。

・WECSA 委員会：TCTP 及び技術会合の調整を担当
・臨時委員会：域内会合の度にアカデミック・プログラム・コーディネーターの下に臨時に組織され、同会合の調整を担当

表－４　WECSA 委員会メンバー

委員会内の役割	氏　名	所属学科
コーディネーター	Mr. Chesire Berge	物理
メンバー	Mr. John Makanda	物理
メンバー	Mr. Thuo Karanja	生物
メンバー	Mr. Masoka Ndelela	化学
メンバー	Ms. Priscilla Ombati	数学

また、CEMASTEA は総務担当スタッフを 1 名配置し、WECSA 活動全般の後方支援に充てている。

2）施設

WECSA コンポーネントの活動は、ケニアコンポーネントと同様、CEMASTEA の施設を利用して実施されている。

3）予算

CEMSTEA スタッフが海外出張する際は、日本側が支給する海外出張経費に上乗せする形で、JICA 規定の 4 分の 1 に該当する金額を、ケニア側が CEMASTEA 経常経費より支出している。

４－２－２　活動実績

計画された活動はおおむね実施された。しかし、以下のとおりいくつかの活動はスケジュールどおりに実施することができなかった。成果 1 の活動に関しては、①インパクト調査で観察予定であったマラウイの INSET の突然のキャンセルにより、インパクト調査の実施予定が変更された、②2011 年末に行われた中間レビューのため TCTP[13]18 及び 19 が 2012 年 1 月及び 2 月に延期された、③TCTP22 は計画どおり実施されたものの、CEMASTEA スタッフが並行して多くの業務を担っていたため、準備が遅れた。以上のことが遅れとして挙げられる。

成果 2 に関しては、ザンビアでの技術会合は予定どおり開催されたものの、ザンビアのタスクチームが多忙であったこと及びケニアから準備プロセスを管理することが困難であったことから、準備が遅れた。

成果 3 に関しては、プロジェクトチーム[14]が、研修の実施等、より明確な締め切りが設けられている他の業務で多忙であったことや、当初プロジェクトチーム内でリソースセンターのあり方に関して共通した認識がなく、その醸成に時間を要したことなどから実施が遅れた。

プロジェクトの主な活動実績は表－５のとおりである。

表－５　活動実績

計　画	活動実績
1-1　SMASE-WECSA メンバー国の INSET システムの現状及びニーズを把握する。	・2013 年 3 月から 5 月にかけて 4 カ国（ザンビア、ウガンダ、南スーダン、ガンビア）でインパクト調査が行われ、TCTP のインパクトや今後のニーズが調査された。レポートは 2013 年 8 月に最終化された。詳細は活動 1-7 を参照のこと。 ・毎年代表者会合の際、各メンバー国は INSET の現状をまとめたカントリーレポートを提出した。

[13] Third Country Training Program = 第三国研修

[14] CEMASTEAスタッフ及び日本人専門家

1-2 SMASE-WECSA メンバー国に対する TCTP の内容を見直し、開発する。	・以下の 5 種類の TCTP コースが開発された：1）英語圏初等コース、2）英語圏中等コース、3）英語圏中等上級コース、4）仏語圏初等コース、5）南スーダン特別コース
1-3 SMASE-WECSA メンバー国への TCTP 教材を見直し、開発する。	・1-2 で記述したコースそれぞれに対し研修教材が開発された。それぞれの内容はプロジェクト期間中改善された。
1-4 SMSE-WECSA メンバー国の INSET 指導員へトレーニングを行う。	・2013 年 8 月時点で通常の TCTP が 4 ラウンド（計 12 コース）、南スーダン向けの特別研修コースが 1 回実施され、計 694 名が参加した。 ・第 5 ラウンド（計 3 コース）が新たに計画されており、2013 年 9 月から 10 月にかけて実施される予定。
1-5 SMASE-WECSA メンバー国へ INSET 構築及び強化に関する技術支援を行う。	・OJT がウガンダ（2 名参加、2009 年 9 月 13 日～27 日）、ルワンダ（5 名参加、2010 年 7 月 11 日～15 日）、南スーダン（4 名参加、2011 年 1 月 24 日～2 月 4 日）に対し、行われた。
1-6 TCTP の質に関するモニタリング・評価を行う。	・プロジェクトチームは、TCTP 中に参加者に 2 種類のアンケートを配付し、その回答結果をまとめ、研修の質のモニタリングを行った。
1-7 TCTP の効果に関するモニタリング・評価を行う。	・2011 年 11 月に、17 カ国の 69 名の研修参加者に対しオンライン調査を行った。 ・インパクト調査のためのツールがプロジェクトチームにより開発され、インパクト調査が 2013 年 3～5 月にかけて実施された（1-1 で記述のとおり）。調査は、INSET のセッションの観察、政府関係者、INSET 指導員（元研修参加者）及び INSET 参加者へのインタビュー、並びに関連文書の分析を通して行われた。
2-1 SMASE-WECSA メンバー国の教育省行政官への ASEI-PDSI 授業実践に関する啓発活動を実施する。	・教育省関係者の CEMASTEA への技術訪問がセネガル（17 名、2009 年 2 月 23 日～28 日）、マリ（12 名、2010 年 3 月 7 日～14 日）、南アフリカ（12 名、2010 年 10 月 3 日）、ナイジェリア（16 名、2012 年 9 月 17 日～21 日）により行われた。
2-2 SMASE-WECSA メンバー国との技術交換を行う。	・40 名の第三国専門家が計 17 回、8 カ国（アンゴラ、ニジェール、ナイジェリア、ルワンダ、セネガル、南スーダン、タンザニア、ブルキナファソ）に派遣された。中間レビュー以降新たな第三国専門家の派遣はない。

	・プロジェクトチームはメンバー国で開催された以下の WS に参加､または実施支援と参加を行った。
2-3　技術会合を開催する（ケニア主催またはメンバー国との共催)。	・技術会合は、2009 年にスワジランド、2012 年にケニア、2013 年にザンビアで開催された。詳細は、表－13 を参照のこと。
2-4　SMASE-WECSA 域内会合を主宰し、参加する。	・2009 年以降、域内会合及び代表者会議は毎年開催された。詳細は表－10 及び表－11 を参照のこと。
2-5　関連する地域会合及び国際会議へ参加する。	・プロジェクトチーム（参加者 5 名）は 2009 年 11 月 COMEDAF IV 会合に参加し、CEMASTEA に関する展示を行った。 ・プロジェクトチーム（参加者 4 名）は 2012 年 ADEA 総会に参加し、SMASE-WECSA アソシエーションの戦略計画を紹介した。 ・プロジェクトチーム（参加者 2 名）は 2013 年 5 月 11 日～16 日の ADEA 運営委員会会議に参加した。 ・プロジェクトチーム（参加者 1 名）は 2012 年 9 月に AMC International 主催の理数科・技術教育改善サミットに参加した。
3-1　関係地域機関及び国際機関とのネットワークを構築・強化する。	・アフリカ連合（African Union : AU）と CEMASTEA の間で、WECSA 活動を AU とより緊密に連携させる話し合いが続いている。 ・2013 年 1 月にアフリカ女性教育者フォーラム（Forum for African Women Educationalists : FAWE）と共同でジェンダーに関する WS が行われた。これをきっかけに、今後 SMASE-WECSA アソシエーションの持続性に関する情報交換が行われる予定。
3-2　SMASE-WECSA 活動に必要な教材及び参考書を収集する。	・リソースセンターに関するコンセプトペーパー案が 2012 年 11 月に CEMASTEA スタッフ全員と作成・共有された。最終版が 2013 年 9 月に完成予定。 ・メンバー国のシラバスや教科書が TCTP や技術会合参加者より収集され、文書や教材のリストが策定された。
3-3　図書機能を充実・整備する。	・収集された文書等は仮設図書館の棚に整理されつつある。

3-4　TCTP 教材を出版用に改訂する。 3-5　改訂された教材を電子化する。	・初等及び中等の TCTP 教材は 2013 年 8 月現在改訂中である。2013 年の TCTP 後最終化され、ウェブサイトに掲載される予定。
3-6　SMASE-WECSA に関する広報をウェブサイトや出版物を用いて実施する。	・CEMASTEA のウェブサイトは 2012 年に CEMASTEA により作られ開設された。 ・2013 年 8 月現在ニュースレターを作成中で、2013 年の TCTP 中に配付される予定。

表－６　WECSA コンポーネント活動計画・実績対象表（中間レビュー以降）

成果 1. SMASE-WECSAメンバー国のASEI/PDSI授業実践指導員が育成される		2011						2012												2013					
		7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
1) SMASE-WECSAメンバー国のINSETシステムの現状およびニーズを把握する。	計画							■	■							■	■	■					■	■	
	実績																					■	■	■	
2) SMASE-WECSAメンバー国に対する第三国研修の内容を見直し、開発する。	計画											■												■	
	実績											■	■											■	■
3) SMASE-WECSAメンバー国への第三国研修教材を見直し、開発する。	計画	■	■										■	■	■										■
	実績												■		■	■						■	■	■	■
4) SMSE-WECSAメンバー国の現職教員研修指導員へトレーニングを行う。	計画			■	■	■										■	■								
	実績				■	■		■	■							■	■								
5) SMASE-WECSAメンバー国へ現職教員研修構築および強化に関する技術支援を行う。	計画	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	実績					■										■									
6) 第三国研修の質に関するモニタリング・評価を行う。	計画							■	■							■	■								
	実績																								
7) 第三国研修の効果に関するモニタリング・評価を行う。	計画																						■	■	
	実績																					■	■	■	
成果 2. SMASE-WECSAネットワークが強化される		2011						2012												2013					
		7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
1) SMASE-WECSAメンバー国の教育省行政官へのASEI-PDSI授業実践に関する啓発活動を実施する。	計画	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	実績															■									
2) SMASE-WECSAメンバー国との技術交換を行う。	計画	■	■	■	■	■	■	■	■	■	■	■	■												
	実績																								
3) 技術会合を開催する（ケニア主催またはメンバー国との共催）。	計画	■	■	■	■	■	■					■	■	■										■	■
	実績													■										■	■
4) SMASE-WECSA地域会合を主宰し、参加する。	計画																	■							
	実績					■	■											■							
5) 関連する地域会合および国際会議へ参加する。	計画	■	■	■	■	■	■	■	■	■	■	■	■												
	実績						■		■		■														
成果 3. CEMASTEAのリソースセンターとしての役割が強化される		2011						2012													2013					
		7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
1) 関係地域機関および国際機関とのネットワークを構築・強化する。	計画	■	■	■	■	■	■	■	■	■	■	■	■												
	実績						■																		
2) SMASE-WECSA活動に必要な教材及び参考書を収集する。	計画	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	実績													■								■	■	■	
3) 図書機能を充実・整備する。	計画							■	■											■	■				
	実績																					■	■	■	■
4) 第三国研修教材を出版用に改訂する。	計画																			■	■	■			
	実績																						■	■	
5) 改訂された教材を電子化する。	計画																					■			
	実績																						■	■	
6) SMASE-WECSAに関する広報をウェブサイトや出版物を用いて実施する。	計画	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	実績								■		■													■	■

４－２－３　成果の達成状況

成果 1：SMASE-WECSA メンバー国の ASEI/PDSI 授業実践指導員が育成される。

成果 1 の達成度は以下のとおりである。

指標 a）CEMASTEA における TCTP が 5 回実施される。

TCTP には、現在、英語圏初等コース、英語圏中等コース、仏語圏初等コース、英語圏中等上級コースの 4 種類のコースがあり、毎年このなかから 3 コース（＝1 ラウンド）が実施される。表－7 のとおり、2013 年 8 月時点で、第 4 ラウンドまで実施された。第 5 ラウンドは、9 月 2 日～10 月 18 日にかけて実施予定である（TCTP23 英語圏中等上級コース：2013 年 9 月 2 日～20 日、TCTP24 仏語圏初等コース:2013 年 9 月 2 日～13 日、TCTP25 英語圏初等コース 2013 年 9 月 30 日～10 月 18 日）

指標 b）500 名以上が TCTP に参加する。

2009 年 1 月より現在まで、合計 692 名の参加者が TCTP に参加した。そのうち、410 名が、中央・州・地域レベルの INSET 指導員または校長・副校長・JOCV C/P の教員であり、他の教員を指導する立場にあることがわかっている。

表－7　TCTP 実施実績

年	タイトル	期間	参加国	参加者数
2009 年	TCTP 南スーダン	1/19～2/13	南スーダン	74
2009 年第 1 回	TCTP11	9/19～10/10	10（英語圏中等）：アンゴラ（8）、ボツワナ（8）、カメルーン（4）、エチオピア（9）、ガンビア（8）、マラウイ（10）、モザンビーク（7）、タンザニア（8）、ウガンダ（7）、ザンジバル（8）	77
	TCTP 12	9/19～10/31	5（仏語圏初等）：ベナン（6）、ブルキナファソ（9）、ブルンジ（6）、カメルーン（3）、セネガル（8）	32
	TCTP 13	10/19～11/6	7（英語圏初等）：ガーナ（6）、ナイジェリア（8）、ルワンダ（8）、シエラレオネ（8）、南スーダン（8）、スワジランド（8）、ザンビア（6）	52
2010 年第 2 回	TCTP 14	9/19～10/5	12（英語圏中等）：アンゴラ（8）、ボツワナ（8）、カメルーン（4）、ガンビア（8）、レソト（4）、マラウイ（11）、モザンビーク（3）、ナミビア（8）、スワジランド（4）、タンザニア（8）、ウガンダ（8）、ザンジバル（8）	82
	TCTP 15	10/24～11/5	7（仏語圏初等）：ベナン（4）、ブルキナファソ（5）、ブルンジ（4）、カメルーン（3）、マリ（4）、ニジェール（5）、セネガル（5）	30

	TCTP 16	10/20～11/12	10（英語圏初等）: エチオピア（6）、ガーナ（6）、レソト（4）、モザンビーク（3）、ナイジェリア（6）、ルワンダ（6）、シエラレオネ（6）、南スーダン（5）、スワジランド（4）、ザンビア（4）	50
2011 年第 3 回	TCTP 17	10/17～11/4	11（英語圏初等）: ボツワナ（6）、エチオピア（4）、ガーナ（6）、モザンビーク（5）、ナミビア（6）、ナイジェリア（6）、シエラレオネ（6）、南スーダン（6）、スワジランド（6）、ザンビア（6）、ジンバブエ（4）	61
2012 年第 3 回（続き）	TCTP 18	1/16～1/27	6（仏語圏初等）: ベナン（5）、ブルキナファソ（5）、ブルンジ（5）、マリ（5）、ニジェール（5）、セネガル（5）	30
	TCTP 19	1/16～2/10	8（英語圏中等）: アンゴラ（7）、カメルーン（6）、ガンビア（7）、マラウイ（6）、ルワンダ（7）、タンザニア（7）、ウガンダ（7）、ザンジバル（5）	52
2012 年第 4 回	TCTP 20	9/3～9/21	12（英語圏初等）: ボツワナ（6）、エチオピア（6）、ガーナ（6）、レソト（6）、モザンビーク（5）、ナミビア（6）、ナイジェリア（6）、シエラレオネ（6）、南スーダン（6）、スワジランド（6）、ザンビア（7）、ジンバブエ（6）	72
	TCTP 21	9/24～10/5	7（仏語圏初等）: ベナン（5）、ブルキナファソ（5）、ブルンジ（5）、マリ（5）、ニジェール（5）、セネガル（5）、ジブチ（1）	31
	TCTP 22	9/24～10/12	8（英語圏中等）: アンゴラ（6）、カメルーン（7）、ガンビア（6）、マラウイ（7）、ルワンダ（5）、タンザニア（6）、ウガンダ（7）、タンザニア（7）	51
合計			26	694

指標 c）15 種類以上の研修教材が開発される。

2013 年 8 月時点で、通常の TCTP コースは TCTP11 から TCTP22 まで 12 回、南スーダンへの特別コースが 1 回実施されており、それぞれに対し 1 種類の研修教材が作成された。本プロジェクトでは今後さらに TCTP コースを 3 回実施する予定であるため、プロジェクト終了までに合計 16 の研修教材が開発されることとなる。通常のコースは 4 種類（英語圏初等コース、英語圏中等コース、仏語圏初等コース、英語圏中等上級コース）に分かれており、毎年改良が加えられていることから、プロジェクト終了までに 4 種類の研修教材の最終版が完成することとなる。

指標 d）授業改善指標（Lesson Innovation Index）が平均 2.5 以上となる。

本来、本指標 d）は INSET 指導員を養成する TCTP 参加者の研修内容の理解度を測ることを意図し、それを通して研修の質も判断することを意図していた。しかし、「授業改善指標」は、初等及び中等教員の教室での ASEI-PDSI の実践度合を測るツールであるため、「授業改善指標」は、本成果の指標として適切でない[15, 16]。研修参加者の理解度や研修の質を測るためには、研修後のテストの実施が適切であったと考えられる。このため、本評価では研修参加者の理解度及び研修の質を測るための代替指標を以下のとおり設けた。

（1）研修内容の理解度と有用性

本評価チームは過去の研修参加者に質問票を配付し、TCTP で学んだことをどの程度実践で活用しているかを聞いた。その結果、表－８のとおり、78%が研修で学んだことを十分に活用しているとの回答が得られた。本結果により、参加者は研修を通じて知識やスキルを身につけることができており、かつ研修の内容も妥当性が高かったといえる。

表－８　TCTP 内容の有用性についての評価

［F＝仏語圏、A＝英語圏、T＝合計* **］　（%）

質　問		1（低）	2	3	4（高）
1　TCTP で学んだことを実地で活用していますか。		全く活用していない	時々活用している	おおむね活用している	大変活用している
	F（N=24）	0.0	12.5	54.2	33.3
	A（N=53）	1.9	13.2	22.6	50.9
	T（N=77）	1.3	13.0	32.5	45.5

*回答者のなかには、プロジェクト開始前（2009 年 1 月以前）の研修参加者も含まれる。

**回答は 16 カ国 77 名より得られた。

（2）研修参加者による研修の質の評価

プロジェクトチームは研修期間中に評価セッションを設け、参加者にアンケートを配付し、研修を評価させている。その結果を表－９に示す。以下の 2 つの項目は 5 段階（0-強く反対、1-反対、2-どちらでもない、3-賛成、4-強く賛成）で評価されている。すべて 3 以上であり、研修参加者の評価は高いといえる。

[15] 47の質問（例：授業中生徒が論理的な思考をするよう奨励されている、生徒の興味や好奇心を高めるよう手に入る物を使って工夫した授業が行われるなど）から構成されており、各項目が5段階で評価される。

[16] 2011年に実施されたオンライン調査では授業改善指標の平均値は3.07、2013年3月から5月にかけガンビア、南スーダン、ウガンダ及びザンビアで行われたインパクト調査の結果では授業改善指標の平均は3.06であった。これらの調査では、質問票が過去の研修参加者（INSET指導員及び教員）に配付され、INSET指導員兼教員、及び教員は自らが子どもに教える際の授業について評価し、専属のINSET指導員は、他の教員がどのように教えているかを評価するよう指示された。

表－９　参加者による研修評価

	TCTP 17	TCTP 18	TCTP 19	TCTP 20	TCTP 21	TCTP 22
研修全体の有益度	3.9	3.6	N/A	3.7	3.5	3.7
ファシリテーションの質	3.7	3.6	N/A	3.6	3.4	N/A

成果 1 の達成度のまとめ

PDM に設定されている指標 a）から c）に加え、指標 d）の代替指標による評価を総合し、2013 年 8 月時点で、成果 1 はほぼ達成されているといえる。今後計画されている TCTP が滞りなく実施されること、及びその研修の質と参加者の理解度が指標 d）以外のより適切なツールで測られ、十分なレベルに達していることが証明されることで、本成果は完全に達成されると考えらえる。なお、指標 a）から c）は活動を実施することでほぼ自動的に達成される指標であることから、成果の指標としてはより高次なレベルの指標設定も必要であった。

成果 2：SMASE-WECSA ネットワークが強化される。

成果 2 の達成度は以下のとおりである。

指標 a）域内会合及び SMASE-WECSA 代表者会議が 4 回以上実施される。

表－10 及び表－11 のとおり、SMASE-WECSA 域内会合及び代表者会議は 4 回実施された。日本人専門家及びケニア側 C/P からの聞き取りによると、2011 年及び 2012 年の域内会合では域内活動の持続性が主な議題となり、議論が活発に行われたことから、会議の内容も域内のネットワークの強化に貢献するものであったことがうかがえる。第 5 回域内会合は 2013 年 10 月 28 日～11 月 1 日にかけて、代表者会議は 2013 年 10 月 28 日～29 日にかけて開催される予定である。

表－10　SMASE-WECSA 域内会合

タイトル	場所	日程	テーマ	参加国	参加者数（ゲスト含む）
第 9 回 SMASE-WECSA 域内会合	ナイロビ	2009 年 11/16～11/19	Successful & Sustainable INSET Activities and Government Support for Quality Teaching and Learning	ボツワナ、ブルキナファソ、ブルンジ、カメルーン、エチオピア、ガンビア、ガーナ、ケニア、 マラウイ、モザンビーク、 ニジェール、ナイジェリア、 ルワンダ、セネガル、南スーダン、スワジランド、タンザニア、 ウガンダ、ザンビア、ザンジバル、ジンバブエ	103

第 10 回 SMASE-WECSA 域内会合	ナイロビ	2010 年 12/6～12/9	A Reflection on a Decade of Promoting Mathematics and Science Education in Africa	アンゴラ、ボツワナ、ブルキナファソ、ブルンジ、カメルーン、エチオピア、ガンビア、ガーナ、ケニア、レソト、マリ、マラウイ、モザンビーク、ナミビア、ニジェール、ナイジェリア、ルワンダ、セネガル、シエラレオネ、南スーダン、スワジランド、タンザニア、ウガンダ、ザンビア、ザンジバル、ジンバブエ	87
第 11 回 SMASE-WECSA 域内会合	ナイロビ	2011 年 12/13～12/16	The Way Forward of SMASE WECSA：Sustainability beyond 2013	アンゴラ、ベナン、ボツワナ、ブルキナファソ、ブルンジ、エチオピア、ガンビア、ガーナ、ケニア、レソト、マラウイ、マリ、モザンビーク、ナミビア、ニジェール、ナイジェリア、ルワンダ、セネガル、シエラレオネ、南スーダン、スワジランド、タンザニア、ウガンダ、ザンビア、ザンジバル、ジンバブエ	65
第 12 回 SMASE-WECSA 域内会合	ナイロビ	2012 年 11/12～11/16	Strategizing for Sustainable SMASE Africa Beyond 2013	アンゴラ、ベナン、ボツワナ、ブルキナファソ、ブルンジ、カメルーン、エチオピア、ガンビア、ガーナ、ケニア、レソト、マラウイ、マリ、モザンビーク、ナミビア、ニジェール、ナイジェリア、ルワンダ、セネガル、シエラレオネ、南スーダン、スワジランド、タンザニア、ウガンダ、ザンビア、ザンジバル、ジンバブエ	100

表－11　SMASE-WECSA 代表者会合

タイトル	場所	日程	参加国
第 9 回代表者会議	ナイロビ	2009 年 11/16	ブルキナファソ、エチオピア、ガンビア、 ガーナ、ケニア、レソト、モザンビーク、ニジェール、 ナイジェリア、ルワンダ、セネガル、シエラレオネ、スーダン、タンザニア、ウガンダ、ザンビア、ザンジバル、 ジンバブエ、ブルンジ、カメルーン、マラウイ（21 カ国）
第 10 回代表者会議	ナイロビ	2010 年 12/9	ブルキナファソ、エチオピア、ガンビア、ガーナ、ケニア、レソト、モザンビーク、ニジェール、ナイジェリア、ルワンダ、セネガル、シエラレオネ、スーダン、タンザニア、ウガンダ、ザンビア、ザンジバル、ジンバブエ、ブルンジ、カメルーン、マラウイ、スワジランド、ナミビア（24 カ国）
第 11 回代表者会議	ナイロビ	2011 年 12/13	アンゴラ、ベナン、ボツワナ、ブルキナファソ、ブルンジ、エチオピア、ガンビア、ガーナ、ケニア、レソト、マラウイ、マリ、モザンビーク、ナミビア、ニジェール、ナイジェリア、ルワンダ、セネガル、シエラレオネ、南スーダン、スワジランド、タンザニア、ウガンダ、ザンビア、ザンジバル、ジンバブエ（26 カ国）
第 12 回代表者会議	ナイロビ	2012 年 11/12	アンゴラ、ベナン、ボツワナ、ブルキナファソ、ブルンジ、カメルーン、エチオピア、ガンビア、ガーナ、ケニア、レソト、マラウイ、マリ、モザンビーク、ナミビア、ニジェール、ナイジェリア、セネガル、シエラレオネ、南スーダン、スワジランド、タンザニア、ウガンダ、ザンビア、ザンジバル、ジンバブエ（26 カ国）

指標 b）SMASE-WECSA に加盟し、INSET 活動を実施する国が増加する。

表－12 のとおり、メンバー国の数は 25 カ国から 27 カ国へと増えたが、2010 年以降増加はみられない。前フェーズまでは、JICA が将来的にはメンバーとなった国で理数科 INSET プロジェクトを立ち上げることを目的に、積極的にメンバー国を増やしてきた経緯がある。しかし、現在、サブサハラアフリカにおける 19 の現地事務所のうち、既に 14 カ国で理数科 INSET 強化プロジェクトを実施中または実施した経験を有しており、これ以上拡大することは困難な状況である[17]。よって、今フェーズでは積極的にメンバー国を増やす活動を行わず、メンバー国を増やすことも優先的な目標とはされてこなかった。よって、現在この指標はプロジェクトにとってあまり重要な指標とはなっていない。

[17] その他の5つはポルトガル語圏で専門家の派遣が困難であったり、駐在事務所が再開あるいは開設したばかり、あるいは教育が主要課題分野の1つでないなどのため、プロジェクトの実施は難しい。

表－12　メンバー国及びオブザーバー国数

カテゴリー	2009	2010	2011	2012	2013
メンバー国	25	27	27	27	27
オブザーバー国	9	7	7	7	7
合計	34	34	34	34	34

指標 c）ケニアの主催または他メンバー国との共催により技術会合が 3 回以上実施される。

表－13 のとおり、技術会合が 3 回実施された。参加者は、技術会合を高く評価しており、その質に満足している[18]。

表－13　技術会合

タイトル	場所及び日程	参加者数	テーマ
第 1 回技術会合	スワジランド、2009 年 5/25～5/29	97 名	Enhancing Classroom Activities for Quality Teaching and Learning through Lesson Study
第 2 回技術会合	ケニア、2012 年 7/23～7/27	63 名	Enriching the practice of ASEI-PDSI in the classroom
第 3 回技術会合	ザンビア、2013 年 6/17～6/21	120 名	A Comprehensive Approach Towards Learner-Centered Lessons Based on Classroom Practice

成果 2 の達成度のまとめ

指標の達成度から判断し、成果 2 は達成された。上記で記載された会合や WS 以外にも本成果の下では技術訪問、第三国専門家派遣、メンバー国の WS 支援、OJT の実施などの活動が行われており、これらもネットワークの強化に貢献した。評価チームは会合のテーマや WS の質がおおむね適切であったことを確認したものの、PDM にも質を判断するため指標が事前に設定されていることがより望ましかったといえる。加えて、指標 b）については、プロジェクト期間中、特にプロジェクト期間後半においてはメンバー国の増加をめざしてはいなかったため、整理される必要があった。

成果 3：CEMASTEA のリソースセンターとしての役割が強化される。

成果 3 の達成度は以下のとおりである。

指標 a）メンバー国により作成された ASEI-PDSI ひな形授業計画案が取りまとめられ、普及される。

終了時評価時点ではまだこの指標は達成されていない。プロジェクトチームは、プロジェクト終了までに、TCTP 中に作成された授業計画案のなかから特に良いものを抽出し、取りまと

[18] 「4-2-6 実施プロセスに関する特記事項」の「(4) 能力強化のためのシステムについて」を参照のこと。

めた後、CEMASTEA のウェブサイトに掲載する予定にしている。

指標 b）TCTP 教材の 1 つが出版のため改訂される。

プロジェクトチームは現在初等及び中等基礎コースの TCTP 教材を電子化しているところである。2013 年 8 月時点で、第一ドラフトが提出されており、著作権に関する確認が行われている。2013 年の TCTP が終了次第、最終化される予定である。

指標 c）改訂された教材が電子化され、CEMASTEA ウェブサイトに掲載される。

電子化された教材は CEMASTEA のウェブサイトに掲載される予定である。

成果 3 の達成度のまとめ

上記の指標から判断し、成果 3 はまだ達成されていない。主な理由は活動の遅れである。しかし、残りのプロジェクト期間で成果 3 の活動に注力することで、上記指標の達成は可能であると考えられる。なお、成果 1 及び 2 と同様、成果 3 の指標も活動を実施することで達成される指標であることから、質を担保する指標やより高次な指標も設定されることが望ましかった。

４－２－４　プロジェクト目標の達成状況

プロジェクト目標：SMASE-WECSA メンバー国において、INSET 指導員（トレーナー及び行政官）の ASEI-PDSI に基づいた研修実践能力が強化される。

プロジェクト目標の達成度は以下のとおり。

指標 a）研修実践能力強化指標（Capacity Building Index）の総合評価が平均 2.5 以上となる。

研修実践能力強化指標は、INSET 指導員が自らの INSET 実施の能力を評価するツールであり、19 の項目[19]すべてに 5 段階（0-強く反対、1-反対、2-よくわからない、3-賛成、4-強く賛成）で自己評価することで測られる。2011 年 11 月に 17 カ国の 69 名の元研修参加者を対象に実施されたオンライン調査では、平均は 3.08 であったが、2013 年に行われたインパクト調査[20]の結果では、表－14 のとおり、3.3 とより高い値を示している。また、表－15 のとおり、インパクト調査では実際に INSET を観察し、元研修参加者のファシリテーション能力が十分に強化されていることが確認された。また、インパクト調査で訪問した 4 カ国とも研修の内容も適切であったことが確認されており、特に、特設 TCTP を受講し、数度にわたる第三国専門家派遣を受けた南スーダンの研修内容が最も高い評価を受けている。

[19] 質問は大きく分けて以下の4つのカテゴリーにわけられる：(1) 準備（例：私は通常INSETのワークプランを遅れずに作成します)、(2) 研修実施（例：私はINSET中にいつも参加型アプローチを用います)、(3) 評価（例：私はINSET中に得られたデータを分析し理解することができます)、(4) チームワーク（例：私は他の指導員や参加者とよい関係を築き保持することができます)

[20] プロジェクトチームにより、2013年3月から5月にかけて4カ国（ザンビア、ウガンダ、南スーダン、ガンビア）でインパクト調査が行われた。調査は、INSETのセッションの観察、政府関係者、INSET指導員（元研修参加者）及びINSET参加者へのインタビュー、並びに関連文書の分析を通して行われ、TCTPのインパクト及び今後のニーズが調査された。

表－14　インパクト調査対象 4 カ国の研修実践能力強化指標（自己評価）

国　名	サンプル数	指　標
南スーダン	32	3.2
ガンビア	6	2.9
ウガンダ	7	3.8
ザンビア	13	3.4
合計/平均	58	3.3

表－15　インパクト調査対象 4 カ国の INSET の内容とファシリテーションスキル

（プロジェクトチームの客観評価）

国　名	内　容	ファシリテーションスキル
南スーダン	3.21	2.60
ガンビア	2.65	2.79
ウガンダ	2.80	2.46
ザンビア	2.60	3.13
合計/平均	2.82	2.75

行政官の能力については、主として域内会合での経験共有及び技術訪問を通じて強化を図ったほか、あまり人数は多くはないものの、TCTP の提供も行った。彼らの能力を直接測る指標は PDM では設定されていないが、インパクト調査チームは、INSET セッションの運営管理面の観察と行政官へのインタビューを通じて、彼らの能力を測ることとした。その結果、研修セッションは、行政官と連携して十分に準備されており、満足のいく運営管理がなされていたこと、また行政官が研修をさまざまな面で支援しており、国によっては研修のモニタリング及び評価にも携わっていることを確認しており、行政官の理解や能力も十分であることがわかっている。

指標 b）ASEI-PDSI の概念がメンバー国の研修マニュアル/研修教材に反映されている度合

本指標評価のため、プロジェクトチームにより、ザンビアの技術会合参加者に質問票が配付され、11 カ国より回答が得られた。その結果 11 カ国中 3 カ国が ASEI-PDSI の概念の反映は限定的であるとし、6 カ国はある程度反映している、1 カ国は今後反映させる予定と回答した[21]。インパクト調査によると、調査を行った 4 カ国すべての研修内容に ASEI-PDSI が反映されていた。しかし、以下のとおり、INSET 指導員の能力は、ASEI-PDSI の研修マニュアル/教材への反映の度合では測れないことがわかった。詳細は次のとおりである。

ASEI-PDSI の反映が限定的な国

ザンジバルの参加者は、「既存の研修マニュアルを改訂するには教育省を説得する必要があり、時間がかかるため、ASEI-PDSI コンセプトの反映は現在のところ限定的である」としてい

[21] 1カ国からの回答は質問に適切に回答していなかった。

る。ナミビアの参加者によると、「授業観察やその後の議論の必要性が組み込まれている点においてはある程度同コンセプトが反映されているといえるが、ナミビアは独自の児童中心教育手法の教材を使用している」と回答しており、この回答からは TCTP 参加後に ASEI-PDSI のコンセプトを同国の研修マニュアル/教材に反映させたとは考えにくい。

カメルーンからの参加者は「カメルーンの研修マニュアル/教材は児童中心教育を主眼としていること、費用対効果の高い教材を使用したり活動を組み込む必要性について書かれている点で、ASAEI-PDSI モデルと一致している」と回答しているが、これも必ずしも TCTP 参加後に同国の研修マニュアル/教材が改訂されたことを意味しない。実際、カメルーンの児童中心に関する教員研修マニュアル[22]は、ASEI-PDSI そのもののコンセプトは組み込まれておらず、他の仏語圏アフリカで使用されているコンピテンシー・ベースト・アプローチを用いた研修マニュアルにより近い。よって、既に研修マニュアル/教材を有する国にとっては、たとえ能力があっても ASEI-PDSI の概念を新たに反映させることは困難であるといえる。

ASEI-PDSI をある程度反映させている国

エチオピアからの参加者は、同国のマニュアルには ASEI-PDSI のコンセプトが 95～100%反映されているとしており、ガーナ、タンザニア、レソト、ザンビアの参加者もある程度同コンセプトを組み込んでいると回答した。ザンビアに関しては、インパクト調査でも同コンセプトを研修マニュアル/教材に反映させていることが確認されている。マラウイの参加者は ASEI-PDSI の弱点をカバーする形のマニュアルを作成したと回答した。また、インパクト調査によると、ウガンダでは ASEI-PDSI と類似の ALEI-PIEI（Activity/Experiments, Learner-centered, Encouragement, and Improvisation - Plan Implementation, Evaluation and Improvement）というコンセプトを導入しているが、必ずしも同じ内容ではなく、ASEI-PDSI とは質の異なる内容も含まれている。加えて、同チームは南スーダンの研修教材が ASEI-PDSI のコンセプトを広く反映していること、ガンビアの研修教材はケニアで使用されているものとほぼ類似のものであることを確認した。

レソトとガンビアを除いては、これらの国は JICA 支援により理数科 INSET 強化のプロジェクトを行っているか、本プロジェクトによる特別支援を受けた国々である。よって、JICA のプロジェクトが現地に存在するか、CEMASTEA からの特別な支援が得られること、つまり政府や教育省レベルでの意思決定があることが、同コンセプトをマニュアル/教材に組み込むための重要な前提条件の 1 つであるといえ、これがないと能力が強化されていても同コンセプトの反映は難しいことが考えられる。

さらに、南スーダンのような新しい国やガンビアのような教員研修マニュアルを有していなかった国は、ケニアのマニュアルをほぼそのまま用いて自国のマニュアルを作成するため ASEI-PDSI が大幅に反映される傾向がある。一方でウガンダ、ザンビア、マラウイなど自国でプロジェクトを有する国は ASEI-PDSI のなかで自国にあった部分だけを取り入れたり、より自国に合うように変更する傾向がある。言い換えると、INSET の経験の蓄積が多く能力が高まるほど、研修指導員はその国の状況やニーズに合わせて同コンセプトを改訂する能力を有する。これらのことから、ASEI-PDSI のコンセプトの研修マニュアルへの反映度合いは、INSET 実施の能力強化の度合いを必ずしも示さないといえる。

[22] Module de Formation des Formateur sur la Nouvelle Approche Pédagogique, l'Approche par Competence

＜その他＞

アンゴラの参加者は、「将来的にはケニアの TCTP で学んだことを国の研修マニュアルに反映させるであろう」という回答が得られた。アンゴラは徐々に ASEI-PDSI を用いた研修を行っているものの、同アプローチの INSET への導入ははまだ公的には承認されていない。

プロジェクト目標の達成度のまとめ

プロジェクトチーム内ではプロジェクト目標の示す「INSET 指導員（トレーナー及び行政官）」が本プロジェクトで直接研修を受けた指導員のみを意味するのか、またはそれ以外の指導員も含めた指導員全員を意味するのかについて、事前に共通認識を有していなかった。ほとんどのメンバー国は、中央及び州レベルの INSET 指導員までは研修に送っていることから、評価チームは主として中央及び州レベルまでの TCTP に参加した INSET 指導員、及び技術会合、域内会合、その他の技術交換等に参加した行政官を評価の対象範囲と判断し、プロジェクトチームと合意した。

この定義に照らし合わせると、設定された 2 つの指標のうち、1 つしか機能していないものの、プロジェクト目標である「INSET 指導員の研修実践能力強化」という目標はほぼ達成されたと考えられる。上記指標以外に、評価チームで配付した質問票の結果、約 96%の回答者[23]が本プロジェクトからの支援により能力が強化したと答えたほか、メンバー国の日本人専門家 8 名中 7 名もケニアでの研修により C/P の能力が伸びたと回答している[24]。他方、JICA の理数科教員研修プロジェクトを有する国の研修参加者は、ケニアへの派遣前からある程度能力強化が行われ、帰国後もそれぞれのプロジェクトで継続的に能力が強化されており、日本人専門家からは、C/P の能力強化がどの程度ケニアの研修によるもので、どの程度自国のプロジェクトによるものなのか判断しにくいという声も聞かれている。よって、本プロジェクト目標である「INSET 指導員の研修実践能力強化」には、各国の理数科教員研修プロジェクトによる貢献もあったと考えらえる。

2 番目の指標である ASEI/PDSI の研修マニュアルへの反映は、各国の教育省の高次なレベルの意思決定が必要であるため、既に独自のマニュアルを有している国や、JICA プロジェクトを有していない、あるいは CEMASTEA から特別な支援を受けていない国にとっては困難であると考えられる。よって、この指標は必ずしも能力強化の度合を意味しないため、より適切な指標の設定が必要であったといえる。また、行政官の能力強化度合いを測る指標が PDM 内で設定されていなかったことから、この指標も設定されておくべきであった。

４－２－５　上位目標の達成状況

上位目標：メンバー国における INSET システムが確立/強化される

現在設定されている 4 つの指標に関し、評価チームの配付した質問票への回答によると、44.2%が自国の INSET 政策をもち、61.0%が INSET 実施のための行政システムを有しており、53.2%が資金メカニズム及びモニタリング・評価体制を備えていると回答した。しかし、これらの指標の明確な定義、ベースラインデータ及び目標値がなく、また得られた回答の信頼性も

[23] 15カ国の47名より回答を得た。「5-2-1　評価5項目による評価」の「(2) 有効性」参照。

[24] 「4-2-6　実施プロセスに関する特記事項」の「(4) 能力強化のためのシステムについて」参照。

低いことがわかった[25]。さらに、研修や会合の実施を主たる活動とする本プロジェクトの介入と、メンバー国での政策の策定や体制の整備をめざす上位目標との相関関係は限定的である。よって、プロジェクト終了前までに新たな目標及び指標を設定することが必要である。

（a）INSET に係る政策が策定される

評価チームの質問票への回答によると、44.2%が自国が INSET に係る政策を有すると回答している（N=77）[26]。しかし、同じ国からの回答者が異なる回答をしているケースも複数あったため、評価チームは本質問票への回答は信頼性が低いと判断した。また、プロジェクトチームがザンビアでの技術会合の参加者に配付した質問票では、16 名（16 カ国）から回答が収集され、そのうち、5 名が政策を有すると回答している。しかし、そのうち、政策は見直されている途中である、政策はあるが文書化されていない、政策はあるが適切に実施されていない[27]と答えた回答者がそれぞれ 1 名いた。また、回答者が指しているものが、国会等で承認された政策/法案なのか、教育セクター戦略の方針か、または関連省庁から発出された規定・勧告か、あるいは文書化されていない慣習なのか、明確にはわからない。

インパクト調査チームは、ガンビアとザンビアには INSET の政策文書はあることを確認しているが、ガンビアの政策文書は同国が TCTP に参加する前の 2004 年に策定されたものであり、ザンビアの政策文書は 1996 年に策定されたものであるため、本プロジェクトの影響を受けて策定されてものではない。

（b）INSET 実施のための行政システムを有している

本指標は、それぞれの国の教育省に INSET を司る部署があるかどうか、その部署に十分な人員が配置されているかどうか等、行政システムの有無について評価することとしていた。評価チームの質問票によると、61.0%が行政システムを有すると回答している（N=77）[28]。しかし、指標（a）と同様、同じ国からの回答者が異なる回答をしているケースも複数あったため、評価チームは本質問票への回答は信頼性が低いと判断した。

（c）INSET のための資金メカニズムが存在する

評価チームの質問票によると、53.2%が資金メカニズムを有していると回答した（N=77）[29]。しかし、他指標と同様、同じ国からの回答者が異なる回答をしているケースも複数あったため、評価チームは本質問票への回答は信頼性が低いと判断した。

プロジェクトチームによりザンビアの技術会合で配付された質問票の結果によると、18 名のうち 14 名が INSET に対し、何らかの政府の資金が得られると回答している[30]。また、ドナーによる資金も得られるとの回答もあった。加えて、ジンバブエとウガンダでは、ディストリクト教育事務所が INSET を行えるよう、各学校が一定の金額を州・県教育事務所または関連の委

[25] 質問では、「あなたの国にINSETに係る政策がありますか」「あなたの国にINSET実施のための行政システムはありますか」等の質問をしたが、これらの定義が明確化されていなかったこと、回答者が必ずしも政策やシステムを詳しく把握するポジションにいないことなどから、同じ国からの回答者であるのに異なる回答が得られた。「3-4　評価調査の制約・限界」で記述のとおり、時間の制約のため、質問票のプレテストができなかったこと、各国での確認のインタビューが行えなかったことにより、同質問への正しい回答を得られなかった。

[26] 16.9%が有していないと回答し、39.0%が無回答であった。

[27] 別途調査したところ、この国にはINSET政策はないことが判明した。

[28] 1.3%が行政システムを有していないと回答し、37.7%が無回答であった。

[29] 7.8%が資金メカニズムを有していないと回答し、39.0%が無回答であった。

[30] 残りの4名の回答は質問に適切に答えていなかった。

員会に納める制度が設立されている。ウガンダのシステムはSESEMAT基金と呼ばれ、JICAの理数科教員能力強化プロジェクトを通じて作られた。

（d）INSETのためのモニタリング・評価システムが存在する

評価チームの質問票によると、53.2%がモニタリング・評価システムを有していると回答した（N=77）[31]。しかし、他指標と同様、同じ国からの回答者が異なる回答をしているケースも複数あったため、評価チームは本質問票への回答は信頼性が低いと判断した。

プロジェクトチームが配付した質問票への回答によると、18名中16名が何らかのモニタリング・評価システムを有していると回答した[32]。そのうちの多くが、教員が研修で学んだことを授業で実践しているかどうかついて、校長または視学官が授業を観察して評価し、その結果をディストリクト教育事務所に報告し、それを州教育事務所及び中央教育省に報告する方式を採っている。一方、視学官や中央の研修指導員または中央の行政官がINSETそのものをモニタリングしているという回答も複数見られた。また、インパクト調査の対象となった4カ国はすべてモニタリング・評価システムを有していることがわかっている。

４－２－６　実施プロセスに関する特記事項

(1) 意思決定とコミュニケーション

SMASE-WECSAアソシエーションは、JICAのSMASSEプロジェクトから生まれたネットワークを基に、アフリカにおける理数科教育の促進を目的として設立され、2003年にはケニアでNPO法人として登録された。同アソシエーションは、現在27カ国がメンバー国として加盟している[33]。本プロジェクトで実施しているTCTP、技術会合、域内会合/代表者会合などの広域活動は、同アソシエーションのメンバー国を対象としている。よって、本プロジェクトは、これらの広域活動の実施について、同アソシエーションと密なコミュニケーションを保ちながら、意思決定を行っている。

(2) モニタリング

TCTPのモニタリングは、研修参加者による研修前及び研修後の評価、並びに研修全体の評価の実施を通じて行っている[34]。これらの結果はTCTP報告書に含まれ、反省点は次回のTCTPで反映されることとなっている。しかし、評価チームは、同報告書のフォーマットが統一されていない、評価されている項目が報告書によって異なる、グラフ等が読みにくい、分析が十分でないなど、質の面で改善の余地があると判断した。評価報告書が改善されることで、報告書が活用されるようになり、今後の研修の改善にもつながることが期待される。

PDM内の指標に沿ったモニタリングはプロジェクトチーム内で十分に行われていなかった。PDM内の表現や指標の定義が曖昧なままにされている、プロジェクトチーム内でPDMの内容に関する共通認識がないなどの課題が確認されていることから、このことでPDMに沿ったモニタリングが限定的になったと考えられる。

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[31] 3.9%がモニタリング・評価体制を有していないと回答し、42.9%が無回答であった。
[32] 残り2名のうち、1名が無回答、1名が質問に適切に答えていなかった。
[33] メンバー国は年間300USドルの会費を支払う。その他、7カ国がオブザーバーとして登録している。
[34] 0-4の5段階で評価される。

（3）カウンターパート/オーナーシップ

プロジェクト終了後もネットワークを持続させるための活動が活発になっており、ケニア教育省からメンバー国に対する SMASE AFRICA アソシエーション設立の支援を募るレターが発出されたり、プロジェクト終了後の支援獲得ためのアフリカ連合（AU）との議論が継続されていたり、アフリカ教育大臣会合（Conference of Ministers of Education of the African Union : COMEDAF）でのプロジェクト活動が紹介されるなど、さまざまな活動が、CEMASTEA を中心に行われている。また、メンバー国は 2011 年及び 2012 年のプロジェクトの代表者会議において、SMASE-WECSA アソシエーションを今後どう持続させるかについて活発に議論を行った。これらのことから、メンバー国の間に帰属意識が生まれてきているといえる。

一方で、インタビューで多くの CEMASTEA スタッフから、WECSA コンポーネントの活動に関する実務レベルのスタッフのモチベーションが低いことが指摘された。現在、TCTP のファシリテーターのモチベーションを上げるべく、CEMASTEA がファシリテーターに謝礼金を支払う議論がされているが、実務スタッフとのインタビューでは、TCTP 実施に関する CEMASTEA のマネジメントレベルの関心が低いという不満が聞かれたり、WECSA 委員会メンバーからは、同委員会のメンバー数が削減されたり域内会合が任されないなど軽視されているという不平が聞かれている。これらのことから、謝礼金などの外的要因でモチベーションを上げるだけでなく、スタッフの仕事に対する本質的なモチベーションを上げる取り組みも必要と考えられる。

今フェーズ以降、プロジェクトの活動が増えたにもかかわらず、退職したスタッフの補充が十分にされていないため、スタッフ数は減少している。これが、活動が遅れたり、締め切りが守られなかったりする要因の 1 つとなっている。

（4）能力強化のためのシステムについて

1）TCTP

表－16 に示すとおり、本終了時評価の質問票回答によると、91％の元研修参加者が TCTP を肯定的に評価している（質問 5）。彼らは CEMASTEA のファシリテーターも高く評価している（質問 2）。他方、質問票の回答及びインタビューの両方で、「なかには少数であるが、ファシリテーションに課題が見受けられる者もいた」「ファシリテーターの質は均質でなく人によって異なる」などの意見も確認されている。質問 4 の回答では、研修参加者は、ケニアのファシリテーターを自国のトレーナーと比べ必ずしもより高くは評価していないこともわかっている。

言語圏にかかわらず TCTP の評価は高いが、評価に多少の違いもみられる。1～4 の 4 段階評価中[35]、肯定的（評価 3：十分である/よい、評価 4：大変そう思う/とてもよい）に評価した人の割合は、質問 4 を除き、仏語圏英語圏の参加者間でほとんど変わりはない。しかし、最も高い評価（評価 4：大変そう思う/とてもよい）をした人の割合は英語圏の方が仏語圏よりも高い。この理由として、①CEMASTEA で使用する言語が英語であること、②通訳が各科目で使う語彙に詳しくないこと、③仏語圏の参加者はケニアの

[35] 4が最も高く（良く）、1が最も低い（悪い）。

学校で使われる言語が英語であるため、授業の実践をする機会がない、などが挙げられる。ポルトガル語圏の国から質問票の回答は得られなかったが、CEMASTEA スタッフより、ポルトガル語圏の参加者が英語での研修についていけていない事実も認識されていることから、状況は仏語圏と似ていると考えられる。

加えて、メンバー国で理数科 INSET 強化プロジェクトを実施する日本人専門家に送った質問票への回答では、8 名より回答が得られた。そのうち、7 名は各国の C/P がケニアでの研修により能力が十分に伸びた（4 段階評価中の評価 3）と評価している[36]。また、同じく 7 名が C/P がケニアで学んだことを十分に業務で活用している（4 段階中の評価 3）と回答した[37]。他方、8 名中 3 名が、自国で INSET システムが構築されたことや、CEMASTEA で新たな研修コースが提供されないため、今後 C/P や関係者をケニアに送る必要はないと考えていることも確認された。

表－16　元研修参加者による TCTP 評価

［F=仏語圏（N=24）、A=英語圏（N=53）、T=合計（N=77* **）］

（%）

質　問		1（低）	2	3	4（高）	無回答
1　ケニアの研修で学んだことを実地で使っていますか		全く使っていない	時々使っている	十分に使っている	とても使っている	
	F	0.0	12.5	54.2	33.3	0
	A	1.9	13.2	22.6	50.9	11.3
	T	1.3	13.0	32.5	45.5	7.8
2　CEMASTEA のファシリテーターをどう評価しますか		良くない	あまり良くない	良い	とても良い	無回答
	F	0	0	66.7	33.3	0
	A	0	0	47.2	41.5	11.3
	T	0	0	53.2	39.0	7.8
3　研修中に配付された資料をどう評価しますか		良くない	あまり良くない	良い	とても良い	無回答
	F	0	4.2	70.8	25.0	0
	A	0	0	50.9	39.6	9.4
	T	0	1.3	57.1	35.1	6.5

[36] 1名は無回答であった。
[37] 1名は無回答であった。

4 CEMASTEA のファシリテーターは自国のトレーナーよりも有能だと思いますか		有能でない	余り有能でない	十分に有能である	とても有能である	無回答
	F	4.2	16.7	58.3	0.0	20.8
	A	3.8	7.5	54.7	20.8	13.5
	T	3.9	10.4	55.8	14.3	15.6
5 全体として、CEMSATEAで行われた研修をどう評価しますか		良くない	あまり良くない	良い	とても良い	無回答
	F	0	0	62.5	37.5	0
	A	0	3.8	41.5	45.3	9.4
	T	0	2.6	48.1	42.9	6.5

*回答者は本プロジェクト開始前（2009 年 1 月以前）の研修参加者も含む。

**回答は 16 カ国 77 名から回収された。

2）第三国専門家派遣

表－17 のとおり、ケニアからの第三国専門家を受け入れた国はその支援に満足している。TCTP に関する回答と同じく、英語圏の国の方がより高く評価をしている。

ケニアからの第三国専門家を受け入れたことのあるメンバー国の日本人専門家の 1 人より、第三国専門家の質は人によって異なるとの意見が聞かれた。同専門家によると、現在の CEMASTEA のシステムでは招へいしたい専門家を受入れ側が指定することができないため、このプロジェクトではケニアの第三国専門家を要請することを取りやめたとのことであった。

表－17　受入国による第三国専門家評価

［F=仏語圏、A=英語圏、T=合計* **］

（%）

質　問		1（低）	2	3	4（高）
1 受け入れたケニア人専門家をどう評価しますか		良くない	あまり良くない	良い	とても良い
	F（N=5）	0	0	80.0	20.0
	A（N=12）	0	0	41.7	58.3
	T（N=17）	0	0	52.9	47.1
2 全体として、ケニア人専門家による技術支援をどう評価しますか		良くない	あまり良くない	良い	とても良い
	F（N=5）	0	0	80.0	20.0
	A（N=13）	0	0	61.5	38.5
	T（N=18）	0	0	66.7	33.3

*回答者は本プロジェクト開始前（2009 年 1 月以前）の第三国専門家受入れも含む。

**回答 1 は 8 カ国 17 名から回収され、回答 2 は 8 カ国 18 名より回収された。

3）技術会合

表－18 のとおり、技術会合参加者の 80%が同会合を「とても良い」と、高く評価している。メンバー国の 8 名の日本人専門家のうち、3 名が自国の C/P の能力が技術会合で強化されたと答えた。残りの 5 名は、ザンビアでの技術会合が終わったばかりであるため、能力強化についてはまだわからないと回答した。

表－18　技術会合参加者の同会合評価

［F=仏語圏、A=英語圏、T=合計*］

（%）

質　問		1（低）	2	3	（高）
SMASE-WECSA 技術会合をどう評価しますか		良くない	あまり良くない	良い	とても良い
	F（N=5）	0	0	25.0	75.0
	A（N=21）	0	0	19.0	81.0
	T（N=26）	0	0	20.0	80.0

*回答は 13 カ国 26 名から回収された。

第５章　評価結果

５－１　評価結果（ケニアコンポーネント）

５－１－１　評価５項目による評価

(1) 妥当性

本プロジェクトの妥当性は、以下の理由から「やや高い」といえる。

本プロジェクトは、ターゲットグループである、理数科目を教える初等教員及び中等教員のニーズを満たしているが、彼らの「ニーズ」と「要求」には若干の違いがある。

ケニアの初等教員及び中等教員は、自分たちの理数科教授能力を向上させたいというニーズがあり、この点においてSMASE研修は彼らのニーズを満たしている。しかしながら、これらのニーズは、研修に参加して認定証を得ることや、今よりも上の職階の教員資格を得ることにより、将来の昇進や昇給に結びつくことを前提とした研修に対する彼らの要求とは必ずしも一致しない。したがって、SMASE研修に参加した教員の多くは、SMASE研修は現行のケニアの教育制度の下では資格取得や昇給に明示的につながらないことに不満を抱えている。

本プロジェクトは、ケニアの国家開発戦略及び教育開発政策に合致している。

ケニアは2008年6月に完成したビジョン2030（Vision 2030）という長期開発戦略において、「世界的に競争力があり、2030 年までに高い生活の質を伴う繁栄した国」をつくることを大目標に掲げ、2030年までの中所得国入りをめざしている。

ビジョン2030のもと、ケニアでは2030年までに産業構造を工業化することを目標として掲げているが、工業化の基礎となる初中等教育における理数科教育の実態は低迷しており、その改善が緊急の課題として取り上げられている。ケニア政府は、2003年に「初等教育無償化（Free Primary Education）」を実施し、2005年にはケニア教育セクターサポートプログラム（Kenya Education Sector Support Programme）という5カ年計画をまとめ、2008年には「中等教育無償化（Free Day Secondary Education）」も導入し、教育へのアクセスの向上をめざした取り組みを継続的に推進している。しかしながら、無償化による生徒数の増加に教員の数が追いついておらず、教育の質の低下への対応が求められている。

また、ケニアの教育開発政策である“Session Paper No. 14 of 2012”“Basic Education Act 2012”“Teachers Service Commission Act 2012”では、教育セクターにおける人材育成分野の強化や教育の質の向上に向けた教師教育の重要性、教師教育の強化におけるINSETの必要性などが強調されている。

本プロジェクトは、日本の対ケニア援助政策に合致している。

第4回アフリカ開発会議（TICAD IV）で採択された「横浜行動計画」（2008年5月30日）の教育部門のなかで、SMASE を通じて理数科分野の教員訓練を拡大することが目標に掲げられており、その具体策として「10万人の教員を対象としたSMASEプロジェクトの拡大」が述べられている[38]。

また、「対ケニア共和国　国別援助方針」（2012年4月策定）及び「対ケニア共和国　事

[38] 2013年6月1～3日に横浜で開催された第5回アフリカ開発会議（TICAD V）において、『横浜宣言2013』及び『横浜行動計画 2013-2017』が採択され、教育部門における具体策として「理数科教育や学校運営改善を通じた2,000万人の子どものための教育の質の向上」が述べられている。

業展開計画」（2012 年 4 月策定）において、「理数科教育強化計画（SMASE）を中核とし、ケニア全国を対象とした初中等理数科 INSET の制度構築・定着及び理数科教育の質の改善をめざす」と述べられている。

一方、本プロジェクトの設計（PDM の構成内容）に関し、以下の課題が指摘された。

1）本プロジェクトの規模は、プロジェクト活動を効果的・効率的に実施するには過大であった。本プロジェクトはケニアコンポーネントと WECSA コンポーネントの 2 つのコンポーネントで構成されているが、ケニアコンポーネント自体、初等教育レベルと中等教育レベルの 2 つのコンポーネントから成っており、本プロジェクトは 1 つのプロジェクトではありながら、3 つの規模のプロジェクトを実施しているといえる。さらに、初等教育・中等教育の両レベルとも全国をターゲットにしているため、活動対象も広範囲に及び、プロジェクト活動が 3 つのプロジェクトを実施するような過大な数になっている。しかしながら、プロジェクト期間中に CEMASTEA スタッフの増員は行われず、プロジェクトのフェーズ 2 は 61 名の CEMASTEA スタッフで活動を行っていたのに対し、本プロジェクトでは 45 名でより広範囲な規模の活動を行っている。この点において、本プロジェクトの設計にはやや無理があった点は否めない。

2）プロジェクト関係者へのインタビュー結果から、初等教育レベルにおいて、SMASE 研修を最初から全国規模で実施する設計にしたことは、時期尚早であったといえる。案件形成当時のケニア側の責任者であった教育省次官からは、政策的見地からパイロットの実施は極力避けたいとの強い意向が示されたものの、初等教育レベルの SMASE 研修は、まずはいくつかのパイロット地域に導入し、パイロット地域での試行を通して得られた十分な経験や教訓を基に、研修のガイドラインやマニュアル、実施体制を含む初等教育レベルの安定したモデルをきちんと作ってから全国に展開した方が、より適切・効果的に実施できたと考えられる。

3）中等教育レベルのプロジェクト設計、つまり、中等教育レベルにおけるプロジェクトのスコープも、関係者に混乱を来たす要因となった。本プロジェクトでは、中等教育レベルにおいて、校長及びディストリクト教育行政官を対象に、ASEI-PDSI 授業実践の強化や授業研究用の WS 等を実施することがプロジェクトのスコープ内の活動として設定され、中等教育レベルの中央研修及びディストリクト研修は、CEMASTEA が独自に実施するプロジェクト外の活動とされた。これにより、中等教育レベルにおいて、プロジェクトによりサポートされる活動と CEMASTEA が独自に行う活動とで分かれたため、一部の CEMASTEA スタッフにとって混乱のもととなった。

4）ターゲットグループの選定として、クラスター研修に参加する初等教員は、6、7、8 学年を担当している理数科科目を教える教員と設定された。しかしながら、初等教員は毎年担当する学年が変わり、6、7、8 学年を担当していても翌年は低学年を担当する可能性も十分あり、各学校でクラスター研修に参加する教員を選定する際に混乱を来たし、また、研修参加教員の継続性が損なわれる原因となった。

（2）有効性

本プロジェクトの有効性は、以下の理由から「中程度」といえる。

上記「4-1-4　プロジェクト目標の達成状況」で述べたように、初等教育レベルのプロジェクト目標は、指標の結果が良好であり、達成される見込みが高い。だが、研修を受講した初等教員が目標数には届いておらず、まだ研修を受けていない教員も多いため、引き続き研修の実施及び学校レベルでの教員間の研修内容の共有を通して、ASEI-PDSI を学ぶ教員を増やしていく必要がある。一方、中等教育レベルのプロジェクト目標は、指標の結果にあまり変化がなく、達成レベルは限定的である。プロジェクト実施中のもろもろの制約により、中等教育レベルの研修・WS が計画どおりに実施できなかった影響が大きい。

本プロジェクトにおいて、特に中等教育レベルにおいて、プロジェクト目標の達成が十分なレベルに至らなかったことは、成果の達成レベルが十分でなかったことに起因する。さらに、初等教育・中等教育レベルにおける成果 2、3、4 の達成が十分でなかったことは、さまざまな要因、上記「妥当性」で述べられたプロジェクトの設計に関する問題、「効率性」で後述される投入の不足に関する問題、「4-1-7　実施プロセスに関する特記事項」で述べられたプロジェクトの実施プロセス上の問題等によって影響を受けた面が大きい。さらに、本プロジェクトでは「CEMASTEA C/P や養成された研修指導員が仕事を続けるだけの十分な動機づけを得る」（成果達成レベル）、「他のプログラムが教員の研修への参加を阻害しない」（プロジェクト目標達成レベル）等の外部条件が想定どおりに維持されなかった。このように、本プロジェクトの達成度を考えるうえで、プロジェクト実施前に予測が容易ではなかった多くの困難な課題に直面したということが特筆されるべきである。

一方、プロジェクト目標の達成レベルとは別に、プロジェクトのフェーズ 1、2 及び本プロジェクトにおける経験を通して、SMASE 研修の内容の有効性について、ケニア側関係者の間で以下のような点が認識されている。

1）SMASE 研修は、研修自体が双方向の対話式であり、生徒中心のアプローチによって進められる。これにより、教員からの一方的な講義スタイルがベストで唯一の授業の実施方法だと長く信じてきた研修参加者の目を開かせることになり、教室における授業に対する彼らの物の見方や態度、行動を変化させることにつながった。

2）SMASE 研修による教員への直接的な効果の例として、以下のようなコメントが寄せられている。例えば、教員が活動主導型・生徒中心型のアプローチを使い、グループでのディスカッションの導入、生徒に質問を考えさせるなど、授業での教え方に態度変容が見られるようになった、教員が理数科の授業を教えることに自信をもつようになった、苦手な単元を扱えるようになった、授業のレッスンプラン・実施内容が向上した、現地で入手可能な素材を使って授業の教材等を作成する方法を学び、improvisation が向上した、生徒を授業に積極的に参加させるようになったなど。

3）プロジェクトにより開発された研修及び WS 用のガイドライン、ハンドブック、マニュアルなどは、シンプルで実用的であり、SMASE 研修を実施するうえでの堅固な基礎となっている。これらの成果物は、プロジェクトの初期の段階に行った状況分析調査によりニーズを詳細に調べ上げ、幾度もの改訂プロセスを経て丁寧に作り込まれた。さらに、すべての成果物が既にあったものを改訂・焼き直しして作られたのではなく、ケニアにはもともとなかったものがゼロから作成された。各成果品の内容・品質については

ケニア側関係者の多くから好評を得ており、強く支持されている。

(3) 効率性

本プロジェクトの効率性は、以下の理由から「中程度」といえる。

上記「4-1-3　成果の達成状況」で述べたように、本プロジェクトの成果 1 はほぼ達成されたものの、成果 2、3、4 の達成レベルは限定的である。成果 5 は現在実施中の活動が完了すれば、プロジェクト終了までに達成されることが見込まれる。このように、本プロジェクトでは期待した成果が十分に達成されたわけではないが、上記の「有効性」でも述べたように、各成果の達成度については、プロジェクト活動が広範囲に及んだ点、予算の不足・配賦遅延等の投入に係る不足、実施プロセス上の課題、外部条件の影響等、さまざまな要因が影響したことが考えられる。

上記「4-1-1　投入実績」で述べたように、投入はケニア・日本国側双方におおむね計画どおりに実施されたが、ケニア側の投入量について、初等教育のバックグラウンドを有する CEMASTEA スタッフの要員追加が行われなかったことや、一部の研修・WS 実施に係る予算の不足・配賦遅延などが活動の進捗に影響を与えた。

投入の質に関し、CEMASTEA の技術面よりもマネジメント機能の強化に重きを置いた中間評価以降のプロジェクトの実施方針に対し、一部の CEMASTEA スタッフからは、JICA 専門家には、マネジメントを通した介入ではなく、フェーズ 1 や 2 のときのように直接的な技術サポートを望む声も寄せられた。また、本プロジェクトにおいて挙げられた PDM 指標データの管理に関する課題から、統計の専門家の配置が検討されるとよかったという声もあった。

このように、本プロジェクトではケニア側の投入量やタイミングに不足があったものの、全体として投入内容はおおむね適切であり、投入された各要素は活動の実施にもれなく活用されたため効率性は中程度といえる。

他に効率性に影響を与えた要因として、ケニアの政権交代により、中央・地方レベルの担当教育行政官の多くがプロジェクトの実施途中で変更になり、新任の担当官への変更後、プロジェクトの実施体制を再び整える必要があった。また、憲法改正に伴う地方行政制度の変更により、WS の参加者数や実施体制の変更もあり、プロジェクト活動が一時中断されるなどの影響があった。「4-1-7　実施プロセスに関する特記事項」で述べたように、プロジェクトのマネジメントにおける課題から、実施上の意思決定プロセスもスムーズに行われたとはいえず、プロジェクト活動の遅延の原因となった。

(4) インパクト

本プロジェクトのインパクトは、以下の理由から「中程度」といえる。

本プロジェクトの上位目標の達成見込みに関し、上記「4-1-5　上位目標の達成状況（見込み)」でも述べたように、初等教育レベルの上位目標の達成見込みは他の指標で判断することが望ましく、中等教育レベルに関しては、指標である SPIAS の結果からははっきりした傾向が表れなかったため、上位目標の達成見込みは現時点では判断がつかなかった。

上位目標である「理数科目についてのケニアの青少年の能力が向上する」は、プロジェクト目標の達成のみでは達成するのは難しく、他の多くの要因、例えば、教員数の増加、

教員の理数科目に関する正確な知識、生徒に十分な数の教科書を行き渡らせること、学習者中心の教育に基づいた評価方法の開発と採用なども、将来の上位目標達成のためには必要である。

本プロジェクトの実施中にみられたインパクトに関し、下記のプラスのインパクト事例が報告されている。

1）一部の学校では、教員の理数科科目における教授スキルを向上させるために、SMASE 研修やワークショップで学んだことを基に、教員同士で ASEI-PDSI アプローチを使った授業観察を行ったり、本邦研修において授業研究を学んだ教員が学校レベルでの授業研究を行ったりするなど、独自に工夫を試みているところがある。

2）Makueni ディストリクトの視学官へのインタビューによると、Makueni の DPC メンバーは、現場の教員のニーズ・アセスメントに基づき SMASE 研修の内容をより向上させる必要性を認識しており、彼ら自身で SMASE 研修のカリキュラムやコンテンツを含む独自のプログラムをカスタマイズしていく意欲を示している。

3）ASEI-PDSI アプローチを他の教科にも取り入れるようになった。

一方、環境や社会配慮面など、本プロジェクトによる負の影響については実施中に報告がなく、今後もプロジェクトによるマイナスのインパクトが生じることは考えにくい。

（5）持続性

本プロジェクトの持続性は、以下の理由から「やや高い」といえる。

政策・制度面での持続性に関して、ケニアにおいて、教師教育の強化及び理数科分野の教授・学習技能の向上は、国の発展の原動力となる重要な戦略の 1 つと見なされている。加えて、次期「国家教育セクターサポートプログラム」（National Education Sector Support Programme）においても、教師教育機能の強化を支持することが明記される。このような背景の下、教育セクターにおける教師教育及び INSET にかかわる機関の能力強化は、ケニア政府により今後も引き続き政策的に支持されることが見込まれる。

CEMASTEA が独立行政法人（Semi-Autonomous Government Agency）の組織である ICADETA（Institute of Capacity Development of Teachers in Africa）になることが計画されていることは、ケニア政府が本プロジェクトの目標や上位目標に向けてのコミットメントを示していることの強い表れであり、今後、CEMASTEA がケニアにおける教師教育の強化において中枢機関としての役割を果たすことが期待される。

教員雇用委員会（Teachers Service Commission：TSC）は教員のマネジメントにおいて主要な役割を果たす機能をもつ。TSC は既に教員の規則コード（Code of Regulations for Teachers）を作成しており、間もなく正式に発表される予定である[39]。更に、カウンティレベルで INSET センターを設立する動きも出ており、同センターにおいて、カウンティレベルでの SMASE 研修の持続性を強化することが必要である。よって、今後の持続性を高めるため、教育省、TSC、CEMASTEA 間で、教師教育における役割分担に関して協力・デマケーションなどの連携・調整を行うために、十分な議論を行うことが望まれる。

組織面での持続性に関して、C/P 機関である CEMASTEA の実施体制強化について、プ

[39] TSC は今後、INSET における詳細規則を作成する予定。

ロジェクト期間中は組織的な強化が十分に行われたわけではない。しかしながら、上記で述べたような政策面での後押しもあり、CEMASTEA が今後、ケニアの教育セクターにおいて教師教育強化に関する主要な役割を果たすことが期待されるため、CEMASTEA の組織的な権限が強化されることが見込まれる。

CEMASTEA の組織的な持続性を高めるためにも、今後 CEMASTEA が果たすべき役割や強化すべき点について、関係者間で十分に議論を行う必要がある。CEMASTEA が ICADETA になっても、プロジェクトで開発した SMASE 研修及び WS は継続していく計画であるが、ICADETA 後に十分な数のスタッフがきちんと増員されるかどうかは、1 つの懸念材料となっている。適切なアカデミック・スタッフの増員がなされなければ、組織的強化の進展は遅くなると考えられる。

各カウンティやディストリクトレベルにおける SMASE 研修及び WS の実施体制強化は、各教育長のオーナーシップによる。教育長のオーナーシップが高いカウンティやディストリクトでは、CEMASTEA とのコミュニケーションも良好で、他のカウンティ・ディストリクトとも情報交換が積極的に行われ、問題の共有や対策などが話し合われている。今後、各カウンティ・ディストリクトとも、積極的に SMASE 研修における情報提供や啓発活動を行っていくことが望まれる。

財務面での持続性に関して、SMASE 研修及び WS の実施コストについて、プロジェクトの最初の年は研修予算が確保されないなどの状況があったが、その後の期間は予算の配賦状況にも一定の向上がみられる。しかしながら、予算の配賦遅延はプロジェクトの計画に沿った活動実施を阻害し、地方教育行政機関においても、SMASE 研修や WS を実施するうえで、しばしば厳しい財政事情を抱える原因となった。

中等教育レベルの研修については、2008 年に開始された中等教育無償化（Free Day Secondary Education）政策によって、教育省から学校に直接配賦される予算のなかから、生徒数に応じて DPC が必要経費を徴収することになり、生徒 1 人当たり 200 ケニアシリングを徴収し、SMASSE 研修基金として設立している。今後の SMASE 研修実施財源の安定的な確保のため、中等教育レベルの SMASSE 研修基金制度にならい、初等教育レベルでも初等教育無償化（Free Primary Education）を政策とそれに伴う予算を通じた研修基金の設立が望まれる。ただし、中等教育レベルにおける研修基金に対する会計監査の不備が、初等教育レベルの基金設立の障害となっていることから、今後 CEMASTEA と教育省が研修基金の使途を適切にモニタリングしていくことが切に求められる。

技術面での持続性に関して、CEMASTEA スタッフの多くは、プロジェクトのフェーズ 2 のころから中央研修指導員としての長い経験を有しているため、中央研修及び WS の企画、実施、運営、モニタリング・評価におけるノウハウは身についており、彼らのスキルレベルは一定程度、保証されている。しかしながら、CEMASTEA スタッフのスキルは中央研修指導員としては蓄積がなされたが学校現場のニーズに応えた研修の実施・改善を行うためにはさらなる取り組みが求められる。今後中央研修だけでなく、実際の教育現場での状況も頻繁にモニタリングし、現場関係者に対するニーズ調査を通じて、現場のニーズに適切に応える研修が提供できるよう一層の能力開発を行っていくことが必要である。

初等教育レベル（地域・クラスター研修）・中等教育レベル（ディストリクト研修）の研修指導員のスキルに関し、彼らは本プロジェクトにおける研修実施を通してスキルの向

上が認められるものの、個々の研修指導員としての技能にはまだ差があるため、今後も引き続き研修指導員として研修を担当し、実務経験・研鑽を積んでいくことが必要である。研修指導員本人達も、今後の継続的な研修実施を望んでいる。

５－１－２　貢献・阻害要因

（1）効果発現に貢献した要因の分析

計画内容に関すること

1）特になし

実施プロセスに関すること

1）SMASE 及び SMASSE プロジェクトはケニアで 15 年にわたり実施され、ケニアの教育セクターに従事する多くの関係者を取りこむことに成功した。CEMASTEA スタッフだけでなく他の多くの教育行政部門の人材が、フェーズ 1 のときから長くプロジェクトに従事しており、彼らは SMASE プロジェクトの目的や内容をよく把握している。本プロジェクトにおいて、政権交代によって中央・地方を含む多くの教育行政担当官が途中で変更になったが、初等教員養成校の校長や教官、カウンティ教育長、カウンティ視学官、ディストリクト教育長、ディストリクト視学官、TAC 教官を含む、新しく赴任した担当官の多くは、以前の担当部署で SMASE プロジェクトについて知っていたため、既にプロジェクトの内容を理解していた。

2）プロジェクトからの働きかけにより、2011 年 3 月に当時の教育省視学局により CEMASTEA への監査が実施されたことや､JCC 会合での教育省次官による指示を受け、2011 年 6 月に「CEMASTEA の改革に関する技術委員会」（Technical Committee on Re-engineering of CEMASTEA）が設置され、CEMASTEA の運営改善と SMASE プロジェクトの円滑な実施のため、日本・ケニア国側双方の関係者が真剣に議論を重ねた。この技術委員会がきっかけで、CEMASTEA を ICADETA にすることが提案された。

（2）効果発現を阻害した要因の分析

計画内容に関すること

1）初等教育レベルの研修実施は、パイロット活動による試行を経ないで全国展開を行ったため、予見可能であった実施運営上の多くの課題を抱えたまま、活動を実施・継続せざるを得ない面があった。

実施プロセスに関すること

1）教育省からの予算の不足・配賦遅延により、当初の計画どおりに研修・WS が実施できなかった。

2）いくつかのディストリクトでは、教員組合等の反対により、中等教育レベルのディストリクト研修が実施されなかった。

3）教員のなかには、SMASE 研修への参加が資格取得に結びついておらず、昇進・昇給等につながらないため、研修に参加しない教員がいた。

4）ケニアでは学校・教員・生徒の数が年々増加しており、また、憲法改正により地方行政制度が変更になったため、WS の参加人数や実施体制等を途中で変更せざるを得ず、計画に沿った活動の実施に影響を及ぼした。

５－２　評価結果（WECSA コンポーネント）

５－２－１　評価 5 項目による評価

（1）妥当性：高い

以下のとおり、本プロジェクトはアフリカ各国の政策及びニーズ、並びに日本の政策と合致している。また、ケニアでの INSET の知見を生かし、ケニアと同様の課題を抱えるアフリカ各国の支援を行うプロジェクトデザインは適切であった。

アフリカ各国の政策

本プロジェクトはアフリカ各国の政策と合致している。アフリカ連合は、戦略文書“Second decade of education for Africa”（2006-2015）において、教員の能力開発及び理数科教育の強化を優先課題としている。また、ADEA ではアフリカ教育における特定課題対処のためのワーキンググループを設けているが、WECSA コンポーネントの活動は ADEA の理数科教育ワーキンググループの活動として位置づけられている。

日本の援助政策

本プロジェクトは日本の対ケニア国別援助方針と合致している。同方針によると、人材育成は貧困削減及び経済成長の基礎となる喫緊の課題と認識されており、5 つの優先課題のうちの 1 つに位置づけられている。同援助方針では、CEMASTEA を拠点としてアフリカ全体の教員の能力向上を測る旨が記述されている。また、2013 年 6 月に開催された TICAD V の横浜行動計画（2013～2017 年）では、理数科教育の拡充支援が重点活動の 1 つとされている。

ケニア及び WECSA メンバー国のニーズ

本プロジェクトは対象国のニーズと整合性を有する。JICA が支援する理数科現職教員強化プロジェクトを実施するメンバー国では、ASEI-PDSI と類似の児童中心型教育をそのプロジェクトの中心コンセプトに据えていることが多いことから、特にプロジェクトの初期の段階において、C/P に ASEI-PDSI の基礎について学んでもらい、彼らの理解及び能力を高めるニーズに合致していた。他のメンバー国においても児童中心型教育を推し進める方針を採ってはいるものの、INSET 指導員は教室でそれをどのように実践したらよいかの方法論を有していないことが多い。よって、ASEI-PDSI を用いた実践的な研修は、メンバー国のニーズに合っていたといえる。一方、ケニアは理数科教育の分野において日本及び他のアフリカの国々との連携を強化することで自国の理数科教育をさらに改善するニーズを有していることから、ケニアとのニーズにも合致していたといえる。

加えて、メンバー国の新しいニーズに答えるため、プロジェクトチームはプロジェクト期間中に継続的に研修内容を改訂してきた。例として、既に基礎的な知識を有している参加者のニーズに応えるため、2009 年に研修コースをより実践的な内容に変更したこと、2010 年と 2011 年にモジュール形式の研修を試行したこと、2012 年に上級者用の英語圏中等コースを開発したことが挙げられる。さらに、初等コースの需要が増したことにより、プロジェクトチームは初等コースと中等コースの受入れ人数を 2011 年より入れ替え、初等コースの受入れ枠を増やした。また、より技術的な内容に特化した会合と経験共有の機会を求める声に応えるため、プロジェクトチームは技術会合の頻度を増やし、2012 年以降は年に 1 度技術会合を開催している。

手段としての適切性

アフリカ各国の INSET 指導員の能力を強化するために本プロジェクトが採用した手段は適切であった。まず、ケニアは JICA が支援する理数科 INSET プロジェクトを 10 年以上にわたり実施しており、他国を支援するに十分な知識やスキルを蓄積している。次に、サブサハラアフリカの国々は児童中心型教育の導入に関し、かつてのケニアと同様、その実践に課題を抱えている。加えて、特に英語圏アフリカは教育システムやその他の状況もケニアに似通っている国が多い。よって、ケニアはアフリカ各国を支援するのに非常に適しているといえ、本プロジェクトが域内南南協力として CEMASTEA を中心として展開されたことは適切であったと考えられる。

一方で、PDM の論理の適切性は限定的である。上位目標とプロジェクト目標の間に乖離があり、上位目標とプロジェクトの介入との相関性が低いことに加え、上位目標の指標が明確でない、成果 1 の指標及びプロジェクト目標の指標のうち 1 つが適切でなく機能しない、各成果の質を測る指標が十分に設定されておらず、活動とほぼ同様のものが指標として設定されている、などの課題があった。よって、プロジェクトのめざす方向性をより明確にし、PDM の論理性や適切な指標の設定を検討することが望ましかった。

（2）有効性：おおむね高い

プロジェクト目標の達成度は比較的高く、プロジェクトにより提供された TCTP、第三国専門家派遣、技術会合は INSET 指導員の能力強化におおむね有効であったと判断されることから、有効性はおおむね高い。

プロジェクト目標の達成度

「4-2-4 プロジェクト目標達成状況」で記述のとおり、プロジェクト目標はおおむね達成された。この達成には、本プロジェクトだけではなく、メンバー国で実施されている JICA による理数科 INSET プロジェクトによる貢献もあったと考えられる。

TCTP、第三国専門家派遣及び技術会合の能力強化に対する有効性

「4-2-6 実施プロセスに関する特記事項」の「(4) 能力強化のためのシステムについて」で記述したとおり、TCTP、第三国専門家派遣及び技術会合は高く評価されている。加えて、表－19 のとおり、約 96%が本プロジェクトの支援により能力が強化されたと回答している。さらに、インパクト調査で 4 カ国の INSET を観察した結果、TCTP 参加者（4 カ国の INSET 指導員）が適切な研修カリキュラムを策定し、十分に計画を練った研修を実施していること、研修を参加型で行っていること、研修の評価を行っていること、また、ASEI-PDSI のコンセプトを用いた授業計画と現在の授業計画との比較を行い、その違いを適切に抽出していることなどを確認し、彼らの能力が十分に強化されたと判断している。

表－19　プロジェクトにより能力が強化された度合

［F=仏語圏、A=英語圏、T=合計* **］

（%）

質　問		1（低）	2	3	（高）
1 全体として、CEMASTEA からの支援（研修、専門家派遣、技術会合）はあなたの能力を開発するのに有益であったと思いますか		全く有益でない	あまり有益でない	十分に有益である	大変有益である
	F（N=9）	0	0	11.1	88.9
	A（N=39）	2.6	2.6	48.7	46.2
	T（N=48）	2.1	2.1	41.7	54.2

*回答者のなかには、プロジェクト開始前（2009 年 1 月以前）に研修に参加したり、第三国専門家を受入れた経験者も含まれる。

**回答は 16 カ国 48 名から回収された。

一方、言語の違いのため、仏語圏及びポルトガル語圏からの参加者に対する有効性は英語圏の参加者に対する有効性よりも低かったと考えられる。多くの仏語圏の元 TCTP 参加者は、通訳及び翻訳の質がよくなく、通訳・翻訳を理解するのに困難なことがしばしばあったと回答している。さらに、CEMASTEA のファシリテーターによると、ポルトガル語圏の参加者のなかには英語の研修についていけていないものもいたことが報告されている。言語の問題のため、ファシリテーターらは、仏語圏及びポルトガル語圏の参加者は英語圏からの参加者と比較して学びが少ないと認識している。

さらに、TCTP 及び技術会合における課題の 1 つとして、多くの国を一度に対象としているため、内容が一般的なものにならざるを得なかったことが挙げられる。対象国を絞り、各国の具体的な課題解決をターゲットとした研修や会合を開催することができれば、より有効性は高まったといえる。

また、カメルーンからの参加者によると、2 週間の研修は ASEI-PDSI の基礎を学ぶには十分であるが、同トピックに関して他の INSET 指導員に対して研修を行えるだけの深い知識や研修実践スキルを身につけるには十分でないとのことであった。JICA による INSET プロジェクトをもたない他の国からも、自国で ASEI-PDSI を有効に実施し、普及するには、CEMASTEA による追加の支援が必要であったという声が多く聞かれた。これらの国に対してよりフォローアップ活動を充実させることで効果はより促進されたと考えられる。

<u>特別支援の有効性</u>

南スーダンに対しては、2009 年に特設 TCTP コースが実施され、74 名が参加した。同時に、第三国専門家が 3 回にわたって派遣され、プロジェクトの立ち上げ、研修カリキュラムの開発、ベースライン調査及び評価ツールの作成支援を行った。インパクト調査チームの調査により、これらのニーズに沿った特別な支援が南スーダンの INSET 指導員の能力強化に有効であったことが確認されている。また、アンゴラに対しても 4 度の第三国専門家派遣が行われ、ニーズに合った支援が実施されたが、アンゴラからは本評価の質問票が回収できておらず、プロジェクトでも同国における成果の確認は計画されていない。

（3）効率性：中程度

南南協力の手法を用い過去のケニアへの投入を生かした点は効率性の向上に貢献したものの、TCTP 受講者の 40%が、本来のターゲット層である研修講師ではなく一現場教員であった点やプロジェクトの運営管理体制が十分でなかったことで、効率性は中程度と判断される。

成果の達成度

成果 1 及び 2 はおおむね達成されたが、成果 3 の達成度は活動の遅れにより低い。しかしながら、成果 3 の達成度は中間レビュー以降、NPC 及び PCC 会議を定例化したこと、並びに同成果と CEMASTEA の運営管理を担当する 2 名の日本人専門家を派遣したことにより加速されてきている。

費用対効果

域内研修や技術交換などの活動をはじめとする南南協力は、先進国から開発途上国に対する協力と比較し、低コストで成果を産出することができる。また、本プロジェクトでは過去のケニアへの投入を十分に生かし、10 年間で育成された人材や提供された投入を使って実施された。これらの要因は、プロジェクトの効率性向上に貢献した。

TCTP の主な対象者は INSET 指導員（主として中央の指導員及び州レベルの指導員）であるが、既にメンバー国の中央及び州レベルの指導員は本プロジェクトによる研修を受けたため、本プロジェクトではメンバー国の教員を受け入れることとなった。その結果、本プロジェクトで研修を提供した 694 名中約 40%を占める 282 名が教員であったことがわかっている[40]。TCTP は研修を受ける個人には有効であるとは考えられるものの、研修指導員に比べると教員は研修後学んだことを他の教員に対して広く普及する機会があまりないこと、各国の教員数が膨大であること、渡航や滞在に費用がかかることなどを考慮すると、効率性は低い。

なお、プロジェクトチームは、費用対効果確保のためすべての教員の研修申し込み者に関し、事前に、その教員が他の教員を指導する立場にあるか否かをメンバー国に確認する作業を行い、それによりある程度効率性を担保した。一方、この確認作業により、指導する立場にあるという返答を得ても、実際に研修に受け入れた後に一般教員と判明したケースもあった。よって、遠隔での確認作業には限界があったといえ、この観点からは確認作業の実施はあまり効率的ではなかったともいえる。

プロジェクト運営管理体制

現在のところ、WECSA コンポーネントは、WECSA 委員会が TCTP と技術会合を担当しているのに対し、アカデミック・プログラム・コーディネーターの下に結成される臨時委員会が域内会合の調整を担当している。これは前 CEMASTEA 所長が、アフリカ各国の注目を集める域内会合はより高次なマネジメントレベルの担当者に任せることに決めたためであるが、WECSA 委員会コーディネーターと一部のメンバーはこれに反発しており、アカデミック・プログラム・コーディネーターとの関係があまり円滑ではない。この二重の体制により、WECSA コンポーネントに関するコミュニケーションが円滑になされず、それぞれの委員会の情報が十分に共有されない状況となっている。CEMASTEA は今後

[40] この 282 名の教員も、何らかの形で他の教員を指導する立場にある可能性はあると考えらえる。

WECSA 委員会が一括して WECSA コンポーネントの活動を調整することにしていることから、将来的にはこの問題は解決されると考えられる。

プロジェクトにより作られた報告書、授業計画、TCTP 評価などが適切にプロジェクトチームにより取りまとめられ保管されていない状況である。よって、必要な報告書や情報を取り出したいときに、それらを探し、入手するのに時間がかかる状況となっている。

他ドナー及び他スキームとの連携

ベルギーの NPO である VVOB は、CEMASTEA の ICT 分野での能力強化支援を行っている。直接の連携は行われていないが、本プロジェクトでは成果 3 において 2012 年に CEMASTEA が立ち上げたウェブサイトを活用しているため、VVOB の支援で強化された ICT 分野のスキルを活用しているといえる。

加えて、現在 JICA の無償資金協力で CEMASTEA の増築が行われており、2013 年 9 月に完成予定である。図書館の建設がこのなかに組み込まれていることから、本プロジェクト終了までに図書館が完成する予定であり、これは成果 3 の達成に貢献すると考えられる。

(4) インパクト：中程度

上位目標の達成見込みが測れないこと、正の波及効果はみられるものの、計画の策定や決議の採択などいまだ準備段階のものであることから、インパクトは中程度と判断する。

上位目標達成の見込み

「4-2-5 上位目標達成状況」で示したとおり、上位目標の指標の明確な定義、ベースラインデータ及び目標値がなく、また得られた回答の信頼性も低い。さらに、本プロジェクトの介入と目標との相関関係も限られている。よって、上位目標の達成度は評価不能である。

その他の波及効果

現在はプロジェクトから独立して活動を行っている SMASE-WECSA アソシエーションは、2013 年の本プロジェクト終了にかんがみて、特に 2011 年以降持続性に関する議論を活発化させてきた。その結果として、2011 年には戦略計画（2014～2018 年）が策定され、ADEA 総会で発表されたほか、2012 年にはメンバー会費の増額や各メンバー国での支所の開設、CONFEMEN、ADEA、UNESCO 国内委員会などとの連携強化を含む 13 の決議を採択した。また、2013 年の会合において、アフリカ教育大臣会合（COMEDAF）はアフリカにおける教員能力強化を実現するための機関の 1 つとして、CEMASTEA をリード・エージェンシーに据えている。

さらに、本プロジェクトで構築されたネットワークを活用し、各国が独自の活動を実施し始めている。例えば、ニジェール、ブルキナファソ及びセネガルは 2009 年と 2010 年に理数科 INSET に関する経験共有 WS を開催している。さらに、セネガルとザンビアは、授業研究に係る WS を共催することを計画している。また、より下位のレベルでは、元研修参加者たちが研修終了後も連絡をとり合っており、国境を越えた情報の交換や文書の共有が行われていることが確認された。よって、域内で相互学習の文化が形成されつつあるといえる。

（5）持続性：中程度

スタッフの能力が比較的高いことや、2014 年中に CEMASTEA がより独立した組織である ICADETA となることは持続性にプラスには働いているが、ケニア政府の今後の方針を明確に示す文書がないこと、実務レベルのオーナーシップやモチベーションが比較的低いことなどにより、持続性は中程度と判断される。また、本コンポーネントは南南協力のプロジェクトであるため、プロジェクト終了後にケニア側が他のアフリカ諸国を支援するための予算を確保するのは難しい。

政策面

現在のところ、ケニア教育省は WECSA コンポーネントの活動実施を正式に CEMASTEA に委託しているが、プロジェクト終了後もこれを継続するとする正式な文書は今のところ発出されていない。一方で、ケニア政府は CEMASTEA の ICADETA 化法案作成や COMEDAF へのコミットメント[41]も行っていることから、ケニア政府が WECSA 活動を続ける可能性はある。

財政面

現在のところ、プロジェクト終了後 WECSA コンポーネントの活動を継続するための予算は得られていない。財政面での持続性確保のため、SMASE-WECSA アソシエーションの各国の会費を年間 1,500US ドルに増額する決議が採択されたが、今までの 5 倍の会費をすべてのメンバー国が支払う準備があるかどうかは定かではない。

ケニア教育省は、他国を支援するための予算は現在のところ有してない。他方、CEMASTEA が ICADETA となった後は、各メンバー国が予算を拠出する体制をつくることで域内活動費を確保することを、案の 1 つとして考えている。

組織面・人材面

より効率的かつ効果的に INSET が行えるよう、CEAMSTEA を再構築し、独立性の高い機関（ICADETA）とする法案が教育省により策定され、同法案は 2014 年度中に国会により可決される見込みである。この法案が可決されれば、スタッフは ICADETA の運営管理評議会に直接雇用されるシステムとなるため、域内活動を専属で担当する部署をつくることも現在よりは容易になるともいえるが、この専属部署及びスタッフの配置は、ICADETA の新所長及び運営管理評議会の意向によると考えられる。当面の間は ICADETA への円滑な移行を促すため、現在の CEMASTEA の複雑な運営管理システムをより合理化することが必要である。

インタビューでは、毎年行われるルーティンの活動となった TCTP に対する実務レベルのスタッフのオーナーシップやモチベーションが低いことが多く指摘された。実務レベルスタッフの間では、マネジメントレベルの同活動に係る関心や理解、それを実施するスタッフへの評価などが足りないと感じているものが多いことも判明している。

「（3）効率性」において記述したとおり、プロジェクト活動のデータや文書が適切に管理されていない。よって、プロジェクトにより蓄積された情報や教訓が他のスタッフとも共有され、組織の記憶・情報が保持されるよう、文書管理及びその活用が改善される必要

[41] COMEDAF が、CEMASTEA をアフリカにおける教員能力強化のためのリード・エージェンシーの 1 つに据えたことを受けて、ケニア政府としてそれを歓迎し、支援することを表明した。

がある。

能力面

JICA 専門家及び CEMASTEA スタッフからの聞き取りによると、CEMASTEA のスタッフは現在の活動を継続する能力は有している。一方でメンバー国の新しいニーズに応えたり、現在の活動の質を改善するためには、常に能力開発を行っていく必要がある。また、TCTP レポートやオンライン調査報告書の質が十分でないため、今後質の高いモニタリング・評価と調査を行うための能力をさらに強化する必要がある。

加えて、TCTP 参加者を招へいするための航空チケットや保険等の手配はプロジェクト期間中 JICA 専門家及び 1 名の CEMASTEA スタッフのみで行われてきた。よって、これらの情報やスキルが他の CEMASTEA スタッフに移転される必要がある。

５－２－２　貢献要因及び阻害要因

（1）効果発現に貢献した要因の分析

1）計画内容に関すること

長期にわたる継続的な支援

JICA は 1998 年よりケニアにおいて理数科 INSET の支援を行ってきており、このことがプロジェクトの効果発現に大きく影響した。まず、ケニアが 10 年以上にわたるプロジェクトの実施で蓄積した国内研修での知見は、本プロジェクトで TCTP を行ううえで欠かせない要素の 1 つであった。また、長期にわたり継続的に強化された C/P の能力が本プロジェクトの実施及び成果発現に大いに貢献した。加えて、ケニア側と日本側の間に構築された信頼関係もプロジェクトの円滑な実施を促進した要因である。また、この 10 年間で CEMASTEA 及びケニアの SMASE プロジェクトはアフリカ各国で革新的な INSET を行う機関及びプロジェクトとして広く知られるようになり、メンバー国から毎年多くの研修参加者を得るに至った。

メンバー国における JICA プロジェクトの存在

JICA の理数科 INSET プロジェクトを実施しているメンバー国では、自国におけるプロジェクトと本プロジェクトとの相乗効果により、TCTP 参加者/メンバー国 C/P の能力開発がさらに強化できたといえる。まず、新しくプロジェクトを開始した国のほとんどで ASEI-PDSI と同様のコンセプトを採用していたため、その国の教育省行政官に対して啓発活動を行ったり、C/P に ASEI-PDSI アプローチの基礎を学んでもらう必要があったが、彼らをまず CEMASTEA に送ることで、これらの C/P の初歩的な理解及び能力を高めることができた。次に、同様のプロジェクトを実施することで、域内会合や技術会合における経験共有や議論が、より深まり活発なものとなった。さらに、メンバー国に日本人専門家やその C/P がいることで、技術会合や技術交換などの国境を越えたイベントの計画及び実施が容易になった。最後に、本プロジェクトでは各国からの研修参加者のフォローアップをするのが困難であったが、メンバー国でプロジェクトを実施していることで、これらのプロジェクトで研修後のフォローアップができ、彼らの更なる能力開発が可能となった。

2）実施プロセスに関すること

NPC 及び PCC 会議の開催

中間レビュー後、NPC 及び PCC 会議を定期的に開催することになったため、日本人専門家側と CEMASTEA 側のコミュニケーションが改善され、活動の進捗確認や締め切りの念押し、課題の共有等が可能となった。特に、NPC にはケニア教育省が議長を務めることとなったことから、これにより、教育省とのコミュニケーション及び巻き込みも増えた。

(2) 効果発現を阻害した要因の分析

1）計画内容に関すること

PDM のロジックの不明瞭さ

本プロジェクトの PDM では、プロジェクト目標の要約の定義が曖昧である、プロジェクト目標と上位目標の間の相関関係が限られている、適切でなかったり、定義が定まっていない指標がある、などの問題があった。プロジェクトチーム内で PDM の内容に関する共通理解がなく、指標の達成度に対するプロジェクトのモニタリングが限定的であったが、これは、PDM が不明瞭であったことが 1 つの要因であったと考えられる。これについては、中間レビュー時にも PDM のロジックが不明瞭であることは議論にのぼったものの、「自国のプロジェクトの有無など多様な影響下にある域内活動を、ケニア側の活動のみに基づいて整理しきれる性質のものではない」という議論もあり、PDM 上で明確に整理しきれなかったことも影響している。しかし、そのような理由や、曖昧な指標を用いて終了時評価においてどう評価すべきかについての指針が残されていないため、プロジェクト期間中のモニタリングのみならず、本終了時評価の達成度の評価も困難な部分があった。

CEMASTEA スタッフ数の不足

本プロジェクト開始時より活動数が増えたにもかかわらず CEMASTEA スタッフ数に変更はなかったため、スタッフは同時並行でいくつも仕事を抱えることとなった。このことにより、締め切りが順守できなかったり、仕事の質が確保できないことがあった。

2）実施プロセスに関すること

情報共有の不足

「(3) 効率性」で述べたとおり、WECSA コンポーネントに係る情報共有が十分に行われてこなかった経緯がある。2 つの委員会に仕事が分かれていることに加え、WECSA 委員会メンバーの間でも NPC、PPC、域内会合、技術会合などの結果がすべてのメンバーに十分に情報が共有されていない。このため、メンバーは全体像をつかむことなく振り分けられた仕事をこなすこととなり、仕事の遂行が効果的、効率的に行えないのみならず、メンバーの仕事へのモチベーションにも影響している。

５－３　結論（評価結果総括）

５－３－１　ケニアコンポーネント

本終了時評価調査における上述の検証の結果、本プロジェクトは、期待された成果をある程度達成したが、十分には達成できなかったと結論づけられる。成果 1、2、3 は、初等教育レベ

ルで新しく導入された中央・地域・クラスター研修や WS に係る活動であったが、研修参加者数が目標レベルに達しないなどの部分はあっても、初等教育レベルにおける SMASE 研修制度の仕組みは整ったといえる。成果 4 に係る中等教育レベルにおいては、プロジェクト期間中はもろもろの制約により活動が計画どおりに実施できなかったため、成果の発現は十分ではなかった。校長を対象に行った WS 等を通じ、今後、学校現場における理数科教員への ASEI-PDSI 授業実践の強化が本格的に実施されることが望まれる。このように SMASE 研修制度は、初等教育・中等教育両レベルにおいて、今後の制度改善に向けて課題は残っている。

上記のように、プロジェクトの成果が十分な達成とはならなかった要因の 1 つは、初等教育レベルの SMASE 研修をパイロット地域での試行を経ずに最初から全国規模で実施したことによると考えられる。本プロジェクトにおいて、初等教育レベルの研修実施がいくつかのパイロット地域で導入されていれば、より効果的に実施された可能性はある。パイロット地域において、さまざまな経験や教訓を基に、初等教育レベルの研修や WS の安定した実施体制モデルが設立された後、全国展開を行う方法もあった。他の要因として、プロジェクトの実施プロセス上で、ケニア側による初等 INSET 用の人員の補充が進まなかったこと、そのため中等 INSET に従事する人材が初等 INSET に対応しなければならなかったこと、その結果 CEMASTEA の業務や組織体制（指揮命令系統）が煩雑かつ複雑になったこと、CEMASTEA のトップマネジメントがプロジェクトに対して協調的でなかったことなど、さまざまな課題・制約があったことも大きい。

しかしながら、本プロジェクトにおいて、良好な結果も認識された。初等教育レベルのプロジェクト目標における量的指標の結果は、ケニアの初等教育に初めて ASEI-PDSI アプローチが導入されるようになってから、良好な数値を示した。また、いくつかのディストリクトにおいては、中等教育レベルのディストリクト研修の実施関係者が、独自のカスタムメイドの SMASE プログラムを開発することに意欲を示している。これらのことは、今後ケニアの初等教育・中等教育レベルにおいて、政府からの手厚いサポートの下、SMASE 研修が引き続き実施される限り、プロジェクト目標は将来的に十分な達成を果たすことが見込まれる。

本プロジェクトの実施により得られた経験・課題等を踏まえ、将来の SMASE 研修制度の改善に向けて、教育省、CEMASTEA をはじめとしたケニア側関係者が今後一層努力を重ねていくことが望まれる。

５－３－２　WECSA コンポーネント

プロジェクト目標は、成果 1 及び 2 の達成度が高いことから、ほぼ達成されている。5 項目評価に関しては、妥当性は高く、有効性はおおむね高いが、効率性、インパクト、持続性は中程度である。

評価チームは、本プロジェクトは TCTP、第三国専門家派遣、技術会合、域内会合・代表者会議、及びその他の技術交換等の活動をおおむね計画どおりに実施し、参加者もこれらの活動を高く評価しているため、順調に成果を発現してきたと判断した。他方、質を伴った目標の達成や持続性を確保するには、スタッフのオーナーシップやモチベーション、コミュニケーション、モニタリングなどの実施プロセスなどに改善の余地があるといえる。

第６章　提言と教訓

６－１　提言

ケニア側関係者と日本側調査団は、協議のうえ、持続可能、効果的、かつ、質の高い INSET のため、以下の措置を講じることに合意した。これらの提言については、合同評価報告書にまとめられた。

６－１－１　ケニアコンポーネント

（1）持続可能な INSET を実現するために

1）SMASE INSET が教員の継続的職能開発（Continuous Professional Development : CPD）のために義務化されること

これまで、INSET を受講することが、どのように昇給や昇進等につながるのかが明確に規定されていなかったため、研修を受講するインセンティブが低かった。2012 年に制定された TSC 法案によって明確にされた INSET の義務化においても、依然、INSET 実施の頻度、時間数、方法、資格制度との関連、昇給や昇進との関連が詳細に詰まっていない。このような状況を踏まえ、教育省と CEMASTEA は、次の事項を行うべきである。①SMASE INSET がケニア国内の INSET/CPD プログラムの必須研修として位置づけられるよう、TSC と連携していくこと。②教育省による INSET/CPD 政策が策定されること。③教育省は、より質の高い教育の提供のために、主要関係者との連携の機会を積極的に増やしていくこと。

2）初等 SMASE 基金の設立

初等無償化政策（FPE）を活用した初等版 SMASE 基金の確立は持続的な INSET 実施に必要であることのみならず、運営上効率的であり、研修受講者の参加意欲を低下させない工夫となる（研修経費の払い戻しがすぐに行われ、それが結果的に参加者のモチベーション維持につながる）。教育省と CEMASTEA は、円滑に初等 INSET が実施されるために、FPE を通じて資金が流れる仕組みを構築すること。

3）中等 SMASSE 基金のモニタリング・監査の強化

・教育省は、既存の仕組みのなかで中等 SMASSE 基金のモニタリングと監査のメカニズムを新たに導入すること。

4）CEMASTEA 予算の確保について

・2013/2014 年度以降の CEMASTEA 予算を確実に確保するようにフォローを行うこと。

5）適切なスタッフの配置と活用

・フェーズ 2 までの CEMASTEA の活動は、プロジェクト活動と同一であり、すなわち、中等と域内（WECSA）活動のみであった。他方、フェーズ 2 に入ってからは、従来の中等・WECSA 活動に加え、大規模な初等レベルでの活動が追加されたものの、初等の専任スタッフは配置されていないままである。また、ICT や R&D、Gender 等を扱う特別 Committee 等にみられる CEMASTEA 独自の活動も加わった。その結果、CEMASTEA の活動量が組織の規模や管理能力に比して過多となっている状況がみられる。また、限られた人数の中等専門のスタッフが初等にかかわっている状況下、業務分担などがうまくなされてないため、全員が均等に地方視察を実施するなど、責任

が曖昧で、かつ非効率な体制になっている。CEMASTEA の Reengineering レポートでも提言されていたように、今後、組織改編（ICADETA へ再編）される CEMASTEA へのスタッフ増員及び専門性を考慮した適切な配置、動機づけ、役割分担と責任の明確化、トップマネジメントの管理能力強化は必須である。

6）組織の持続性

これまでの CEMASTEA への支援及びスタッフが能力向上してきている状況にかんがみ、今後 CEMASTEA/ ICADETA はその役割/機能が維持されるだけでなく、教育省傘下の中核的な INSET 提供機関/リソースセンターとしても、更に発展・強化していくことが求められる。

（2）効果的な INSET のために

1）戦略的なモニタリング

・プロジェクト期間中、CEMASTEA は他のステークホルダーとともに、地域及びクラスターレベルの INSET のモニタリングを行ってきた。しかしながら、関係者が多かったことから、それぞれの役割が曖昧になり、必ずしも効率的に実施されていなかった。したがって、改めて、関係者（DQASO, PTTC tutors, TAC tutors）の役割を見直したうえで、戦略的なモニタリング体制を構築する必要がある。

・プロジェクト期間中、研修実施告書の提出が遅延したケースが多々発生したため、今後はタイムリーに提出されるよう、全関係者が意識を高めることが重要である。CEMASTEA は、この実施報告書に記載されている有用なフィードバックや改善コメントを吸い上げ、カスケードの各層の関係者にサポート・助言を行う役割が求められている。

2）各カスケードの階層での SMASE 活動のフォローアップ

・CEMASTEA は SMASE 活動へのフォローアップメカニズムを確立する必要がある。

・CEMASTEA はこれまで策定されたガイドラインを今一度見直し、ルールを共有、徹底化を図る。

（3）質の高い INSET のために

小学校、中等学校の教員は多くの課題（大人数教室、シラバス、研修参加手当への不満等）を抱えているものの、授業観察、授業研究を自主的に始めている例、中等学校では年1回10日間の地方研修を年2回の各5日間に分けて地域で工夫して教員研修に取り組んでいる例など、現場で好事例が少しずつ芽吹きつつあることが確認できた。

CEMASTEA は、原点としての SMASE スピリッツに立ちかえり、現場レベルの好事例の芽を発掘し、いくつかのパイロット地区でこうした事例を支援し、現場から学び、現在の研修アプローチ・内容に付加価値をつけていく取り組みが求められていると考える。

６－１－２　WECSA コンポーネント

メンバー国に対し技術支援を継続的に提供できる基盤確立のため以下を提言。

（1）アフリカ域内における理数科プラットフォームとしての機能強化

これまで域内協力については、TCTP、域内会合、技術会合を通じて、JICA のアフリカ

の理数科教育協力の拡大に CEMASTEA は大きな役割を果たしてきた。CEMASTEA はアフリカの INSET 指導者の能力強化に継続的に貢献することが期待されている。そのため CEMASTEA はアフリカの域内の理数科教育のための研修・リソースセンターとしてその機能を強化されるべきである。

(2) 域内活動のための CEMASTEA のステータスの付与

CEMASTEA は地域機関として AU、ADEA 等でアフリカのリージョナル機関として認知されているものの、ケニア国内の教員研修が主業務であることから、CEMASTEA の WECSA コンポーネントのスタッフレベルのかかわりや認識は一様ではない。今後 CEMASTEA が域内協力についての関与していくためにも教育省が CEMASTEA に域内活動を行える法的ステータスを付与することを検討する必要がある。

(3) 更なる域内活動へのサポート

成功裏に終わった、これまでの TCTP での経験を踏まえ、JICA は TCTP に対して更なる支援を検討することが求められる。

(4) TCTP の実施における改善

今後の改善事項は以下のとおり。

・(短期的) TCTP レポートのフォーマット統一化
・(短期的) 域内協力に関するリソース、特に TCTP で作成した教材・研修実施記録などを蓄積を効果的に管理するシステムの確立
・(短期的) CEMASTEA 管理職による TCTP をはじめとする域内活動モニタリング実施 (CEMASTEA スタッフの士気を高められる)
・(将来的) 新規コースに対するニーズ調査の実施、及びニーズに対応したコンテンツの開発
・(将来的) 具体的な研修ターゲット層と適切な研修評価指標の設定

６－２　教訓

６－２－１　ケニアコンポーネント

(1) 初等教育レベル

・フェーズ 2 は、中等理数科教員研修の成功体験・教訓を活用し、全国の初等の既存のクラスターでの研修を再活性化し、最終的には学校レベルでも横のつながりが生まれることをねらって設計された。CEMASTEA の大多数の職員は中等理数科のバックグラウンドのため、初等理数科のバックグラウンドを有する職員の増員がなされるはずであったが、中間評価等を通じて教育省に継続的に申し入れを行ってきたにもかかわらず、人員の追加配置は実現しなかった。このような当初予定と異なった展開に対応するために、案件設計時に、2～3 年程度のパイロット (実証) フェーズを組み込んでおいたことが望ましかったと考える。実証フェーズ後、人員増の課題が明らかになった場合に、JICA としてはその課題の解決を求めることを全国展開の条件として交渉する、あるいは、適切な計画 (規模・時期) の修正が可能となったのではなかったかと思われる。

・フェーズ 2 では、校長研修に参加した（あるいは校長自身が過去に INSET 参加経験がある）場合は、その後の積極的な INSET への参加、校内の経験共有のネットワークが広がる事例があった。したがって、現職教員の INSET 参加を促し、効果的な INSET を継続させるためには、教員個人のみならず、所属する学校の校長の理解とリーダーシップが重要である。

（2）中等教育レベル

・フェーズ 2 における中等コンポーネントの主要活動である中等校長 WS は、形成時には、校長の代表が CEMASTEA で実施される中央 WS に参加し、それらの校長代表が各ディストリクトにおいて全校長が参加する WS のファシリテーターとなることが想定されていた。しかしながら、一部の校長がファシリテーターとなることは、同格意識の強い校長同士では受け入れられないという見方が CEMASTEA 側にあったため、カスケード型の校長 WS のアイデアは CEMASTEA 側によって変更された。そのため、2010 年から実施された校長研修は、CEMASTEA スタッフが各地に出かけて、CEMASTEA スタッフがファシリテーターとなる直接方式で実施された。このように、計画から実施方法が変更されることになったが、結果的に学校長への sensitization は、INSET 内容の共有化や学校レベルでの取り組みの促進につながった。さらに、校長 WS で DQASO がファシリテーターとしてかかわったことは、ASEI の実践の拡大をもたらし、同時に DQASO の指導力を高めた。

６－２－２　WECSA コンポーネント

（1）個別ニーズに対応した協力

・2009 年に実施された国別特設 TCTP のように、先方ニーズに基づいてオーダーメイドされた TCTP 及びそれに関する第三国専門家の派遣は、各国の INSET に対する意識を高めるとともに、自ら INSET 制度を開発する能力も醸成した。

（2）TCE

・CEMASTEA のスタッフが第三国専門家として推薦を受けた際、そのプロセスに受入れ国側は加わっていなかった。供給側だけで人選などを行っていたことが、結果的に TCE への関心の低下を招いてしまった。

６－３　団長所感

（1）初等教員研修の全国展開：パイロット（実証）フェーズ・段階的拡大なアプローチの必要性

本プロジェクト設計時において、当時の教育省次官の強いイニシアティブのもと、中等理数科教員研修の成功体験・教訓を活用し、全国の初等の既存のクラスターでの研修を再活性化し、最終的には学校レベルの研修へつながっていくことをねらって設計した。理数科担当（6～8 学年）の初等教員 6 万人の目標値には達しなかったものの、毎年、約 4 万 3,000 人～5 万 5,000 人がクラスター研修（年 1 回 5 日間/場所：約 4,000 クラスター校）を実施できる全国展開の仕組みが構築されたことは高く評価できる。

一方で CEMASTEA の大多数の職員は中等理数科のバックグラウンドのため、初等理数科

のバックグラウンドを有する職員の増員がなされるはずであったが、中間評価等を通じ継続的に申し入れを行ってきたものの、人員増とはならなかった。この背景には、CEMASTEAの職員の人事は教員雇用委員会（TSC）が所掌しており、教育省次官の権限下になく、人事面での影響を行使できなかったことにあると思われる。結果、中等理数科のバックグラウンドの職員も初等教員研修への業務が主となり、中等理数科教員研修に対しても、少なからず影響を与えられたと考えられる。

このような当初予定と異なった展開に対応するために、案件設計時に、2〜3 年程度のパイロットフェーズを組み込んでおいたことが望ましかったと考える。例えば、初等教員養成校19 校の約 300 名の教員に対する中央研修は全国レベルで行い、いくつかのパイロット地区の教員養成校でクラスター研修指導員への研修（地方研修）、クラスター校で理数科担当の教員への研修（クラスター研修）を行うことによって、パイロット地区の実証のプロセスでの教訓を活用し、全国展開に伴う課題を最小限におさえることが可能になったのではないかと考えられる。本実証プロセス後、CEMASTEA の初等理数科バックグラウンドを有する職員の人員増がなされていない場合、JICA としては増員を求めることを全国展開の条件として交渉する、あるいは、適切な計画（規模・時期）の修正が可能となったのではなかったかと思われる。

全国展開となった場合、もはやプロジェクトではなく、国家プログラム的（予算等含）となり、プロジェクト途中での柔軟な計画変更は難しいことが本プロジェクトの経験からいえる。中等教育と比較し、初等教育の関係機関数、ターゲットの教員数、研修会場数も格段に多いことから、実施機関への負担も大きく、オペレーションもより複雑となる。したがって、プロジェクト前半にパイロットフェーズを組み込み、全国展開の過程において柔軟に計画を修正できる案件設計とすることが本プロジェクトの教訓であるとともに、他の類似案件への教訓にもなると考えられる。

（2）SMASE スピリッツの再活性化　－現場から学ぶ－

調査団による聞き取り調査などから、小学校、中等学校の教員は多くの課題（大人数教室、シラバス、研修参加手当への不満等）を抱えているものの、授業観察、授業研究を自主的に始めている例、中等学校では年 1 回 10 日間の地方研修を年 2 回の各 5 日間に分けて地域で工夫して教員研修に取り組んでいる例など、現場で好事例が少しずつ芽吹きつつあることも確認できた。

CEMASTEA は、現場レベルの好事例の芽を発掘し、いくつかのパイロット地区でこうした事例を支援し、現場から学び、現在の研修アプローチ・内容に付加価値をつけていく取り組みが求められていると考える。

フェーズ 3 で初等教員研修の仕組みの構築への業務の負担が大きかったことから、付加価値をつくり出していく取り組みに十分な手が回らなかったと思われるが、初中等の研修アプローチ、内容に進化させていくためにも、現場で芽吹いている動きを支援していくパイロット試行的な取り組みが必要になっていると考える。

（3）INSET/CPD 政策

2012 年にケニアでは教員研修を義務化とする TSC 法令（Act）が策定されたが、どの研修

を義務化の対象とするかについて具体化していく Regulation の策定が予定されている。教育省は INSET 政策を策定予定であり、TSC の法令・規定と調和しつつ、SMASE INSET が義務化対象の研修として位置づけられることが重要になってくる。また、CEMASTEA は理数科のみならず全教科初中等の教員の研修機関として Institute of Capacity Development of Teachers in Africa（ICADETA）と位置づけられていく法案（地方においては ICADETA のもと全国各 47 カウンティに教員研修センター設立を計画）が閣議決定され、国会承認のプロセスが予定されている。約 15 年前、教員養成大学の 1 ユニットから出発し、初中等理数科の INSET センターとなり、そして、全教科の初中等教員の INSET 機関として発展しようとしていること自体については、プロジェクトの大きな成果の 1 つとして評価すべきことと考えるが、当面、組織として再整理・確立していくには時間を要するものと思われる。

今後、JICA としては、ICADETA の組織の動きをおさえつつ、INSET 政策や TSC の CPD の法令・規定の動きをフォローし、政策、法令・規定のなかに SMASE INSET をしっかりと位置づけ、INSET/CPD 政策全体の策定に貢献していくことが求められていると考える。教育省は JICA に INSET/CPD 政策分野への支援への期待を示していることから、今後、INSET/CPD 政策アドバイザーの教育省への派遣を通じて支援を検討していくことが必要であると考える。

付　属　資　料

１．ミニッツ（合同評価報告書添付）

２．ケニア国コンポーネント評価レポート〔Terminal Evaluation Report（Kenya Component）〕

３．WECSAコンポーネント評価レポート〔Terminal Evaluation Report（WECSA Component）〕

MINUTES OF MEETING BETWEEN THE JAPANESE TERMINAL EVALUATION TEAM AND THE AUTHORITIES CONCERNED OF THE GOVERNMENT OF THE REPUBLIC OF KENYA ON THE JAPANESE TECHNICAL COOPERATION FOR THE STRENGTHENING OF MATHEMATICS AND SCIENCE EDUCATION (SMASE) PROJECT

The Japanese Terminal Evaluation Team (hereinafter referred to as "the Team"), organised by the Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Mr. Shinichi ISHIHARA, visited the Republic of Kenya (hereinafter referred to as "Kenya") from 30 to 8 August 2013 for the purpose of the Terminal Evaluation of the Strengthening of Mathematics and Science Education (SMASE) Project (hereinafter referred to as "the Project").

During its stay in Kenya, the Team exchanged views through a series of discussions with the concerned parties of the Government of the Republic of Kenya (hereinafter referred to as "the Kenyan side") on the achievement made so far and challenges of the Project. As a result of the discussions, both the Kenyan side and the Team agreed upon the matters referred to in the document attached hereto.

Nairobi, 8 August 2013

Mr. Shinichi Ishihara
Leader
Terminal Evaluation Team
Japan International Cooperation Agency
Japan

Dr. Bello R. Kipsang
Principal Secretary
Ministry of Education, Science and Technology
Republic of Kenya

STRENGTHENING OF MATHEMATICS AND SCIENCE EDUCATION (SMASE) PROJECT

Joint Terminal Evaluation Report

Nairobi, 8 August 2013

TABLE OF CONTENTS

LIST OF ABBREVIATIONS AND ACRONYMS

ASEI- PDSI	Activity, Student-centred, Experiment and Improvisation- Plan, Do, See and Improve
CEMASTEA	Centre for Mathematics, Science and Technology Education in Africa
DAC	Development Assistance Committee
DPC	District Planning Committees
DQASO	District Quality Assurance and Standards Officer
ICADETA	Institute for Capacity Development of Teachers in Africa
INSET	In-Service Education and Training
JCC	Joint Coordinating Committee
JICA	Japan International Cooperation Agency
LOU	Letter of Understanding
M&E	Monitoring and Evaluation
M/M	Minutes of Meeting
MOEST	Ministry of Education, Science and Technology
MOU	Memorandum of Understanding
NPC	National Planning Committee
OECD	Organization for Economic Co-operation and Development
ODA	Official Development Assistance
PDM	Project Design Matrix
PO	Plan of Operation
PTTC	Primary Teachers Training College
R/D	Record of Discussions
R&D	Research and Development
SAGA	Semi-Autonomous Government Agency
SMASE	Strengthening of Mathematics and Science Education
SMASSE	Strengthening of Mathematics and Science in Secondary Education
SMASE-WECSA	Strengthening of Mathematics and Science Education in Western, Eastern, Central and Southern Africa
TAC	Teacher Advisory Centre
TCE	Third Country Expert
TICAD	Tokyo International Conference on African Development
TSC	Teachers Service Commission
TW	Technical Workshop
ZQASO	Zonal Quality Assurance and Standards Officer

1. INTRODUCTION

1-1. Preface

The Project has been implemented in collaboration with the Ministry of Education, Science and Technology (MOEST) and JICA since January 2009. JICA dispatched the Team to Kenya for the purpose of conducting the Terminal Evaluation, which has been undertaken jointly by Kenyan authorities concerned and the Team.

1-2. Objectives of Teaminal Evaluation

(1) To review: the project implementation process; and the project inputs, the progress of the project activities, and achievement levels of the intended outputs based on the most recently revised Project Design Matrix (PDM) (PDM dated March 12, 2012) (Attachment 1 and 2);

(2) To confirm project achievements and issues with the project implementation based on the evaluation of project process and achievements and to evaluate the project jointly with the Kenyan side using the five evaluation criteria (Relevance, Effectiveness, Efficiency, Impact, and Sustainability), defined in 1-5-1 Overall Framework of Terminal Evaluation;

(3) To clarify necessary measures to be taken for further improvement of the Project's quality by the end of the project period (December 2013) and draw up recommendations for future direction of the Project upon consultation with the Kenyan side, as well as lessons learned that will be useful for similar education projects by JICA in Kenya and/or other countries; and

(4) To form consensus on recommended measures by summarising them in the Joint Terminal Evaluation Report.

1-3. Schedule of the Team

The Terminal Evaluation has been conducted from 30 July to 8 August, 2013.

Detailed schedule is shown in Appendix I and II.

1-4. Members Concerned to Terminal Evaluation

Kenyan Side	
Dr. Belio R. Kipsang	Principal Secretary, MOEST
Mr. Kiragu Magochi	Education Secretary, MOEST
Ms. Margaret Thiongo	Director, Field & Other Services, MOEST
Mr. Milton M. Mokah	Acting Senior Deputy Director of Education, MOEST
Mr. Darius Mogaka	Senior Deputy Director, Field & Other Services, MOEST
Mr. Charles Kanja	Senior Quality Assurance and Standards Officer, Field & Other Services, MOEST
Mr. Moses O. Kawa	Acting Director, CEMASTEA
Ms. Lydia Muriithi	Acting Deputy Director, CEMASTEA
Mr. Patrick Kogolla	Coordinator of Academic Programme, CEMASTEA

Mr. Joseph Kamau Mathenge		Deputy Coordinator of Academic Programme, CEMASTEA
Ms. Nancy Nui		Coordinator, Secondary Committee and Dean of Mathematics Department, CEMASTEA
Mr. Ernest Ng'eny		Coordinator, R&D Committee, CEMASTEA
Mr. George Kiruja Kiria		Deputy Coordinator, Primary Committee and Head of Biology Department, CEMASTEA
Mr. Makanda J. L		Deputy Coordinator, WECSA Committee and Head of Physics Department, CEMASTEA
Mr. Makobu Kizito		ICT Committee, CEMASTEA
Japanese Side		
Terminal Evaluation Members		
Team Leader	Mr. Shinichi Ishihara	Senior Advisor, Human Development Department, JICA
Cooperation Planning	Ms. Akiko Komori	Deputy Director, Basic Education Division II, Human Development Department, JICA
Evaluation Analysis 1	Ms. Sawa Hasegawa	Consultant, Japan Development Service Co., Ltd. (Kenya Component)
Evaluation Analysis 2	Ms. Chie Tsubone	Consultant, Global Link Management Inc. (WECSA Component)
Japanese Project Team		
Mr. Atsushi Matachi		Chief Advisor
Mr. Motoe Nakajima		Deputy Chief Advisor/WECSA Advisor
Ms. Hazuki Uchiyama		Subjects Advisor (Science Education)
Mr. Kenji Ohira		Project Coordinator II/INSET Management
Mr. Noriaki Tanaka		Project Coordinator I
JICA Kenya Office		
Mr. Hideo Eguchi		Chief Representative
Mr. Junichi Hanai		Senior Representative
Mr. Samuel K. Kibe		Consultant (Education)

1-5. Framework of Teaninal Evaluation

1-5-1.Overall Framework of Terminal Evaluation

Based on the PDM of the Project, the Terminal Evaluation was designed to assess the following aspects:

1) Achievements of the Project based on the PDM verifiable indicators;
2) Implementation process; and
3) Five evaluation criteria of Development Assistance Committee (DAC)

Definitions of the five evaluation criteria of DAC are as follows.

Relevance	Relevance of the project plan was reviewed in terms of the validity of the project purpose and the overall goal in connection with the development policy of the Government of Kenya, aid policy of the Government of Japan, needs of beneficiaries, and by logical consistency of the project plan.
Effectiveness	Effectiveness was assessed by evaluating the extent to which the Project had achieved its purpose and by clarifying the relationship between the purpose and Outputs.
Efficiency	Efficiency of the Project implementation was analysed by focusing on the relationship between Outputs and inputs in terms of timing, quality and quantity of inputs.
Impact	Impact of the Project was assessed on the basis of both positive and negative influences caused by the Project.
Sustainability	Sustainability of the Project was assessed in terms of political, institutional, financial and technical aspects by examining the extent to which the effect produced through the Project would be sustained or expanded after the Project period.

1-5-2. Process of Terminal Evaluation

1) The achievement and implementation process of the Project were reviewed against the initial PDM and PO. The overall achievement of the Kenya Component was further evaluated according to the DAC's five evaluation criteria.
2) The results of these Terminal Evaluations of both Kenyan and WECSA Components were compiled in the separate reports, which were attached to this Minutes of Meeting (M/M) as appendixes.
3) Based on the said results of the Terminal Evaluation, the Kenyan side and the Team discussed issues to be addressed and measures to be taken by both Kenyan and Japanese sides in order to lead the successful implementation of the Project.
4) Both sides jointly prepared the M/M that summarises the results of the Terminal Evaluation and discussions.

1-5-3. Methodology of Terminal Evaluation

(1) Kenya Component

1) Literature Review (SMASE documents)
2) Analysis of SMASE Project Monitoring and Evaluation (M&E) reports submitted by the SMASE Project and other existing documents
3) Questionnaire survey to CEMASTEA counterparts, teachers and district management personnel
4) Interviews with Kenyan stakeholders

(2) WECSA Component

1) Literature Review (SMASE documents and project reports of other Strengthening of Mathematics and Science Education in Western, Eastern, Central and Southern Africa (SMASE-WECSA) member countries)
2) Analysis of SMASE Project M&E reports submitted by the SMASE project and other existing document
3) Questionnaire survey to the participants of SMASE-WECSA activities and related project experts in SMASE-WECSA member countries
4) Interviews with concerned parties of WECSA activities in Kenya, Senegal and Cameroon and with participants of the WECSA Component activities

2. THE SUMMARY OF THE EVALUATION OF KENYA COMPONENT

This part summarises the findings of the Terminal Evaluation. The detailed report of findings is attached as Appendix I (Kenya Component).

2-1. Achievements of the Project

2-1-1. Inputs

In general, inputs both from the Japanese and Kenyan sides have been provided as planned except for the following inputs. No additional CEMASTEA staff who has the experiences in primary teacher's education was assigned. The budget for conducting the planned INSET and Workshops was not sufficient and its disbursement was delayed. The details of inputs are shown in Appendix I.

2-1-2. Implementation of Activities

The project activities indicated in PDM have been implemented basically as planned, although some INSET as well as Workshops have been implemented behind the schedule, the Workshops have been implemented for fewer times, and not full numbers of trainees have participated in the INSET and Workshops compared to the original plan.

2-1-3. Outputs

Output 1: A system of National INSET for Regional Trainers is established at CEMASTEA.

Output 1 is considered to be almost achieved and the system of National INSET for Regional Trainers has been almost established at CEMASTEA. The training materials and programs for 4 Cycles of National INSET for primary level have been developed, the targeted number of Regional Trainers has been trained by the National INSET at every Cycle and the quality of National INSET has reached the expected level.

Output 2: A system of Regional INSET and Regional workshop is established at Primary Teachers' Training Colleges (PTTCs).

Output 2 is considered to be not achieved to the fullest. No indicators of Output 2 have been achieved to the fullest. Neither the number of Cluster Trainers trained by the Regional INSET nor the numbers of TAC Tutors/Zonal QASOs, County QASOs and Sub-county QASOs trained by the Regional Workshops has reached the target as well as the quality of Regional INSET has not reached the expected level. It is deemed that while the system of Regional INSET and Regional workshops has been established at PTTCs to some extent, the system in terms of the quality and number of participants has a room for improvement.

Output 3: Existing system of cluster INSET is strengthened.

Output 3 is considered to be achieved, but not to the fullest. While the guideline/manual on management of M/S INSET for primary school teachers has been made, other indicators of Output 3 have not been achieved to the fullest. The number of primary school teachers trained by the Cluster INSET has not reached the targeted number. It is deemed that while the system of Cluster INSET has been strengthened to some extent, the system in terms of the quality and number of participants has a room for improvement.

Output 4: Secondary Mathematics and Science teachers' Activity, Student-centred, Experiment and Improvisation-Plan, Do, See and Improve (ASEI-PDSI) practices in classroom are enhanced.

Output 4 is considered to be achieved, but not to the fullest. While the contents of INSET and Workshops for introducing the lesson study as well as the guidebook on lesson study have been developed, other indicators of Output 4 have not been achieved to the fullest. While the reasonable number of secondary school principals has participated in the Principal's Workshops, their supervision on ASEI-PDSI practices has not been enhanced or improved to the expected level during the project period. Only 2 out of expected 4 Principal's Workshops have been conducted so far, due to many factors such as teacher's strike, lack of funds by some DPCs and change of modality of training. It is deemed that the secondary M/S teachers' ASEI-PDSI practices in classroom have been enhanced to some extent.

Output 5: Role of CEMASTEA as resource centre for Mathematics and Science education is strengthened.

The achievement of Output 5 is in progress and Output 5 is expected to be achieved by the end of the Project. The revised Primary INSET materials (write-ups) for Cycle 1&2 as self-explanatory materials, the booklet on ASEI-PDSI practices and the exemplary lesson video are to be completed by the end of the project period.

2-1-4. Project Purpose

Project Purpose: Quality of Mathematics and Science education at Primary and Secondary school levels in Kenya is strengthened through INSET.

(1) Primary level

The Project Purpose for primary level is expected to be achieved. The results of 3 quantitative indicators for Project Purpose are found to be positive. As mentioned in the results of Output 3, however, the number of primary school teachers who participated in the Cluster INSET has not reached the target number. It is therefore desirable that the SMASE INSET will be continuously conducted at

the primary level and more primary school teachers will be trained to reach the target.

(2) Secondary level

The Project Purpose for secondary level has been achieved to some extent. Some activities for secondary level were not conducted as expected as well as all districts did not conduct the District INSET every year as assumed. It is likely that these issues have affected the achievement of Project Purpose for secondary level.

2-1-5. Overall Goal

Overall Goal: Capability of young Kenyans in Mathematics and Science is upgraded.

It would be desirable that the achievement of Overall Goal for primary level be measured by another indicator. In regard to the secondary level, based on the result of indicator, the prospect for achievement of Overall Goal was not clearly identified by the SPIAS results.

2-2. Implementation Process

2-2-1. Management System

Findings

The 6 Committees (JCC, NPC, PCC, RPC, DPC and ZPC) involving stakeholders, have been established in the Phase 3 in order to implement and manage the project related activities. However, there are some issues to be addressed in the management system of the Project.

1) There are too many counterparts committees (1,872) for one project to efficiently implement and properly manage the project related activities. The involvement of managerial stakeholders is necessary to implement the Project, but it has led to the increase in coordination tasks for the Project.
2) CEMASTEA faced challenges in implementation of SMASE activities because of the complicated management structure where MOEST is responsible for budget and TSC for staffing.
3) CEMASTEA's complex organisation structure consisting of subject departments, Programme Areas, and Performance Contract Specialised Committees to which all academic staff concurrently belong lead to overworking and multiple supervision in the process hindering effective coordination and communication.
4) To address these challenges, MOEST constituted the "Technical Committee on Re-engineering of CEMASTEA" was convened in 2011 where key stakeholders made recommendations on how to improve the management of CEMASTEA and implementation of SMASE Programme.

2-2-2. Monitoring System

Findings

1) The JCC meeting is supposed to be held semi-annually, but so far has not been held as planned.

This caused the delay in addressing challenges facing the management of project activities. NPC and PCC meetings however, were held regularly.

2) CEMASTEA staffs frequently submit reports after agreed deadline and the quality of the reports need to be improved.
3) Record keeping of data on the indicators of PDM has not been appropriately managed by both the Kenyan and Japanese sides. Consequently, the progress of the Project based on the indicators was not effectively followed-up.
4) Adequate arrangements were not made by CEMASTEA and MOEST to monitor and audit funds at the district level.

2-2-3. Training System

Findings

1) The approach of the Project is to conduct the SMASE INSET through a cascade system. While this approach is effective in training a large numbers of teachers relatively in a short term, contents of training are diluted in the process of cascading.
2) Topics covered by INSET in a particular year are limited and may not address all the diverse needs of teachers.
3) Interviews revealed that though teachers consider the training content as appropriate, some of them do not apply the ASEI-PDSI approach in their classrooms, due to some reasons such as large class size and syllabus coverage.
4) The local administrative system and personnel changed with constitutional revision forcing the Project to change numbers of some target groups, e.g. DEOs and QASOs.
5) The implementation system of Principals' Workshops was also changed in the middle of project period.

2-2-4. Other Issues regarding the Implementation Process

Findings

1) In the Cluster INSET, 200 shillings are given for participant's lunch. According to interviews with primary teachers, this amount is not enough for many participants and this has discouraged them from participating in the Cluster INSET.
2) Every District Education Office is required to pick up Cluster INSETs materials from Nairobi. However, this is not cost effective. Additionally, shortage of materials is sometimes experienced due to lack of data from districts.
3) Interviews revealed the lack of continuity in terms of both participation in SMASE INSET and motivation to practice. Teachers initially show interests in the INSET as well as ASEI-PDSI

approach, but this eventually wanes maintained through regularization and institutionalization.

4) Though NPC and PCC were introduced for enhancing the management system of the Project, the number of meeting increased accordingly thus burdening CEMASTEA Programme Coordinators and in the process hindering their implementation of project activities.
5) After the Mid-term Review, JICA experts placed priority on strengthening the management function of CEMASTEA rather than technical capacity. The approach was useful to management, but other staffs felt that they needed technical support as was in Phase 1 and 2.
6) Publicity of the Project has not been effectively conducted in the Phase 3. Newsletters and brochures for the Project as well as the Project outline were not published to effectively inform the stakeholders.

2-3. Evaluation by Five Criteria

2-3-1. Relevance

Findings

The relevance of the Project is judged to be moderately high because of the following reasons:

1) The Project meets the needs of its targets, i.e. primary and secondary school teachers who teach mathematics and science. The primary and secondary school teachers in Kenya have been aspired to upgrade their teaching skills. However, that does not meet their demand of career advancement.
2) The Project is consistent with the national development strategy as well as educational development policy of the Government of Kenya such as Vision 2030, Sessional Paper No. 14 of 2012, Basic Education Act 2012, Teachers Service Commission Act 2012 and the proposed National Education Sector Support Programme.
3) The Project is consistent with the Japan's Official Development Assistance (ODA) policy for Kenya. It is in line with the Action Plan adopted in the "Tokyo International Conference on African Development (TICAD) V" held in Yokohama in 2013, which stipulates the commitment of Japanese government to expand the SMASE network. It is also in line with the Japan's ODA policy for Kenya which targets the establishment and stabilization of INSET System targeting mathematics/science teachers of primary and secondary schools in Kenya.
4) However, the 3-in-1design of the Project, comprising primary, secondary, and WECSA components caused some complication in implementation of activities. The design also overlooked piloting stage that would have been appropriate. Similarly, targeting only grades 6, 7, or 8 teachers caused a challenge in consistent participation of same teachers since teachers teach different classes year by year.

2-3-2. Effectiveness

Findings

The effectiveness of the Project is judged to be medium because of the following reasons:

1) The Project Purpose for primary level is expected to be achieved. SMASE INSET, especially the Cluster INSET, will be continuously conducted and school-based training will be developed in schools. The results of quantitative indicators of Project Purpose for primary level are found to be positive. The Project Purpose for secondary level has been achieved to some extent.
2) However, the Project Purpose in the Phase 3 was not achieved to the fullest extent. Furthermore, the achievement level of Outputs for both primary and secondary levels have been affected by factors such as project design, insufficient inputs and issues on the project management. The Project has been also affected by the important assumptions towards Outputs and Project Purpose. Thus, the effectiveness of Phase 3 turned out to be lower than expected.
3) Apart from the achievement of Project Purpose of Phase 3, Kenyan stakeholders recognise the following as the effectiveness of contents of SMASE INSET:
   a) The training is interactive and learner-centred which is an eye-opener for participants who had long believed the one-way lecturing style was the best and only way of conducting classes. This has created positive changes in mind-set and behaviour with regard to their classroom practice;
   b) The tangible products such as guidelines, handbooks and training manuals for the SMASE INSET and Workshops have been developed.

2-3-3. Efficiency

Findings

The efficiency of the Project is judged to be medium because of the following reasons.

1) The achievement of outputs have been realized, but not to the fullest. Output 1 is almost achieved and Output 5 is being achieved once the on-going activities are completed.
2) However, the achievement of Outputs has been affected by the following factors:
   a) Ambitious project design;
   b) In spite of Kenyan side having provided its inputs to a large extent, there was a shortage in CEMASTEA personnel and delay in disbursement of fund for conducting the SMASE INSET and Workshops;
   c) Dispatch Japanese experts focusing more on management rather than input in technical areas;
   d) Project implementation and being affected by the important assumptions;
   e) Creation of a new administrative structure (CDE, TSC-CD) and transfer of personnel brought challenges in smooth implementation of project activities;
   f) Midway change of implementation system caused the temporary suspension of the project related activities;

g) Change of the implementation system of Principals' Workshops midway through the Project;
h) Lack of smooth decision-making process causing a delay in implementing some activities.

2-3-4. Impact

Findings

The overall impact of the Project is judged to be medium because of the following reasons.

(1) Likelihood of achieving Overall Goal

The results for primary show improvement of KCPE in both subjects, while the results for secondary have mixed performance based on SPIAS results. Therefore, one may say that at least the overall goal for primary can be achievable. However, the KCPE results may not represent to measure achievement of overall goal, as the degree of difficulty may vary year by year.

(2) Unintended Outputs

The Project produced following unexpected outputs.

a) Implementation:
- The group of ex-trainee in Japan have introduced lesson study in their areas of jurisdiction;
- Some ASAL Districts conducted residential INSET on their own initiative before MOEST allocated funds; and
- Some schools have been trying to exercise some ingenious attempts to improve their teachers' skills in mathematics and science based on the experiences of SMASE INSET and Workshops, one of which is the lesson observation among teachers

b) Policy Level:
- MOEST is in the process of converting CEMASTEA into the Institute of Capacity Development of Teachers in Africa (ICADETA) which will offer INNSET including humanities;
- Indirect influence on the enactment of TSC Act 2012 that made Continuous Professional Development (CPD) mandatory and the development of Sessional Paper No. 14 of 2012 that emphasises the importance of CPD.

Meanwhile, there have been no reports of any negative impacts of the Project in terms of the environmental and social aspects and it is unlikely that any negative impacts of the Project will emerge in the remaining project period.

2-3-5. Sustainability

Findings

The sustainability of the Project is judged to be moderately high because of the following reasons.

(1) Policy and institutional aspects

a) The strengthening of teacher education as well as the improvement of teaching/learning in mathematics and science is considered to be one of the important strategies for Kenya in order to realise national development as articulated in the following policy documents: 1) Kenya Vision 20130; 2) Session Paper No.14 of 2012; 3) Basic Education Act No. 14 of 2013; 4) TSC Act; 5) upcoming National Education Sector Support Program (NESSP). These strengthen sustainability of SMASE activities.

b) The plan for upgrading CEMASTEA to one of the Semi-Autonomous Government Agency (SAGA) status, i.e. ICADETA, is an evidence of the commitment of the Kenyan government to achieving the purpose as well as overall goal of the Project. CEMASTEA is expected in due course to play a role of the leading organization for the strengthening of teacher education in Kenya. Besides, proposed County INSET Centre is expected to strengthen the sustainability of activities at the county level once implemented.

c) However, to ensure sustainability, the cooperation and demarcation of roles in the teacher education among MOEST, TSC and CEMASTEA needs to be harmonized.

(2) Organizational aspect

a) Although the organizational strength of CEMASTEA as the counterpart organization for the Project has not been fully developed during the project period. However, the strong government backing described above means that CEMASTEA is expected to play a major role in the strengthening of teacher education in Kenya. Its organizational authority is therefore likely to grow in the coming years.

b) The upgraded ICADETA is planning to continue the SMASE INSET and Workshops, both of which have been developed under the Project.

c) The actual strengthening of SMASE INSET and Workshops of each county and district level strongly depends on the ownership of its directors and officers. In the counties where the ownership level is high, maintain good communication with CEMASTEA and other stakeholders, resulting in a shared understanding of problems and corrective measures. It is highly desirable for the local administrative units to actively continue to provide information as well as educational activities on the SMASE INSET.

d) However, the lack of sufficient personnel at CEMASTEA is a concern. While the institution managed to implement activities with insufficient number of staff, this may not be the case in the future if adequate number of staff is not allocated.

(3) Financial aspect

a) The budget allocation was adequate in principle, though, that was not secured for the first year of the Project. Proposed SMASE INSET funding as a part of FPE could also strengthen

sustainability to meet the expenses of the implementation cost same just as the secondary SMASE funding through Free Day Secondary Education (FDSE).

b) However, reduction of financial allocation in 2013/2014 could compromise the sustainability. Besides, the delayed disbursement of budget may be another constraint for implementation of the project activities if this happens in the future.

(4) Technical aspect

a) CEMASTEA staffs have long experiences as National Trainers since the Phase 2. They have enough know-how and skills for planning, execution and management of National INSET and Workshops. However, since these skills have only been developed through work experience, it is necessary for them to further necessary to enhance the skills through capacity building based on needs assessment.

b) District, Regional and Cluster Trainers have acquired their skills by implementing the Regional and Cluster INSET under the Project. It is essential for similar training to continue to enable the Trainers to continue to improve their skills through actual work. The Trainers trained have expressed a wish for continuous training.

2-4. Contributing and Constraining Factors

2-4-1. Contributing Factors

Findings

The Project has the following contributing factors.

1) The SMASSE/SMASE Project has lasted for 15 years in Kenya and succeeded in reaching many project stakeholders who belong to the education sector in Kenya. Not only CEMASTEA staff but also other administrative human resources have been for long engaged in the Project since Phase 1 and they are quite familiar with the objectives and contents of SMASE. In spite the changes in administrative personnel both at national and local levels during Phase 3, the newly assigned persons, including PTTC principals and tutors, CDE and CQASO, DEO and DQASO and TAC tutors, however, have known of and understood the SMASE Project somehow since they had been engaged in the Project in their previous positions.

2) MOEST set up the "Technical Committee on Re-engineering of CEMASTEA" in 2011, where key stakeholders of the Project discussed how to improve the management of CEMASTEA and implementation of SMASE Programme.

2-4-2. Constraining Factors

Findings

The Project has the following constraining factors.

1) The delayed disbursement of budget from MOE has affected the planned implementation of

SMASE INSET and Workshops.

2) In some districts, the District INSET for secondary level was not conducted due interference by Teacher's Trade Union which negatively affected the implementation of INSET.
3) Many teachers who participated in the INSET are not satisfied with the fact that SMASE INSET does not lead to promotion. This interfered with attendance of INSET.
4) In Kenya the numbers of schools, teachers and students have been increasing over time. Local administrative system and personnel have also changed with constitutional revision. This forced the Project to change numbers of some target groups, e.g. DEOs and QASOs. The implementation system of Principals' Workshops was also changed in the middle of project period.

2-5. Conclusion

Based on the findings of the Terminal Evaluation, it is concluded that the Project has achieved expected outputs, but not to the fullest. Output 1, 2 and 3 is concerned with newly introduced National, Regional and Cluster INSETs as well as Workshops. These were developed and implemented, though some were behind the schedule. Secondary level activities in Output 4 were implemented, but only to some extent. The achievement of Output 5 is in progress and is expected to be achieved by the end of the project. The SMASE INSET system both at the primary and secondary levels still has issues to be considered and modified for the future improvement. The results of 5 criteria were as follows. The relevance was moderately high, effectiveness, efficiency and impact were medium while sustainability moderately high.

3. THE SUMMARY OF THE EVALUATION OF WECSA COMPONENT

This part summarises the findings of the Terminal Evaluation. The detailed report of the findings is attached as Appendix II (WECSA Component).

3-1. Achievements of the Project

3-1-1. Inputs

In general, the WECSA Component utilized the same inputs made for the Kenya Component. The planned inputs by Kenyan and Japanese sides have been made in accordance with the plan.

(1) Inputs by Kenyan side

Buildings, offices and other facilities: WECSA Component activities utilised CEMASTEA facilities as illustrated in the summary of Appendix I of the evaluation of Kenya Component.

Personnel: All the CEMASTEA staff (described in the summary of Appendix I of the evaluation of Kenya Component) were made available for the activities of WECSA Component such as Third Country Training Programme (TCTP), Third Country Expert (TCE) Dispatch, Technical Workshop, and Regional Conference. Some staff were specially assigned to the component as follows.

- WECSA committee, which consists of five members, coordinates TCTP and Technical Workshop.
- A temporary committee is organized for each Regional Conference under Coordinator Academic Programme.
- One non-teaching staff supports logistics and administration.

Finance: The Kenyan side provided quarter perdiem for staff who travel outside Kenya on top of the travel allowance provided by JICA.

(2) Inputs by Japanese side

Personnel (Japanese experts): All the Japanese experts assigned to the Project served for both of Kenya and WECSA Components.

Finance: The cost disbursed so far for the WECSA Component amounts to Ksh. 317,308,219 in total.

Equipment and facilities: All equipment and facilities provided by the Japanese side were utilised for both Kenyan and WECSA Components.

3-1-2. Implementation of Activities

(1) Activities under Output 1: ASEI-PDSI based INSET providers from member countries are trained.

Major activities conducted include: development of five types of TCTP course (Anglophone primary course, Anglophone secondary course, Advanced Anglophone secondary course, Francophone primary course, and South Sudan customized course); conducting 13 TCTPs for 694 participants in total, and

monitoring/evaluating the TCTPs by having all the participants evaluate the course they attended, and conducting surveys (an on-line survey and an impact survey). OJT was also provided for Uganda, Rwanda and South Sudan.

Most of the planned activities were implemented, but some were not carried out as scheduled. The implementation of the impact survey was rescheduled due to the cancellation of INSET in Malawi, which the survey team planned to observe. TCTP 18 and 19, which were planned to be held within 2011, were postponed until January and February 2012 due to the mid-term review. Though TCTP 22 was conducted as planned, there was a challenge in meeting deadlines during the preparation stage due to other competing tasks allocated to the CEMASTEA staff.

(2) Activities under Output 2: SMASE-WECSA network is strengthened.

Major activities conducted include: technical visits of officials from four member countries; dispatch of 30 TCEs to seven countries; organizing three Technical Workshops, and conducting four Regional Conferences and Delegates Meetings. Most of the activities were implemented as planned, but the preparation for the Technical Workshop in Zambia was delayed because the task team of Zambia had been occupied with other tasks, and the project team had difficulty to control the preparation process from Kenya.

(3) Activities under Output 3: Role of CEMASTEA is strengthened as resource centre for Mathematics and Science education in Africa.

Activities conducted include: drafting a concept paper to establish a resource centre; collecting related documents from member countries; revising TCTP materials for digitization, and development of Newsletter. Meanwhile, the activities are behind the schedule because the project team[1] has been occupied with other activities, which have more immediate deadlines. It also took time to develop a common understanding among the project team regarding the vision of the resource center.

3-1-3. Outputs

Output 1: ASEI-PDSI based INSET providers from member countries are trained

Output 1 has been mostly achieved as of August 2013. It will be fully achieved by the end of the project period if the planned activities are implemented, and the quality of upcoming TCTPs and the level of knowledge gained by participants, which are to be assessed by more relevant tool, are proved to be satisfactory.

- Verifiable Indicator 1(a): TCTP at CEMASTEA is carried out five times

Four rounds of regular TCTP have been carried out to date. The fifth round is planned to be held from

[1] "The project team" refers to counterparts in CEMASTEA and Japanese experts.

September to October 2013.

- Verifiable indicator 1(b): At least 500 participants attend the TCTP at CEMASTEA

In total, 694 participants have attended since January 2009.

- Verifiable indicator 1(c): At least 15 sets of training materials are produced

In total, 12 regular TCTPs, and one customized TCTP were organized, and one set of training material was produced for each course. As the Project plans to conduct three more TCTPs, and is developing a set of material for each, 16 sets of training materials will be developed in total by the end of the Project.

- Verifiable indicator 1(d): Lesson Innovation Index attains a mean of 2.5.

The impact survey was conducted by the project team in the Gambia, South Sudan, Uganda and Zambia from March to May 2013, and the team found that the mean of Lesson Innovation Index was 3.06. However, Lesson Innovation Index is not a relevant tool to evaluate whether or not training for INSET providers was appropriately conducted, and whether or not participants have learned sufficient knowledge/skills on INSET because it is a tool to assess teachers' practices in classroom. Conducting a test for trainees after each TCTP would have been more pertinent to directly assess quality/appropriateness of the training and the degree of knowledge gained by participants. Meanwhile, the project team assessed the quality of training by having participants evaluate the quality of TCTP. The results show that they are mostly satisfied. Also, the evaluation team conducted a questionnaire survey to ex-participants and confirmed that more than 77% utilize what they learned through the training. This result can show, to certain extent, that the training was relevant, and they gained solid knowledge and skills.

Output 2 : SMASE-WECSA network is strengthened

Output 2 has been fully achieved judging from the achievement level of each indicator.

- Verifiable indicator 2(a): Regional conferences and SMASE-WECSA delegates meetings are held at least four times.

SMASE-WECSA Regional Conference and Delegates Meeting were held four times. The fifth Regional Conference will be held from October 28 to November 1, 2013, and Delegate Meeting will be held from 28 to 29 October, 2013.

- Verifiable indicator 2(b): Increased number of countries participating in SMASE-WECSA activities and implementing INSET.

The number of member countries has increased from 25 to 27. The number remains unchanged since 2010.

- Verifiable indicator 2(c): Technical workshops organized by Kenya or in collaboration with member countries are held at least three times.

Three technical workshops were conducted. The theme, venue and date are as follows.

1) "Enhancing Classroom Activities for Quality Teaching and Learning through Lesson Study" in Swaziland in 2009

2) "Enriching the practice of ASEI-PDSI in the classroom" in Kenya in 2012

3) "A Comprehensive Approach Towards Learner-Centered Lessons Based on Classroom Practice" in Zambia in 2013

Output 3: Role of CEMASTEA is strengthened as a resource centre for Mathematics and Science education in Africa.

Output 3 has not been achieved yet due to the delay in implementing the activities. It is possible to fully achieve the indicators if the activities are conducted as planned during the remaining project period.

- Verifiable indicator 3(a): ASEI/PDSI prototype lesson plans, developed by member countries, are compiled and disseminated.

ASEI/PDSI prototype lesson plans have not been compiled and disseminated. The project team plans to select well-developed lesson plans made during TCTP, and compile and digitize them to upload to the CEMASTEA website to share with the member countries by the end of the project period.

- Verifiable indicator 3(b): One of the TCTP materials (write-ups) is revised/refined for publication.

The project team is developing digitized TCTP materials for primary and secondary basic courses. They will be finalized immediately after TCTP 2013.

- Verifiable indicator 3(c): The revised material is digitized and made available through the CEMASTEA website.

The digitized materials will be made available through the CEMASTEA website after they have been revised.

3-1-4. Project Purpose

Project purpose: Capability of INSET providers to implement ASEI-PDSI based INSET in member countries is strengthened.

The Project Purpose was mostly achieved. Meanwhile, setting more robust indicators was desirable in order to prove the effectiveness of the project approach more strongly.

- Verifiable indicator (a): INSET providers obtain a mean of 2.5 on a scale of 0-4 in the overall assessment of Capacity Building Index for INSET provision

According to the on-line survey conducted in November 2011 to 69 ex-participants of 17 countries, the mean of Capacity Building Index was 3.08 (N=69). The results of the project impact survey show higher attainment, which is 3.29 (N=58). The impact survey team also observed INSET sessions, and objectively confirmed that the ex-participants' facilitation skills have been developed sufficiently in the four sample countries.

- Verifiable indicator (b): The extent to which the ASEI-PDSI concept is reflected in the training manual/materials in the member countries.

A questionnaire was distributed by the project team to the participants of the Technical Workshop in Zambia, and answers from 11 countries were collected. Among the 11 countries, training manuals/materials of three countries have limited reflection of the concept of ASEI-PDSI, six countries have certain reflection of the concept, one country has a will to reflect, and one answer was not pertinent to the question. According to the impact survey results, all the four countries incorporated the concept in their training contents. However, we found, by examining the type of country and the degree of reflection, that achieving this indicator appears to be difficult for countries which already had their own training manuals, and which neither implemented a JICA project nor received a special assistance from CEMASTEA. Moreover, the results of the impact survey show that the more the country has experiences in INSET, the more they have the ability to adapt the concept according to the country's context and needs. This indicator therefore does not necessarily prove the degree of capacity developed.

3-1-5. Overall Goal

Overall Goal: INSET systems in member countries are established/strengthened.

It is impossible to assess the achievement level of the Overall Goal due to the absence of definitions, baseline data and targets for the indicators, and limited reliability of obtained information. Also, the causality between intervention of the Project and the indicators is limited; developing a policy and obtaining approval for it as well as establishing INSET structures often require special assistance, and these are also subject to many external conditions. From these reasons, setting new indicators is recommended.

Verifiable indicator (a): Existence of policy on INSET

According to the results of the questionnaire of the evaluation team, 43.4% responded that their countries own INSET policies (N=76).

Verifiable indicator (b): Existence of administrative structure on INSET system

According to the results of the questionnaire of the evaluation team, 60.5% responded that they have administrative structures (N=76).

Verifiable indicator (c): Existence of a funding mechanism for INSET

According to the results of the questionnaire of the evaluation team, 52.6% responded that they have funding mechanisms (N=76).

Verifiable indicator (d): Existence of M&E systems of INSET

According to the results of the questionnaire of the evaluation team, 52.6% answered that they have M&E structures (N=76).

3-2. Implementation Process

3-2-1. Appropriateness of TCTP

Responses to the questionnaire for the terminal evaluation show that more than 92% of ex-participants evaluate TCTP positively. They also evaluate trainers of CEMASTEA highly. Meanwhile, opinions such as "a few trainers had a challenge in facilitation" were heard through interviews and responses to the questionnaire.

Both Anglophone and Francophone countries evaluated TCTP highly in terms of degree of utilization of what they learned, quality of trainers, quality of materials, and overall quality of training[2]. Though the percentage who marked the positive sides (Rate 3: Sufficiently/Good, and Rate 4: Very much/Very good) is almost the same between Francophone and Anglophone countries, more Anglophone participants marked the highest than those of Francophone countries. This is mainly due to the fact that: (1) instruction language of CEMASTEA is English; (2) interpreters and translators are not familiar with the vocabulary of the subject, (3) Francophone participants have chances to observe classes, but do not have an opportunity to teach in classroom because the language of instruction in Kenya is English.

Moreover, seven out of eight Japanese experts in member countries assessed that their counterparts developed their capacities sufficiently (Rate 3) by TCTP, and also seven answered that their counterparts sufficiently (Rate 3) utilized what they learned through TCTP. Meanwhile, three of them think that it is not necessary to send their counterparts and other related stakeholders to TCTP in Kenya anymore because the countries have developed their own INSET system.

3-2-2. Third Country Expert

Those who had received technical assistance from Kenyan experts are mostly satisfied with it. Similarly to the responses on TCTP, Anglophone countries evaluate TCE more highly than Francophone countries.

According to a Japanese expert in a member country, who had experiences in accepting TCEs from CEMASTEA, the quality of experts are different from one person to another. As the current system of CEMASTEA does not allow requesting countries to choose which expert they would like to invite, the project of this country stopped asking for assistance of TCE.

3-2-3. Technical Workshop

Participants of Technical Workshop are highly satisfied with it. 79.2% of respondents marked "Very good (highest)" for the evaluation of the Technical Workshop .

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[2] All of them were rated by 4-scale. Rate 1 and 2 are on the negative side, and Rate 3 and 4 are on the positive side. Rate 1 is the lowest, and Rate 4 is the highest.

3-2-4. Project Management Structure

Decision-making and Communication

SMASE-WECSA Association is an association registered in Kenya in 2003, which aims to promote mathematics and science education in Africa. The association currently has 27 member countries, which pay the subscription fee of 300 USD per year, and seven observers. The steering committee of the association composes of five members, being chaired by Mr. Edward Tindi in Zambia. Though the association now functions independently, the project team has maintained communication with the association regarding implementation of the project activities, such as TCTP, Technical Workshop and Regional Conference/Delegates Meeting as the project activities were targeted on the member countries of the association.

Monitoring

Monitoring of the quality of TCTP is conducted by having participants evaluate the course they attended. These results are supposed to be incorporated into TCTP reports, and to be reflected in the next TCTP. However, the report format is not standardized, the reports are not presented in a reader-friendly way, and the analysis is not sufficient. Improvements in these aspects will lead to optimizing TCTP reports, and to further improvement of the quality of TCTP.

Monitoring of indicators in PDM has not been conducted regularly by the project team. It is indispensable that records be kept properly, and the progress of the Project be monitored regularly based on the indicators.

Counterparts/Ownership

Activities to sustain the network are being conducted by CEMASTEA. For example, the Ministry of Education, Science and Technology (MOEST) of Kenya has sent a letter to the member countries in January 2013 to call for support to establish SMASE-Africa Association. CEMASTEA has also taken initiative to contact AU to seek their support after the termination of the Project, and to put SMASE-WECSA on the agenda of COMEDAF meetings.

Meanwhile, during the interviews, it was pointed out by some staff that the motivation of working-level staff for the activities of WECSA Component is not very high. Though discussions about providing honorarium for conducting TCTP are ongoing, efforts to raise intrinsic motivation of the staff are needed as well.

In spite of increase of the activities since 2009, the number of staff in CEMASTEA was decreased because sufficient replacement was not made. This is one of the reasons that activities are behind the schedule and deadlines are often missed.

3-3. Evaluation by Five Criteria

Relevance: High

The WECSA Component is relevant to the needs and policies of African nations as follows: (1) African Union prioritizes teacher development along with mathematics and science education in its strategic paper "Second decade of education for Africa (2006-2015)" and (2) the activities of the WECSA Component are at the same time activities of the working group of mathematics and science education of the Association for the Development of Education in Africa. It is also consistent with Japanese ODA/foreign policy for Kenya. Moreover, expanding projects under SMASE is listed as one of the activities of Yokohama Action Plan (2013-2017), which was adopted by TICAD V held in June 2013.

The means the Project adopted was appropriate. Firstly, Kenya has accumulated sufficient knowledge and skills to assist other countries by implementing JICA projects for more than a decade. Secondly, many Sub-Saharan African countries have same challenges that Kenya used to have, and the context and education system of these countries, especially Anglophone nations, are very similar to those of Kenya. Therefore, Kenya is well positioned to provide relevant assistance to them. From these reasons, it is pertinent that the Project was designed as a region-wide south-south cooperation project, which revolves around CEMASTEA, Kenya.

Effectiveness: Moderately high

The Project Purpose was mostly achieved.

More than 97% of the respondents of the evaluation questionnaire answered that their capacities were developed by assistance from Kenya (N=47). Meanwhile, the effectiveness to Francophone and Lusophone participants seems to be lower than that of Anglophone participants due to the barrier of language. Another issue is that the contents of TCTP and Technical Workshop tend to be general to cover interests of all the member countries. It is assumed, from the experience of conducting a special course for South Sudan, that a country-specific TCTP would enhance the effectiveness.

Another challenge is the difficulty for ex-participants to adapt and spread ASEI/PDSI without additional support and follow-ups in their own countries. This opinion was prevalent among the countries, which do not have science and mathematics projects supported by JICA. The effectiveness for these countries could have been more visible by leveraging the follow-up activities.

Efficiency: Mixed

While Output 1 and 2 have been mostly achieved, the achievement level of Output 3 is low due to the delay in the activities.

South-south cooperation such as regional training and technical exchange often require lower costs, and produce outcomes equal to or more than the North-South cooperation. Also, past inputs to Kenya, which are Kenyan human resources and experiences strengthened over a decade of cooperation, and equipment provided previously was utilized effectively in the Project.

Though the main target of TCTP is INSET providers, 282 among 694 participants, which accounts for

40%, were teachers[3]. Although TCTP is beneficial to each individual, training teachers of other countries is not efficient considering costs incurred and limited chance they have to spread what they learned.

Currently, the tasks related to the WECSA Component are delegated to two committees; while WECSA Committee coordinates TCTP and Technical Workshop, an ad hoc committee coordinates Regional Conference. It caused a challenge in terms of communication regarding WECSA Component. Meanwhile, as CEMSATEA has decided that the WECSA committee will be in charge of all the WECSA activities from now onwards, it is expected that this issue will be solved shortly.

Documents produced by the Project, such as reports, lesson plans and TCTP evaluations have not been kept properly by the project team. Therefore, it took time for the project team to retrieve them when they are necessary.

VVOB, the Belgian NPO, has been assisting CEMASTEA on ICT capacity development. The Project benefitted from ICT expertise of CEMASTEA developed by VVOB especially in terms of development of CEMASTEA website, which is necessary to achieve Output 3.

Additional buildings are being constructed by JICA grant, and expected to be completed by the end of September 2013. As a library is included in the construction, a complete library will be established by the end of the Project, which will strengthen the achievement level of Output 3.

Impact: Medium

It is impossible to assess the achievement level of the Overall Goal due to unclear definitions, targets, baseline data, and obtained information on the indicators. Also, the causality between intervention of the Project and the indicators is limited.

Other impacts include active discussions and initiatives taken by SMASE-WECSA Association to sustain the network after the termination of the Project, COMEDAF's recognition of CEMASTEA as the lead agency for improving science, mathematics and technology (SMT) in Africa, and active technical exchanges among member countries and ex-participants. The bill to convert CEMASTEA to the Institute of Capacity Development of Teachers in Africa (ICADETA)

Sustainability: Mixed

Policy: Currently, CEMASTEA is mandated by MOEST to conduct WECSA Component activities. There are strong indications, through the bill to convert CEMASTEA to ICADETA and the commitment of MOEST to COMEDAF that CEMASTEA will serve as a lead agency for improving SMT, that the Kenyan government will continue to support WECSA activities

Finance: No alternative funding has been confirmed to run WECSA Component activities after the

[3] According to the project team, though their title is teacher/senior teacher, there is a possibility that they are also involved in some type of teacher training as trainers.

project period.

Institutional/Personnel/Organizational Issue: The bill to convert CEMASTEA to the Institute of Capacity Development of Teachers in Africa (ICADETA) is expected be approved by the parliaments within this year. It will be easier, under this more autonomous system, to create a section solely in charge of WECSA Component, which will enhance the activities and network.

It was pointed out, through interviews, that ownership and motivation for routine activities such as TCTP is limited among working-staff levels. Meanwhile, some staff perceived that the interests of the top management of CEMASTEA regarding routine activities such as TCTP are not sufficient.

The documentation and the quality of reports need significant improvement so that information and lessons learned can be shared with other staff, and institutional memories can be retained.

Technical: CEMASTEA staff have sufficient capacities to continue the current activities. Meanwhile, it is important to keep upgrading their capacities in order to further improve the current activities and to meet the needs of the member countries. Moreover, their capacities to conduct quality evaluation and impact studies need to be further improved.

In addition, the logistics arrangement to invite participants has been managed by JICA expert team and one CEMASTEA staff to date. Therefore, the information and the skills to arrange logistics needs to be transferred to other staff in CEMASTEA.

3-4. Contributing and Constraining Factors

3-4-1. Contributing factors

There are several contributing factors of the Project, which includes: (1) long-term and continuous assistance and collaboration between Kenya and JICA, and (2) existence of JICA projects in member countries.

3-4-2. Constraining factors

There are several constraining factors as follows.

(1) Inadequate understandings regarding PDM by the project team

The definition of the narrative summary of the Project Purpose, logic between the Project Purpose and the Overall Goal, and definitions as well as relevance of some of the indicators were not sufficient. Moreover, the evaluation team found that common understandings regarding the PDM among the project team are missing. These factors hindered regular monitoring of the progress against the indicators, and the progress of Output 3.

(2) Inadequate number of staff

Efforts were made by CEMASTEA staff to implement project activities as scheduled. However, due to the limited number of staff, they have been occupied with competing tasks, and observance of deadlines and the quality of work may have been compromised.

(3) Inadequate information sharing on the WECSA Component activities

Sharing of information regarding WECSA Component among WECSA Committee is not sufficient. Because results of activities such as Regional Conference, Technical Workshop, and other WECSA activities are not sufficiently shared among the committee members, it was sometimes difficult for them to pursue allocated tasks without information resulted from these activities.

3-5. Conclusion

The Project Purpose was mostly achieved mainly by the high achievement levels of Output 1 and 2. Regarding evaluation by the five criteria, while Relevance is high and Effectiveness is moderately high, Impact is medium, and Efficiency and Sustainability are mixed.

The evaluation team concluded that the Project has made steady progress towards the target by conducting TCTP, Technical Workshop, Regional Conference/Delegates Meeting, and other technical supports and exchanges, which have been highly appreciated by the member countries. Meanwhile, the implementation process, which includes ownership/motivation regarding routine WECSA activities, communication, and monitoring requires further improvement in order to achieve the target with quality and to ensure sustainability of the component.

4. RECOMMENDATIONS

The following recommendations were drawn from the Terminal Evaluation Results.

4-1. Kenya Component

4-1-1. For Sustainable INSET

(1) SMASE INSET at all levels as Mandatory INSET/Continuous Professional Development (CPD) Program

- MOEST and CEMASTEA to work with TSC to ensure that SMASE INSET becomes mandatory INSET/CPD program.
- MOEST to develop INSET/CPD Policy.
- MOEST needs to explore the possibility of continued collaboration to address the identified challenge.

(2) Establishment of Primary SMASE Fund

MOEST and CEMASTEA to establish SMASE Funding channeled through FPE for smooth and efficient implementation of Primary INSET.

(3) Reinforcement of Accountability for SMASE Fund

MOEST to establish a mechanism for monitoring and auditing SMASE Fund within the existing system.

(4) Securing CEMASTEA budget for FY2013/14

MOEST to secure additional funding for CEMASTEA activities for 2nd half of 2013/14 and upcoming years.

(5) Providing adequate staffing level

Increase the number of CEMASTEA staff to appropriate level as recommended in the Reengineering Report under ICADETA.

(6) Institutional sustainability

Considering the investment made in upgrading and refurbishing CEMASTEA and the enhanced capacity of technical staff, the role of CEMASTE/ICADETA as an INSET institution and resource centre under MOEST should be maintained and strengthened.

4-1-2. For Effective INSET

(1) Implementation of strategic monitoring

- During the project period, CEMASTEA, as a provider of SMASE INSET and Workshops together with other stakeholders have been monitoring regional and cluster training. To implement and sustain quality INSET, this monitoring task could be more strategically carried out by reviewing and redefining the role of each stakeholder (e.g., QASOs, PTTC tutors, TAC tutors).
- Timely submission of Implementation Reports for all INSET activities should be ensured by all

concerned stakeholders. CEMASTEA should effectively use feedback from the reports of regional, district and cluster INSETs to identify major issues and provide support and advice to the cascaded levels of INSET.

(2) Effective follow-up on SMASE activities at cascaded levels

- CEMASTEA further strengthens support and follow-up mechanism of SMASE activities at all levels.
- CEMASTEA should review and enforce agreed guidelines

4-1-3. For Quality INSET

Re-vitalizing SMASE Spirits – Learning from the Ground

- CEMASTEA to support and strengthen school-based INSET activities particularly lesson study as part of INSET system.
- CEMASTEA to visit schools, identify the needs, and develop innovative approaches to contribute to the improvement of Math and Science lessons.
- CEMASTEA should act as an overall coordinator in facilitating knowledge and experience sharing among schools by identifying good practices emerging on the ground from and through action research and utilizing such content in INSET.
- CEMASTEA should analyze the reason hindering teachers from practicing ASEI-PDSI approach and come up with a workable solutions

4-2. WECSA Component

(1) Platform for Mathematics and Science Education in Africa

CEMASTEA has been widely recognized as a regional training/resource center for mathematics and science education in Africa through the activities of WECSA component. CEMASTEA/ICADETA is expected to continuously contribute to the capacity development of INSET providers and trainers in Africa. It is recommended that the organizational capacity of CEMASTEA/ICADETA is strengthened as a regional training/resource center for mathematics and science education in Africa.

(2) Legal Status for CEMASTEA for Regional Activities

For the past decade, CEMASTEA has been established and has implemented a variety of activities to promote Mathatics and Science Education in Africa. To strengthen the capacity of organization for further regional cooperation, MoEST should consider according CEMASTEA necessary legal status.

(3) Further Enforcement of the Support of Regional Activities

Based on the successful experience of TCTP, it is recommended that JICA consider further support to TCTP.

(4) TCTP

a) Improvement of TCTP Report (immediately)

The Terminal Evaluation Team has found that the format of the report for TCTP is not unified and the contents assessed vary depending on the report. Project should unify the format and contents of TCTP report.

b) Record Keeping (immediately)

Currently, most of the resourses of regional activities, especially TCTP resources (e.g., Implementation report, handout, Lesson plan, etc.) kept by the individual staff. This makes it difficult to find the necessary resources when required. Effective system for resource management of regional activities should be established.

c) Monitoring of Regional Activities by the Management level (immediately)

CEMASTEA Managements are encouraged to observe the activities once in a while to motivate the staffs.

d) Clear Target and Indicators (Future)

Clear target group and appropriate indicators for TCTP should be set, when formulating TCTP in the future.

e) Needs Analysis (Future)

There are needs for new courses. Based on needs analysis for targeting countries, the contents of TCTP should be developed, when formulating TCTP in the future.

5. LESSONS LEARNED

5-1. Kenya Component

(1) Primary Level

- Pilot approach must be considered when the target level was changed from Secondary to Primary. It would be more effective if the SMASE INSET at primary level had been introduced to some pilot regions to develop the adjusted model for nation-wide INSET including guidelines, training manuals and implementation system. The experiences and lessons of pilot activities may contribute to minimize various challenges for the scaling-up as well as to improve training contents based on the ground needs.
- Involvement of Head teachers was quite effective. Facilitation of the ASEI-PDSI concepts with broad coverage produced the certain impacts.

(2) Secondary Level

- Involvement of sensitization for all principles (instead of only one in Phase 1) led to enhanced support at the school level. It was acknowledged and appreciated by many stakeholders.
- The use of lesson study at the school level goes along with the understanding of ASEI practice.
- Use of DQASO as facilitators in Principals WS helped them internalize ASEI practice which in turn enhance their supervision.

5-2. WECSA Component

(1) Effectiveness of Customized Assistance

For South Sudan, a customized TCTP course was developed based on the country needs, and it was conducted attended by 73 participants in 2009. At the same time, Third Country Experts were dispatched three times to provide assistance for project formulation, development of training curriculum/ modules, and tools for evaluation and baseline survey. It was proved, by the observation of INSET sessions by the impact survey team, that this country-specific assistance was effective to develop their INSET capacities.

(2) TCE

When the staffs of CEMASTEA were nominated as TCE, beneficiary country was not involved the nomination of the staff. This could be one of the reasons for the declining number of TCE mission. This service should be assessed to take into account the interest of the beneficiary countries.

Attachment 1: Project Design Matrix (Kenya Component)

Project Title: Strengthening of Mathematics and Science Education (SMASE)
Executing Bodies: Ministry of Education (MOE) and Japan International Cooperation Agency (JICA)
Duration: 5 years from January 2009 to December 2013
Target groups: 1) Primary school teachers who teach mathematics and/or science in grades 6, 7, or 8 in Kenya
2) Secondary school teachers who teach mathematics and/or science in Kenya

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumptions
(Overall goal) Capability of young Kenyans in Mathematics and Science is upgraded.	(a) Performance in National Examination at primary education (mean scores of KCPE) is improved. (b) Results of SPIAS at the secondary level are improved compared with the ones conducted at the end of Phase 2.	-Kenya National Examinations Council Reports -Results of SPIAS	
(Project Purpose) Quality of Mathematics and Science education at Primary and Secondary school levels in Kenya is strengthened through INSET.	By the end of the project, the results of the evaluations by the following monitoring and evaluation tools reach the targeted figures as follows: <u>(Primary level)</u> (a) Lesson Innovation Index attains to 3.3 on a 0-4 scale. (b) ASEI/PDSI Lesson Observation attains to 2.0 on a 0-4 scale. (c) Student Participation Index attains to 2.5 on a 0-4 scale. <u>(Secondary level)</u> (a) ASEI/PDSI lesson Observation attains to 3.0 on a 0-4 scale. (b) Lesson Innovation Index attains to 3.0 on a 0-4 scale. (c) Student Participation Index attains to 3.0 on a 0-4 scale	SMASE Project M&E reports	
(Output) 1. A system of National INSET for Regional Trainers is established at CEMASTEA.	By the end of the project: 1 (a) 4 cycles of training materials and programs for the National INSET for the primary education are developed. 1 (b) 300 (at least 250) Regional Trainers are trained at CEMASTEA every year. 1 (c) National INSET for the primary education at CEMASTEA obtain a mean of over 3 on the scale of 0 to 4 in the Quality of INSET Assessment Index. 1(d) (*1)100% of Implementation Reports (*2)on National INSET and Workshops are submitted by CEMASTEA staff by the agreed deadlines (in one month).	1. SMASE Project M&E reports.	
2. A system of Regional INSET and Regional workshop is established at PTTCs.	2 (a) Regional INSET for Cluster Trainers at PTTCs is carried out four times. 2 (b) 4,500 (at least 4,400) Cluster Trainers are trained every year. 2 (c) Over 1,200 TAC Tutors/Zonal QASOs, 47 County QASOs, and 287 Sub-county QASOs are trained. 2 (d) Regional Trainers obtain a mean of over 2.5 on the scale of 0 to 4 in the overall assessment of Capacity Building Index at the Regional INSET at PTTCs. 2 (e) Regional INSET at PTTCs attains to a mean of over 2.5 on the scale of 0 to 4 in the Quality of INSET Assessment Index. 2 (f) (*1) 100% of M&E Reports on Regional INSET and Workshops are submitted by CEMASTEA staff by the agreed deadlines (in one month). 2 (g) (*1) 100% of Implementation Reports (*2) are submitted by PTTCs by agreed deadlines (in one month).	2. SMASE Project M&E reports.	

3. Existing system of cluster INSET is strengthened.	3 (a) A guideline/manual on management of M/S INSET for primary school teacher is developed. 3 (b) At least 60,000 primary school teachers who teach mathematics and/or science in grades 6, 7, and/or 8 drawn from every cluster in the country participate in Cluster INSET every year. 3 (c) (*1) 100% of M&E reports on Cluster INSET are submitted by CEMASTEA staff by the agreed deadlines (in one month). 3 (d) (*1) 100% of Implementation Reports (*2) are submitted by DEOs in three months.	3. SMASE Project M&E reports.	Other programs do not adversely affect teachers' participation.
4. Secondary M/S teachers' ASEI/PDSI practices in classroom are enhanced.	4 (a) INSET and workshop contents for introducing lesson study are developed. 4 (b) A guidebook on Lesson Study is developed. 4 (c) At least 90% of Secondary School Principals are trained on pedagogical leadership including Lesson Study. 4(d) 47 County Directors of Education, 47 County QASOs, 287 DEOs and 287 District QASOs are trained for District Workshops for Principals. 4(e) More than 80% of the Counties (clustered Districts) conduct workshops for Secondary School Principals to share and discuss experience in Lesson Study. 4 (f) Principal's supervision on ASEI-PDSI practice is enhanced/improved by 10% compared with the results in the Situational Analysis. 4(g) (*1) 100% of M&E Reports on Principals' Workshops are submitted by CEMASTEA Staff by the agreed deadlines (in one month). 4 (h) (*1) At least 50% of Implementation Reports (*2) on Principals' Workshop are submitted by the agreed deadlines (in three months) by DPCs.	4. SMASE Project M&E reports.	District INSET for all secondary M&S teachers are conducted every year.
5. Role of CEMSTEA as a resource centre for M/S education is strengthened.	5 (a) Primary INSET materials (write-ups) for Cycle 1&2 are revised/refined as self-explanatory materials and published for teachers. 5 (b) The revised Primary INSET materials for Cycle 1&2 are digitized and made available through the CEMASTEA website. 5 (c) At least one booklet on ASEI/PDSI practices is published and distributed. 5 (d) At least one exemplary lesson video is produced and distributed.	5. SMASE Project M&E reports.	

(Activities) 1-1 To assess INSET training needs of primary M/S teachers 1-2 To develop manuals and materials for National/Regional/Cluster INSET. 1-3 To develop/review monitoring and evaluation tools for National/Regional/Cluster INSET. 1-4 To conduct National INSET to develop the capacity of Regional Trainers at CEMASTEA. 1-5 To organise workshops for PTTC Principals and Deans of Curriculum/heads of M/S department on understanding of SMASE INSET & ASEI/PDSI classroom practices. 1-6 To get evaluation from participants on quality of National INSET. 1-7 To carry out monitoring and evaluation on impact of National INSET by National Trainers.	**(Inputs)** **Kenyan side:** 1. Buildings, offices and other facilities necessary for INSET activities 2. Assignment of adequate Kenyan full-time academic counterpart personnel at CEMASTEA 3. Assignment of adequate non-academic personnel at CEMASTEA 4. Expenses necessary for the project activities to be implemented in Kenya 5. Expenses for repair,	The counterparts at CEMASTEA and key trainers in the devolved cascade levels will be motivated enough to continue to work for the project

2-1 To conduct national sensitisation workshop for DEO, QASO. 2-2 To select Cluster Trainer. 2-3 To provide PTTCs with training materials/apparatus as necessary for regional INSET and workshop. 2-4 To develop the workshop contents and materials by CEMASTEA. 2-5 To organise Regional workshops for ZQASOs and TAC Tutors. 2-6 To conduct Regional INSET for Cluster Trainers at PTTCs. 2-7 To carry out monitoring and evaluation on quality of Regional INSET. 2-8 To carry out monitoring and evaluation on impact of Regional INSET. 2-9 To collect and analyse implementation reports (Attendance list and training reports) made by PTTC. 3-1 To provide training materials/apparatus as necessary for Cluster INSET and District Workshop. 3-2 To conduct Cluster INSET. 3-3 To conduct District workshop for Head Teachers. 3-4 To carry out monitoring and evaluation on quality of the cluster INSET. 3-5 To carry out monitoring and evaluation on the impact of cluster INSET and ASEI/PDSI classroom practices. 3-6 To collect and analyse implementation reports (Attendance list and Training reports) made by DPCs. 3-7 To develop handbook on management of primary INSET system in accordance with MOE policy. 4-1 To assess the current situation of M/S teachers' ASEI/PDSI classroom practices 4-2 To develop INSET content for lesson study. 4-3 To assess the current situation of capacity of school leadership on supervision of ASEI/PDSI classroom practices. 4-4 To develop workshop content for principals. 4-5 To conduct workshops for County Directors of Education, County and District QASOs to develop the capacity to conduct workshops for principals at District level. 4-6 To conduct District workshops to support Secondary Principals in promoting Lesson Study and ASEI-PDSI practices in the classroom. 4-7 To develop a guidebook on Lesson Study. 4-8 To work with model schools on Lesson Study. 4-9 To carry out monitoring and evaluation on ASEI/PDSI classroom practices. 4-10 To carry out SPIAS 5-1 To revise/refine existing Primary INSET materials as self-explanatory materials for publication. 5-2 To digitize the revised materials. 5-3 To identify good ASEI-PDSI practices. 5-4 To organise symposia on good ASEI/PDSI classroom practices. 5-5 To compile good practices of ASEI/PDSI and disseminate.	maintenance and improvements of CEMASTEA facilities **Japanese side:** 1. Dispatch of long-term experts 2. Dispatch of short-term experts 3. Training of Kenyan counterpart personnel in Japan and in third countries 4. Provision of training materials and equipment for INSET activities 5. Expenses necessary for SMASE-WECSA activities 6. Local operation cost for administration of the Project	**Preconditions:** Teachers' union support the project.

(*1): Report submission rates are to be measured at two points: by the agreed deadlines and by the time for the final evaluation.
(*2): Each Implementation Report should consist of an attendance list and training reports that include participants' evaluation and its analysis and recommendations.

Attachment 2: Project Design Matrix (WECSA Component)

Project Title: Strengthening of Mathematics and Science Education (SMASE)
Executing Bodies: Ministry of Education, Science and Technology and Japan International Cooperation Agency (JICA)
Duration: 5 years from January 2009 to December 2013
Super Goal: Quality of Teaching and Learning of Mathematics and Science in member countries is improved.

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumptions
(Overall goal) INSET systems in member countries are established/strengthened.	(a) Existence of Policy on INSET (b) Existence of Administrative structure on INSET system (c) Existence of a funding mechanism for INSET (d) Existence of M&E systems of INSET	-Project documents, project reports, sector programs, policy papers, etc. in member countries	
(Project Purpose) Capability of INSET providers (trainers and administrators) to implement ASEI/PDSI based INSET in member countries is strengthened	By the end of the project period: (a) INSET providers obtain a mean of 2.5 on a scale of 0-4 in the overall assessment of Capacity Building Index (*1) for INSET provision. (b) The extent to which the ASEI-PDSI concept is reflected in the training manual/ materials in the member countries.	SMASE Project Monitoring and Evaluation Reports	Policy frameworks in participating countries will be supportive of INSET for Mathematics and Science teachers
(Outputs) 1. ASEI/PDSI based INSET providers (trainers) from member countries are trained.	1. By the end of the project period: a) TCTP at CEMASTEA is carried out five times. b) At least 500 participants attend the TCTP at CEMASTEA c) At least 15 sets of training materials are produced (one set of training materials is all materials prepared for one TCTP course) d) Lesson Innovation Index (*2) attains a mean of 2.5.	1. SMASE Project M&E reports.	
2. SMASE-WECSA network is strengthened.	2. By the end of the project period: a) Regional conferences and SMASE-WECSA delegates meetings are held at least four times b) Increased number of countries participating in SMASE-WECSA activities and implementing INSET. c) Technical workshops organized by Kenya or in collaboration with member countries are held at least three times.	2. SMASE Project M&E reports.	
3. Role of CEMASTEA is strengthened as a resource centre for Mathematics and Science education in Africa.	3. By the end of project period: a) ASEI/PDSI prototype lesson plans, developed by member countries, are compiled and disseminated. b) One of the TCTP materials (write-ups) is revised/refined for publication. c) The revised material is digitized and made available through the CEMASTEA website.	3. SMASE Project M&E reports.	

(Activities)	(Inputs)	
1-1 To assess the current situation and needs of INSET systems in SMASE-WECSA member countries. 1-2 To review and develop TCTP course content for mathematics and science educators from SMASE-WECSA member countries. 1-3 To review and develop training manuals and materials for the TCTP. 1-4 To train INSET providers from SMASE-WECSA member countries. 1-5 To offer technical support in the construction and strengthening of INSET system for mathematics and science education for member countries. 1-6 To monitor and evaluate the quality of TCTP. 1-7 To monitor and evaluate the impact of TCTP. 2-1 To sensitise officials of education ministries in member countries on ASEI-PDSI classroom practices as need arises. 2-2 To conduct technical exchange visits with member countries as need arises. 2-3 To organize technical workshops by Kenya or in collaboration with member countries. 2-4 To organise and participate in SMASE-WECSA Regional conferences and delegates meetings. 2-5 To participate in relevant regional and international conferences and other activities. 3-1 To establish / strengthen networks with Regional and International organisations involved in related activities 3-2 To collect materials and reference books for SMASE-WECSA activities. 3-3 To establish/equip a library. 3-4 To revise/refine TCTP materials (write-ups) materials for publication. 3-5 Revised materials are digitized. 3-6 To disseminate information on SMASE-WECSA activities through the website, and other publications.	**1.Kenya side:** a Buildings, offices and other facilities necessary for the project at CEMASTEA b Assignment of adequate Kenyan full-time counterpart personnel at CEMASTEA c Assignment of adequate support personnel at CEMASTEA **2. Japanese side:** a Dispatch of long term experts b Expenses necessary for Training of SMASE-WECSA Counterpart personnel at CEMASTEA c Expenses necessary for dispatch of teams for Technical exchange visits, Technical assistance and Third Country Expertise among member countries d Expenses necessary for holding Regional conferences and SMASE-WECSA delegates meetings e Expenses necessary for SMASE-WECSA counterparts to attend international conferences f Provision of machinery, equipment and materials to CEMASTEA as resource centre	**Pre-condition** *Member countries have or will have plans of improving Mathematics and Science Education at basic level.*

*1 Capacity Building Index: To evaluate the capacity of INSET trainers to manage INSET, e.g., PDSI of INSET implementation by third persons.
*2 Lesson Innovation Index: To evaluate the perception of the participants (teacher trainers/teachers) on lessons by themselves.

Report for the Terminal Evaluation on the Technical Cooperation Project for Strengthening of Mathematics and Science Education (SMASE)

Kenya Component

August 2013

Table of Contents

Annexes

1. Achievements of the Project

1-1 Results of Inputs

As a whole, inputs both from the Japanese and Kenyan sides have been provided as planned except for the following inputs. No additional CEMASTEA staff who has the experiences in primary teacher's education was assigned. The budget for conducting the planned INSET and Workshops was not sufficient and its disbursement was delayed. The summary of main inputs by both sides is as follows.

1-1-1 Japanese Side

Items	Actual Inputs
Dispatch of long-term experts	7 long-term experts in charge of the following assignments have been dispatched. The list of experts is shown in Annex 5: List of Inputs (Kenya Component). 1) Chief Advisor 2) Deputy Chief Advisor/WECSA Advisor 3) Subjects Advisor (Science Education) 4) Subjects Advisor (Mathematics Education) 5) Project Coordinator I 6) Project Coordinator II/INSET Management 7) Academic Adviser
Dispatch of short-term experts	3 short-term experts in charge of the following assignments have been dispatched. The list of experts is shown in Annex 5: List of Inputs (Kenya Component). 1) Academic Adviser 2) Evaluation 3) Curriculum Development
Training of Kenyan counterpart personnel in Japan and in third countries	136 Kenyan counterpart personnel have participated in the training in Japan and the third country (124 in Japan and 12 in Malaysia). The list of participants is shown in Annex 5: List of Inputs (Kenya Component).
Provision of training materials and equipment for INSET activities	101,554,593.03 Kenya shillings in total (from January 2009 to June 2013). The list of equipment provided is shown in Annex 5: List of Inputs (Kenya Component).
Local operation cost for administration of the Project	79,364,692.56 Kenya shillings in total (from January 2009 to June 2013). The breakdown of expenses is shown in Annex 5: List of Inputs (Kenya Component).

1-1-2 Kenyan Side

Items	Actual Inputs
Buildings, offices and other facilities necessary for INSET activities	Buildings, offices and other facilities necessary for INSET activities have been provided by CEMASTEA. Expenses for repair, maintenance and improvement of CEMASTEA facilities have been also provided by CEMASTEA. The list of facilities provided is shown in Annex 5: List of Inputs (Kenya Component).
Assignment of adequate Kenyan full-time academic counterpart personnel at CEMASTEA	45 academic counterpart personnel have been assigned at CEMASTEA although the number of personnel including those who have the experiences in primary teacher's education should have been increased more in the original plan. In addition, they have been engaged not only in the project activities but also in another assignment as academic staff of CEMASTEA. The list of counterparts of MOEST and CEMASTEA is shown in Annex 5: List of Inputs (Kenya Component).
Assignment of adequate non-academic personnel at CEMASTEA	Adequate number of non-academic personnel has been assigned at CEMASTEA.
Expenses necessary for the project activities to be implemented in Kenya	472,326,269.80 Kenya shillings in total (from July 2009 to June 2013). The breakdown of expenses is shown in Annex 5: List of Inputs (Kenya Component).

1-2 Progress of Activities

The project activities indicated in PDM have been implemented basically as planned, although some INSET as well as Workshops have been implemented behind the schedule, the Workshops have been implemented for fewer times, and not full numbers of trainees have participated in the INSET and Workshops compared to the original plan. The progress of activities is shown in Annex 3: Plan of Operation (Kenya Component).

1-3 Achievement of Outputs

The achievement of each Output can be judged based on the results of Verifiable Indicators specified in PDM. The indicators with results of each Output are as follows.

Output 1: A system of National INSET for Regional Trainers is established at CEMASTEA.

<table>
<tr><th>Indicators</th><th>Results</th></tr>
<tr><td>1 (a) 4 cycles of training materials and programs for the National INSET for the primary education are developed.</td><td>The training materials and programs for 4 cycles of the National INSET for primary level have been developed.</td></tr>
<tr><td>1 (b) Over 250 Regional Trainers are trained at CEMASTEA every year.</td><td>The number of Regional Trainers trained by the National INSET is as follows.

<table>
<tr><th>Cycle</th><th>Periods</th><th>No. of Regional Trainers trained</th></tr>
<tr><td rowspan="4">Cycle 1</td><td>14 – 27 Feb 2010</td><td>82</td></tr>
<tr><td>28 Feb – 13 Mar 2010</td><td>73</td></tr>
<tr><td>14 – 27 Mar 2010</td><td>117</td></tr>
<tr><td>Total</td><td>272</td></tr>
<tr><td rowspan="4">Cycle 2</td><td>13 – 26 Feb 2011</td><td>87</td></tr>
<tr><td>27 Feb – 12 Mar 2011</td><td>79</td></tr>
<tr><td>13 – 26 Mar 2011</td><td>120</td></tr>
<tr><td>Total</td><td>286</td></tr>
<tr><td rowspan="4">Cycle 3</td><td>12 – 25 Feb 2012</td><td>69</td></tr>
<tr><td>26 Feb – 10 Mar 2012</td><td>87</td></tr>
<tr><td>11 – 24 Mar 2012</td><td>128</td></tr>
<tr><td>Total</td><td>284</td></tr>
<tr><td rowspan="4">Cycle 4</td><td>28 Jan – 8 Feb 2013</td><td>58</td></tr>
<tr><td>11 – 22 Feb 2013</td><td>83</td></tr>
<tr><td>11 – 22 Mar 2013</td><td>116</td></tr>
<tr><td>Total</td><td>257</td></tr>
</table>

The number is more than 250 at every Cycle of the National INSET.</td></tr>
<tr><td>1 (c) National INSET for the primary education at CEMASTEA obtains a mean of over 3 on the scale of 0 to 4 in the Quality of INSET Assessment Index.</td><td>Data on the Quality of INSET Assessment Index obtained at the National INSET for primary level are as follows.

<table>
<tr><th></th><th>Cycle 1 (2010)</th><th>Cycle 2 (2011)</th><th>Cycle 3 (2012)</th><th>Cycle 4 (2013)</th></tr>
<tr><td>Mathematics</td><td>1.9</td><td>2.3</td><td>3.6</td><td>3.8</td></tr>
<tr><td>Science</td><td>2.3</td><td>2.4</td><td>3.4</td><td>3.5</td></tr>
</table>

The data have been increasing year by year and the data for Cycle 3 & 4 obtained more than 3.0 both for mathematics and science.</td></tr>
<tr><td>1 (d) 100% of Implementation Reports on National</td><td>Since this indicator was added after the Mid-term Review of the Project, the data is available for the National INSET and Workshops implemented after the Mid-term</td></tr>
</table>

<table>
<tr><th>Indicators</th><th>Results</th></tr>
<tr><td>INSET and Workshops are submitted by CEMASTEA staff by the agreed deadlines (in one month).</td><td>Review. The rates of submission of Implementation Reports on both National INSET and National Workshops are as follows.

<table>
<tr><td>No. of National INSET implemented in 2012 and 2013</td><td>2</td></tr>
<tr><td>No. of Implementation Reports on National INSET submitted by CEMASTEA staff by the agreed deadlines (in one month)</td><td>0</td></tr>
<tr><td>The rate of submission</td><td>0%</td></tr>
<tr><td>No. of National Workshops implemented in 2012 and 2013</td><td>8</td></tr>
<tr><td>No. of Implementation Reports on National Workshops submitted by CEMASTEA staff by the agreed deadlines (in one month)</td><td>2</td></tr>
<tr><td>The rate of submission</td><td>25%</td></tr>
</table>

Both rates of submission within the agreed deadlines are less than 100% although the reports were submitted after the deadlines.</td></tr>
</table>

Based on the above results of each indicator, Output 1 is considered to be almost achieved and the system of National INSET for Regional Trainers has been almost established at CEMASTEA. The training materials and programs for 4 Cycles of National INSET for primary level have been developed. The targeted number of Regional Trainers has been trained by the National INSET at every Cycle as well as the quality of National INSET has reached the expected level.

Output 2: A system of Regional INSET and Regional workshop is established at PTTCs.

<table>
<tr><th>Indicators</th><th>Results</th></tr>
<tr><td>2 (a) Regional INSET for Cluster Trainers at PTTCs is carried out four times.</td><td rowspan="2">The number of Cluster Trainers trained by the Regional INSET is as follows.

<table>
<tr><th>PTTC</th><th>Cycle 1 (2010)</th><th>Cycle 2 (2011)</th><th>Cycle 3 (2012)</th></tr>
<tr><td>Asumbi</td><td>331</td><td>325</td><td>288</td></tr>
<tr><td>Baringo</td><td>170</td><td>96</td><td>220</td></tr>
<tr><td>Bondo</td><td>-</td><td>-</td><td>190</td></tr>
<tr><td>Egoji</td><td>213</td><td>233</td><td>112</td></tr>
<tr><td>Eregi</td><td>329</td><td>308</td><td>292</td></tr>
<tr><td>Garissa</td><td>82</td><td>67</td><td>31</td></tr>
<tr><td>Kaimosi</td><td>396</td><td>382</td><td>217</td></tr>
<tr><td>Kamwenja</td><td>219</td><td>186</td><td>143</td></tr>
<tr><td>Kericho</td><td>284</td><td>360</td><td>294</td></tr>
</table></td></tr>
<tr><td>2 (b) 4,500 (at least 4,400) Cluster Trainers are trained every year.</td></tr>
</table>

<table>
<tr><th>Indicators</th><th>Results</th></tr>
<tr><td></td><td>
<table>
<tr><td>Kigari</td><td>272</td><td>145</td><td>198</td></tr>
<tr><td>Kilimambogo</td><td>79</td><td>213</td><td>202</td></tr>
<tr><td>Machakos</td><td>307</td><td>317</td><td>187</td></tr>
<tr><td>Meru</td><td>136</td><td>94</td><td>119</td></tr>
<tr><td>Migori</td><td>337</td><td>399</td><td>352</td></tr>
<tr><td>Mosoriot</td><td>260</td><td>279</td><td>216</td></tr>
<tr><td>Murang'a</td><td>225</td><td>122</td><td>181</td></tr>
<tr><td>Shanzu</td><td>265</td><td>240</td><td>252</td></tr>
<tr><td>Tambach</td><td>302</td><td>117</td><td>276</td></tr>
<tr><td>Thogoto</td><td>213</td><td>265</td><td>251</td></tr>
<tr><td>Total</td><td>4,420</td><td>4,164</td><td>4,021</td></tr>
</table>
Note: Cycle 1&2 were not held in Bondo PTTC.

Cycle 4 of the Regional INSET is to be held in August in 2013. The number is less than 4,400 at the times of Cycle 2 and Cycle 3. It should be noted, however, that there is a room for discussion whether the number '4,500 (at least 4,400)' is appropriate as the target number.</td></tr>
<tr><td>2 (c) Over 1,200 TAC Tutors/Zonal QASOs, 47 County QASOs and 287 Sub-county QASOs are trained.</td><td>The number of TAC Tutors/Zonal QASOs who participated in the Regional Workshops is as follows.

<table>
<tr><th rowspan="2">PTTC</th><th colspan="4">TAC Tutors/Zonal QASOs</th></tr>
<tr><th>2009</th><th>2010</th><th>2011</th><th>2012</th></tr>
<tr><td>Kericho</td><td>123</td><td>192</td><td>163</td><td>61</td></tr>
<tr><td>Egoji</td><td>136</td><td>211</td><td>166</td><td>75</td></tr>
<tr><td>Kamwenja</td><td>95</td><td>-</td><td>-</td><td>75</td></tr>
<tr><td>Shanzu</td><td>55</td><td>-</td><td>36</td><td>50</td></tr>
<tr><td>Garissa</td><td>29</td><td>-</td><td>29</td><td>-</td></tr>
<tr><td>Migori</td><td>160</td><td>-</td><td>-</td><td>184</td></tr>
<tr><td>Kilimambogo</td><td>-</td><td>-</td><td>-</td><td>93</td></tr>
<tr><td>Kaimosi</td><td>160</td><td>129</td><td>166</td><td>77</td></tr>
<tr><td>Tambach</td><td>184</td><td>137</td><td>184</td><td>135</td></tr>
<tr><td>Thogoto</td><td>171</td><td>228</td><td>88</td><td>91</td></tr>
<tr><td>Total</td><td>1113</td><td>897</td><td>832</td><td>841</td></tr>
</table>
Note: "-" means that the Regional Workshop was not held in the PTTC in that year. The PTTCs where the Regional Workshops were held differ year by year.

The number is less than 1,200 every year. It should be noted, however, that there is a room for discussion whether the number 'over 1,200' for TAC Tutors/Zonal QASOs is appropriate as the target number.

The numbers of County QASOs and Sub-county QASOs (District QASOs) who participated in the National Workshops are as follows.</td></tr>
</table>

<table>
<tr><th>Indicators</th><th>Results</th></tr>
<tr><td></td><td>
<table>
<tr><td></td><td>2012</td><td>2013</td></tr>
<tr><td>County QASOs</td><td>-</td><td>45</td></tr>
<tr><td>District QASOs</td><td>242</td><td>-</td></tr>
</table>

The National Workshops for District QASO is to be held later. Both numbers are less than the target numbers.
</td></tr>
<tr><td>2 (d) Regional Trainers obtain a mean of over 2.5 on the scale of 0 to 4 in the overall assessment of Capacity Building Index at the Regional INSET at PTTCs.</td><td>Data on the Capacity Building Index obtained at the Regional INSET for primary level are as follows.
<table>
<tr><td>Cycle 1 (2010)</td><td>Cycle 2 (2011)</td><td>Cycle 3 (2012)</td></tr>
<tr><td>2.5</td><td>2.4</td><td>2.1</td></tr>
</table>

The data have been decreasing year by year and are less than 2.5.
</td></tr>
<tr><td>2 (e) Regional INSET at PTTCs attains to a mean of over 2.5 on the scale of 0 to 4 in the Quality of INSET Assessment Index.</td><td>Data on the Quality of INSET Assessment Index obtained at the Regional INSET for primary level are as follows.
<table>
<tr><td>Cycle 1 (2010)</td><td>Cycle 2 (2011)</td><td>Cycle 3 (2012)</td></tr>
<tr><td>2.1</td><td>2.5</td><td>2.0</td></tr>
</table>

The data as of Cycle 3 is less than 2.5.
</td></tr>
<tr><td>2 (f) 100% of M&E Reports on Regional INSET and Workshops are submitted by CEMASTEA staff by the agreed deadlines (in one month).</td><td>Since this indicator was added after the Mid-term Review of the Project, the data is available for the Regional INSET and Workshops implemented after the Mid-term Review. The rates of submission of M&E Reports on both Regional INSET and Regional Workshops are as follows.
<table>
<tr><td>No. of Regional INSET implemented in 2012 (annual time)</td><td>1</td></tr>
<tr><td>No. of M&E Reports on Regional INSET submitted by CEMASTEA staff by the agreed deadlines (in one month)</td><td>1</td></tr>
<tr><td>The rate of submission</td><td>100%</td></tr>
<tr><td>No. of Regional Workshops implemented in 2012 (annual time)</td><td>1</td></tr>
<tr><td>No. of M&E Reports on Regional Workshops submitted by CEMASTEA staff by the agreed deadlines (in one month)</td><td>0</td></tr>
<tr><td>The rate of submission</td><td>0%</td></tr>
</table>

While the rate of submission for Regional INSET is 100%, the rate within the agreed deadlines for Regional
</td></tr>
</table>

<table>
<tr><th>Indicators</th><th>Results</th></tr>
<tr><td></td><td>Workshops is 0% although the report was submitted after the deadlines.</td></tr>
<tr><td>2 (g) 100% of Implementation Reports are submitted by PTTCs by agreed deadlines (in one month).</td><td>Since this indicator was added after the Mid-term Review of the Project, the data is available for the Regional INSET and Workshops implemented after the Mid-term Review. The rates of submission of Implementation Reports on both Regional INSET and Regional Workshops are as follows.

<table>
<tr><td>No. of Regional INSET implemented at each PTTC in 2012</td><td>19</td></tr>
<tr><td>No. of Implementation Reports on Regional INSET submitted by PTTCs by the agreed deadlines (in one month)</td><td>0</td></tr>
<tr><td>The rate of submission</td><td>0%</td></tr>
<tr><td>No. of Regional Workshops implemented at each PTTC in 2012</td><td>9</td></tr>
<tr><td>No. of Implementation Reports on Regional Workshops submitted by PTTCs by the agreed deadlines (in one month)</td><td>2</td></tr>
<tr><td>The rate of submission</td><td>22%</td></tr>
</table>

Both rates of submission within the agreed deadlines are less than 100% although the reports were submitted after the deadlines.</td></tr>
</table>

Based on the above results of each indicator, the establishment of system of Regional INSET and Regional workshop has not been achieved to the fullest. No indicators of Output 2 have been achieved to the fullest extent. Neither the number of Cluster Trainers trained by the Regional INSET nor the numbers of TAC Tutors/Zonal QASOs, County QASOs and Sub-county QASOs trained by the Regional Workshops has reached the target as well as the quality of Regional INSET has not reached the expected level. It is deemed that while the system of Regional INSET and Regional workshops has been established at PTTCs to some extent, the system in terms of the quality and number of participants has a room for improvement.

Output 3: Existing system of cluster INSET is strengthened.

Indicators	Results
3 (a) A guideline/manual on management of M/S INSET for primary school teacher is	The pilot version of guideline/manual on management of M/S INSET for primary school teachers has been made.

<table>
<tr><th>Indicators</th><th>Results</th></tr>
<tr><td>developed.</td><td></td></tr>
<tr><td>3 (b) At least 60,000 primary school teachers who teach mathematics and/or science in grades 6, 7, and/or 8 drawn from every cluster in the country participate in Cluster INSET every year.</td><td>The number of primary school teachers who participated in the Cluster INSET is as follows.

<table>
<tr><th></th><th>Cycle 1 (2010)</th><th>Cycle 2 (2011)</th><th>Cycle 3 (2012)</th><th>Cycle 4 (2013)</th></tr>
<tr><td>No. of Clusters</td><td>4,249</td><td>4,253</td><td>4,132</td><td>4,196</td></tr>
<tr><td>No. of Primary Teachers who participated</td><td>55,393</td><td>46,933</td><td>43,006</td><td>-</td></tr>
</table>
Note: No. of Clusters for Cycle 4 (2013) is an estimate.

The Cycle 4 is to be held in August in 2013. The number of participants is less than 60,000 in every cycle and even decreasing year by year. One reason why the number did not reach 60,000 is that the Cluster INSET was not conducted in some area of ASAL (arid and semi-arid land). It should be noted, however, that there is a room for discussion whether the number 'at least 60,000' is appropriate as the target number.</td></tr>
<tr><td>3 (c) 100% of M&E reports on Cluster INSET are submitted by CEMASTEA staff by the agreed deadlines (in one month).</td><td>Since this indicator was added after the Mid-term Review of the Project, the data is available for the Cluster INSET implemented after the Mid-term Review. The rate of submission of M&E Reports on Cluster INSET is as follows.

<table>
<tr><td>No. of Cluster INSET implemented in 2012 (annual time)</td><td>1</td></tr>
<tr><td>No. of M&E Reports on Cluster INSET submitted by CEMASTEA staff by the agreed deadlines (in one month)</td><td>0</td></tr>
<tr><td>The rate of submission</td><td>0%</td></tr>
</table>
The rate of submission within the agreed deadlines is less than 100% although the report was submitted after the deadlines.</td></tr>
<tr><td>3 (d) 100% of Implementation Reports are submitted by DEOs in three months.</td><td>Since this indicator was added after the Mid-term Review of the Project, the data is available for the Cluster INSET and District Workshops for Head Teachers implemented after the Mid-term Review. The rates of submission of Implementation Reports on both Cluster INSET and District Workshops for Principals are as follows.</td></tr>
</table>

Indicators	Results
	<table><tr><td>No. of Cluster INSET implemented at each District in 2012</td><td>287</td></tr><tr><td>No. of Implementation Reports on Cluster INSET submitted by DEOs by the agreed deadlines (in three months)</td><td>227</td></tr><tr><td>The rate of submission</td><td>79%</td></tr><tr><td>No. of District Workshops for Principals implemented at each District in 2012</td><td>287</td></tr><tr><td>No. of Implementation Reports on District Workshops for Principals submitted by DEOs by the agreed deadlines (in three months)</td><td>27</td></tr><tr><td>The rate of submission</td><td>9%</td></tr><tr><td>No. of District Workshops for Principals implemented at each District in 2013</td><td>287</td></tr><tr><td>No. of Implementation Reports on District Workshops for Principals submitted by DEOs by the agreed deadlines (in three months)</td><td>167</td></tr><tr><td>The rate of submission</td><td>58%</td></tr></table> The both rates of submission are less than 100%.

Based on the above results of each indicator, the strengthening of system of Cluster INSET has been achieved, but not to the fullest. While the indicator 3 (a) is to be achieved and the guideline/manual on management of M/S INSET for primary school teachers has been made, other indicators of Output 3 have not been achieved to the fullest extent. The number of primary school teachers trained by the Cluster INSET has not reached the targeted number. It is deemed that while the system of Cluster INSET has been strengthened to some extent, the system in terms of the quality and number of participants has a room for improvement.

Output 4: Secondary M/S teachers' ASEI/PDSI practices in classroom are enhanced.

Indicators	Results
4 (a) INSET and workshop contents for introducing lesson study are developed.	INSET and workshop contents for introducing lesson study were developed.
4 (b) A guidebook on Lesson Study is developed.	The draft of guidebook on lesson study was developed and will be finalized by the end of the Project.
4 (c) At least 90% of Secondary School Principals are trained	The Workshops on pedagogical leadership including lesson study for secondary school principals were not held in 2009. The 1st round Workshops for the target

<table>
<tr><th>Indicators</th><th>Results</th></tr>
<tr><td>on pedagogical leadership including Lesson Study.</td><td>group had been held during 2010, 2011 and 2012 and 82% of secondary school principals (5,040 out of 6,125) participated in the Workshops. The 2nd round Workshops have been still ongoing since January 2013 although they were planned to start from September 2012, but did not start due to the teacher's strike.</td></tr>
<tr><td>4 (d) 47 County Directors of Education, 47 County QASOs, 287 DEOs and 287 District QASOs are trained for District Workshops for Principals.</td><td>The numbers of County Directors of Education, County QASOs, DEOs and District QASOs who participated in the National Workshops are as follows.

<table><tr><th></th><th>2012</th><th>2013</th></tr><tr><td>County Directors of Education</td><td>-</td><td>47</td></tr><tr><td>County QASOs</td><td>-</td><td>47</td></tr><tr><td>TSC-CDs</td><td>-</td><td>42</td></tr><tr><td>DEOs</td><td>258</td><td>-</td></tr><tr><td>District QASOs</td><td>242</td><td>-</td></tr></table>
While the numbers of County Directors of Education and County QASOs reached the target, the numbers of DEOs and District QASOs are less than the target numbers. The Workshops for DEOs in 2013 were planned, but postponed by MOEST.</td></tr>
<tr><td>4 (e) More than 80% of the Counties (clustered Districts) conduct workshops for Secondary School Principals to share and discuss experience in Lesson Study.</td><td>Although the Workshops for secondary school principals to share and discuss experiences in lesson study were planned to be conducted every year, they were not conducted in 2009. 80% (47 out of 59) of Clustered Districts conducted the Workshops in 2013.</td></tr>
<tr><td>4 (f) Principal's supervision on ASEI-PDSI practice is enhanced/improved by 10% compared with the results in the Situational Analysis.</td><td>The data on the principal's supervision on ASEI-PDSI practices are measured by the rate of principals who answered 'always' and 'often' to the following 3 question items. The rates as of the Situational Analysis (2009) and 2013 as well as the difference of two rates are as follows.

<table><tr><th>Items</th><th>2009</th><th>2013</th><th>Difference</th></tr><tr><td>1. Check professional tools</td><td>87.5%</td><td>83.3%</td><td>-4.2</td></tr><tr><td>2. Observe M/S lessons</td><td>24.3%</td><td>33.3%</td><td>+9.0</td></tr><tr><td>3. Check effective use of teaching and learning resources</td><td>60.6%</td><td>64.8%</td><td>+4.2</td></tr><tr><td>Average</td><td>57.5%</td><td>60.5%</td><td>+3.0</td></tr></table></td></tr>
</table>

Indicators	Results
	The average of difference between 2009 and 2013 is 3.0, less than 10%. It should be noted, however, that only 1 Workshop had been implemented by the time of the comparative study.
4 (g) 100% of M&E Reports on Principals' Workshops are submitted by CEMASTEA staff by the agreed deadlines (in one month).	Since this indicator was added after the Mid-term Review of the Project, the data is available for the Principals' Workshops implemented after the Mid-term Review. The Workshops were not held in 2012 due to the teachers' strike. The Workshops in 2013 are still being implemented in some Counties and the M&E Reports on the Workshops are supposed to be submitted by CEMASTEA staff after all the Workshops in 2013 are completed.
4 (h) At least 50% of Implementation Reports on Principals' Workshops are submitted by the agreed deadlines (in three months) by DPCs.	Same as the indicator 4-7, the data is available for the Principals' Workshops implemented in 2013. The Workshops in 2013 are still being implemented in some Counties and the deadline has passed in 18 Counties by now. The Implementation Reports on the Workshops which were submitted are 0.

Based on the above results of each indicator, the enhancement of secondary M/S teachers' ASEI/PDSI practices in classroom has been achieved, but not to the fullest. While the contents of INSET and Workshops for introducing the lesson study as well as the guidebook on lesson study have been developed, other indicators of Output 4 have not been achieved to the fullest extent. While the reasonable number of secondary school principals has participated in the Principal's Workshops, their supervision on ASEI-PDSI practices has not been enhanced or improved to the expected level during the project period. Only 2 out of expected 4 Principal's Workshops have been conducted so far, due to some factors such as teacher's strikes, lack of funds by some DPCs and change of modality of training. It is deemed that the secondary M/S teachers' ASEI/PDSI practices in classroom have been enhanced to some extent.

Output 5: Role of CEMSTEA as a resource centre for M/S education is strengthened.

Indicators	Results
5 (a) Primary INSET materials (write-ups) for Cycle 1&2 are	The Primary INSET materials (write-ups) for Cycle 1&2 have been revised/refined as self-explanatory materials as well as the 300 copies of materials have been published

Indicators	Results
revised/refined as self-explanatory materials and published for teachers.	for teachers.
5 (b) The revised Primary INSET materials for Cycle 1&2 are digitized and made available through the CEMASTEA website.	The revised Primary INSET materials for Cycle 1&2 are to be digitized in the CEMASTEA website.
5 (c) At least one booklet on ASEI/PDSI practices is published and distributed.	The booklet on ASEI/PDSI practices is to be published and distributed based on the results of Symposium held in July 2013.
5 (d) At least one exemplary lesson video is produced and distributed.	The exemplary lesson video is to be published and distributed based on the results of Symposium held in July 2013.

Based on the above results of each indicator, the achievement of Output 5 is in progress and Output 5 is expected to be achieved by the end of the Project. The revised Primary INSET materials (write-ups) for Cycle 1&2 as self-explanatory materials, the booklet on ASEI-PDSI practices and the exemplary lesson video are to be completed by the end of the project period.

1-4 Achievement of Project Purpose

The achievement of Project Purpose can be judged based on the results of Verifiable Indicators specified in PDM, same as the achievement of Outputs. The indicators with results are as follows.

Project Purpose: Quality of Mathematics and Science education at Primary and Secondary school levels in Kenya is strengthened through INSET.

<Primary Level>

Indicators	Results
(a) (Primary level) Lesson Innovation Index attains to 3.3 on a 0-4 scale.	Data on the Lesson Innovation Index for primary level in 2009, 2011 and 2013 are as follows.

<table>
<tr><th>Indicators</th><th>Results</th></tr>
<tr><td></td><td>
<table>
<tr><td></td><td>2009</td><td>2011</td><td>2013</td></tr>
<tr><td>Mathematics</td><td>3.17</td><td>3.25</td><td>3.31</td></tr>
<tr><td>Science</td><td>3.28</td><td>3.20</td><td>3.26</td></tr>
</table>
Sample numbers: 111 for Math, 82 for Science (2009), 78 for Math, 78 for Science (2011) and 38 for Math, 38 for Science (2013)

The data for mathematics in 2013 is more than 3.3 while the data for science in 2013 is less than 3.3.</td></tr>
<tr><td>(b) (Primary level) ASEI/PDSI Lesson Observation attains to 2.0 on a 0-4 scale.</td><td>Data on the ASEI/PDSI Lesson Observation for primary level in 2009, 2011 and 2013 are as follows.

<table>
<tr><td>2009</td><td>2011</td><td>2013</td></tr>
<tr><td>1.54</td><td>2.14</td><td>2.34</td></tr>
</table>
Sample numbers: 202 (2009), 62 (2011) and 62 (2013)
Note: the tracking survey for 2011 and 2013

The data in 2011 and 2013 are more than 2.0 and reasonably increasing compared to that in 2009.</td></tr>
<tr><td>(c) (Primary level) Student Participation Index attains to 2.5 on a 0-4 scale.</td><td>Data on the Student Participation Index for primary level in 2009, 2011 and 2013 are as follows. These data were collected based on a 0-2 scale and the data of 2009 is available only for the average of mathematics and science.

<table>
<tr><td></td><td>2009</td><td>2011</td><td>2013</td></tr>
<tr><td>Mathematics</td><td rowspan="2">1.33</td><td>1.51</td><td>1.71</td></tr>
<tr><td>Science</td><td>1.57</td><td>1.75</td></tr>
</table>
Sample numbers: 2,302 (2009), 1,406 (2011) and 1,033 (2013)

The data for both mathematics and science in 2011 and 2013 are more than 1.5 on a 0-2 scale and reasonably increasing compared to that in 2009.</td></tr>
</table>

Based on the above results of each indicator, the Project Purpose for primary level is expected to be achieved. The results of 3 quantitative indicators are found to be positive. As mentioned in the results of Output 3, however, the number of primary school teachers who participated in the Cluster INSET has not reached the target number. It is therefore desirable that the SMASE INSET will be continuously conducted at the primary level and more primary school teachers will be trained to reach the target.

<Secondary Level>

Indicators	Results
(a) (Secondary level) ASEI/PDSI Lesson Observation attains to 3.0 on a 0-4 scale.	Data on the ASEI-PDSI Lesson Observation for secondary level in 2009 and 2013 are as follows. 2009: 2.7 / 2013: 2.9 Sample numbers: 72 (2009) and 134 (2013) The data in 2013 is less than 3.0 although it is slightly increasing compared to that in 2009.
(b) (Secondary level) Lesson Innovation Index attains to 3.0 on a 0-4 scale.	Data on the Lesson Innovation Index for secondary level in 2009 and 2013 are as follows. 2009: 2.8 / 2013: 2.9 Sample numbers: 232 (2009) and 140 (2013) The data in 2013 is less than 3.0 although it is slightly increasing compared to that in 2009.
(c) (Secondary level) Student Participation Index attains to 3.0 on a 0-4 scale.	Data on the Student Participation Index for secondary level were collected only in 2009 and the achievement of this indicator cannot be judged.

Based on the above results of each indicator, the Project Purpose for secondary level has been achieved to some extent. Some activities for secondary level were not conducted as expected as well as all districts did not conduct the District INSET every year as assumed. It is likely that these issues have affected the achievement of Project Purpose for secondary level.

1-5 Prospect for Achievement of Overall Goal

The prospect for achievement of Overall Goal can be judged based on the results of Verifiable Indicators specified in PDM, same as the achievements of Outputs and Project Purpose. The indicators with results are as follows.

Overall Goal: Capability of young Kenyans in Mathematics and Science is upgraded.

<table>
<tr><th>Indicators</th><th>Results</th></tr>
<tr><td>(a) Performance in National Examination at primary education (mean scores of KCPE) is improved.</td><td>The mean scores of mathematics and science of KCPE (Kenya Certificate of Primary Education) as of 2008, 2009, 2010 and 2011 are as follows. The mean scores of 2012 have not been published yet.

<table>
<tr><th>Subject</th><th>2008</th><th>2009</th><th>2010</th><th>2011</th></tr>
<tr><td>Mathematics</td><td>47.16</td><td>49.56</td><td>53.80</td><td>52.18</td></tr>
<tr><td>Science</td><td>55.24</td><td>59.92</td><td>60.86</td><td>67.48</td></tr>
</table>

The mean scores have been increasing both for mathematics and science. It should be noted, however, that the examination contents of KCPE change from year to year and the mean scores of KCPE change accordingly based on the degree of difficulty in the reference year. It is therefore necessary that the improvement of performance in the national examination at primary education should be measured based on not the mean scores of KCPE but other tools such as SPIAS of the secondary level. Or another appropriate indicator could be used.</td></tr>
<tr><td>(b) Results of SPIAS at the secondary level are improved compared with the ones conducted at the end of Phase 2.</td><td>The results of SPIAS (SMASSE Project Impact Assessment Survey) for the secondary level conducted in 2012 compared with those conducted in 2008 in terms of the following survey item are as follows.

<table>
<tr><th>Survey item: Change in the student's attitude, participation and achievement</th></tr>
<tr><td>- Student's attitude towards ASEI-PDSI and perception on ASEI-PDSI practice improved slightly between 2008 and 2012.
- Student's participation in ASEI-PDSI lesson also improved slightly between 2008 and 2012.
- While student's achievement in Biology and Physics subjects was average and maintained during 2008-2012 with slight decline, achievement in Chemistry and Mathematics subjects performed on average and maintained during 2008-2012 with slight improvement.</td></tr>
</table>

The results of student's achievement are as follows.</td></tr>
</table>

Indicators	Results

Subject	2008	2012	Deviation
Biology	50.56	48.54	-2.02
Chemistry	50.49	52.74	+2.25
Physics	51.61	50.37	-1.24
Mathematics	46.15	46.18	+0.03
Mean	**49.70**	**49.46**	**-0.24**

Based on the above, the achievement level of this indicator was not clearly identified by the results of SPIAS since no significant difference was observed in the SPIAS results.

The results of other survey items are as follows.

Survey item: Improvement in the principal's management of mathematics and science education at school
- On resource management, although principal's self-evaluation indicated that they had a positive attitude in 2008, their attitude seemed to have faded away in 2012. They often promoted M&S education in 2008 while they sometimes do in 2012. Furthermore, principal's supervision of ASEI-PDSI practice to teachers got worse in 2012 compared to 2008. Teachers think that principals relatively often supervised their ASEI-PDSI practice in 2008 while in 2012 they rarely do so.
Survey item: Change in the teacher's INSET attendance, attitude towards teaching of mathematics and science and ASEI-PDSI practice
- The teacher's INSET attendance and attitude towards teaching of M&S as of 2012 have improved compared with those as of 2008. Meanwhile, the implementation of ASEI lesson and PDSI cycle did not reach the preferable score.
Survey item: Change in the facilitation and management of District INSET
- Although the process of facilitation by mathematics and science teachers and management of District INSET by DPC members have improved for better over the five year duration, the extent of management and facilitation has not yet reached the expected levels.

As described above, it would be desirable that the achievement of Overall Goal for primary level be measured by another indicator. In regard to the secondary level, based on the result of indicator, the prospect for achievement of Overall Goal was not clearly identified by the SPIAS results.

1-6 Results of Important Assumptions

The results whether the Project was affected by the Important Assumptions indicated in PDM are as follows.

<Important assumption towards Outputs>

Important Assumption	Results
The counterparts at CEMASTEA and key trainers in the devolved cascade levels will be motivated enough to continue to work for the project.	According to the interview with stakeholders, although CEMASTEA staff has been working for the Project, their motivation for the Project has been decreasing during the Phase 3 due to their overwork for being engaged in the SMASE INSET for primary level in addition to that of secondary level, without any increase in the number of staff.

<Important assumptions towards Project Purpose>

Important Assumptions	Results
Other programs do not adversely affect teachers' participation.	Some teachers gave preference to participating in other training over the SMASE INSET.
District INSET for all secondary M&S teachers are conducted every year.	In 2009 and 2010, only some districts conducted the District INSET for M&S teachers. However, in 2011 and 2012, all districts conducted the INSET cascaded from the national level.

2. Implementation Process

2-1 Appropriateness of Project Management Structure

2-1-1 Management System

With regard to the management system of the Project, the following 6 Committees have been established in the Project Phase 3 in order to implement and manage the project related activities such as the SMASE INSET and Workshops at the primary and secondary levels. They are the Joint Coordinating Committee (JCC), National Planning Committee (NPC), Programme Coordinators Committee (PCC), Regional Planning Committee (RPC), District Planning Committee (DPC) and Zonal Planning Committee (ZPC).

JCC, which consists of related personnel of MOEST, TSC, CEMASTEA, JICA and other related organizations, has been established as a responsible body for the overall policy decisions related to the Project. NPC, which consists of MOEST, CEMASTEA and JICA, was re-established after the Mid-term Review. PCC, which consists of the Coordinators of Academic Programmes and Programme Coordinators of CEMASTEA as well as JICA experts, was newly established after the Mid-term Review. RPC, which consists of CDE, CQASO as well as Principal, Dean of Curriculum and Tutors of PTTC has been established at each PTTC region. DPC, which consists of DEO, DQASO and related personnel of District level has been established both at the primary and secondary levels in each District. There are 289 DPCs at the primary level and 80 at the secondary level. ZPC, which consists of ZQASO, TAC tutors and related personnel, has been established at the primary level in each Zone. There are 1,455 ZPCs.

There are some issues to be addressed in the above management system of the Project.

There are too many counterpart committees for one project to efficiently implement and properly manage the project related activities. The number of counterpart committees of the Phase 3 accounts for 1,872 including the national and local committees. The involvement of managerial stakeholders is necessary to implement the Project, but it has led to the increase in coordination tasks for the Project.

CEMASTEA faced challenges in implementation of SMASE activities because of the complicated management structure: 1) the responsible entity for disbursement of budget

is MOEST; and 2) the responsible entity for staffing of CEMASTEA is TSC.

Another challenge CEMASTEA faces lies in the internal implementation structure. CEMASTEA currently has 3 implementing bodies: 1) Subject Departments (Biology, Chemistry, Mathematics and Physics); 2) Programme Committees (Primary, Secondary, ICT, SMASE-WECSA and R&D); and 3) Specialized Committees (consist of more than 10 Committees). All academic staff of CEMASTEA concurrently belongs to the three units and participates in all units' activities. This has overworked some academic staff, especially the Programme Coordinators. This multiple supervision has hindered effective coordination of activities and task allocation as well as effective communication between JICA experts and CEMASTEA staff.

To address these challenges, MOEST constituted the "Technical Committee on Re-engineering of CEMASTEA" in 2011 where key stakeholders of the Project seriously discussed how to improve the management of CEMASTEA and implementation of SMASE Programme.

2-1-2 Monitoring System

The following findings related to the monitoring system were identified.

The JCC meeting is supposed to be held semi-annually, but it was not held in 2009 and 2010 and had been held only once in November 2011 from the commencement till the time of Mid-term Review of the Project. This caused the delay for JCC members to address the challenges facing the management of project activities. After the Mid-term Review as well as the Technical Committee meeting, the JCC meeting was held in January 2012 and March 2013, not twice a year as planned.

The NPC meeting has been regularly held once a month and the progress and challenges of the Project have been reported and shared among NPC members. In addition, the PCC meeting has been regularly held twice a month and the progress and challenges of the Project have been reported and shared among PCC members as well. The frequency of RPC, DPC and ZPC meetings depends on each level. While some Committees are active and have often had the committee meeting, others are not.

One of the challenges facing the Project is report submission; CEMASTEA staffs

frequently submit the reports after agreed deadlines. Furthermore, the quality of reports needs to be improved.

In addition to the above-mentioned point, record keeping of data on the indicators of PDM has not been appropriately managed by both the Kenyan and Japanese sides. Data on some indicators were not collected as mentioned in the section '1-3 Achievement of Outputs.' Consequently, the progress of the Project based on the indicators was not effectively followed-up.

Furthermore, keeping a careful audit of the SMASSE INSET Fund for secondary level is major concern for the stakeholders of the Project. Auditing of funds for the secondary INSET activities at district level has not been given adequate attention during the Phase 3. Adequate arrangements were not made by CEMASTEA and MOEST to monitor funds at the district level when scaling up.

2-2 Appropriateness of Training System

The approach of the Project is to conduct the SMASE INSET through a cascading system for the purpose of strengthening teachers' skills in mathematics and science. While this approach is effective in training a large majority of mathematics/science teachers relatively in a short term, the following limitations are pointed out on the SMASE INSET.

1) Conducting the training through a cascading system has a weakness in that the accurate contents of training are diluted to the bottom level of cascade, i.e. teachers.
2) The main objective of SMASE INSET is to improve teaching methods and skills of mathematics and science based on the ASEI-PDSI approach. However, the topics covered by INSET in a particular year are limited and may not address all diverse topics.
3) According to the interview with DQASO and TAC tutors, it is difficult for some teachers to apply the ASEI-PDSI approach in their practical use in the classroom even if they have participated in the SMASE INSET and understood the contents of ASEI-PDSI approach. The training content is appropriate, however, they face challenges because of the classroom size and syllabus coverage.
4) In Kenya the numbers of schools, teachers and students have been increasing over time. The local administrative system and personnel has also changed with

constitutional revision. This forced the Project to change the numbers of some target groups, e.g. DEOs and DQASOs. The implementation system of Principals' Workshops was also changed in the middle of project period.

2-3 Other Issues regarding the Implementation Process

The Project has experienced the following challenges.

1) In the Cluster INSET, 200 shillings are given for participant's lunch. According to the interview with primary teachers, this amount is not enough for many participants and this has discouraged them from participating in the Cluster INSET.
2) Every District Education Office is required to come to Nairobi to pick up the materials to be used in the Cluster INSETs. However, the information on the quantity of materials was not properly communicated from them to CEMASTEA.
3) According to the interview with stakeholders, the lack of continuity in terms of both participation in SMASE INSET and motivation to practice was pointed out. Teachers initially show interests in the SMASE INSET as well as ASEI-PDSI approach, but they lose it and do not continue to practice the ASEI-PDSI approach in their teaching.
4) NPC and PCC were introduced for enhancing the management system of the Project after the Mid-term Review and the number of meeting for the Project have increased accordingly. Consequently, too many meetings have placed a burden, especially on the Programme Coordinators of CEMASTEA and hindered their implementation of project activities.
5) At the time of Mid-term Review, the Kenyan and Japanese sides recognized the need to strengthen the managerial aspect of the Project. Thus during the Phase 3 especially after the Mid-term Review, JICA experts have placed priority on strengthening the management function of CEMASTEA rather than strengthening its technical capacity. Although the approach was useful to the management, some CEMASTEA staffs felt that they needed technical support as was in the Phase 1 and 2.
6) Publicity of the Project has not been effectively conducted in the Phase 3. Newsletters and brochures for the Project as well as the Project outline were not published to effectively inform the stakeholders.

3. Results of Evaluation

3-1 Evaluation by Five Criteria

3-1-1 Relevance

The relevance of the Project is judged to be moderately high because of the following reasons.

The Project meets the needs of its target, i.e. primary and secondary school teachers who teach mathematics and science while there is a slight gap between their needs and their demands.

The primary and secondary school teachers in Kenya have aspired to upgrade their teaching skills, however, their 'needs' on upgrading are based on their 'demands' to get a certificate of training and qualification for their future step-up such as the career advancement and increase in pay. Many teachers, especially primary teachers who have participated in the SMASE INSET are therefore not satisfied with the fact that the SMASE INSET is not related to the acquisition of qualification under the current education system in Kenya.

The Project is consistent with the national development strategy as well as educational development policy of the Government of Kenya.

The Project is in line with the Kenya's long-term national development strategy, "Vision 2030." In this Vision, the Kenyan government set a goal to be an industrialized nation by the year 2030. Currently, however, the level of mathematics and science education has not reached the expected one in basic education in Kenya while it is fundamental for industrialization. The current action to improve in this field was required thereafter. In order to improve access to education, the Government introduced "Free Primary Education" in 2003, developed the "Kenya Education Sector Support Programme" in 2005 and started to implement "Free Day Secondary Education" in 2008. However, the number of enrolment rapidly increased due to the introduction of free education while the number of teachers has not kept up with such increase. Decline in quality of education is to be addressed.

The Project is also in line with the "Session Paper No. 14 of 2012," "Basic Education

Act 2012" and "Teachers Service Commission Act 2012" which place a value on the improvement of teaching/learning in mathematics and science as the essential means for national development as well as support the quality improvement of teachers by INSET, developed as an integral part of continuing teacher education.

The Project is consistent with the Japan's Official Development Assistance (ODA) policy for Kenya.

The Project is in line with the Action Plan adopted in the "Tokyo International Conference on African Development (TICAD) IV" held in Yokohama in 2008, which stipulates the commitment of Japanese government to train 100,000 mathematics and science teachers in Africa.

The Project is also in line with the Japan's ODA policy for Kenya, i.e. the "Country Assistance Policy for the Republic of Kenya (as of April 2012)" as well as the "Rolling Plan for the Republic of Kenya (as of April 2012)." The Policy and Plan state that the Japanese government assist on the establishment and stabilization of In-service Training System targeting mathematics/science teachers of primary and secondary schools in Kenya as well as focus on the quality improvement of mathematics and science education mainly through SMASE which aims for capacity building of mathematics/science teachers and administrative staffs.

Meanwhile, the following problems are raised in terms of the design of the Project, i.e. the contents of PDM.

1) The target size designed for the Project Phase 3 would be too ambitious to effectively and efficiently implement the project activities. The Phase 3 consists of two components, i.e. the Kenya Component and WECSA Component. The Kenya Component also includes two components, i.e. the primary component and secondary component. It means that the Project Purpose for Kenya Component includes two purposes for the primary and secondary levels although it is designed as just one purpose. It is likely that the Phase 3 has been driving three projects. Furthermore, the target size of both the primary and secondary levels is on a nationwide scale. The design of the Phase 3 is ambitious in that the Project includes too many activities which are almost equal to the amount of activities for three projects, without allocating the proper number of CEMASTEA staff. While the

Phase 2 was implemented by 61 CEMASTEA staff, the Phase 3 has been done by 41 staff in spite of the infinitely more activities compared to the Phase 2. The project design is therefore not relevant especially in the target size which is enormous to cover in one project.

2) The design of conducting the SMASE INSET at primary level across the country would be speed-before-quality decision. It would be more appropriate and effective if the SMASE INSET for the primary level had been introduced to some pilot regions at first and a stable model of primary level, including the guidelines, training manuals and implementation system, had been firmly established through the enough experiences and lessons of pilot regions.
3) The project design for secondary level, in other words the project scope for secondary level also has caused confusion. In the Phase 3, the activities for conducting Workshops on ASEI-PDSI practices and lesson study for the principals and administrative personnel were set as the project scope for secondary level and the activities for conducting the SMASE INSET at secondary level were designed to be implemented by CEMASTEA in its own. This mixed activities supported by the Project and solely implemented by CEMASTEA for the secondary level resulted in a source of confusion for some CEMASTEA staff.
4) The selection of target group, i.e. primary school teachers who teach mathematics and/or science in grades 6, 7, or 8 and secondary school teachers who teach mathematics and/or science is appropriate. While the selection of target group is appropriate, targeting the across-the-country primary school teachers was not the best way as the project approach as mentioned above. Furthermore, targeting primary teachers only in grades 6, 7, or 8 has caused the problem that the participants of Cluster INSET differ by year since primary teachers are frequently changed their grades in charge.

3-1-2 Effectiveness

The effectiveness of the Project is judged to be medium because of the following reasons.

As referred to in '1-4 Achievement of Project Purpose,' for the primary level, the Project Purpose is expected to be achieved as far as the SMASE INSET, especially the Cluster INSET will be continuously conducted as well as the school based training will be developed in primary schools. In spite of a limited sample size, the results of

quantitative indicators of Project Purpose for primary level are found to be positive. The Project Purpose for secondary level has been achieved to some extent.

Not the fullest achievement of Project Purpose in the Phase 3 results from the achievement level of Outputs. Furthermore, the achievement level of Outputs for both the primary and secondary levels has been affected by some factors such as the issues on project design as mentioned in '3-1-1 Relevance,' insufficient inputs to be mentioned in '3-1-3 Efficiency" and project management as mentioned in '2-1 Appropriateness of Project Management Structure.' The Project has been also affected by the important assumptions towards Outputs and Project Purpose. Thus it should be considered that the Phase 3 has been constrained to face tough conditions.

Apart from the achievement level of Project Purpose, the following points have been recognized among the Kenyan stakeholders as the effectiveness of contents of SMASE INSET through the experiences of the Phase 1, 2 and 3 of the Project.

1) In the SMASE INSET, the training itself is interactive and learner-centred. This is eye-opening for the participants who had long believed the one-way lecturing style was the best and only way of conducting classes. This has brought them some changes in mindset, attitude and behaviour in the classroom teaching.
2) The examples of direct effects of SMASE INSET on teachers are as follows: teachers have had attitudinal changes in teaching, using activity-oriented and learner-centred approaches; they have developed confidence in teaching mathematics and science, become able to handle even some perceived difficult topics, and improved in planning and conducting lessons; they have learned and improved in their improvisation and resource utilization from local materials; and they have applied the ASEI-PDSI approach into other subjects.
3) The tangible products such as guidelines, handbooks and training manuals for the SMASE INSET and Workshops have been developed through the Phase 1, 2 and 3 of the Project. Being simple and practical, these products have given a firm base of implementing the SMASE INSET. They have been made with taking the relevant concrete needs identified by the Situational Analysis conducted at an early stage of the Project into full consideration. Kenya is not only a country where it is impossible to legally enforce the retention of civil servants or teachers with a view to preventing their job-hopping or transfer to other government positions. The availability of standardised training courses and manuals makes it possible to

develop the required foundations as these are little affected by external conditions.

3-1-3 Efficiency

The efficiency of the Project is judged to be medium because of the following reasons.

As referred to in '1-3 Achievement of Outputs,' Outputs 2, 3 and 4 of the Project is deemed to be achieved to some extent with Output 1 being almost achieved and Output 5 being on course to the achievement once the on-going activities have been completed. The intended Outputs of the Project have not been produced to the fullest extent in the Phase 3. As mentioned above, the achievement of Outputs has been affected by the factors such as ambitious project design, insufficient inputs, issues on project implementation and important assumptions.

As referred to in "1-1 Results of Inputs," both the Kenyan and Japanese sides have provided their inputs roughly as planned. Meanwhile, in terms of the quantity of inputs, there were shortage of inputs in implementing the project activities, which is the assignment of insufficient number of CEMASTEA staff including those who have the experiences in primary teacher's education as well as the disbursement of insufficient budget for conducting the INSET and Workshops.

In terms of the quality of inputs, the result of interview with CEMASTEA staff suggests that they need inputs, supports and technical transfer from JICA experts in the area of their assigned subjects as was in the Phase 1 and 2 though JICA experts have placed priority on strengthening the management function of CEMASTEA rather than strengthening its technical capacity. Furthermore, an expert who has an assignment of statistics could be considered in the Phase 3. Otherwise the inputs were generally appropriate as all individual inputs were utilised in the intended activities.

The change involving the national and local administrative personnel by the political changes meant that the process of developing an implementation system for the Project had to be repeated after the assignment of new personnel to the Project. The subsequent change of the implementation system of Workshops midway through the Project caused the temporary suspension of the project related activities. The decision-making process cannot be described as being smooth, causing a delay of some activities.

3-1-4 Impact

The impact of the Project is judged to be medium because of the following reasons.

In regard to the prospect for achieving the Overall Goal of the Project, as referred to in '1-5 Prospect for Achievement of Overall Goal,' the present level of achievement of Overall Goal was not clearly identified based on the results of indicators.

It will take considerable time to achieve the Overall Goal in the post-project period both at the primary and secondary levels. The Overall Goal of the Project is losing touch with the Project Purpose in that the Overall Goal, i.e. "Capability of young Kenyans in Mathematics and Science is upgraded," can be achieved by not only the achievement of Project Purpose, but also other many factors such as increase in the number of teachers, teachers' correct knowledge on their subjects, every student's holding textbooks, development and adoption of the assessment based on the learner centred approach, etc.

In regard to the project impacts on policies and systems in the education sector of Kenya, even though remarkable impacts on the policy formulation and institutional aspects are as yet to emerge, the following developments have been reported.

1) Some schools have been trying to exercise some ingenious attempts to improve their teachers' skills in mathematics and science based on the experiences of SMASE INSET and Workshops, one of which is the lesson observation among teachers.
2) According to the interview with DQASO of Makueni District, the Makueni DPC members recognize the necessity of improving the SMASE INSET based on the needs assessment of teachers and show their high motivation to develop their customized SMASE programme including the training curriculum and contents of SMASE INSET by their own.

Meanwhile, there have been no reports of any negative impacts of the Project in terms of the environmental and social aspects and it is unlikely that any negative impacts of the Project will emerge in the remaining project period.

3-1-5 Sustainability

The sustainability of the Project is judged to be moderately high because of the following reasons.

(1) Policy and institutional aspects

The strengthening of teacher education as well as the improvement of teaching/learning in mathematics and science is considered to be one of the important strategies for Kenya in order to lead to the national development. The upcoming "National Education Sector Support Programme" will also support the strengthening of teacher education function. Against this background, the capacity building of organizations involved in the teacher education in the public sector are likely to be continually supported by the Government of Kenya.

The plan for upgrading CEMASTEA to one of the Semi-Autonomous Government Agency (SAGA) status, i.e. the Institute for Capacity Development of Teachers in Africa (ICADETA) is an evidence of the commitment of the Kenyan government to achieving the purpose as well as overall goal of the Project. CEMASTEA is expected in due course to play a role of the leading organization for the strengthening of teacher education in Kenya.

In addition to the upgraded CEMASTEA, TSC has functions to play a role in the teacher management and they have developed the draft of new "Code of Regulations for Teachers" in Kenya. This regulation is going to be issued soon. Besides, the proposed County INSET Centre is expected to strengthen the sustainability of activities at the county level once implemented. To ensure the sustainability, the cooperation and demarcation of roles in the teacher education among MOEST, TSC and CEMASTEA should be therefore harmonized and well coordinated by them with sound discussions.

(2) Organizational aspect

Although the organizational strength of CEMASTEA as the counterpart organization for the Project has not been fully developed during the project period, the strong government backing described above means that CEMASTEA is expected to play a major role in the strengthening of teacher education in the public sector in Kenya and its organizational authority is therefore likely to grow in the coming years.

Proper debates involving all stakeholders are highly necessary on the roles to be actually played by CEMASTEA and operational matters requiring improvement or strengthening. The upgraded ICADETA is planning to continue the SMASE INSET and Workshops, both of which have been developed under the Project. However, the lack of sufficient personnel at CEMASTEA is a concern. While the institution managed to implement activities with insufficient number of staff, this may not be the case in the future if the adequate number of academic staff is not allocated.

The actual strengthening of SMASE INSET and Workshops of each county and district level will strongly depend on the ownership of its directors and officers. In the counties and districts where the ownership level of directors and officers is high, they will continue to maintain good communication with CEMASTEA as well as the corresponding units of other organizations, resulting in a shared understanding of problems and corrective measures. It is highly desirable for the local administrative units to actively continue to provide information as well as educational activities on the SMASE INSET.

(3) Financial aspect

With regard to the implementation cost of SMASE INSET and Workshops, although the budget allocation was not secured for the first year of the Project, it has shown an improvement for the following years during the project period. The delayed allocation of budget, however, has frustrated the planned implementation of project activities as well as the local implementing organizations sometimes faced budgetary difficulties in implementing the SMASE INSET and Workshops.

Proposed SMASE INSET funding as a part of "Free Primary Education" could also strengthen the sustainability to meet the expenses of implementation cost just same as the secondary SMASE funding through "Free Day Secondary Education." However, the reduction of financial allocation in FY2013/2014 could compromise the sustainability. Besides, the delayed disbursement of budget may be another constraint for the implementation of project activities if this happens in the future.

(4) Technical aspect

In regard to the skills of CEMASTEA staff, as most of them have long experiences of the National Trainers since the Project Phase 2, they have enough know-how and skills for the planning, execution and management of National INSET and Workshops. The

status of National Trainer, however, does not automatically guarantee the possession of perfect technical expertise. As the skills to conduct the National INSET and Workshops are essentially elaborated through a series of practical work, it is necessary for them to build up their practical experiences to further polish their skills. From this point of view, it is important for CEMASTEA staff to be continually involved in actual teaching work in the future in addition to their work of training the Regional Trainers.

In regard to the skill level of the District, Regional and Cluster Trainers, while the skills of those working at the District, Regional and Cluster INSET have improved through the INSET implementation under the Project, it is essential for similar training to continue for Trainers so that they can continue to improve their skills through actual work. The trainers trained under the Project themselves have expressed a wish for continuous training.

3-2 Contributing and Constraining Factors

3-2-1 Contributing Factors

The Project has the following contributing factors.

1) The SMASSE/SMASE Project has lasted for 15 years in Kenya and succeeded in reaching many project stakeholders who belong to the education sector in Kenya. Not only CEMASTEA staff but also other administrative human resources have been for long engaged in the Project since Phase 1 and they are quite familiar with the objectives and contents of SMASE. In spite of the changes in administrative personnel both at national and local levels during the Phase 3, the newly assigned persons, including PTTC principals and tutors, CDE and CQASO, DEO and DQASO and TAC tutors, however, have known of and understood the SMASE Project somehow since they had been engaged in the Project in their previous positions.
2) MOEST set up the technical committee to come up with the ways of enhancing the effectiveness of the Project. As mentioned in '2-1-1 Management System,' the "Technical Committee on Re-engineering of CEMASTEA" was organized in order to improve the management of CEMASTEA and the Technical Committee meeting was convened where the key stakeholders of the Project seriously discussed the problem. This Committee proposed to upgrade CEMASTEA to ICADETA, which will harmonise and coordinate the provision of INSET in Kenya.

3-2-2 Constraining Factors

The Project has the following constraining factors.

1) The delayed disbursement of budget from MOEST has affected the planned implementation of SMASE INSET and Workshops.
2) In some districts, the District INSET for secondary level was not conducted due to the interference by the Teacher's Trade Union which negatively affected the implementation of INSET.
3) Many teachers who participated in the INSET are not satisfied with the fact that SMASE INSET does not lead to their promotion. This interfered with attendance of INSET.
4) In Kenya the numbers of schools, teachers and students have been increasing over time. Local administrative system and personnel have also changed with the constitutional revision. This forced the Project to change the numbers of some target groups, e.g. DEOs and DQASOs. The implementation system of Principals' Workshops was also changed in the middle of project period.

4. Conclusion

Based on the findings of the Terminal Evaluation, it is concluded that the Project has achieved expected outputs, but not to the fullest extent. Outputs 1, 2 and 3 are concerned with the newly introduced National, Regional and Cluster INSETs as well as the Workshops for primary level. These have been developed and implemented during the Phase 3, though some were behind the schedule. Secondary level activities in Output 4 have been implemented, but only to some extent. The achievement of Output 5 is in progress and expected to be achieved by the end of the Project. The SMASE INSET system both at the primary and secondary levels still has issues to be considered and modified for the future improvement.

One of the factors for the above result is related to the project design that the SMASE INSET for primary level was developed and spread across the country without any trial in the pilot regions. The Project would have been more effectively implemented if the primary INSET had been introduced to some pilot regions in the Phase 3. The primary INSET could be scaled up nationwide after the stable model of implementation system of INSET and Workshops was established in the pilot regions, based on the experiences and lessons learned from the pilot. Another factor is related to the fact that the project implementation has been affected by some challenges during the Phase 3 as mentioned in '2. Implementation Process' and '3-2-2 Constraining Factors.'

Some positive aspects, however, can be identified during the Phase 3. In spite of a limited sample size, the results of quantitative indicators of the Project Purpose for primary level, such as the Lesson Innovation Index, ASEI/PDSI Lesson Observation and Student Participation Index, were found to be positive after the ASEI-PDSI approach was introduced to primary schools in Kenya. Furthermore, in some districts, the stakeholders who manage the District INSET for secondary level show their initiative on the development of their customized SMASE INSET and they are ready to improve the training programme including the curriculum and contents of SMASE INSET based on their needs. This will lead to the assumption that the Project Purpose will be achieved as far as the SMASE INSET will be continuously conducted both at the primary and secondary levels in Kenya with the reasonable support from the government.

The Project has a remaining period of five months. In the meantime, the Project is

highly expected to work thorough the challenges and recommendations addressed by the Terminal Evaluation and make steady progress in the future.

Annex 1: Schedule (Kenya Component)

Date			Progression	Stay
1	15-Jul	Mon	22:30 Depart Tokyo	In-flight
2	16-Jul	Tue	13:55 Arrive at Nairobi	Nairobi
3	17-Jul	Wed	08:30-13:30 Kick-off meeting with JICA Experts 14:00-15:30 Interview with JICA Expert (Mr. Tanaka) 15:30-17:30 Interview with JICA Expert (Mr. Nakajima)	Nairobi
4	18-Jul	Thu	08:30-10:30 Interview with JICA Expert (Mr. Ohira) 11:00-12:30 Interview with CEMASTEA Staff (Primary Committee Members) 12:30-13:30 Interview with CEMASTEA Staff (R&D Committee Members) 14:00-15:15 Interview with CEMASTEA Staff (Secondary Committee Members) 15:30-19:00 Interview with JICA Expert (Mr. Matachi)	Nairobi
5	19-Jul	Fri	08:30-10:30 Interview with JICA Expert (Ms. Uchiyama) 10:30-12:30 Attending Programme Coordinators' Committee Meeting 15:30-17:00 Interview with CEMASTEA Staff (Coordinators of Secondary and R&D Committee) 17:00-18:00 Interview with CEMASTEA Staff (Coordinator of Academic Programme)	Nairobi
6	20-Jul	Sat	Report writing	Nairobi
7	21-Jul	Sun	Report writing	Nairobi
8	22-Jul	Mon	09:30-11:00 Interview with CEMASTEA Staff (Deputy Coordinator of Academic Programme) 11:00-12:15 Interview with CEMASTEA Staff (Coordinators of Primary and Secondary Committee) 12:15-13:15 Interview with Director and Deputy Director of CEMASTEA 13:15-14:00 Meeting with JICA Experts (Mr. Matachi and Mr. Ohira)	Nairobi
9	23-Jul	Tue	06:45 Depart Nairobi 11:00 Arrive at Meru 11:30-13:00 Interview with Meru County Director of TSC 14:00-16:00 Interview with DEO, DQASO and TAC tutors of Imenti North District	Meru
10	24-Jul	Wed	08:30-10:30 Interview with Principal, Dean of Curriculum and Tutors of Meru PTTC 10:30-12:00 Interview with Principal of Kaaga Primary School 12:00-13:30 Interview with CT and Teachers of Kaaga Primary School 14:30-16:30 Interview with DEO, DQASO and TAC tutors of Imenti South District	Meru
11	25-Jul	Thu	07:15 Depart Meru 08:15-09:45 Interview with Principal, Dean of Curriculum and Tutors of Egoji PTTC 10:00-10:30 Interview with Principal of Gikurune Primary School 10:30-11:00 School Observation 11:00-11:30 Interview with Teachers of Gikurune Primary School 11:30-12:00 Lesson Observation 12:00-13:15 Interview with CT and Teachers of Gikurune Primary School 13:30 Depart Imenti South 18:30 Arrive at Nairobi	Nairobi
12	26-Jul	Fri	11:00-13:00 Interview with Director, Deputy Director and Officer of TSC	Nairobi
13	27-Jul	Sat	Report writing	Nairobi
14	28-Jul	Sun	Report writing	Nairobi
15	29-Jul	Mon	07:00 Depart Nairobi 10:00 Arrive at Makueni 10:15-10:45 Interview with CQASO 10:45-11:15 Interview with Makueni County Director of TSC 11:15-12:30 Interview with Deputy DEO and DQASO of Makueni District 13:45-14:00 School Observation of Makueni Boys High School 14:00-15:00 Lesson Observation 15:00-16:00 Interview with District Trainers and M&S Teachers of Makueni Boys High School 16:00-17:15 Interview with Principal of Makueni Boys High School	Wote
16	30-Jul	Tue	07:00 Depart Makueni 10:30 Arrive at Kajiado 10:45-12:15 Interview with DEO and TAC tutors of Kajiado Central District 13:30-14:00 Interview with Deputy Principal of Kajiado Township Primary School 14:00-14:40 Lesson Observation 14:40-15:30 Interview with CT and Teachers of Kajiado Township Primary School 15:45 Depart Kajiado 18:00 Arrive at Nairobi	Nairobi
17	31-Jul	Wed	09:00-11:00 Interiview with Directors and Deputy Directors of MOEST	Nairobi

Date			Progression	Stay
18	1-Aug	Thu	Report writing	Nairobi
19	2-Aug	Fri	Report writing	Nairobi
20	3-Aug	Sat	Drafting Minutes of Meeting	Nairobi
21	4-Aug	Sun	10:45-20:00 Discussion on Minutes of Meeting among Evaluation Team	Nairobi
22	5-Aug	Mon	14:00-22:00 Discussion on Evaluation Report with JICA Experts	Nairobi
23	6-Aug	Tue	09:00-17:30 Discussion on Evaluation Report with CEMASTEA and MOEST	Nairobi
24	7-Aug	Wed	07:00-12:00 Discussion on Evaluation Report with CEMASTEA and MOEST	Nairobi
25	8-Aug	Thu	08:00-15:30 Revising Minutes of Meeting 16:30-17:30 Signing Minutes of Meeting 18:00-19:00 Report to JICA Kenya Office	Nairobi
26	9-Aug	Fri	Revising report	Nairobi
27	10-Aug	Sat	13:00 Depart Nairobi	In-flight
28	11-Aug	Sun	17:50 Arrive at Tokyo	

Annex 2: List of Interviewees (Kenya Component)

Name	Title/Position
MOEST	
Ms. Margaret Thiongo	Director, Field & Other Services
Mr. Darius Mogaka Ogutu	Senior Deputy Director, Field & Other Services
Mr. Charles Kanja	Senior Quality Assurance and Standards Officer, Field & Other Services
Mr. M. M. Mwinyipembe	Acting Director, Quality Assurance and Standards
Mr. Fidelis Nakhulo	Deputy Director, Quality Assurance and Standards
Mr. Simon W. Mururi	Assistant Director, Quality Assurance and Standards
Mr. Stephen T. Mogoba	Assistant Director, Quality Assurance and Standards
Mr. Orwa M. Ondego	Acting Senior Deputy Director, Secondary and Tertiary Education
Mr. Mboguah Stephen	Acting Senior Assistant Director, Secondary and Tertiary Education
CEMASTEA	
Mr. Moses Kawa	Acting Director
Ms. Lydia Muriithi	Acting Deputy Director
Mr. Patrick Kogolla	Coordinator of Academic Programme
Mr. James Mathenge	Deputy Coordinator of Academic Programme
Mr. Samuel Gachuhi	Coordinator of Primary Committee
Mr. George Kiruja	Deputy Coordinator of Primary Committee
Ms. Amina Sharbaidi	Primary Committee Member
Mr. Joseph Kuria	Primary Committee Member
Mr. John Mungai	Primary Committee Member
Ms. Nancy Nui	Coordinator of Secondary Committee
Mr. Fred Odindo	Deputy Coordinator of Secondary Committee
Ms. Rahab Chiira	Secondary Committee Member
Ms. Beatrice Olukutukei	Secondary Committee Member
Mr. Daiel Matiri	Secondary Committee Member
Mr. Paul Kibanya	Secondary Committee Member
Mr. Ernest Ng'eny	Coordinator of R&D Committee
Ms. Mary Sichangi	Deputy Coordinator of R&D Committee
Mr. John Odhiambo	R&D Committee Member
Mr. Simon Mugo	R&D Committee Member
Mr. Richard Jakomanyo	R&D Committee Member
TSC	
Ms. Nancy Njeri Macharia	Director (Teacher Management)
Ms. Mary Rotich	Senior Deputy Director (Teacher Management)
Mr. Hilary Lukhafwa	Quality Assurance and Standards/Teacher Registration
Meru County	
Mr. Francis Ngware	Director, TSC
Imenti North District	
Ms. Anne Githaiga	DEO
Mr. Peter Mbaya Ikunyua	DQASO
Ms. Faith Kobia	TAC Tutor
Mr. Julius P. Kithure	TAC Tutor
Ms. Celiana Kanini Kinoti	TAC Tutor
Ms. Rosemary Njagi	Principal, Meru PTTC
Dr. Roselinda Njokah	Deputy Principal, Meru PTTC

Name	Title/Position
Ms. Verasia Riungu	DOC, Meru PTTC
Ms. Julia Mbaabu	HOD-Math, Meru PTTC
Mr. Josphat Kimuthuri	Head Teacher, Kaaga Primary School
Ms. Hellen I Mutunga	Deputy Head Teacher, Kaaga Primary School
Ms. Rose K. Murega	Teacher, Kaaga Primary School
Ms. Flora G.G. Kiuna	Teacher, Kaaga Primary School
Ms. Florence M. Wambua	Teacher, Kaaga Primary School
Imenti South District	
Mr. David K Ntuara	DEO
Mr. Benson W. Njoroue	DQASO
Ms. Agnes Igoki Mputhia	TAC Tutor
Mr. Chabari	TAC Tutor
Mr. Elias Majau	TAC Tutor
Mr. Charles Kmathi	TAC Tutor
Ms. Charity Kinyuru	TAC Tutor
Ms. Jean I. Kivuti	Principal, Egoji PTTC
Ms. Susan M. Gukonda	Acting DOC, Egoji PTTC
Mr. Gatitu S. Muriithi	HOD-Math, Egoji PTTC
Mr. Murithi Nojo	Tutor, Egoji PTTC
Ms. Julia Mutuiru	Tutor, Egoji PTTC
Mr. Elias Mbaabu	Head Teacher, Gikurune Primary School
Ms. Kaimuri George	Teacher, Gikurune Primary School
Ms. Aniceta Meme	Teacher, Gikurune Primary School
Mr. Denis Ngaive	Head Teacher, Geeto Primary School
Makueni County	
Mr. Geoffrey Kimani	CQASO
Ms. Mary Karitu	Director, TSC
Makueni District	
Mr. Simon K. Mulwa	Deputy DEO
Mr. Simon K Mutemi	DQASO
Mr. Benson Manoo	Principal, Makueni Boys High School
Ms. Josephine K. Nthiwa	Teacher, Makueni Boys High School
Ms. Rose N. Malely	Teacher, Makueni Boys High School
Mr. Muia Naum	Teacher, Makueni Boys High School
Ms. Josephine Wambua	Teacher, Makueni Boys High School
Mr. Pius M. Muisa	Teacher, Makueni Boys High School
Ms. Katei E. N.	Teacher, Makueni Boys High School
Mr. Esastus Kimetu	Teacher, Makueni Boys High School
Mr. Krbanus K Mutuku	Teacher, Makueni Boys High School
Mr. Peter N Munywoki	Teacher, Makueni Boys High School
Ms. Mushoki	Teacher, Makueni Boys High School
Kajiado Central District	
Mr. Odhiambo S. Duncan	DEO
Mr. Moses Sutek	Deputy Head Teacher, Kajiado Township Primary School
Ms. Lucy Gichuru	Teacher, Kajiado Township Primary School
Ms. Mwangi Milliam	Teacher, Kajiado Township Primary School
JICA Kenya Office	
Mr. Samuel K. Kibe	Consultant (Education)
JICA Experts	
Mr. Atsushi Matachi	Chief Advisor
Mr. Motoe Nakajima	Deputy Chief Advisor / WECSA Advisor

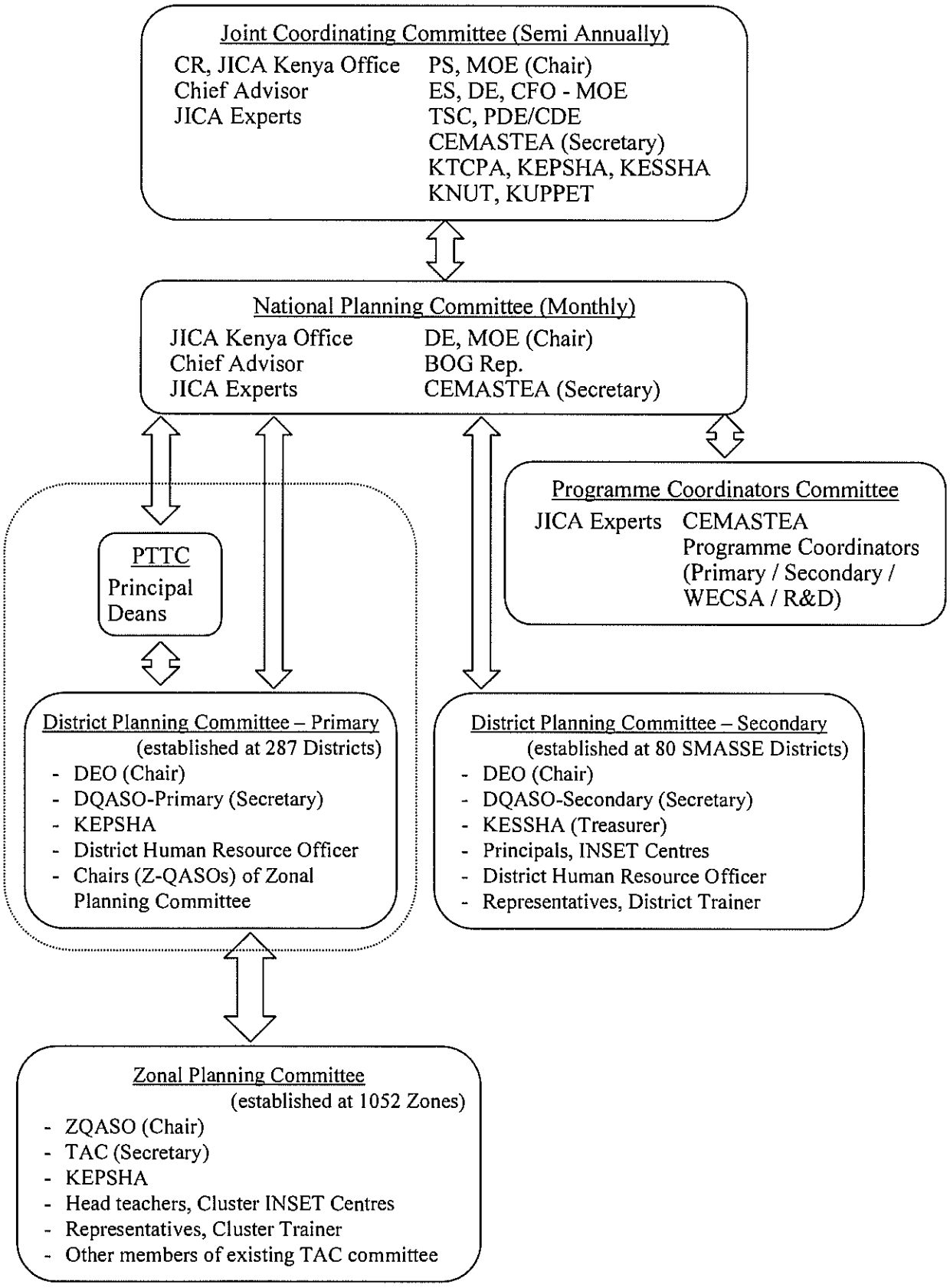
Name	Title/Position
Ms. Hazuki Uchiyama	Subjects Advisor (Science Education)
Mr. Kenji Ohira	Project Coordinator II / INSET Management
Mr. Noriaki Tanaka	Project Coordinator I

Annex 3: Plan of Operation (Kenya Component)

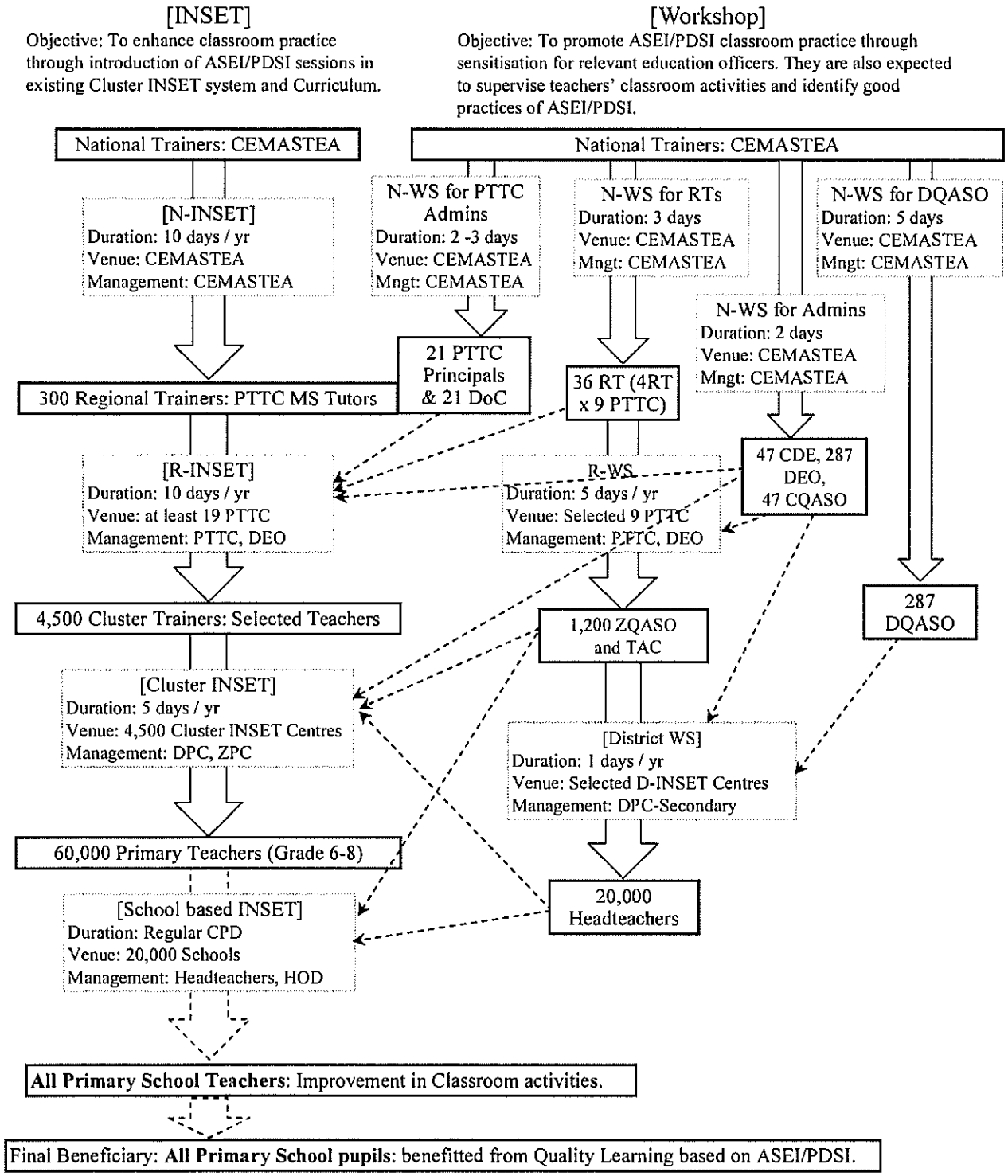
Output	Activities	2009	2010	2011	2012	2013
1. A system of National INSET for Regional Trainers is established at CEMASTEA.	1) To assess INSET training needs of primary M/S teachers					
	2) To develop manuals and materials for National/Regional/Cluster INSET					
	3) To develop/review monitoring and evaluation tools for National/Regional/Cluster INSET.					
	4) To conduct National INSET to develop the capacity of RT at CEMASTEA					
	5) To organise workshops for PTTC Principals and Deans of Curriculum/heads of M/S department on understanding of SMASE INSET & ASEI/PDSI classroom practices					
	6) To get evaluation from participants on quality of National INSET					
	7) To carry out monitoring and evaluation on impact of National INSET by National trainers					
2. A system of Regional INSET and Regional workshop is established at PTTCs.	1) To conduct national sensitisation workshop for DEO and QASO					
	2) To select Cluster Trainer.					
	3) To provide PTTCs with training materials/apparatus as necessary for regional INSET and workshop					
	4) To develop the workshop contents and materials by CEMASTEA					
	5) To organise Reginonal workshops for ZQASOs and TAC tutors.					
	6) To conduct Regional INSET for Cluster Trainers at PTTCs.					
	7) To carry out monitoring and evaluation on quality of Regional INSET					
	8) To carry out monitoring and evaluation on impact of Regional INSET.					
	9) To collect and analyse implementation reports made by PTTC					
3. Existing system of Cluster INSET is strengthened.	1) To provide training materials/apparatus as necessary for Cluster INSET and District Workshop.					
	2) To conduct cluster INSET.					
	3) To conduct District workshop for Head teachers.					
	4) To carry out monitoring and evaluation on quality of the cluster INSET.					
	5) To carry out monitoring and evaluation on the impact of cluster INSET and ASEI/PDSI classroom practices.					
	6) To collect and analyse implemantation reports made by DPCs					
	7) To develop the handbook for primary INSET system in accordance with MOE policy					
4. Secondary M/S teachers' ASEI/PDSI practices in classroom are enhanced.	1) To assess the current situation of M/S teachers' ASEI/PDSI classroom practices.					
	2) To develop INSET content for lesson study.					
	3) To assess the current situation of capacity of school leadership on supervision of ASEI/PDSI classroom practices.					
	4) To develop the workshop content for principals.					
	5) To conduct workshops for County Director of Education, DEO, county and District QASOs to develop the capacity to conduct workshops for principals at District level.					
	6) To conduct workshops to support secondary principals in promoting lesson study and ASEI-PDSI practices in the classroom.					
	7) To develop a guidebook on Lesson Study					
	8) To work with model schools on Lesson Study					
	9) To carry out monitoring and evaluation on ASEI/PDSI classroom practices					
	10) To carry out SPIAS.					
5. Role of CEMASTEA as resource centre for M/S education is strengthened.	1) To revise/ refine existing Primary INSET materials as self-explanatory materials for publication.					
	2) To degitize the revised materials					
	3) To identify good ASEI-PDSI practices					
	4) To organise symposia on good ASEI/PDSI classroom practices.					
	5) To compile good practices of ASEI/PDSI and disseminate.					

Annex 4: Project Implementation Structure (Kenya Component)

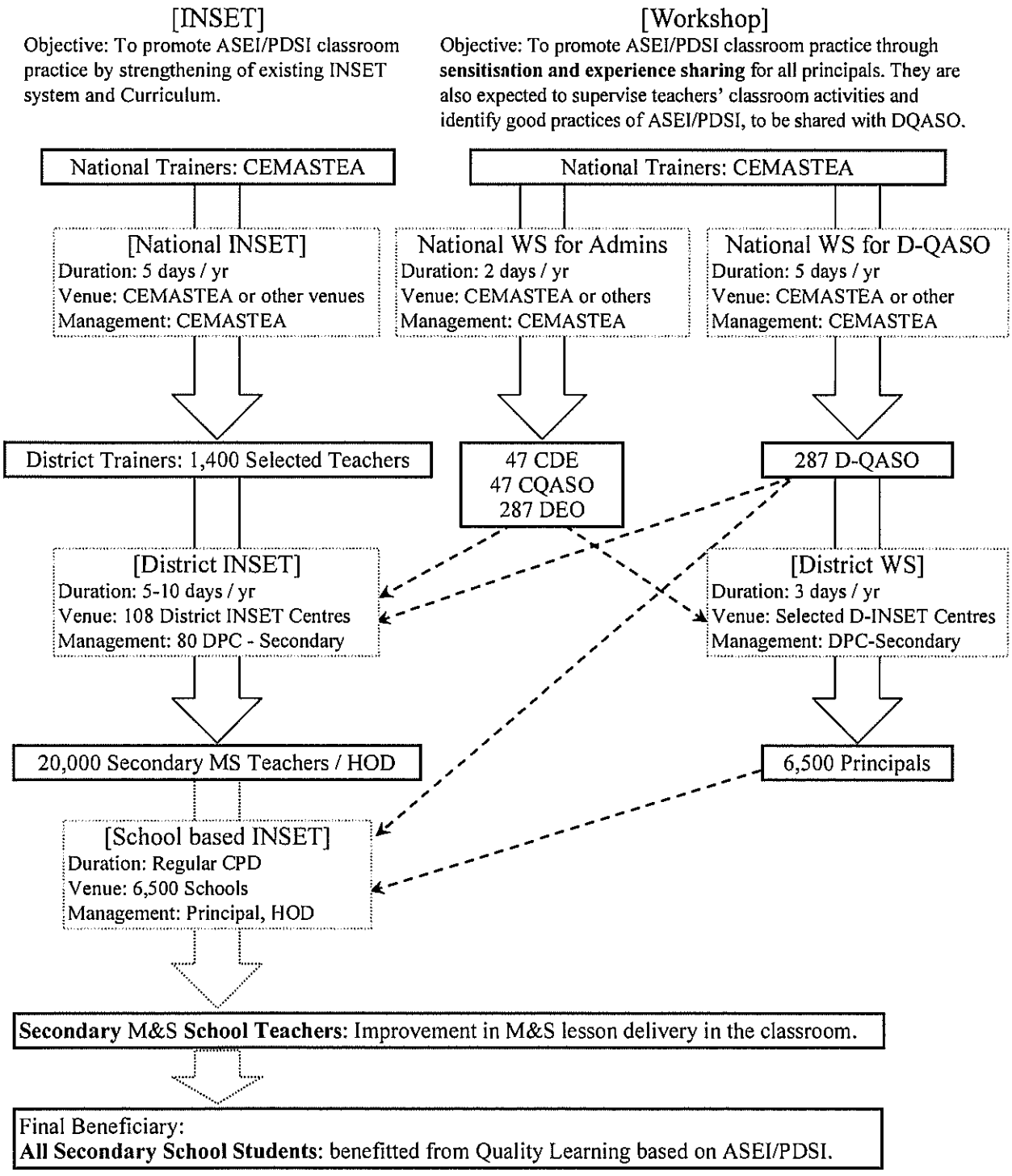
4-1 Management Structure



4-2 INSET and Workshop Structure at Primary Level



4-3 INSET and Workshop Structure at Secondary Level



Annex 5: List of Inputs (Kenya Component)

5-1 JICA Experts

<Long-term Experts>

No.	Name	Assignment	Period Dispatched to Kenya
1	Mr. Keiichi Naganuma	Chief Advisor	2009/01/01~2012/06/30
2	Ms. Hazuki Uchiyama	Subjects Advisor (Science Education)	2009/01/01~2013/12/31
3	Mr. Noriaki Tanaka	Project Coordinator I	2009/05/09~2013/12/31
4	Mr. Shimpei Taguchi	Subjects Advisor (Mathematics Education)	2009/06/22~2011/06/21
5	Mr. Atsushi Matachi	Academic Advisor	2010/08/10~2012/06/30
6	Mr. Atsushi Matachi	Chief Advisor	2012/07/01~2013/12/31
7	Mr. Kenji Ohira	Project Coordinator II/ INSET Management	2012/06/22~2013/12/31
8	Mr. Motoe Nakajima	Deputy Chief Advisor/ WECSA Advisor	2012/10/14~2013/12/31

<Short-term Experts>

No.	Name	Assignment	Period Dispatched to Kenya
1	Mr. Atsushi Matachi	Academic Advisor	2009/01/11~2009/01/25
			2009/05/17~2011/06/05
2	Mr. Masahiro Hattori	Evaluation	2009/02/28~2009/03/24
3	Mr. Norito Mitsunaga	Curriculum Development	2009/05/10~2009/08/06

5-2 Participants of Training in Japan and Malaysia

No.	Name	Training Course	From	To
1	Mr. Paul Kithinji MWONGERA	Teacher Education for Basic Education of African Countries	2011/10/24	2011/11/27
2	Mr. Robert Mebusi OMBASA	INSET Management in Africa (Anglophone and Francophone Countries) b	2011/11/15	2011/12/15
3	Ms. Sela Mwenya MUNIAFU	INSET Management in Africa (Anglophone and Francophone Countries) b	2011/11/15	2011/12/15
4	Ms. Alice Cherotich KIRUI	INSET Management in Africa (Anglophone and Francophone Countries) b	2011/11/15	2011/12/15
5	Mr. Eliud Onyango OWINO	INSET Management in Africa (Anglophone and Francophone Countries) b	2011/11/15	2011/12/15
6	Mr. Alex Kinoti IMANYARA	INSET Management in Africa (Anglophone and Francophone Countries) b	2011/11/15	2011/12/15
7	Mr. Charles Murimi KANJA	Improving Mathematics and Science Lessons in Primary Schools	2011/11/8	2011/12/10
8	Mr. Samuel Kamami GACHUHI	Improving Mathematics and Science Lessons in Primary Schools	2011/11/8	2011/12/10
9	Ms. Amina S. Mohammed SHARBAIDI	Improving Mathematics and Science Lessons in Primary Schools	2011/11/8	2011/12/10
10	Mr. Joseph Kairu KARUGA	Improving Mathematics and Science Lessons in Primary Schools	2011/11/8	2011/12/10
11	Ms. Regina Mbithe MULWA	Improving Mathematics and Science Lessons in Primary Schools	2011/11/8	2011/12/10
12	Mr. Fuad Abdalla ALI	Improving Mathematics and Science Lessons in Primary Schools	2011/11/8	2011/12/10
13	Ms. Anne Judith KIBERA	Improving Mathematics and Science Lessons in Primary Schools	2011/11/8	2011/12/10
14	Mr. Peter Harrison GATIMU	Improving Mathematics and Science Lessons in Primary Schools	2011/11/8	2011/12/10
15	Ms. Susan MBUVI	Improving Mathematics and Science Lessons in Primary Schools	2011/11/8	2011/12/10
16	Ms. Mary Medza BAYA	Improving Mathematics and Science Lessons in Primary Schools	2011/11/8	2011/12/10
17	Mr. Benson Wakaba NJOROGE	Improving Mathematics and Science Lessons in Primary Schools	2011/11/8	2011/12/10
18	Ms. Agnes Igoki MPUTHIA	Improving Mathematics and Science Lessons in Primary Schools	2011/11/8	2011/12/10
19	Mr. Agostino Kiogoro KINOTI	Improving Mathematics and Science Lessons in Primary Schools	2011/11/8	2011/12/10
20	Mr. Catherine Martha KIYIAPI	Improving Mathematics and Science Lessons in Primary Schools	2011/11/8	2011/12/10
21	Mr. Muhyadin Shide DAGANE	Improving Mathematics and Science Lessons in Primary Schools	2011/11/8	2011/12/10
22	Mr. Mohamed Dumal KEDHI	Improving Mathematics and Science Lessons in Primary Schools	2011/11/8	2011/12/10
23	Mr. Moses Karunda KIARIE	Improving Mathematics and Science Lessons in Primary Schools	2011/11/8	2011/12/10
24	Mr. Roberts Osano OBIRI	Improving Mathematics and Science Lessons in Primary Schools	2011/11/8	2011/12/10
25	Mr. Daniel Ottiali AMUKHUMA	Improving Mathematics and Science Lessons in Primary Schools	2011/11/8	2011/12/10

No.	Name	Training Course	From	To
26	Mr. Joseph Kiprob KIRUI	Improving Mathematics and Science Lessons in Primary Schools	2011/11/8	2011/12/10
27	Mr. Thomas Lutumbi SHIUNDU	Improving Mathematics and Science Lessons in Primary Schools	2011/11/8	2011/12/10
28	Mr. Albert Munuya OKUMU	Improving Mathematics and Science Lessons in Primary Schools	2011/11/8	2011/12/10
29	Mr. Kimathi M'NKANATA	Strengthening of Local Education for SMASE-WECSA in Sub-Saharan Africa	2012/1/15	2012/2/10
30	Mr. Cherutich Chesire BEREGGE	Strengthening for Implementation Capability of Development Training under South-South Cooperation	2012/1/29	2012/2/4
31	Mr. Moses Ndelela MASOKA	Strengthening for Implementation Capability of Development Training under South-South Cooperation	2012/1/29	2012/2/4
32	Mr. Abel Mulandi MUTO	Practical Human Resource Development IN Electrical and Electronic Engineering for Africa	2012/7/22	2012/9/22
33	Mr. Simon Njeru MUGOH	Seminar for Mathematics Lesson Evaluation	2012/8/22	2012/9/15
34	Ms. Betty Naliaka SIMIYU	Seminar for Mathematics Lesson Evaluation	2012/8/22	2012/9/15
35	Mr. Joseph KAMAU	Improvement of Lesson Evaluation in Science for English-speaking Sub-Sahara African Countries	2012/9/3	2012/9/29
36	Mr. Ernest Kiprono NGENY	Improvement of Lesson Evaluation in Science for English-speaking Sub-Sahara African Countries	2012/9/3	2012/9/29
37	Mr. Felix George KIRUJA	Improvement of Lesson Evaluation in Science for English-speaking Sub-Sahara African Countries	2012/9/3	2012/9/29
38	Mr. Sebastian Muli SAUSI	Strengthening Mathematics and Science Education (smase)	2012/11/8	2012/12/8
39	Ms. Jane Musimbi LOCHO	Strengthening Mathematics and Science Education (smase)	2012/11/8	2012/12/8
40	Ms. Gladys Aliviza MWUGUSI	Strengthening Mathematics and Science Education (smase)	2012/11/8	2012/12/8
41	Ms. Rosemary Njura NYAGA	Strengthening Mathematics and Science Education (smase)	2012/11/8	2012/12/8
42	Mr. John Livingstone MAKANDA	Strengthening Mathematics and Science Education (smase)	2012/11/8	2012/12/8
43	Ms. Rose Wangui MACHARIA	Strengthening Mathematics and Science Education (smase)	2012/11/8	2012/12/8
44	Ms. Alice Kemunto GICHANA	Strengthening Mathematics and Science Education (smase)	2012/11/8	2012/12/8
45	Mr. Fredrick Ondiek OBUNDE	Strengthening Mathematics and Science Education (smase)	2012/11/8	2012/12/8
46	Mr. Benson Muvaka MUASYA	Strengthening Mathematics and Science Education (smase)	2012/11/8	2012/12/8
47	Mr. Hezekiah Kiptoo BOIT	Strengthening Mathematics and Science Education (smase)	2012/11/8	2012/12/8
48	Ms. Rosemary Akinyi OKODE	Strengthening Mathematics and Science Education (smase)	2012/11/8	2012/12/8
49	Mr. Paul Kariuki MUNGAI	Strengthening Mathematics and Science Education (smase)	2012/11/8	2012/12/8
50	Mr. Jeremiah Ananda MAHINDU	Strengthening Mathematics and Science Education (smase)	2012/11/8	2012/12/8
51	Mr. Abdirahman Mohamed OSMAN	Strengthening Mathematics and Science Education (smase)	2012/11/8	2012/12/8
52	Mr. Patrick Muchiri IRERI	Strengthening Mathematics and Science Education (smase)	2012/11/8	2012/12/8
53	Ms. Jane Wairimu KURIA	Strengthening Mathematics and Science Education (smase)	2012/11/8	2012/12/8

No.	Name	Training Course	From	To
54	Mr. Harrison Maluki NYUMU	Strengthening Mathematics and Science Education (smase)	2012/11/8	2012/12/8
55	Mr. Daud Mahamed HUSSEIN	Strengthening Mathematics and Science Education (smase)	2012/11/8	2012/12/8
56	Ms. Esther Wanjiku KIMANI	Strengthening Mathematics and Science Education (smase)	2012/11/8	2012/12/8
57	Ms. Alice Wanjugu MOKO	Strengthening Mathematics and Science Education (smase)	2012/11/8	2012/12/8
58	Mr. Robert Musungu MURAKWA	Strengthening Mathematics and Science Education (smase)	2012/11/8	2012/12/8
59	Ms. Beatrice Ambogo GUNA	Strengthening Mathematics and Scieuce Education (smase)	2012/11/8	2012/12/8
60	Mr. Matthews Isutsa ABOKA	INSET Management in Africa (Anglophone Countries)	2012/11/20	2012/12/20
61	Mr. Moses Otieno KAWA	INSET Management in Africa (Anglophone Countries)	2012/11/20	2012/12/20
62	Mr. Pius Mutisya KIMANI	INSET Management in Africa (Anglophone Countries)	2012/11/20	2012/12/20
63	Mr. Fidelis Joseph NAKHULO	INSET Management in Africa (Anglophone Countries)	2012/11/20	2012/12/20
64	Mr. Milton Mwanyumba MOCAH	Strengthening of Local Education for SMASE-WECSA in SUB-SAHARAN AFRICA	2013/1/14	2013/2/9

Note: The list of participants from 2009 to September 2011 can be found in the Mid-term Review Report.

5-3 Equipment Provided by JICA

No.	Item	Specification	Qty	Supplier	KSH		Total Amount	JFY
					Unit Price	Sub Total		
1	Printing Paper	A4, 80g/m	330	Lino Stationers Africa Limited	300.00	99,000.00	8,550,372.00	2011
2	Looseleaf Pad	A4, Ruled	69,000	Lino Stationers Africa Limited	32.80	2,263,200.00		2011
3	Biro Pen (Black)	Bic Biro Pen (Black), Ordinary	34,500	Lino Stationers Africa Limited	7.70	265,650.00		2011
4	Biro Pen (Blue)	Bic Biro Pen (Blue), Ordinary	34,500	Lino Stationers Africa Limited	7.70	265,650.00		2011
5	Pencil	Original Steadtler HB110	60,000	Lino Stationers Africa Limited	21.40	1,284,000.00		2011
6	Eraser	Pelican Radiere Eraser BR180	60,000	Lino Stationers Africa Limited	4.70	282,000.00		2011
7	Document Wallet	Clear Bag/PVC	69,000	Lino Stationers Africa Limited	16.00	1,104,000.00		2011
8	Chalks	Dustress, Assorted Color	4,600	Lino Stationers Africa Limited	28.50	131,100.00		2011
9	Chalks	Dustress, White	4,600	Lino Stationers Africa Limited	27.50	126,500.00		2011
10	Flip Chart	Booklet (50 pcs of paper/chart)	5,053	Lino Stationers Africa Limited	220.00	1,111,660.00		2011
11	Felt Pen	SNOWMAN MARKER (Assorted)	56,772	Lino Stationers Africa Limited	22.00	1,248,984.00		2011
12	Blue Tac	Cambridge	4,726	Lino Stationers Africa Limited	78.00	368,628.00		2011
13	Manila Paper	Standard Size, Assorted Color	165,600	Image Plus Limited	7.90	1,308,240.00	13,950,380.00	2011
14	Manila Paper	Standard Size, White	43,200	Image Plus Limited	7.90	341,280.00		2011
15	Felt Pen	Assorted Color	4,600	Image Plus Limited	189.00	869,400.00		2011
16	30-cm Ruler	Plastic, as per sample	23,000	Image Plus Limited	10.90	250,700.00		2011
17	Geometrical Set	Genuine oxford	4,600	Image Plus Limited	105.00	483,000.00		2011
18	Crayon	Wax Crayons, Non-Toxic, as per sample	4,600	Image Plus Limited	16.50	75,900.00		2011
19	Paper Plate	Appro. 15cm diameter, Thin Plastic、as per sample	27,600	Image Plus Limited	4.00	110,400.00		2011
20	Meter Ruler	Thin, Wooden, as per sample	4,600	Image Plus Limited	209.00	961,400.00		2011
21	Thread/string	as per sample	4,600	Image Plus Limited	75.00	345,000.00		2011
22	Set Square	Plastic, as per sample	4,600	Image Plus Limited	255.00	1,173,000.00		2011
23	Dividers (Compass)	Plastic, as per sample	4,600	Image Plus Limited	255.00	1,173,000.00		2011
24	Protractor	Plastic, as per sample	4,600	Image Plus Limited	280.00	1,288,000.00		2011
25	Glue	Pritt stick, 40gsm	4,600	Image Plus Limited	81.00	372,600.00		2011
26	Cello Tape	Medium size, 1 Inch	4,600	Image Plus Limited	16.50	75,900.00		2011

No.	Item	Specification	Qty	Supplier	KSH		Total Amount	JFY
					Unit Price	Sub Total		
27	Masking Tape	Medium size, 1 Inch	9,200	Image Plus Limited	81.00	745,200.00		2011
28	Polythene Paper	Transparent, A4, as per sample	115,000	Image Plus Limited	4.00	460,000.00		2011
29	Scalpel	Size 23	9,200	Image Plus Limited	3.00	27,600.00		2011
30	Hand Lenses /Magnifying Glasses	Standard, Magnification Higher than 10, as per sample	23,000	Image Plus Limited	50.00	1,150,000.00		2011
31	Dry Cell	Size D	46,000	Image Plus Limited	40.00	1,840,000.00		2011
32	Connecting Wire	Separate, Black, 30cm, as per sample	23,000	Image Plus Limited	8.80	202,400.00		2011
33	Connecting Wire	Separate, Red, 30cm, as per sample	23,000	Image Plus Limited	8.80	202,400.00		2011
34	Torch Bulb	2.5V	46,000	Image Plus Limited	7.00	322,000.00		2011
35	Steel Wool	Dish washing type	4,600	Image Plus Limited	5.30	24,380.00		2011
36	Match Box	safety matches	4,600	Image Plus Limited	2.30	10,580.00		2011
37	Melody Card	as per sample	4,600	Image Plus Limited	30.00	138,000.00		2011
38	Printing Paper	A4, 80g/m	2,025	Image Plus Limited	333.00	674,325.00		2011
39	Loose-leaf Pad	A4, Ruled	20,285	Image Plus Limited	38.75	786,043.75		2011
40	Pen (Black)	Bic Biro Pen (Black), Ordinary	10,140	Image Plus Limited	8.80	89,232.00		2011
41	Pen (Blue)	Bic Biro Pen (Blue), Ordinary	10,145	Image Plus Limited	8.80	89,276.00		2011
42	Document Wallet	Clear Bag/PVC	20,285	Image Plus Limited	18.00	365,130.00	3,438,486.75	2011
43	Flip Chart	Booklet (50 pcs of paper/chart)	108	Image Plus Limited	250.00	27,000.00		2011
44	Felt pen	Assorted Color	108	Image Plus Limited	170.00	18,360.00		2011
45	Masking Tape	Medium Size, 2 Inch	108	Image Plus Limited	95.00	10,260.00		2011
46	Set Square (45 degree)	Plastic, For Teacher	4,690	Image Plus Limited	294.00	1,378,860.00		2011
47	Geometrical Sets	Helix Oxford set of Mathematical Instruments	630	Image Plus Limited	125.00	78,750.00		2011
48	Manila paper	160 gms/Assorted, A1	2,640	Image Plus Limited	12.00	31,680.00		2011
49	Cotton Thread	Cotton twine, as per sample	220	Image Plus Limited	78.00	17,160.00		2011
50	Felt pen	SNOWMAN, Assorted	215	Image Plus Limited	204.00	43,860.00		2011
51	Pins	Ordinary, 100/pkt	215	Image Plus Limited	18.00	3,870.00	13,603,096.00	2011
52	Blu Tac	Original	440	Image Plus Limited	165.00	72,600.00		2011
53	Rulers	Plastic, 100 cm	4,815	Image Plus Limited	160.00	770,400.00		2011
54	Beaker	Plastic, 1000MLS, as per sample	5,260	Image Plus Limited	230.00	1,209,800.00		2011
55	Soma cubes	1Inch by 1Inch by 1Inch, as per sample	9,900	Image Plus Limited	15.00	148,500.00		2011

No.	Item	Specification	Qty	Supplier	KSH		Total Amount	JFY
					Unit Price	Sub Total		
56	Thermometers	Ordinary, Celsius (Centigrade), as per sample	14,445	Image Plus Limited	110.00	1,588,950.00		2011
57	Chalk	Dustless, Assorted colours	215	Image Plus Limited	40.00	8,600.00		2011
58	Spring balance- Range (0-5)N	Standard, Range (0-5)N, as per sample	9,630	Image Plus Limited	600.00	5,778,000.00		2011
59	Magnet	Bar magnet, 4 Inch, as per sample	9,630	Image Plus Limited	250.00	2,407,500.00		2011
60	Aluminium Foil	Standard	215	Image Plus Limited	120.00	25,800.00		2011
61	Candle	Standard, as per sample	1,290	Image Plus Limited	140.00	180,600.00		2011
62	Plasticine (Modeling Clay)	Bars, Assorted	645	Image Plus Limited	90.00	58,050.00		2011
63	Soft boards	1m x 1m, as per sample	645	Image Plus Limited	470.00	303,150.00		2011
64	Thumb pins	50/Packet	215	Image Plus Limited	20.00	4,300.00		2011
65	Printing Paper	A4, 80g/m	592	Image Plus Limited	340.00	201,280.00		2011
66	Loose-leaf Pad (A4)	A4, Ruled	5,920	Image Plus Limited	41.00	242,720.00		2011
67	Pen	Bilo Pen	5,920	Image Plus Limited	8.80	52,096.00		2011
68	Pencil	HB Steadler	5,920	Image Plus Limited	35.00	207,200.00		2011
69	Eraser	Pelican BR80	5,920	Image Plus Limited	10.00	59,200.00		2011
70	Document Wallet	Plastic, Clear Bag/ per sample	5,920	Image Plus Limited	18.00	106,560.00		2011
71	Masking Tape	White, 2 Inch	26	Image Plus Limited	95.00	2,470.00		2011
72	Geometrical Sets	Helix Oxford set of Mathematical Instruments	13,500	Image Plus Limited	120.00	1,620,000.00		2012
73	Manila paper	160 gms/Assorted, A1	54,000	Image Plus Limited	12.00	648,000.00		2012
74	Cotton Thread	Cotton twine, as per sample	4,500	Image Plus Limited	77.00	346,500.00		2012
75	Felt pen	SNOWMAN, Assorted	67,344	Image Plus Limited	17.00	1,144,848.00		2012
76	Pins	Ordinary, 100/pkt	4,500	Image Plus Limited	18.00	81,000.00		2012
77	Blu Tac	Original	10,000	Image Plus Limited	165.00	1,650,000.00		2012
78	Soma cubes	Plastic, 100 cm	202,500	Image Plus Limited	15.00	3,037,500.00	25,372,911.20	2012
79	Chalk	Plastic, 1000MLS, as per sample	4,500	Image Plus Limited	39.00	175,500.00		2012
80	Aluminium Foil	1Inch by 1Inch by 1Inch, as per sample	4,500	Image Plus Limited	120.00	540,000.00		2012
81	Single Pulley	Ordinary, Celsius (Centigrade), as per sample	63,000	Image Plus Limited	58.00	3,654,000.00		2012
82	Plasticine (Modeling Clay)	Dustless, Assorted colours	13,500	Image Plus Limited	76.00	1,026,000.00		2012
83	Soft boards	Standard, Range (0-5)N, as per sample	13,500	Image Plus Limited	470.00	6,345,000.00		2012
84	Thumb pins	Bar magnet, 4 Inch, as per sample	4,500	Image Plus Limited	65.00	292,500.00		2012

No.	Item	Specification	Qty	Supplier	KSH		Total Amount	JFY
					Unit Price	Sub Total		
85	Printing Paper	Standard	718	Image Plus Limited	338.00	242,684.00		2012
86	Loose-leaf Pad	Standard, as per sample	8,168	Image Plus Limited	40.00	326,720.00		2012
87	Pen	Bars, Assorted	67,168	Image Plus Limited	8.90	597,795.20		2012
88	Pencil	1m x 1m, as per sample	60,000	Image Plus Limited	27.00	1,620,000.00		2012
89	Eraser	50/Packet	60,000	Image Plus Limited	8.00	480,000.00		2012
90	Document Wallet	A4, 80g/m	67,168	Image Plus Limited	23.00	1,544,864.00		2012
91	Printing Paper	A4, 80g/m	2,125	Image Plus Limited	328	697,000.00	1,908,312.00	2012
92	Loose-leaf Pad	A4, Ruled	21,242	Image Plus Limited	33	690,365.00		2012
93	Pen (Black)	Bic Biro Pen (Black), Ordinary	10,621	Image Plus Limited	8	84,968.00		2012
94	Pen (Blue)	Bic Biro Pen (Blue), Ordinary	10,621	Image Plus Limited	8	84,968.00		2012
95	Document Wallet	Clear Bag/PVC	21,242	Image Plus Limited	16	329,251.00		2012
96	Felt pen	Assorted Color	128	Image Plus Limited	170	21,760.00		2012
97	Manila papers	Assorted colurs (5 colours)	1,050	Image Plus Limited	9.25	9,712.50	1,018,873.50	2012
98	Geometrical set	Oxford	420	Image Plus Limited	109.00	45,780.00		2012
99	Measuring tapes	200 cm	210	Image Plus Limited	390.00	81,900.00		2012
100	Chalk	Dustless, assorted colours with most being white	210	Image Plus Limited	36.00	7,560.00		2012
101	Graph papers	A-4	1,050	Image Plus Limited	2.30	2,415.00		2012
102	Candle	standard	210	Image Plus Limited	5.75	1,207.50		2012
103	Match box	Normal	210	Image Plus Limited	2.50	525.00		2012
104	Glue	Office glue	210	Image Plus Limited	20.00	4,200.00		2012
105	Plane mirrors	Normal (15cm by 10cm by 0.5cm)	1,260	Image Plus Limited	47.00	59,220.00		2012
106	String	Cotton thread (not for sewing but for kite)	210	Image Plus Limited	67.00	14,070.00		2012
107	Plasticine – different colours	normal	630	Image Plus Limited	65.00	40,950.00		2012
108	Crayons – red and blue	ordinary crayon	210	Image Plus Limited	24.00	5,040.00		2012
109	Manilla Papers Assorted colours	A1 size 60 gsm, 3 white, 1 red 1blue, 1 yellow 1 green	1,470	Image Plus Limited	9.25	13,597.50		2012
110	Transparent polythene bags	size of manila paper	840	Image Plus Limited	44.00	36,960.00		2012
111	Cellotape	Clear 1"inch	210	Image Plus Limited	20.00	4,200.00		2012
112	Masking tape	one and half inch	420	Image Plus Limited	72.00	30,240.00		2012
113	Scapels	normal surgical	420	Image Plus Limited	14.00	5,880.00		2012

No.	Item	Specification	Qty	Supplier	KSH		Total Amount	JFY
					Unit Price	Sub Total		
114	Printing Paper	A4, 80g/m	480	Image Plus Limited	328.00	157,440.00		2012
115	Loose-leaf Pad (A4)	A4, Ruled	5,920	Image Plus Limited	36.00	213,120.00		2012
116	Pen	Bilo Pen	4,800	Image Plus Limited	8.30	39,840.00		2012
117	Pencil	HB Steadler	4,800	Image Plus Limited	26.00	124,800.00		2012
118	Eraser	Pelican BR80	4,800	Image Plus Limited	6.70	32,160.00		2012
119	Document Wallet	Plastic, Clear Bag/ per sample	4,800	Image Plus Limited	18.00	86,400.00		2012
120	Masking Tape	White, 2 Inch	23	Image Plus Limited	72.00	1,656.00		2012
121	Manila papers	Assorted colours (5 colours)	22,500	Image Plus Limited	11.00	247,500.00	11,449,591.00	2012
122	Geometrical set	Oxford	9,000	Image Plus Limited	115.50	1,039,500.00		2012
123	Chalk	Dustless, assorted colours with most being white	4,500	Image Plus Limited	37.00	166,500.00		2012
124	Graph papers	A-4	22,500	Image Plus Limited	0.80	18,000.00		2012
125	Candle	Standard	4,500	Image Plus Limited	11.00	49,500.00		2012
126	Match box	Normal	4,500	Image Plus Limited	4.00	18,000.00		2012
127	Glue	Office glue	4,500	Image Plus Limited	14.70	66,150.00		2012
128	Cotton Thread (Twin)	Cotton thread (not for sewing but for kite)	4,500	Image Plus Limited	68.30	307,350.00		2012
129	Plasticine – different colours	Normal	13,500	Image Plus Limited	74.00	999,000.00		2012
130	Crayons – red and blue	Ordinary crayon	4,500	Image Plus Limited	27.00	121,500.00		2012
131	Manila Papers Assorted colours	A1 size 60 gsm, 3 white, 1 red 1blue, 1 yellow 1 green	31,500	Image Plus Limited	11.00	346,500.00		2012
132	Transparent polythene bags	size of manila paper	18,000	Image Plus Limited	42.00	756,000.00		2012
133	Cello tape	Clear 1"inch	4,500	Image Plus Limited	14.00	63,000.00		2012
134	Masking tape	One and half inch	9,000	Image Plus Limited	65.00	585,000.00		2012
135	Scalpels	Normal surgical	9,000	Image Plus Limited	7.35	66,150.00		2012
136	Printing Paper	A4, 80g/m	6,073	Image Plus Limited	336.00	2,040,528.00		2012
137	Loose-leaf Pad (A4)	A4, Ruled	58,162	Image Plus Limited	39.00	2,268,318.00		2012
138	Pen (Black)	Bilo Pen	30,381	Image Plus Limited	8.50	258,238.50		2012
139	Pen (Blue)	Bilo Pen	30,381	Image Plus Limited	8.50	258,238.50		2012
140	Felt Pen	SNOWMAN	45,192	Image Plus Limited	17.00	768,264.00		2012
141	Document Wallet	Plastic, Clear Bag/ per sample	36,962	Image Plus Limited	17.00	628,354.00		2012
142	Masking Tape	White, 2 Inch	4,500	Image Plus Limited	84.00	378,000.00		2012

5-4 Local Cost from Japanese Side

FY: from April to March, Unit: Kenya Shillings

Year	Amount
2009 (From January to March)	2,645,468.61
FY2009/2010	11,093,487.45
FY2010/2011	19,607,624.25
FY2011/2012	20,141,346.45
FY2012/2013	22,147,135.20
2013 (From April to June)	3,729,630.60
Total	79,364,692.56

5-5 Facilities Provided by Kenyan Side

No.	Facility		Quantity
1	Office blocks at CEMASTEA	Administration	2
		Accounts	1
		Physics Department	1
		Chemistry Department	1
		Mathematics Department	1
		Biology Department	1
2	Science Laboratories (24 participants seating capacity)	Biology	1
		Chemistry	1
		Physics	1
3	ICT Laboratory (40 participants seating capacity)		1
4	Lecture Rooms	Biology	1
		Chemistry	1
		Physics	1
		Mathematics	1
5	Hostels (46 Beds, Double occupancy)		2
6	Kitchen		1
7	Dining Hall (92 seating capacity)		1
8	Office Block (University of Nairobi Kenya Science Campus)		1
9	Regional INSET Centres		19
10	Cluster INSET Centres		4,196
11	District Centre		108
12	Staff Houses at CEMASTEA		13
13	Building at Kenya Science Campus		1
14	Storehouse at Kenya Science Campus (Room 47)		1
15	Container at Kenya Science Campus		1
16	Water and Electricity Supply at CEMASTEA and KSC		

5-6 Kenyan Counterparts

<MOEST>

No.	Name	Position	Position in Project
1	Dr. Belio R. Kipsang	Principal Secretary	Project Director
2	Mr. Kiragu Magochi	Education Secretary	National Project Coordinator
3	Ms. Margaret Thiongo	Director, Field & Other Services	SMASE Desk Officer
4	Mr. Darius Mogaka	Senior Deputy Director, Field & Other Services	SMASE Desk Officer
5	Mr. Charles Kanja	Senior Quality Assurance and Standards Officer, Field & Other Services	SMASE Desk Officer

<CEMASTEA>

No.	Name	Designation	
	ADMINISTRATION		
1	Mr. Moses O. Kawa	Ag. Director	
2	Ms. Lydia Muriithi	Ag. Deputy Director	
3	Mr. Patrick Kogolla	Coordinator of Academic Programme	
4	Mr. Joseph Kamau Mathenge	Deputy Coordinator of Academic Programme	
	BIOLOGY DEPARTMENT		
5	Ms. Mary W. Kariuki	Dean of Subject	Specialised Committee
6	Mr. George Kiruja Kiria	Head of Department	Primary
7	Ms. Amina Sharbaidi	Lecturer	Primary
8	Mr. Kizito Makoba	Lecturer	ICT
9	Mr. John Odhiambo	Lecturer	R&D
10	Mr. David Arimi	Lecturer	Secondary
11	Mr. Thuo Karanja	Lecturer	WECSA
12	Mr. Maina Nyingi	Lecturer	Secondary
	CHEMISTRY DEPARTMENT		
13	Mr. Samuel K. Gachuhi	Dean-Chemistry Department	Primary
14	Mr. Benjamin M. Kilonzo	Head of Department-Chemistry	Primary
15	Mr. Daniel Matiri	Lecturer	Secondary
16	Mr. Oduor Stephen	Lecturer	ICT

No.	Name	Designation	
17	Mr. Ndelela Masoka	Lecturer	WECSA
18	Mr. Isaac Gathambiri	Lecturer	Primary
19	Mr. David Kireru	Lecturer	Primary
20	Ms. Gladys Masai	Lecturer	Secondary
21	Mr. Richard Jakomanyo	Lecturer	R&D
22	Mr. John Mungai Njoroge	Lecturer	Primary
	MATHEMATICS DEPARTMENT		
23	Ms. Nancy Nui	Dean-Mathematics Department	Secondary
24	Mr. Fred Odindo	Head of Department-Mathematics	Secondary
25	Mr. Matembo Lukongo	Lecturer	Secondary
26	Mr. Simon Mugo	Lecturer	R&D
27	Mr. Joseph Kuria	Lecturer	Primary
28	Ms. Priscilla Ombati	Lecturer	WECSA
29	Ms. Rahab Chiira	Lecturer	Secondary
30	Ms. Beatrice Macharia	Lecturer	
31	Mr. Ogwel Ateng	Lecturer	Primary
	PHYSICS DEPARTMENT		
32	Mr. Chesire Beregge	Dean-Physics Department	WECSA
33	Mr. Makanda J. L	Head of Department-Physics	WECSA
34	Mr. George Gitau	Lecturer	Primary
35	Mr. Paul Kibanya	Lecturer	Secondary
36	Mr. Philip Maate	Lecturer	Secondary
37	Mr. Mutua Muyanga	Lecturer	ICT
38	Mr. Jacob Amimo	Lecturer	Primary
39	Ms. Beatrice Olutukei	Lecturer	Secondary
40	Mr. Kosgey Kipngetich J. H	Lecturer	Primary
41	Ms. Serah Njeri Mburu	Lecturer	ICT
	RESEARCH AND DEVELOPEMNT DEPARTMENT		
42	Mr. Ernest Ngeny	Dean-Research and Development	R&D
43	Ms. Mary Wakhaya Sichangi	Head of Department-Research and Development	R&D
	ICT DEPARTMENT		
44	Mr. Kithaka Njogu	Dean-ICT	ICT
45	Mr. Paul Waibochi	Head of Department-ICT	ICT

5-7 Local Cost from Kenyan Side

Development Fund

FY: from July to June, Unit: Kenya Shillings

Year	Amount
FY2009/2010	6,336,355.60
FY2010/2011	150,008,927.20
FY2011/2012	172,565,884.00
FY2012/2013	143,415,103.00
Total	472,326,269.80

Note: Amount during January – June 2009 is not available.

Reference Information: Estimated Amount of SMASSE Fund for District INSET

FY: from July to June, Unit: Kenya Shillings

Year	Amount
FY2009/2010	300,003,000.00
FY2010/2011	341,824,000.00
FY2011/2012	344,469,200.00
FY2012/2013	394,937,000.00
FY2013/2014	401,908,400.00

Annex 6: Results of Evaluation Grid (Kenya Component)

1. Achievements of the Project

<table>
<tr><th>Items</th><th>Indicators</th><th>Results</th></tr>
<tr><td colspan="3">Overall Goal</td></tr>
<tr><td rowspan="2">Capability of young Kenyans in Mathematics and Science is upgraded.</td><td>(a) Performance in National Examination at primary education (mean scores of KCPE) is improved.</td><td>The mean scores of mathematics and science of KCPE (Kenya Certificate of Primary Education) as of 2008, 2009, 2010 and 2011 are as follows. The mean scores of 2012 have not been published yet.

<table>
<tr><th>Subject</th><th>2008</th><th>2009</th><th>2010</th><th>2011</th></tr>
<tr><td>Mathematics</td><td>47.16</td><td>49.56</td><td>53.80</td><td>52.18</td></tr>
<tr><td>Science</td><td>55.24</td><td>59.92</td><td>60.86</td><td>67.48</td></tr>
</table>

The mean scores have been increasing both for mathematics and science. It should be noted, however, that the examination contents of KCPE change from year to year and the mean scores of KCPE change accordingly based on the degree of difficulty in the reference year. It is therefore necessary that the improvement of performance in the national examination at primary education should be measured based on not the mean scores of KCPE but other tools such as SPIAS of the secondary level. Or another appropriate indicator could be used.</td></tr>
<tr><td>(b) Results of SPIAS at the secondary level are improved compared with the ones conducted at the end of Phase 2.</td><td>The results of SPIAS (SMASSE Project Impact Assessment Survey) for the secondary level conducted in 2012 compared with those conducted in 2008 in terms of the following survey item are as follows.

<table>
<tr><th>Survey item: Change in the student's attitude, participation and achievement</th></tr>
<tr><td>- Student's attitude towards ASEI-PDSI and perception on ASEI-PDSI practice improved slightly between 2008 and 2012.
- Student's participation in ASEI-PDSI lesson also improved slightly between 2008 and 2012.
- While student's achievement in Biology and Physics subjects was average and maintained during 2008-2012 with slight decline, achievement in Chemistry and Mathematics subjects performed on average and maintained during 2008-2012 with slight improvement.</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Items</th><th>Indicators</th><th>Results</th></tr>
<tr><td></td><td></td><td>
The results of student's achievement are as follows.
<table>
<tr><th>Subject</th><th>2008</th><th>2012</th><th>Deviation</th></tr>
<tr><td>Biology</td><td>50.56</td><td>48.54</td><td>-2.02</td></tr>
<tr><td>Chemistry</td><td>50.49</td><td>52.74</td><td>+2.25</td></tr>
<tr><td>Physics</td><td>51.61</td><td>50.37</td><td>-1.24</td></tr>
<tr><td>Mathematics</td><td>46.15</td><td>46.18</td><td>+0.03</td></tr>
<tr><td>Mean</td><td>49.70</td><td>49.46</td><td>-0.24</td></tr>
</table>
Based on the above, the achievement level of this indicator was not clearly identified by the results of SPIAS since no significant difference was observed in the SPIAS results.
The results of other survey items are as follows.
<table>
<tr><td>Survey item: Improvement in the principal's management of mathematics and science education at school</td></tr>
<tr><td>- On resource management, although principal's self-evaluation indicated that they had a positive attitude in 2008, their attitude seemed to have faded away in 2012. They often promoted M&S education in 2008 while they sometimes do in 2012. Furthermore, principal's supervision of ASEI-PDSI practice to teachers got worse in 2012 compared to 2008. Teachers think that principals relatively often supervised their ASEI-PDSI practice in 2008 while in 2012 they rarely do so.</td></tr>
<tr><td>Survey item: Change in the teacher's INSET attendance, attitude towards teaching of mathematics and science and ASEI-PDSI practice</td></tr>
<tr><td>- The teacher's INSET attendance and attitude towards teaching of M&S as of 2012 have improved compared with those as of 2008. Meanwhile, the implementation of ASEI lesson and PDSI cycle did not reach the preferable score.</td></tr>
<tr><td>Survey item: Change in the facilitation and management of District INSET</td></tr>
<tr><td>- Although the process of facilitation by mathematics and science teachers and management of District INSET by DPC members have improved for better over the five year duration, the extent of management and facilitation has not yet reached the expected levels.</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Items</th><th>Indicators</th><th>Results</th></tr>
<tr><td colspan="3">Project Purpose</td></tr>
<tr><td rowspan="3">Quality of Mathematics and Science education at Primary and Secondary school levels in Kenya is strengthened through INSET.</td><td>(a) (Primary level) Lesson Innovation Index attains to 3.3 on a 0-4 scale.</td><td>Data on the Lesson Innovation Index for primary level in 2009, 2011 and 2013 are as follows.

<table><tr><th></th><th>2009</th><th>2011</th><th>2013</th></tr><tr><td>Mathematics</td><td>3.17</td><td>3.25</td><td>3.31</td></tr><tr><td>Science</td><td>3.28</td><td>3.20</td><td>3.26</td></tr></table>Sample numbers: 111 for Math, 82 for Science (2009), 78 for Math, 78 for Science (2011) and 38 for Math, 38 for Science (2013)

The data for mathematics in 2013 is more than 3.3 while the data for science in 2013 is less than 3.3.</td></tr>
<tr><td>(b) (Primary level) ASEI/PDSI Lesson Observation attains to 2.0 on a 0-4 scale.</td><td>Data on the ASEI/PDSI Lesson Observation for primary level in 2009, 2011 and 2013 are as follows.

<table><tr><th>2009</th><th>2011</th><th>2013</th></tr><tr><td>1.54</td><td>2.14</td><td>2.34</td></tr></table>Sample numbers: 202 (2009), 62 (2011) and 62 (2013)
Note: the tracking survey for 2011 and 2013

The data in 2011 and 2013 are more than 2.0 and reasonably increasing compared to that in 2009.</td></tr>
<tr><td>(c) (Primary level) Student Participation Index attains to 2.5 on a 0-4 scale.</td><td>Data on the Student Participation Index for primary level in 2009, 2011 and 2013 are as follows. These data were collected based on a 0-2 scale and the data of 2009 is available only for the average of mathematics and science.

<table><tr><th></th><th>2009</th><th>2011</th><th>2013</th></tr><tr><td>Mathematics</td><td rowspan="2">1.33</td><td>1.51</td><td>1.71</td></tr><tr><td>Science</td><td>1.57</td><td>1.75</td></tr></table>Sample numbers: 2,302 (2009), 1,406 (2011) and 1,033 (2013)

The data for both mathematics and science in 2011 and 2013 are more than 1.5 on a 0-2 scale and reasonably increasing compared to that in 2009.</td></tr>
</table>

<table>
<tr><th>Items</th><th>Indicators</th><th>Results</th></tr>
<tr><td></td><td>(a) (Secondary level) ASEI/PDSI Lesson Observation attains to 3.0 on a 0-4 scale.</td><td>Data on the ASEI-PDSI Lesson Observation for secondary level in 2009 and 2013 are as follows.

<table><tr><th>2009</th><th>2013</th></tr><tr><td>2.7</td><td>2.9</td></tr></table>Sample numbers: 72 (2009) and 134 (2013)

The data in 2013 is less than 3.0 although it is slightly increasing compared to that in 2009.</td></tr>
<tr><td></td><td>(b) (Secondary level) Lesson Innovation Index attains to 3.0 on a 0-4 scale.</td><td>Data on the Lesson Innovation Index for secondary level in 2009 and 2013 are as follows.

<table><tr><th>2009</th><th>2013</th></tr><tr><td>2.8</td><td>2.9</td></tr></table>Sample numbers: 232 (2009) and 140 (2013)

The data in 2013 is less than 3.0 although it is slightly increasing compared to that in 2009.</td></tr>
<tr><td></td><td>(c) (Secondary level) Student Participation Index attains to 3.0 on a 0-4 scale.</td><td>Data on the Student Participation Index for secondary level were collected only in 2009 and the achievement of this indicator cannot be judged.</td></tr>
<tr><td colspan="3">Outputs</td></tr>
<tr><td rowspan="2"><Output 1>
A system of National INSET for Regional Trainers is established at CEMASTEA.</td><td>1 (a) 4 cycles of training materials and programs for the National INSET for the primary education are developed.</td><td>The training materials and programs for 4 cycles of the National INSET for primary level have been developed.</td></tr>
<tr><td>1 (b) Over 250 Regional Trainers are trained at CEMASTEA every year.</td><td>The number of Regional Trainers trained by the National INSET is as follows.

<table><tr><th>Cycle</th><th>Periods</th><th>No. of Regional Trainers trained</th></tr><tr><td rowspan="4">Cycle 1</td><td>14 – 27 Feb 2010</td><td>82</td></tr><tr><td>28 Feb – 13 Mar 2010</td><td>73</td></tr><tr><td>14 – 27 Mar 2010</td><td>117</td></tr><tr><td>Total</td><td>272</td></tr><tr><td rowspan="4">Cycle 2</td><td>13 – 26 Feb 2011</td><td>87</td></tr><tr><td>27 Feb – 12 Mar 2011</td><td>79</td></tr><tr><td>13 – 26 Mar 2011</td><td>120</td></tr><tr><td>Total</td><td>286</td></tr></table></td></tr>
</table>

<table>
<tr><th>Items</th><th>Indicators</th><th>Results</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td>Cycle 3</td><td>12 – 25 Feb 2012</td><td>69</td></tr>
<tr><td></td><td>26 Feb – 10 Mar 2012</td><td>87</td></tr>
<tr><td></td><td>11 – 24 Mar 2012</td><td>128</td></tr>
<tr><td></td><td>Total</td><td>284</td></tr>
<tr><td>Cycle 4</td><td>28 Jan – 8 Feb 2013</td><td>58</td></tr>
<tr><td></td><td>11 – 22 Feb 2013</td><td>83</td></tr>
<tr><td></td><td>11 – 22 Mar 2013</td><td>116</td></tr>
<tr><td></td><td>Total</td><td>257</td></tr>
</table>
The number is more than 250 at every Cycle of the National INSET.
</td></tr>
<tr><td></td><td>1 (c) National INSET for the primary education at CEMASTEA obtains a mean of over 3 on the scale of 0 to 4 in the Quality of INSET Assessment Index.</td><td>
Data on the Quality of INSET Assessment Index obtained at the National INSET for primary level are as follows.
<table>
<tr><th></th><th>Cycle 1 (2010)</th><th>Cycle 2 (2011)</th><th>Cycle 3 (2012)</th><th>Cycle 4 (2013)</th></tr>
<tr><td>Mathematics</td><td>1.9</td><td>2.3</td><td>3.6</td><td>3.8</td></tr>
<tr><td>Science</td><td>2.3</td><td>2.4</td><td>3.4</td><td>3.5</td></tr>
</table>
The data have been increasing year by year and the data for Cycle 3 & 4 obtained more than 3.0 both for mathematics and science.
</td></tr>
<tr><td></td><td>1 (d) 100% of Implementation Reports on National INSET and Workshops are submitted by CEMASTEA staff by the agreed deadlines (in one month).</td><td>
Since this indicator was added after the Mid-term Review of the Project, the data is available for the National INSET and Workshops implemented after the Mid-term Review. The rates of submission of Implementation Reports on both National INSET and National Workshops are as follows.
<table>
<tr><td>No. of National INSET implemented in 2012 and 2013</td><td>2</td></tr>
<tr><td>No. of Implementation Reports on National INSET submitted by CEMASTEA staff by the agreed deadlines (in one month)</td><td>0</td></tr>
<tr><td>The rate of submission</td><td>0%</td></tr>
<tr><td>No. of National Workshops implemented in 2012 and 2013</td><td>8</td></tr>
<tr><td>No. of Implementation Reports on National Workshops submitted by CEMASTEA staff by the agreed deadlines (in one month)</td><td>2</td></tr>
<tr><td>The rate of submission</td><td>25%</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Items</th><th>Indicators</th><th>Results</th></tr>
<tr><td></td><td></td><td>Both rates of submission within the agreed deadlines are less than 100% although the reports were submitted after the deadlines.</td></tr>
<tr><td rowspan="2"><Output 2>
A system of Regional INSET and Regional workshop is established at PTTCs.</td><td>2 (a) Regional INSET for Cluster Trainers at PTTCs is carried out four times.</td><td rowspan="2">The number of Cluster Trainers trained by the Regional INSET is as follows.

<table>
<tr><th>PTTC</th><th>Cycle 1 (2010)</th><th>Cycle 2 (2011)</th><th>Cycle 3 (2012)</th></tr>
<tr><td>Asumbi</td><td>331</td><td>325</td><td>288</td></tr>
<tr><td>Baringo</td><td>170</td><td>96</td><td>220</td></tr>
<tr><td>Bondo</td><td>-</td><td>-</td><td>190</td></tr>
<tr><td>Egoji</td><td>213</td><td>233</td><td>112</td></tr>
<tr><td>Eregi</td><td>329</td><td>308</td><td>292</td></tr>
<tr><td>Garissa</td><td>82</td><td>67</td><td>31</td></tr>
<tr><td>Kaimosi</td><td>396</td><td>382</td><td>217</td></tr>
<tr><td>Kamwenja</td><td>219</td><td>186</td><td>143</td></tr>
<tr><td>Kericho</td><td>284</td><td>360</td><td>294</td></tr>
<tr><td>Kigari</td><td>272</td><td>145</td><td>198</td></tr>
<tr><td>Kilimambogo</td><td>79</td><td>213</td><td>202</td></tr>
<tr><td>Machakos</td><td>307</td><td>317</td><td>187</td></tr>
<tr><td>Meru</td><td>136</td><td>94</td><td>119</td></tr>
<tr><td>Migori</td><td>337</td><td>399</td><td>352</td></tr>
<tr><td>Mosoriot</td><td>260</td><td>279</td><td>216</td></tr>
<tr><td>Murang'a</td><td>225</td><td>122</td><td>181</td></tr>
<tr><td>Shanzu</td><td>265</td><td>240</td><td>252</td></tr>
<tr><td>Tambach</td><td>302</td><td>117</td><td>276</td></tr>
<tr><td>Thogoto</td><td>213</td><td>265</td><td>251</td></tr>
<tr><td>Total</td><td>4,420</td><td>4,164</td><td>4,021</td></tr>
</table>
Note: Cycle 1&2 were not held in Bondo PTTC.

Cycle 4 of the Regional INSET is to be held in August in 2013. The number is less than 4,400 at the times of Cycle 2 and Cycle 3. It should be noted, however, that there is a room for discussion whether the number '4,500 (at least 4,400)' is appropriate as the target number.</td></tr>
<tr><td>2 (b) 4,500 (at least 4,400) Cluster Trainers are trained every year.</td></tr>
</table>

<table>
<tr><th>Items</th><th>Indicators</th><th>Results</th></tr>
<tr><td></td><td>2 (c) Over 1,200 TAC Tutors/Zonal QASOs, 47 County QASOs and 287 Sub-county QASOs are trained.</td><td>The number of TAC Tutors/Zonal QASOs who participated in the Regional Workshops is as follows.

<table>
<tr><th rowspan="2">PTTC</th><th colspan="4">TAC Tutors/Zonal QASOs</th></tr>
<tr><th>2009</th><th>2010</th><th>2011</th><th>2012</th></tr>
<tr><td>Kericho</td><td>123</td><td>192</td><td>163</td><td>61</td></tr>
<tr><td>Egoji</td><td>136</td><td>211</td><td>166</td><td>75</td></tr>
<tr><td>Kamwenja</td><td>95</td><td>-</td><td>-</td><td>75</td></tr>
<tr><td>Shanzu</td><td>55</td><td>-</td><td>36</td><td>50</td></tr>
<tr><td>Garissa</td><td>29</td><td>-</td><td>29</td><td>-</td></tr>
<tr><td>Migori</td><td>160</td><td>-</td><td>-</td><td>184</td></tr>
<tr><td>Kilimambogo</td><td>-</td><td>-</td><td>-</td><td>93</td></tr>
<tr><td>Kaimosi</td><td>160</td><td>129</td><td>166</td><td>77</td></tr>
<tr><td>Tambach</td><td>184</td><td>137</td><td>184</td><td>135</td></tr>
<tr><td>Thogoto</td><td>171</td><td>228</td><td>88</td><td>91</td></tr>
<tr><td>Total</td><td>1113</td><td>897</td><td>832</td><td>841</td></tr>
</table>
Note: "-" means that the Regional Workshop was not held in the PTTC in that year. The PTTCs where the Regional Workshops were held differ year by year.

The number is less than 1,200 every year. It should be noted, however, that there is a room for discussion whether the number 'over 1,200' for TAC Tutors/Zonal QASOs is appropriate as the target number.

The numbers of County QASOs and Sub-county QASOs (District QASOs) who participated in the National Workshops are as follows.

<table>
<tr><th></th><th>2012</th><th>2013</th></tr>
<tr><td>County QASOs</td><td>-</td><td>45</td></tr>
<tr><td>District QASOs</td><td>242</td><td>-</td></tr>
</table>
The National Workshops for District QASO is to be held later. Both numbers are less than the target numbers.</td></tr>
</table>

<table>
<tr><th>Items</th><th>Indicators</th><th>Results</th></tr>
<tr><td></td><td>2 (d) Regional Trainers obtain a mean of over 2.5 on the scale of 0 to 4 in the overall assessment of Capacity Building Index at the Regional INSET at PTTCs.</td><td>Data on the Capacity Building Index obtained at the Regional INSET for primary level are as follows.

<table><tr><th>Cycle 1 (2010)</th><th>Cycle 2 (2011)</th><th>Cycle 3 (2012)</th></tr><tr><td>2.5</td><td>2.4</td><td>2.1</td></tr></table>
The data have been decreasing year by year and are less than 2.5.</td></tr>
<tr><td></td><td>2 (e) Regional INSET at PTTCs attains to a mean of over 2.5 on the scale of 0 to 4 in the Quality of INSET Assessment Index.</td><td>Data on the Quality of INSET Assessment Index obtained at the Regional INSET for primary level are as follows.

<table><tr><th>Cycle 1 (2010)</th><th>Cycle 2 (2011)</th><th>Cycle 3 (2012)</th></tr><tr><td>2.1</td><td>2.5</td><td>2.0</td></tr></table>
The data as of Cycle 3 is less than 2.5.</td></tr>
<tr><td></td><td>2 (f) 100% of M&E Reports on Regional INSET and Workshops are submitted by CEMASTEA staff by the agreed deadlines (in one month).</td><td>Since this indicator was added after the Mid-term Review of the Project, the data is available for the Regional INSET and Workshops implemented after the Mid-term Review. The rates of submission of M&E Reports on both Regional INSET and Regional Workshops are as follows.

<table><tr><td>No. of Regional INSET implemented in 2012 (annual time)</td><td>1</td></tr><tr><td>No. of M&E Reports on Regional INSET submitted by CEMASTEA staff by the agreed deadlines (in one month)</td><td>1</td></tr><tr><td>The rate of submission</td><td>100%</td></tr><tr><td>No. of Regional Workshops implemented in 2012 (annual time)</td><td>1</td></tr><tr><td>No. of M&E Reports on Regional Workshops submitted by CEMASTEA staff by the agreed deadlines (in one month)</td><td>0</td></tr><tr><td>The rate of submission</td><td>0%</td></tr></table>
While the rate of submission for Regional INSET is 100%, the rate within the agreed deadlines for Regional Workshops is 0% although the report was submitted after the deadlines.</td></tr>
<tr><td></td><td>2 (g) 100% of Implementation Reports are submitted by PTTCs by agreed deadlines</td><td>Since this indicator was added after the Mid-term Review of the Project, the data is available for the Regional INSET and Workshops implemented after the Mid-term Review. The rates of</td></tr>
</table>

<table>
<tr><th>Items</th><th>Indicators</th><th>Results</th></tr>
<tr><td></td><td>(in one month).</td><td>submission of Implementation Reports on both Regional INSET and Regional Workshops are as follows.

<table><tr><td>No. of Regional INSET implemented at each PTTC in 2012</td><td>19</td></tr><tr><td>No. of Implementation Reports on Regional INSET submitted by PTTCs by the agreed deadlines (in one month)</td><td>0</td></tr><tr><td>The rate of submission</td><td>0%</td></tr><tr><td>No. of Regional Workshops implemented at each PTTC in 2012</td><td>9</td></tr><tr><td>No. of Implementation Reports on Regional Workshops submitted by PTTCs by the agreed deadlines (in one month)</td><td>2</td></tr><tr><td>The rate of submission</td><td>22%</td></tr></table>
Both rates of submission within the agreed deadlines are less than 100% although the reports were submitted after the deadlines.</td></tr>
<tr><td rowspan="3"><Output 3>
Existing system of cluster INSET is strengthened.</td><td>3 (a) A guideline/manual on management of M/S INSET for primary school teacher is developed.</td><td>The pilot version of guideline/manual on management of M/S INSET for primary school teachers has been made.</td></tr>
<tr><td>3 (b) At least 60,000 primary school teachers who teach mathematics and/or science in grades 6, 7, and/or 8 drawn from every cluster in the country participate in Cluster INSET every year.</td><td>The number of primary school teachers who participated in the Cluster INSET is as follows.

<table><tr><td></td><td>Cycle 1 (2010)</td><td>Cycle 2 (2011)</td><td>Cycle 3 (2012)</td><td>Cycle 4 (2013)</td></tr><tr><td>No. of Clusters</td><td>4,249</td><td>4,253</td><td>4,132</td><td>4,196</td></tr><tr><td>No. of Primary Teachers who participated</td><td>55,393</td><td>46,933</td><td>43,006</td><td>-</td></tr></table>Note: No. of Clusters for Cycle 4 (2013) is an estimate.

The Cycle 4 is to be held in August in 2013. The number of participants is less than 60,000 in every cycle and even decreasing year by year. One reason why the number did not reach 60,000 is that the Cluster INSET was not conducted in some area of ASAL (arid and semi-arid land). It should be noted, however, that there is a room for discussion whether the number 'at least 60,000' is appropriate as the target number.</td></tr>
<tr><td>3 (c) 100% of M&E reports on Cluster INSET are submitted by CEMASTEA staff by the</td><td>Since this indicator was added after the Mid-term Review of the Project, the data is available for the Cluster INSET implemented after the Mid-term Review. The rate of submission of M&E</td></tr>
</table>

<table>
<tr><th>Items</th><th>Indicators</th><th>Results</th></tr>
<tr><td></td><td>agreed deadlines (in one month).</td><td>Reports on Cluster INSET is as follows.

<table><tr><td>No. of Cluster INSET implemented in 2012 (annual time)</td><td>1</td></tr><tr><td>No. of M&E Reports on Cluster INSET submitted by CEMASTEA staff by the agreed deadlines (in one month)</td><td>0</td></tr><tr><td>The rate of submission</td><td>0%</td></tr></table>
The rate of submission within the agreed deadlines is less than 100% although the report was submitted after the deadlines.</td></tr>
<tr><td></td><td>3 (d) 100% of Implementation Reports are submitted by DEOs in three months.</td><td>Since this indicator was added after the Mid-term Review of the Project, the data is available for the Cluster INSET and District Workshops for Head Teachers implemented after the Mid-term Review. The rates of submission of Implementation Reports on both Cluster INSET and District Workshops for Principals are as follows.

<table><tr><td>No. of Cluster INSET implemented at each District in 2012</td><td>287</td></tr><tr><td>No. of Implementation Reports on Cluster INSET submitted by DEOs by the agreed deadlines (in three months)</td><td>227</td></tr><tr><td>The rate of submission</td><td>79%</td></tr><tr><td>No. of District Workshops for Principals implemented at each District in 2012</td><td>287</td></tr><tr><td>No. of Implementation Reports on District Workshops for Principals submitted by DEOs by the agreed deadlines (in three months)</td><td>27</td></tr><tr><td>The rate of submission</td><td>9%</td></tr><tr><td>No. of District Workshops for Principals implemented at each District in 2013</td><td>287</td></tr><tr><td>No. of Implementation Reports on District Workshops for Principals submitted by DEOs by the agreed deadlines (in three months)</td><td>167</td></tr><tr><td>The rate of submission</td><td>58%</td></tr></table>
The both rates of submission are less than 100%.</td></tr>
<tr><td><Output 4>
Secondary M/S teachers' ASEI/PDSI practices in classroom are enhanced.</td><td>4 (a) INSET and workshop contents for introducing lesson study are developed.</td><td>INSET and workshop contents for introducing lesson study were developed.</td></tr>
<tr><td></td><td>4 (b) A guidebook on Lesson Study is developed.</td><td>The draft of guidebook on lesson study was developed and will be finalized by the end of the Project.</td></tr>
<tr><td></td><td>4 (c) At least 90% of Secondary School</td><td>The Workshops on pedagogical leadership including lesson study for secondary school</td></tr>
</table>

<table>
<tr><th>Items</th><th>Indicators</th><th>Results</th></tr>
<tr><td></td><td>Principals are trained on pedagogical leadership including Lesson Study.</td><td>principals were not held in 2009. The 1st round Workshops for the target group had been held during 2010, 2011 and 2012 and 82% of secondary school principals (5,040 out of 6,125) participated in the Workshops. The 2nd round Workshops have been still ongoing since January 2013 although they were planned to start from September 2012, but did not start due to the teacher's strike.</td></tr>
<tr><td></td><td>4 (d) 47 County Directors of Education, 47 County QASOs, 287 DEOs and 287 District QASOs are trained for District Workshops for Principals.</td><td>The numbers of County Directors of Education, County QASOs, DEOs and District QASOs who participated in the National Workshops are as follows.

<table><tr><th></th><th>2012</th><th>2013</th></tr><tr><td>County Directors of Education</td><td>-</td><td>47</td></tr><tr><td>County QASOs</td><td>-</td><td>47</td></tr><tr><td>TSC-CDs</td><td>-</td><td>42</td></tr><tr><td>DEOs</td><td>258</td><td>-</td></tr><tr><td>District QASOs</td><td>242</td><td>-</td></tr></table>
While the numbers of County Directors of Education and County QASOs reached the target, the numbers of DEOs and District QASOs are less than the target numbers. The Workshops for DEOs in 2013 were planned, but postponed by MOEST.</td></tr>
<tr><td></td><td>4 (e) More than 80% of the Counties (clustered Districts) conduct workshops for Secondary School Principals to share and discuss experience in Lesson Study.</td><td>Although the Workshops for secondary school principals to share and discuss experiences in lesson study were planned to be conducted every year, they were not conducted in 2009. 80% (47 out of 59) of Clustered Districts conducted the Workshops in 2013.</td></tr>
<tr><td></td><td>4 (f) Principal's supervision on ASEI-PDSI practice is enhanced/improved by 10% compared with the results in the Situational Analysis.</td><td>The data on the principal's supervision on ASEI-PDSI practices are measured by the rate of principals who answered 'always' and 'often' to the following 3 question items. The rates as of the Situational Analysis (2009) and 2013 as well as the difference of two rates are as follows.

<table><tr><th>Items</th><th>2009</th><th>2013</th><th>Difference</th></tr><tr><td>1. Check professional tools</td><td>87.5%</td><td>83.3%</td><td>-4.2</td></tr><tr><td>2. Observe M/S lessons</td><td>24.3%</td><td>33.3%</td><td>+9.0</td></tr><tr><td>3. Check effective use of teaching and learning resources</td><td>60.6%</td><td>64.8%</td><td>+4.2</td></tr><tr><td>Average</td><td>57.5%</td><td>60.5%</td><td>+3.0</td></tr></table></td></tr>
</table>

Items	Indicators	Results
		The average of difference between 2009 and 2013 is 3.0, less than 10%. It should be noted, however, that only 1 Workshop had been implemented by the time of the comparative study.
	4 (g) 100% of M&E Reports on Principals' Workshops are submitted by CEMASTEA staff by the agreed deadlines (in one month).	Since this indicator was added after the Mid-term Review of the Project, the data is available for the Principals' Workshops implemented after the Mid-term Review. The Workshops were not held in 2012 due to the teachers' strike. The Workshops in 2013 are still being implemented in some Counties and the M&E Reports on the Workshops are supposed to be submitted by CEMASTEA staff after all the Workshops in 2013 are completed.
	4 (h) At least 50% of Implementation Reports on Principals' Workshops are submitted by the agreed deadlines (in three months) by DPCs.	Same as the indicator 4-7, the data is available for the Principals' Workshops implemented in 2013. The Workshops in 2013 are still being implemented in some Counties and the deadline has passed in 18 Counties by now. The Implementation Reports on the Workshops which were submitted are 0.
<Output 5> Role of CEMSTEA as a resource centre for M/S education is strengthened.	5 (a) Primary INSET materials (write-ups) for Cycle 1&2 are revised/refined as self-explanatory materials and published for teachers.	The Primary INSET materials (write-ups) for Cycle 1&2 have been revised/refined as self-explanatory materials as well as the 300 copies of materials have been published for teachers.
	5 (b) The revised Primary INSET materials for Cycle 1&2 are digitized and made available through the CEMASTEA website.	The revised Primary INSET materials for Cycle 1&2 are to be digitized in the CEMASTEA website.
	5 (c) At least one booklet on ASEI/PDSI practices is published and distributed.	The booklet on ASEI/PDSI practices is to be published and distributed based on the results of Symposium held in July 2013.
	5 (d) At least one exemplary lesson video is produced and distributed.	The exemplary lesson video is to be published and distributed based on the results of Symposium held in July 2013.
Inputs		
Inputs from Japanese side	Planned inputs 1. Dispatch of long-term experts 2. Dispatch of short-term experts 3. Training of Kenyan counterpart personnel in Japan and in third countries 4. Provision of training materials and equipment for INSET activities 5. Local operation cost for administration of the Project	The actual inputs from Japanese side are as follows. 1. 7 long-term experts have been dispatched. 2. 3 short-term experts have been dispatched. 3. 136 Kenyan counterpart personnel have participated in the training in Japan and the third country (124 in Japan and 12 in Malaysia). 4. 101,554,593.03 Kenya shillings in total (from January 2009 to June 2013). 5. 79,364,692.56 Kenya shillings in total (from January 2009 to June 2013).

Items	Indicators	Results
Inputs from Kenyan side	Planned inputs 1. Buildings, offices and other facilities necessary for INSET activities 2. Assignment of adequate Kenyan full-time academic counterpart personnel at CEMASTEA 3. Assignment of adequate non-academic personnel at CEMASTEA 4. Expenses necessary for the project activities to be implemented in Kenya 5. Expenses for repair, maintenance and improvements of CEMASTEA facilities	The actual inputs from Kenyan side are as follows. 1. Buildings, offices and other facilities necessary for INSET activities have been provided by CEMASTEA. 2. 45 academic counterpart personnel have been assigned at CEMASTEA although the number of personnel including those who have the experiences in primary teacher's education should have been increased more in the original plan. In addition, they have been engaged not only in the project activities but also in another assignment as academic staff of CEMASTEA. 3. Adequate number of non-academic personnel has been assigned at CEMASTEA. 4. 472,326,269.80 Kenya shillings in total (from July 2009 to June 2013). 5. Expenses for repair, maintenance and improvement of CEMASTEA facilities have been provided by CEMASTEA.
Important Assumptions		
Important assumptions towards Project Purpose	- Other programs do not adversely affect teachers' participation. - District INSET for all secondary M&S teachers are conducted every year.	- Some teachers gave preference to participating in other training over the SMASE INSET. - In 2009 and 2010, only some districts conducted the District INSET for M&S teachers. However, in 2011 and 2012, all districts conducted the INSET cascaded from the national level.
Important assumptions towards Outputs	- The counterparts at CEMASTEA and key trainers in the devolved cascade levels will be motivated enough to continue to work for the project.	- According to the interview with stakeholders, although CEMASTEA staff has been working for the Project, their motivation for the Project has been decreasing during the Phase 3 due to their overwork for being engaged in the SMASE INSET for primary level in addition to that of secondary level, without any increase in the number of staff.

2. Process of the Project Implementation

Evaluation Questions		Findings
Survey Items	**Sub-Survey Items**	
Implementation of activities	Have the project activities been implemented as planned?	- The project activities indicated in PDM have been implemented basically as planned, although some INSET as well as Workshops have been implemented behind the schedule, the Workshops have been implemented for fewer times, and not full numbers of trainees have participated in the INSET and Workshops compared to the original plan.
Project management system	Is there any problem in the project management system?	- With regard to the management system of the Project, the following 6 Committees have been established in the Project Phase 3 in order to implement and manage the project related activities such as the SMASE INSET and Workshops at the primary and secondary levels. They are the Joint Coordinating Committee (JCC), National Planning Committee (NPC), Programme Coordinators Committee (PCC), Regional Planning Committee (RPC), District Planning Committee (DPC) and Zonal Planning Committee (ZPC). - JCC, which consists of related personnel of MOEST, TSC, CEMASTEA, JICA and other related organizations, has been established as a responsible body for the overall policy decisions related to the Project. - NPC, which consists of MOEST, CEMASTEA and JICA, was re-established after the Mid-term Review. - PCC, which consists of the Coordinators of Academic Programmes and Programme Coordinators of CEMASTEA as well as JICA experts, was newly established after the Mid-term Review. - RPC, which consists of CDE, CQASO as well as Principal, Dean of Curriculum and Tutors of PTTC has been established at each PTTC region. - DPC, which consists of DEO, DQASO and related personnel of District level has been established both at the primary and secondary levels in each District. There are 289 DPCs at the primary level and 80 at the secondary level. - ZPC, which consists of ZQASO, TAC tutors and related personnel, has been established at the primary level in each Zone. There are 1,455 ZPCs. - There are some issues to be addressed in the above management system of the Project. - There are too many counterpart committees for one project to efficiently implement and properly manage the project related activities. The number of counterpart committees of the Phase 3 accounts for 1,872 including the national and local committees. The involvement of managerial stakeholders is necessary to implement the Project, but it has led to the increase in coordination tasks for the Project. - CEMASTEA faced challenges in implementation of SMASE activities because of the complicated management structure: 1) the responsible entity for disbursement of budget is MOEST; and 2) the responsible entity for staffing of CEMASTEA is TSC. - Another challenge CEMASTEA faces lies in the internal implementation structure. CEMASTEA currently has 3 implementing bodies: 1) Subject Departments (Biology, Chemistry, Mathematics and Physics); 2)

Evaluation Questions		Findings
Survey Items	**Sub-Survey Items**	
		Programme Committees (Primary, Secondary, ICT, SMASE-WECSA and R&D); and 3) Specialized Committees (consist of more than 10 Committees). All academic staff of CEMASTEA concurrently belongs to the three units and participates in all units' activities. This has overworked some academic staff, especially the Programme Coordinators. This multiple supervision has hindered effective coordination of activities and task allocation as well as effective communication between JICA experts and CEMASTEA staff. - To address these challenges, MOEST constituted the "Technical Committee on Re-engineering of CEMASTEA" in 2011 where key stakeholders of the Project seriously discussed how to improve the management of CEMASTEA and implementation of SMASE Programme.
	Is the monitoring system for the project managed appropriately?	- The JCC meeting is supposed to be held semi-annually, but it was not held in 2009 and 2010 and had been held only once in November 2011 from the commencement till the time of Mid-term Review of the Project. This caused the delay for JCC members to address the challenges facing the management of project activities. After the Mid-term Review as well as the Technical Committee meeting, the JCC meeting was held in January 2012 and March 2013, not twice a year as planned. - The NPC meeting has been regularly held once a month and the progress and challenges of the Project have been reported and shared among NPC members. In addition, the PCC meeting has been regularly held twice a month and the progress and challenges of the Project have been reported and shared among PCC members as well. The frequency of RPC, DPC and ZPC meetings depends on each level. While some Committees are active and have often had the committee meeting, others are not. - One of the challenges facing the Project is report submission; CEMASTEA staffs frequently submit the reports after agreed deadlines. Furthermore, the quality of reports needs to be improved. - The monitoring and progress reports on the Project have not been appropriately made by the Japanese side as well. The submission of monthly reports by JICA experts have been delayed during the project periods and the progress report for July – Dec 2012 was submitted in July 2013. - In addition to the above point at issue on the project reports both by the Kenyan and Japanese sides, data on the indicators of PDM have not been appropriately managed by both sides and some indicators' data were not collected as mentioned in the results of indicators in the "1. Achievements of the Project." The progress of the Project based on the results of indicators has not been therefore managed and indentified in an appropriate manner. - Furthermore, keeping a careful audit of the SMASSE INSET Fund for secondary level is major concern for the stakeholders of the Project. Auditing of funds for the secondary INSET activities at district level has not been given adequate attention during the Phase 3. Adequate arrangements were not made by CEMASTEA and MOEST to monitor funds at the district level when scaling up.

Evaluation Questions		Findings
Survey Items	**Sub-Survey Items**	
	Is there any problem in the communication between experts and CP?	- There has been less communication and coordination between JICA experts and CEMASTEA staff during the Phase 3 compared to the Phase 1&2 of the Project. While both sides are still in regular contact with each other in the Phase 3, their communication and relationship have placed a disproportionate emphasis on CEMASTEA's management issues rather than on technical issues.
Degree of participation of CP	Has the degree of participation/ownership of CP in the project been high?	- CEMASTEA staff has been well involved in the project activities and they understand the contents of the Project well as most members have been engaged in the SMASE Projeet since 2003. The number of staff is, however, not sufficient to implement the project activities, monitor the activities and submit the implementation and monitoring reports on the activities to the satisfactory level. Their motivation to participate in the project activities as well as SMASE INSET during the Phase 3 has been decreasing compared to the Phase 1&2 of the Project.
	Are the appropriate post/personnel allocated as CP?	- The main counterpart organization of the Project is CEMASTEA. In addition, the Project has many counterpart organizations such as TSC, PTTCs, County Education Offices, District Education Offices, etc. and it has caused the decision making of project activities to be time-consuming as well as CEMASTEA staff and JICA experts have involved an immense amount of time and effort to make.
	Has the degree of participation/ownership of the target group in the project been high?	- The target group of the Project is primary school teachers who teach mathematics and/or science in grades 6, 7, or 8 and secondary school teachers who teach mathematics and/or science. Their participation in the Project has been maintained as their participation in the Cluster INSET during the project period. Some primary teachers, however, did not participate in the Cluster INSET as they participated in different training.
Problems in the process of implementation	Are there any factors that have inhibited the smooth implementation of the project? If any, what is the cause?	The Project has experienced the following challenges. - In the Cluster INSET, 200 shillings are given for participant's lunch. According to the interview with primary teachers, this amount is not enough for many participants and this has discouraged them from participating in the Cluster INSET. - Every District Education Office is required to come to Nairobi to pick up the materials to be used in the Cluster INSETs. However, the information on the quantity of materials was not properly communicated from them to CEMASTEA. - According to the interview with stakeholders, the lack of continuity in terms of both participation in SMASE INSET and motivation to practice was pointed out. Teachers initially show interests in the SMASE INSET as well as ASEI-PDSI approach, but they lose it and do not continue to practice the ASEI-PDSI approach in their teaching. - NPC and PCC were introduced for enhancing the management system of the Project after the Mid-term Review and the number of meeting for the Project have increased accordingly. Consequently, too many meetings have placed a burden, especially on the Programme Coordinators of CEMASTEA and hindered

Evaluation Questions		Findings
Survey Items	Sub-Survey Items	
		their implementation of project activities. - At the time of Mid-term Review, the Kenyan and Japanese sides recognized the need to strengthen the managerial aspect of the Project. Thus during the Phase 3 especially after the Mid-term Review, JICA experts have placed priority on strengthening the management function of CEMASTEA rather than strengthening its technical capacity. Although the approach was useful to the management, some CEMASTEA staffs felt that they needed technical support as was in the Phase 1 and 2. - Publicity of the Project has not been effectively conducted in the Phase 3. Newsletters and brochures for the Project as well as the Project outline were not published to effectively inform the stakeholders. - An active relationship between the project implementation side, i.e. CEMASTEA and JICA experts, and other related organizations including MOE, TSC, other donors, etc. has not been encouraged during the Phase 3. TSC has not been informed of the Project in detail and they expressed their dissatisfaction at the disconnection between TSC and the Project. The relationship between MOE and the Project should have been much further encouraged during the Phase 3 and JICA experts were expected to get into touch with MOE more frequently and serve as a liaison bridge between MOE and the Project.

3. Evaluation by Five Criteria

(1) Relevance

Evaluation Questions		Findings
Survey Items	**Sub-Survey Items**	
Necessity	Does the project meet the target group's needs?	- The Project meets the needs of its target, i.e. primary and secondary school teachers who teach mathematics and science while there is a slight gap between their needs and their demands. - The primary and secondary school teachers in Kenya have aspired to upgrade their teaching skills, however, their 'needs' on upgrading are based on their 'demands' to get a certificate of training and qualification for their future step-up such as the career advancement and increase in pay. Many teachers, especially primary teachers who have participated in the SMASE INSET are therefore not satisfied with the fact that the SMASE INSET is not related to the acquisition of qualification under the current education system in Kenya.
Priority	Is the project in line with the development policy of Kenya?	- The Project is consistent with the national development strategy as well as educational development policy of the Government of Kenya. - The Project is in line with the Kenya's long-term national development strategy, "Vision 2030." In this Vision, the Kenyan government set a goal to be an industrialized nation by the year 2030. Currently, however, the level of mathematics and science education has not reached the expected one in basic education in Kenya while it is fundamental for industrialization. The current action to improve in this field was required thereafter. In order to improve access to education, the Government introduced "Free Primary Education" in 2003, developed the "Kenya Education Sector Support Programme" in 2005 and started to implement "Free Day Secondary Education" in 2008. However, the number of enrolment rapidly increased due to the introduction of free education while the number of teachers has not kept up with such increase. Decline in quality of education is to be addressed. - The Project is also in line with the "Session Paper No. 14 of 2012," "Basic Education Act 2012" and "Teachers Service Commission Act 2012" which place a value on the improvement of teaching/learning in mathematics and science as the essential means for national development as well as support the quality improvement of teachers by INSET, developed as an integral part of continuing teacher education.
	Is the project in line with the Japan's ODA policy?	- The Project is consistent with the Japan's Official Development Assistance (ODA) policy for Kenya. - The Project is in line with the Action Plan adopted in the "Tokyo International Conference on African Development (TICAD) IV" held in Yokohama in 2008, which stipulates the commitment of Japanese government to train 100,000 mathematics and science teachers in Africa. - The Project is also in line with the Japan's ODA policy for Kenya, i.e. the "Country Assistance Policy for the Republic of Kenya (as of April 2012)" as well as the "Rolling Plan for the Republic of Kenya (as of April 2012)." The Policy and Plan state that the Japanese government assist on the establishment and stabilization of In-service Training System targeting mathematics/science teachers of primary and secondary schools in

Evaluation Questions		Findings
Survey Items	**Sub-Survey Items**	
		Kenya as well as focus on the quality improvement of mathematics and science education mainly through SMASE which aims for capacity building of mathematics/science teachers and administrative staffs.
Appropriateness of project means	Is the project appropriate as a strategy for producing an effect to the development issues in Kenya?	The approach of the Project is to conduct the SMASE INSET through a cascading system for the purpose of strengthening teachers' skills in mathematics and science. While this approach is effective in training a large majority of mathematics/science teachers relatively in a short term, the following limitations are pointed out on the SMASE INSET. - Conducting the training through a cascading system has a weakness in that the accurate contents of training are diluted to the bottom level of cascade, i.e. teachers. - The main objective of SMASE INSET is to improve teaching methods and skills of mathematics and science based on the ASEI-PDSI approach. However, the topics covered by INSET in a particular year are limited and may not address all diverse topics. - According to the interview with DQASO and TAC tutors, it is difficult for some teachers to apply the ASEI-PDSI approach in their practical use in the classroom even if they have participated in the SMASE INSET and understood the contents of ASEI-PDSI approach. The training content is appropriate, however, they face challenges because of the classroom size and syllabus coverage. - In Kenya the numbers of schools, teachers and students have been increasing over time. The local administrative system and personnel has also changed with constitutional revision. This forced the Project to change the numbers of some target groups, e.g. DEOs and DQASOs. The implementation system of Principals' Workshops was also changed in the middle of project period. Meanwhile, the following problems are raised in terms of the design of the Project, i.e. the contents of PDM. - The target size designed for the Project Phase 3 would be too ambitious to effectively and efficiently implement the project activities. The Phase 3 consists of two components, i.e. the Kenya Component and WECSA Component. The Kenya Component also includes two components, i.e. the primary component and secondary component. It means that the Project Purpose for Kenya Component includes two purposes for the primary and secondary levels although it is designed as just one purpose. It is likely that the Phase 3 has been driving three projects. Furthermore, the target size of both the primary and secondary levels is on a nationwide scale. The design of the Phase 3 is ambitious in that the Project includes too many activities which are almost equal to the amount of activities for three projects, without allocating the proper number of CEMASTEA staff. While the Phase 2 was implemented by 61 CEMASTEA staff, the Phase 3 has been done by 41 staff in spite of the infinitely more activities compared to the Phase 2. The project design is therefore

Evaluation Questions		Findings
Survey Items	Sub-Survey Items	
		not relevant especially in the target size which is enormous to cover in one project. - The design of conducting the SMASE INSET at primary level across the country would be speed-before-quality decision. It would be more appropriate and effective if the SMASE INSET for the primary level had been introduced to some pilot regions at first and a stable model of primary level, including the guidelines, training manuals and implementation system, had been firmly established through the enough experiences and lessons of pilot regions. - The project design for secondary level, in other words the project scope for secondary level also has caused confusion. In the Phase 3, the activities for conducting Workshops on ASEI-PDSI practices and lesson study for the principals and administrative personnel were set as the project scope for secondary level and the activities for conducting the SMASE INSET at secondary level were designed to be implemented by CEMASTEA in its own. This mixed activities supported by the Project and solely implemented by CEMASTEA for the secondary level resulted in a source of confusion for some CEMASTEA staff.
	Is the selection of target group appropriate?	- The selection of target group, i.e. primary school teachers who teach mathematics and/or science in grades 6, 7, or 8 and secondary school teachers who teach mathematics and/or science is appropriate. While the selection of target group is appropriate, targeting the across-the-country primary school teachers was not the best way as the project approach as mentioned above. Furthermore, targeting primary teachers only in grades 6, 7, or 8 has caused the problem that the participants of Cluster INSET differ by year since primary teachers are frequently changed their grades in charge.
	Can the project become widespread to other areas/groups?	- Since the Project already covers all over the Kenya at primary and secondary levels, the approach and concept of SMASE can become widespread in Kenya. It would, however, take more time to actually disseminate the teaching method of SMASE to all Counties and Districts including ASAL in Kenya.

(2) Effectiveness

Evaluation Questions		Findings
Survey Items	Sub-Survey Items	
Prospect for achieving Project Purpose	Is there any prospect for achieving Project Purpose by the end of the project?	- As referred to in '1. Achievements of the Project,' for the primary level, the Project Purpose is expected to be achieved as far as the SMASE INSET, especially the Cluster INSET will be continuously conducted as well as the school based training will be developed in primary schools. In spite of a limited sample size, the results of quantitative indicators of Project Purpose for primary level are found to be positive. The Project Purpose for secondary level has been achieved to some extent.
	Has the target group got any benefits from the project?	- The target group, primary and secondary school teachers have been satisfied with taking part in the SMASE INSET and they have learned useful and practical skills in their teaching. On the other hand, some teachers

Evaluation Questions		Findings
Survey Items	**Sub-Survey Items**	
		who have participated in the Cluster INSET are not satisfied with their low allowance paid for participation. - In Kenya principals and teachers have a tendency toward exam-oriented and the results of examination is prioritized even in primary schools. It is therefore significant that they have learned their attitude of mind to the learners centred approach by participating in the SMASE INSET and workshops. - In the SMASE INSET, the training itself is interactive and learner-centred. This is eye-opening for the participants who had long believed the one-way lecturing style was the best and only way of conducting classes. This has brought them some changes in mindset, attitude and behaviour in the classroom teaching. - The examples of direct effects of SMASE INSET on teachers are as follows: teachers have had attitudinal changes in teaching, using activity-oriented and learner-centred approaches; they have developed confidence in teaching mathematics and science, become able to handle even some perceived difficult topics, and improved in planning and conducting lessons; they have learned and improved in their improvisation and resource utilization from local materials; and they have applied the ASEI-PDSI approach into other subjects. - The tangible products such as guidelines, handbooks and training manuals for the SMASE INSET and Workshops have been developed through the Phase 1, 2 and 3 of the Project. Being simple and practical, these products have given a firm base of implementing the SMASE INSET. They have been made with taking the relevant concrete needs identified by the Situational Analysis conducted at an early stage of the Project into full consideration. Kenya is not only a country where it is impossible to legally enforce the retention of civil servants or teachers with a view to preventing their job-hopping or transfer to other government positions. The availability of standardised training courses and manuals makes it possible to develop the required foundations as these are little affected by external conditions.
Causal relationship	Are Outputs enough to achieve Project Purpose?	- Outputs 1 to 5 are enough to achieve the Project Purpose, but it will take some more time to achieve them to the fullest extent compared to the original plan.
	Are there any obstructive factors against the achievement of Project Purpose?	- Not the fullest achievement of Project Purpose in the Phase 3 results from the achievement level of Outputs. Furthermore, the achievement level of Outputs for both the primary and secondary levels has been affected by some factors such as the issues on project design as mentioned in '(1) Relevance,' insufficient inputs to be mentioned in '(3) Efficiency" and project management as mentioned in '2. Process of the Project Implementation.'
	Is there any influence by the important assumptions towards Project Purpose?	- The important assumptions indicated in PDM have affected the achievement of Project Purpose as mentioned in '1. Achievements of the Project.'

(3) Efficiency

Evaluation Questions		Findings
Survey Items	**Sub-Survey Items**	
Achievement of outputs	Is the achievement level of outputs favorable?	- As referred to in '1. Achievements of the Project,' Outputs 2, 3 and 4 of the Project is deemed to be achieved to some extent with Output 1 being almost achieved and Output 5 being on course to the achievement once the on-going activities have been completed. The intended Outputs of the Project have not been produced to the fullest extent in the Phase 3.
Causal relationship	Are inputs and activities appropriate in achieving outputs?	- As referred to in "1. Achievements of the Project," both the Kenyan and Japanese sides have provided their inputs roughly as planned except for the following inputs. No additional CEMASTEA staff who has the experiences in primary teacher's education was assigned. The budget for conducting the planned INSET and Workshops was not sufficient and its disbursement was delayed. Otherwise the inputs were generally appropriate as all individual inputs were utilised in the intended activities.
	Are there any obstructive factors against the achievement of outputs?	- The achievement level of Outputs for both the primary and secondary levels has been affected by some factors such as the issues on project design, insufficient inputs and project management. - The change involving the national and local administrative personnel by the political changes meant that the process of developing an implementation system for the Project had to be repeated after the assignment of new personnel to the Project. The subsequent change of the implementation system of Workshops midway through the Project caused the temporary suspension of the project related activities. The decision-making process cannot be described as being smooth, causing a delay of some activities.
	Is there any influence by the important assumptions towards outputs?	- The important assumptions indicated in PDM have affected the achievement of Outputs as mentioned in '1. Achievements of the Project.'
Appropriateness of inputs from Kenyan side	Are the head count, placement and skills of CP appropriate?	- Appropriate organizations, departments and personnel necessary to implement the Project have been assigned as CP. However, no additional CEMASTEA staff who has the experiences in primary teacher's education was assigned.
	Are the local costs from Kenyan side appropriate?	- The budget for conducting the planned INSET and Workshops was not sufficient and its disbursement was delayed.
Appropriateness of inputs from Japanese side	Are the number of experts dispatched, their fields of expertise, and timing and period of dispatch appropriate?	- While a proper number of JICA experts have been dispatched in a timely manner, the result of interview with CEMASTEA staff suggests that they need inputs, supports and technical transfer from JICA experts in the area of their assigned subjects as was in the Phase 1 and 2 though JICA experts have placed priority on strengthening the management function of CEMASTEA rather than strengthening its technical capacity. - An expert who has an assignment of statistics could be considered in the Phase 3.
	Are the type, quantity and timing of installation of equipment appropriate?	- Proper quantity of equipment with suitable specifications has been procured.

Evaluation Questions		Findings
Survey Items	**Sub-Survey Items**	
	Are the number of trainees, their fields, training contents, training period and timing of overseas training appropriate?	- A proper scale of training in Japan and the third countries were conducted in a proper timing.
	Are the project budget and local costs appropriate?	- A proper amount of budgets have been disbursed by the Japanese side for appropriate use in a timely fashion.

(4) Impact

Evaluation Questions		Findings
Survey Items	**Sub-Survey Items**	
Prospect for achieving overall goal	Is there any prospect for achieving overall goal after the project?	- As referred to in '1. Achievements of the Project,' the present level of achievement of Overall Goal was not clearly identified based on the results of indicators.
Causal relationship	Does overall goal not lose touch with project purpose?	- The Overall Goal of the Project is losing touch with the Project Purpose in that the Overall Goal, i.e. "Capability of young Kenyans in Mathematics and Science is upgraded," can be achieved by not only the achievement of Project Purpose, but also other many factors such as increase in the number of teachers, teachers' correct knowledge on their subjects, every student's holding textbooks, development and adoption of the assessment based on the learner centred approach, etc.
	Are there any obstructive factors against the achievement of overall goal?	- As mentioned above, the factors such as increase in the number of teachers, teachers' correct knowledge on their subjects, every student's holding textbooks, development and adoption of the assessment based on the learner centred approach, etc. should be considered in the achievement of overall goal.
Other impacts	Are there any project impacts on policies and systems in the education sector of Kenya?	- The remarkable impacts on the policy formulation and institutional aspects are as yet to emerge.
	Are there any positive impacts that are not planned at the time of planning but have been produced by the project?	- Some schools have been trying to exercise some ingenious attempts to improve their teachers' skills in mathematics and science based on the experiences of SMASE INSET and Workshops, one of which is the lesson observation among teachers. - According to the interview with DQASO of Makueni District, the Makueni DPC members recognize the necessity of improving the SMASE INSET based on the needs assessment of teachers and show their high motivation to develop their customized SMASE programme including the training curriculum and contents of SMASE INSET by their own.
	Are there any negative impacts that	- No seriously negative impact was reported in the questionnaires and interviews conducted during the

Evaluation Questions		Findings
Survey Items	Sub-Survey Items	
	are not planned at the time of planning but have been brought about by the project?	Terminal Evaluation.

(5) Sustainability

Evaluation Questions		Findings
Survey Items	Sub-Survey Items	
Policy and institutional aspect	Will the political support by the Kenyan government be carried on?	- The strengthening of teacher education as well as the improvement of teaching/learning in mathematics and science is considered to be one of the important strategies for Kenya in order to lead to the national development. The upcoming "National Education Sector Support Programme" will also support the strengthening of teacher education function. Against this background, the capacity building of organizations involved in the teacher education in the public sector are likely to be continually supported by the Government of Kenya. - The plan for upgrading CEMASTEA to one of the Semi-Autonomous Government Agency (SAGA) status, i.e. the Institute for Capacity Development of Teachers in Africa (ICADETA) is an evidence of the commitment of the Kenyan government to achieving the purpose as well as overall goal of the Project. CEMASTEA is expected in due course to play a role of the leading organization for the strengthening of teacher education in Kenya. - In addition to the upgraded CEMASTEA, TSC has functions to play a role in the teacher management and they have developed the draft of new "Code of Regulations for Teachers" in Kenya. This regulation is going to be issued soon. Besides, the proposed County INSET Centre is expected to strengthen the sustainability of activities at the county level once implemented. To ensure the sustainability, the cooperation and demarcation of roles in the teacher education among MOEST, TSC and CEMASTEA should be therefore harmonized and well coordinated by them with sound discussions.
Organizational aspect	Will the implementation system in CEMASTEA be carried on?	- Although the organizational strength of CEMASTEA as the counterpart organization for the Project has not been fully developed during the project period, the strong government backing described above means that CEMASTEA is expected to play a major role in the strengthening of teacher education in the public sector in Kenya and its organizational authority is therefore likely to grow in the coming years. - Proper debates involving all stakeholders are highly necessary on the roles to be actually played by CEMASTEA and operational matters requiring improvement or strengthening. The upgraded ICADETA is planning to continue the SMASE INSET and Workshops, both of which have been developed under the Project. However, the lack of sufficient personnel at CEMASTEA is a concern. While the institution managed

Evaluation Questions		Findings
Survey Items	**Sub-Survey Items**	
		to implement activities with insufficient number of staff, this may not be the case in the future if the adequate number of academic staff is not allocated.
	Will the implementation system in the regional level be carried on?	- The actual strengthening of SMASE INSET and Workshops of each county and district level will strongly depend on the ownership of its directors and officers. In the counties and districts where the ownership level of directors and officers is high, they will continue to maintain good communication with CEMASTEA as well as the corresponding units of other organizations, resulting in a shared understanding of problems and corrective measures. It is highly desirable for the local administrative units to actively continue to provide information as well as educational activities on the SMASE INSET.
Financial aspect	Will the government be able to allocate the sufficient budget for continuing activities?	- With regard to the implementation cost of SMASE INSET and Workshops, although the budget allocation was not secured for the first year of the Project, it has shown an improvement for the following years during the project period. The delayed allocation of budget, however, has frustrated the planned implementation of project activities as well as the local implementing organizations sometimes faced budgetary difficulties in implementing the SMASE INSET and Workshops. - Proposed SMASE INSET funding as a part of "Free Primary Education" could also strengthen the sustainability to meet the expenses of implementation cost just same as the secondary SMASE funding through "Free Day Secondary Education." However, the reduction of financial allocation in FY2013/2014 could compromise the sustainability. Besides, the delayed disbursement of budget may be another constraint for the implementation of project activities if this happens in the future.
Technical aspect	Does CEMASTEA staff have enough skills for continuing activities?	- In regard to the skills of CEMASTEA staff, as most of them have long experiences of the National Trainers since the Project Phase 2, they have enough know-how and skills for the planning, execution and management of National INSET and Workshops. The status of National Trainer, however, does not automatically guarantee the possession of perfect technical expertise. As the skills to conduct the National INSET and Workshops are essentially elaborated through a series of practical work, it is necessary for them to build up their practical experiences to further polish their skills. From this point of view, it is important for CEMASTEA staff to be continually involved in actual teaching work in the future in addition to their work of training the Regional Trainers.
	Do District, Regional and Cluster Trainers have enough skills for continuing activities?	- In regard to the skill level of the District, Regional and Cluster Trainers, while the skills of those working at the District, Regional and Cluster INSET have improved through the INSET implementation under the Project, it is essential for similar training to continue for Trainers so that they can continue to improve their skills through actual work. The trainers trained under the Project themselves have expressed a wish for continuous training.

Report of Terminal Evaluation of
The Strengthening of Mathematics and Science Education Project (SMASE)
WECSA Component

Contents

Tables

Annexes

Abbreviations and Acronyms

ADEA	Association for Development of Education in Africa
ALEI-PIEI	Activity/Experiments, Learner-centered, Encouragement, and Improvisation - Plan Implementation, Evaluation and Improvement
ASEI-PDSI	Activity, Student-centered, Experiment and Improvisation – Plan, Do, See and Improve
AU	African Union
CEMASTEA	Centre for Mathematics, Science and Technology Education in Africa
COMEDAF	Conference of Ministers of Education of the African Union
CONFEMEN	Conférence des Ministres de l'Education des Etats et Gouvernements de la Francophoni
FAWE	Forum for African Women Educationalists
ICADETA	Institute of Capacity Development of Teachers in Africa
INSET	In-service Education and Training
ICT	Information and Communication Technology
JICA	Japan International Cooperation Agency
JOCV	Japan Overseas Cooperation Volunteer
Ksh	Kenyan Shilling
M & E	Monitoring and Evaluation
MOEST	Ministry of Education, Science and Technology
NPO	Non-Profit Organization
NPC	National Planning Committee
PDM	Project Design Matrix
PO	Plan of Operations
PCC	Programme Coordinators Committee
SMT	Science, Mathematics and Technology
TCE	Third Country Expert
TCTP	Third Country Training Program
TICAD	Tokyo International Conference on African Development
UNESCO	United Nations Educational, Scientific and Cultural Organization
USD	United States Dollar
VVOB	Flemish Association for Development Cooperation and Technical Assistance
SMASE	Strengthening of Mathematics and Science Education

SMASE-WECSA	Strengthening of Mathematics and Science Education in Western, Eastern, Central and Southern Africa
SMASSE	Strengthening of Mathematics and Science in Secondary Education

1. Achievement of the Project

1-1. Result of Inputs

1-1-1. Kenyan Side

(1) Counterpart

All the CEMASTEA staff (described in 1-1 of Kenya Component report) were made available for the activities of WECSA Component such as Third Country Training Programme (TCTP), Third Country Expert (TCE) Dispatch, Technical Workshop, and Regional Conference. Some staff were specially assigned to the WECSA Component as follows.

- WECSA committee, which consists of five members, coordinates TCTP and Technical Workshop (Table 1).
- A temporary committee is organized for each Regional Conference under Coordinator Academic Programme.
- One non-academic staff supports logistics and administration.

Table 1: WECSA committee members

Role in the comittee	Name	Department
Coordinator	Mr. Chesire Berge	Physics
Member	Mr. John Makanda	Physics
Member	Mr. Thuo Karanja	Biology
Member	Mr. Masoka Ndelela	Chemistry
Member	Ms. Priscilla Ombati	Mathematics

(2) Office space

WECSA Component activities utilized CEMASTEA facilities as the Kenya Component. Please refer to 1-1 of Kenya Component report for details.

(3) Cost

The Kenyan side provided a quarter perdiem for staff who travel outside Kenya on top of the travel allowance provided by JICA.

1-1-2. Japanese Side

(1) Japanese experts

All the Japanese experts assigned to the Project served for both of Kenya and WECSA Components. Please refer 1-1 of the Kenya Component report.

(2) Training in Japan

Training was held in Japan from January 29 to February 4, 2012 under the title of "Strengthening for Implementation Capacity of Development Training under South-South Cooperation". Two CEMASTEA staff of WECSA Committee participated in the training.

(3) Equipment and facilities

All equipment and facilities provided by the Japanese side were utilized for both of Kenya and WECSA Components. Please refer 1-1 of the Kenya Component report.

(4) Operational Cost

The cost disbursed so far for the WECSA Component amounts to Ksh. 317,308,219 in total.

Table 2: Cost disbursed by JICA (Ksh million)

Japanese Fiscal Year*	2008/09	2009/10	2010/11	2011/12	2012/13	2013**
Total cost for the WECSA Component	4.49	61.79	74.48	79.40	84.74	12.38

* It starts in April and ends in March.

** Input as of 30 June, 2013

1-2. Progress of Activities

Most of the planned activities were implemented, but some of them were not carried out as scheduled. As regards the activities under Output 1, the implementation of the impact survey was rescheduled due to the cancellation of INSET in Malawi, which the survey team planned to observe. TCTP 18 and 19 were planned to be held within 2011, but they were postponed until January and February 2012 because of the mid-term review held at the end of 2011. Though TCTP 22 was implemented as planned, there was a challenge in meeting deadlines during the preparation stage due to other competing tasks allocated to the CEMASTEA staff. Regarding the activities under Output 2, the preparation of the Technical Workshop in Zambia was delayed because the task team of Zambia had been occupied with other tasks, and the project team[1] had difficulty to control the preparation process from Kenya. Activities under Output 3 are behind the schedule because the project team has been busy with other activities, which have more immediate deadlines. It also took time to develop a common understanding among the project team regarding the vision of the resource center. Please refer Annex 3 for details of the implemented activities.

[1] The project team refers to CEMASTEA counterparts and Japanese experts.

1-3. Achievement of Outputs

Output 1: ASEI/PDSI based INSET providers from member countries are trained.

The achievement level of Output 1 was assessed as below.

Indicator a) TCTP at CEMASTEA is carried out five times.

The regular TCTP courses are categorized into four types, which are Anglophone primary course, Anglophone secondary course, Francophone primary course and Advanced Anglophone secondary course. Three of them are held each year, and they compose one round. As of August 2013, four rounds have been carried out as indicated in Table 3. The fifth round is planned to be held from September 2 to October 18, 2013 (TCTP 23 Advanced Anglophone Secondary Course: September 2-20, 2013, TCTP 24 Francophone Primary Course: September 2-13, 2013, and TCTP 25 Anglophone Primary Course: September 30-October 18).

Indicator b) At least 500 participants attend the TCTP at CEMASTEA.

In total, 694 participants have attended the TCTP since January 2009 as Table 3 indicates. Among them 410 participants are either INSET trainers at the national/regional/divisional level, or in a position to train other teachers as principals/vice principals or teachers who are JOCV counterparts[2].

Table 3: TCTP held during the project period

Year	Title	Date	Participated Countries	Participants
2009	TCTP Southern Sudan	19 Jan - 13 Feb.	Southern Sudan	74
2009 1st Round	TCTP 11	19 Sept. - 10 Oct.	**10 (Anglophone Secondary Course)**: Angola(8), Botswana(8), Cameroon(4), Ethiopia(9), Gambia(8), Malawi(10), Mozambique(7), Tanzania(8), Uganda(7), Zanzibar(8)	77
	TCTP 12	19 Sept. - 31 Oct.	**5 (Francophone Course)**: Benin(6), Burkina Faso(9), Burundi(6), Cameroon(3), Senegal(8)	32
	TCTP 13	19 Oct. - 6 Nov.	**7 (Anglophone Course)**: Ghana(6), Nigeria(8), Rwanda(8), Sierra Leone(8), Southern Sudan(8), Swaziland(8), Zambia(6)	52
2010 2nd Round	TCTP 14	19 Sept. - 15 Oct.	**12 (Anglophone Course)**: Angola(8), Botswana(8), Cameroon(4), Gambia(8), Lesotho(4), Malawi(11), Mozambique(3), Namibia(8), Swaziland(4), Tanzania(8), Uganda(8), Zanzibar(8)	82
	TCTP 15	24 Oct. - 5 Nov.	**7 (Francophone Course)**: Benin(4), Burkina faso(5), Burundi(4), Cameroon(3), Mali(4), Niger(5), Senegal(5)	30
	TCTP 16	20 Oct. - 12 Nov.	**10 (Anglophone Course)**: Ethiopia(6), Ghana(6), Lesotho(4), Mozambique(3), Nigeria(6), Rwanda(6), Sierra Leone(6), Southern Sudan(5), Swaziland(4),	50

[2] The rest of participants (284) are teachers/senior teachers.

			Zambia(4)	
2011 3rd Round	TCTP 17	17 Oct. - 4 Nov.	**11 (Anglophone, Primary Course)**: Botswana(6), Ethiopia(4), Ghana(6), Mozambique(5), Namibia(6), Nigeria(6), Sierra Leone(6), South Sudan(6), Swaziland(6), Zambia(6), Zimbabwe(4)	61
2012 3rd Round continued	TCTP 18	16 Jan. - 27 Jan.	6 **(Francophone, Primary Course)**: Benin (5), Burkina Faso (5), Burundi (5), Mali (5), Niger (5), Senegal (5)	30
	TCTP 19	16 Jan. - 10 Feb.	**8 (Anglophone, Secondary Course)**: Angola (7), Cameroon (6), Gambia (7), Malawi (6), Rwanda (7), Tanzania (7), Uganda (7), Zanzibar (5)	52
2012 4th Round	TCTP 20	3 Sept. - 21 Sept.	**12 (Anglophone Course)**: Botswana (6), Ethiopia (6), Ghana (6), Lesotho (6), Mozambique (5), Namibia (6), Nigeria (6), Sierra Leone (6), South Sudan (6), Swaziland (6), Zambia (7), Zimbabwe (6)	72
	TCTP 21	24 Sept. - 5 Oct.	**7 (Anglophone Course)**: Benin (5), Burkina faso (5), Burundi (5), Mali (5), Niger (5), Senegal (5), Djibouti(1)	31
	TCTP 22	24 Sept. - 12 Oct.	**8 (Anglophone Course)**: Angola (6), Cameroon (7), Gambia (6), Malawi (7), Rwanda (5), Tanzania (6), Uganda (7), Tanzania (7)	51
Total			**26**	**694**

Indicator c) At least 15 sets of training materials are produced (one set of training materials is all materials prepared for one TCTP course).

In total, 12 regular TCTPs, which are categorized into the four types, and one customized course were organized, and one set of training material was produced for each course. As the Project plans to conduct three more TCTPs (TCTP 23, 24 and 25), and is developing a set of material for each, 16 sets of training materials will be developed in total by the end of the Project.

Indicator d) Lesson Innovation Index attains a mean of 2.5.

The impact survey was conducted by the project team in the Gambia, South Sudan, Uganda and Zambia from March to May 2013, and the team found that the mean of Lesson Innovation Index was 3.06. However, Lesson Innovation Index is not a relevant tool to evaluate whether or not training for INSET providers was appropriately conducted, and whether or not participants have learned sufficient knowledge/skills on INSET because it is a tool to assess teacher's practice in classroom[3]. Conducting a test for trainees after each TCTP would have been more pertinent to directly assess quality/appropriateness of the training, and the degree of knowledge gained by participants. Because of this reason, the evaluation team utilized the following two proxy indicators in order to evaluate the quality of training and the degree of knowledge gained by

[3] It consists of 47 questions, such as "Learners are encouraged to think logically during teaching/learning sessions", and "Improvisation is practiced to arouse the interest and curiosity of the learner". Each item is assessed by 5-scale. Measuring classroom teaching capacities of INSET providers who also practice as teachers is not relevant because only part of the INSET providers are classroom teachers (especially, most of the national trainers are full-time trainers or inspectors), and this output aims to strengthen their INSET implementation capacities, not their teaching capacities to children.

participants.

(1) Results of session evaluation

The project team assessed the quality of training through evaluation session, in which each participant evaluates usefulness of training and quality of facilitation. The results are shown in Table 4. The two items are assessed by 5 scale (0-strongly agree, 1-disagree, 2-not sure, 3-agree, 4-strongly agree), and all are more than 3, which is satisfactory.

Table 4: TCTP Evaluation by participants

	TCTP 17	TCTP 18	TCTP 19	TCTP 20	TCTP 21	TCTP 22
Overall usefulness of training	3.9	3.6	N/A	3.7	3.5	3.7
Quality of facilitation	3.7	3.6	N/A	3.6	3.4	N/A

(2) Evaluation on usability of TCTP contents

The evaluation team sent a questionnaire to ex-participants and asked if they utilize what they learned in TCTP. The team confirmed that more than 77% utilize what they learned through the training as Table 5 shows. This result can show, to certain extent, that the training was relevant to the participants, and they gained solid knowledge and skills.

Table 5: Evaluation on usability of TCTP contents

[F=Francophone country, A=Anglophone country, T=Total* **]

Question		1 (low)	2	3	4 (high)
		Not at all	Sometimes	Sufficiently	Very much
1 Do you utilize what you have learned through TCTP?	F (N=24)	0.0%	12.5%	54.2%	33.3%
	A (N=52)	1.9%	13.5%	23.1%	50.0%
	T (N=76)	1.3%	13.2%	32.9%	44.7%

*The sample includes participants who attended TCTP before the Project started in January 2009.

**The 76 responses were collected from 15 member countries.

Summary of Achievement Level: Output 1

Output 1 has been mostly achieved as of August 2013. It will be fully achieved by the end of the project period if the planned activities are implemented, and the quality of upcoming TCTPs and the level of knowledge gained by participants, which are to be assessed by more relevant tool, are proved to be satisfactory.

Output 2: SMASE-WECSA network is strengthened.

The achievement level of Output 2 was assessed as below.

Indicator a) Regional conferences and SMASE-WECSA delegates meetings are held at least four times.

As shown in Table 6 and 7, SMASE-WECSA Regional Conference and Delegates Meeting were held four times. The fact that the last two regional conferences were dedicated to the discussion on the sustainability of WECSA activities (or establishment of SMASE-Africa Association) proves that the network has been sufficiently strengthened. The fifth Regional Conference will be held from October 28 to November 1, 2013, and Delegate Meeting will be held from 28 to 29 October, 2013.

Table 6: SMASE-WECSA Regional Conference

Title	Venue	Date	Theme	Participating countries	Participant
9th SMASE WECSA Regional Conference	Nairobi	16-19 Nov. 2009	Successful & Sustainable INSET Activities and Government Support for Quality Teaching and Learning	Angola, Benin, Burkina Faso, Ethiopia, Gambia, Ghana, Kenya, Lesotho, Mozambique, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Sudan, Swaziland, Tanzania, Uganda, Zambia Zanzibar, Zimbabwe, Burundi, Cameroon	62 (including guests)
10th SMASE WECSA Regional Conference	Nairobi	6-9 Dec. 2010	A Reflection on a Decade of Promoting Mathematics and Science Education in Africa	Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Ethiopia, Gambia, Ghana, Kenya, Lesotho, Mali, Malawi, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Sudan, Swaziland, Tanzania, Uganda, Zambia, Zanzibar, Zimbabwe,	87 (same as above)
11th SMASE WECSA Regional Conference	Nairobi	13-16 Dec. 2011	The Way Forward of SMASE WECSA: Sustainability beyond 2013	Angola, Benin, Botswana, Burkina Faso, Burundi, Ethiopia, Gambia, Ghana, Lesotho, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Sudan, Swaziland, Tanzania, Uganda, Zambia, Zanzibar, Zimbabwe	63 (same as above)
12th SMASE WECSA Regional Conference	Nairobi	12-16 Nov. 2012	Strategizing for Sustainable SMASE Africa Beyond 2013	Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Ethiopia, Gambia, Ghana, Lesotho, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Senegal, Sierra Leone, South Sudan, Swaziland, Tanzania, Uganda, Zambia, Zanzibar, Zimbabwe	103 (same as above)

Table 7: SMASE-WECSA Delegates Meeting

Title	Venue	Date	Participating countries
9th Delegates Meeting	Nairobi	16 Nov. 2009	Burkina Faso, Ethiopia, Gambia, Ghana, Kenya, Lesotho, Mozambique, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Sudan, Tanzania, Uganda, Zambia Zanzibar, Zimbabwe, Burundi, Cameroon, Malawi (22 countries)
10th Delegates Meeting	Nairobi	9 Dec. 2010	Burkina Faso, Ethiopia, Gambia, Ghana, Kenya, Lesotho, Mozambique, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Sudan, Tanzania, Uganda, Zambia Zanzibar, Zimbabwe, Burundi, Cameroon, Malawi, Swaziland, Namibia (24 countries)
11th Delegates Meeting	Nairobi	13 Dec. 2011	Angola, Benin, Botswana, Burkina Faso, Burundi, Ethiopia, Gambia, Ghana, Lesotho, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Sudan, Swaziland, Tanzania, Uganda, Zambia, Zanzibar, Zimbabwe (25 countries)
12th Delegates Meeting	Nairobi	12 Nov. 2012	Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Ethiopia, Gambia, Ghana, Lesotho, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Senegal, Sierra Leone, South Sudan, Swaziland, Tanzania, Uganda, Zambia, Zanzibar, Zimbabwe (25 countries)

Indicator b) Increased number of countries participating in SMASE-WECSA activities and implementing INSET.

The number of member countries has increased from 25 to 27. The number remains unchanged since 2010.

Table 8: Number of member and observer countries

Category	2009	2010	2011	2012	2013
Member	25	27	27	27	27
Observer	9	7	7	7	7
Total	34	34	34	34	34

Indicator c) Technical workshops organized by Kenya or in collaboration with member countries are held at least three times.

Three Technical Workshops were conducted three times as shown in Table 9. As ex-participants evaluate the three Technical Workshops highly[4], the quality was also satisfactory.

Table 9: Technical Workshop conducted by the Project

Title	Venue and Date	Participant	Theme
1st Technical Workshop	Swaziland, 25-29 May 2009	97	Enhancing Classroom Activities for Quality Teaching and Learning through Lesson Study
2nd Technical Workshop	Nairobi, Kenya 23-27 July, 2012	63	Enriching the practice of ASEI-PDSI in the classroom

[4] Please refer "2-2-3. Technical Workshop"

3rd Technical Workshop	Lusaka, Zambia 17-21 June, 2013	104	A Comprehensive Approach Towards Learner-Centered Lessons Based on Classroom Practice

Summary of Achievement Level: Output 2

Output 2 has been fully achieved judging from the achievement level of each indicator. Besides conferences and workshops described above, other activities implemented under this Output such as technical visits, Third Country Experts dispatch, provision of assistance for related workshops in member countries, and conducting OJTs also contributed to strengthen the network. Though the evaluation team confirmed that the contents of meetings/conferences and the quality of workshops were satisfactory, indicators to assess these as well as perception of member countries regarding the network should have been set in PDM beforehand.

Output 3: Role of CEMASTEA is strengthened as a resource center for Mathematics and Science education in Africa.

The achievement level of Output 3 was assessed as below.

Indicator a) ASEI/PDSI prototype lesson plans, developed by member countries, are compiled and disseminated.

At the moment, ASEI/PDSI prototype lesson plans have not been compiled and disseminated. During the remaining project period, the project team plans to select well-developed lesson plans made during TCTP, and compile and digitize them to upload to the website to share with the member countries.

Indicator b) One of the TCTP materials (write-ups) is revised/refined for publication.

The project team is developing digitized TCTP materials for primary and secondary basic courses. As of August 2013, the first draft was submitted and confirmation process of copy right issue is on-going. They will be finalized immediately after TCTP 2013.

Indicator c) The revised material is digitized and made available through the CEMASTEA website.

The digitized materials will be made available through the CEMASTEA website after they have been revised.

Summary of Achievement Level: Output 3

Output 3 has not been achieved yet due to the delay in implementation of the activities.

1-4. Achievement of the Project Purpose

Project Purpose: Capability of INSET providers (trainers and administrators) to implement ASEI/PDSI based INSET in member countries is strengthened.

The achievement level of the Project Purpose was assessed as below.

Indicator a) INSET providers obtain a mean of 2.5 on a scale of 0-4 in the overall assessment of Capacity Building Index for INSET provision.

Capacity Building Index is an INSET providers' self-assessment on their capacities to conduct INSET. They assess their capacities by answering 19 questions[5]by 5-scale (0-strongly agree, 1-disagree, 2-not sure, 3-agree, 4-strongly agree). According to the on-line survey conducted in November 2011 to 69 ex-participants of 17 countries[6], the mean was 3.08. The results of the project impact survey show higher attainment, which is 3.29 as Table 10 shows. The impact survey team also observed INSET sessions, and objectively confirmed that the ex-participants' facilitation skills have been developed sufficiently, and the INSET contents were relevant as shown in Table 11. The contents of South Sudan, for which the project team provided extensive assistance, have the highest score. The relatively low facilitation scores of South Sudan and Uganda resulted from the absence of an evaluation session.

Table 10: Capacity Building Index (self-assessed)

Country	Sample	Index
South Sudan	32	3.2
Gambia	6	2.9
Uganda	7	3.8
Zambia	13	3.4
Total/Average	58	**3.3**

Table 11: Rate for INSET Contents and Facilitation Skills (evaluated by the impact survey team)

Country	Contents	Facilitation
South Sudan	3.21	2.60
Gambia	2.65	2.79
Uganda	2.80	2.46
Zambia	2.60	3.13
Total/Average	**2.82**	**2.75**

Regarding administrators, the Project intended to strengthen their capacities through experience-sharing in Regional Conferences, accepting technical visits of officers, and providing TCTP for some of them. Though an indicator to directly measure capacities of administrators is not set, the impact survey sought to confirm their capacities via observing managerial aspect of INSET sessions, and interviews with managers. The impact survey team found that the INSET sessions were well managed with good preparation, and the managers were supportive of the training, providing

[5] The questions can be roughly divided into four categories, which are preparation (e.x. I usually prepare INSET work plans in time), delivery (e.x. I always use participatory approach during INSET sessions), evaluation (e.x. I am capable of analyzing and interpreting data collected during INSET), and team work (e.x.I establish and maintain good rapport among trainers, and participants).

[6] Botswana, Gambia, Lesotho, Malawi, Namibia, Swaziland, Tanzania, Uganda, Zanzibar, Ethiopia, Burundi, Ghana, Nigeria, Rwanda, Sierra Leone, Southern Sudan, Zambia

necessary assistance and participating in M&E activities.

Indicator b) The extent to which the ASEI-PDSI concept is reflected in the training manual/materials in the member countries.

In order to assess this indicator, a questionnaire was distributed by the project team to the participants of Technical Workshop in Zambia, and answers from 11 countries were collected. Among the 11 countries, training manuals/materials of three countries have limited reflection of the concept of ASEI-PDSI, those of six countries have certain reflection, one country has a will to reflect, and one answer was not pertinent to the question. According to the impact survey results, all the four countries incorporated the concept in their training contents. However, it was found that "capabilities of INSET providers" cannot be proved by the level of reflection of ASEI-PDSI in their manuals/materials as explained below.

Countries with limited reflection

A participant from Zanzibar answered that the reflection is limited because it takes time to convince ministry officials to change. A participant of Namibia answered that it is reflected to some extent in that lesson observation/post discussions is conducted, but the country uses its own learner-centered approach material; this does not necessarily mean that the concept of ASEI-PDSI was incorporated in their material after TCTP. Cameroon replied that "the training contents are in line with the ASEI-PDSI model in that teaching/learning materials need to be cost-effective, the contents are learner-centered, and the contents include activities", but this does not also mean the country revised its manual after TCTP. In fact, a national teacher training manual on learner-centered approach in Cameroon (Module de Formation des Formateur sur la Nouvelle Approche Pédagogique, l'Approche par Competence) does not include the concept of ASEI-PDSI, and it is more similar to manuals of other Francophone countries, which adopt competency-based approach. Incorporation of the concept therefore is difficult for countries, which already have existing manuals.

Countries with reflection

A participant from Ethiopia replied that it is reflected 95-100%. Respondents of Ghana, Tanzania, Lesotho and Zambia answered that some ideas of the concept were incorporated. The adoption/adaptation of the concept in materials in Zambia was also verified by the impact survey. A participant of Malawi replied that their training contents even cover shortfalls of ASEI-PDSI. The results of the impact survey indicate that the aspects of ASEI-PDSI feature extensively in the INSET contents in South Sudan. The training materials of the Gambia are also quite similar to those they were trained with in Kenya. The team also found that Uganda adopts a similar concept called ALEI-PIEI (Activity/Experiments, Learner-centered, Encouragement, and Improvisation - Plan Implementation, Evaluation and Improvement) but it was adapted to the Ugandan contexts, and the contents incorporate ideas which are different from ASEI-PDSI as well.

These countries, except for Lesotho and the Gambia, either implement JICA projects or received extensive assistance from CEMASTEA. On this basis, it is assumed that the existence of these projects and special assistance from CEMASTEA are important factors to enable the incorporation of the concept. Moreover, new country, such as South Sudan, and a country, which did not have specific manuals such as the Gambia, tend to directly adopt the Kenyan manual while countries with their own projects incorporate or adapt only the necessary parts. In other words, the more the country has experiences in INSET, the more they have the ability to adapt the concept according to the country's context and needs.

Others

A participant from Angola replied that the country shall reflect inputs from TCTP in the national INSET material in future. Though the country is implementing ASEI-PDSI based INSET gradually, the approach has not yet been officially authorized.

Summary of Achievement Level: Project Purpose

The Project Purpose was mostly achieved. In addition to the above assessment, the evaluation team has confirmed that more than 97% of the 47 respondents from 15 countries answered that their capacities were developed by the assistance from CEMASTEA (Please refer Table 15). Meanwhile, the contribution from the science and mathematics projects supported by JICA in member countries also needs to be taken into consideration for these achievements.

With regards to the degree of reflection of ASEI/PDSI in the training manual/materials, achieving it appears to be difficult for countries which already have their own training manuals, and which neither implemented a JICA project nor received a special assistance from CEMASTEA. It is because changing training manuals requires not only capacities to do so but also political decision at the higher level in each country. This indicator therefore does not necessarily prove the degree of capacity developed. Thus, setting more robust indicators was desirable in order to prove the effectiveness of the approach more strongly.

1-5. Achievement of the Overall Goal

According to the results of the questionnaire of the evaluation team, 43.4% responded that their countries own INSET policies, 60.5% responded that they have administrative structures, 52.6% responded that they have funding mechanisms, and 52.6% answered that they have M&E structures. It is impossible, however, to assess the achievement level of the Overall Goal due to the absence of definitions, baseline data and targets for the indicators, and limited reliability of obtained information. Also, the causality between intervention of the Project and the indicators is limited; extensive and special assistance is often required for developing a policy and establishing INSET structures in developing countries. At the same time, achieving these are subject to many external

conditions. From these reasons, setting new indicators is recommended.

Overall Goal: INSET systems in member countries are established/strengthened.

(a) Existence of policy on INSET

According to the results of the questionnaire of the evaluation team, 43.4% responded that their countries own an INSET policy while 17.1% answered no, and 39.5% did not answer (N=76). However, as there are cases in which respondents from the same country answered differently, the information lacks reliability. Another questionnaire was distributed by the project team to the participants of the Technical Workshop in Zambia, and answers were collected from 16 respondents (16 countries). Six respondents (countries) replied that there are policies, but one added it is under review, another explained that it is not properly documented, and another describes that it is not implemented properly[7]. Also, it is not certain whether or not these are policies/bills approved by the parliaments, education sector strategies which cover a certain period, regulations/recommendations issued by related ministries, or just practices.

Meanwhile, the impact survey team confirmed that the Gambia and Zambia had INSET Policy documents while South Sudan and Uganda do not have them[8].

(b) Existence of administrative structure on INSET system

This indicator seeks to assess whether or not the section responsible for INSET exists in the respective ministries of education, and if appropriate personnel are allocated. According to the results of the evaluation team questionnaire, 60.5% responded that their countries own an administrative structure while 1.3% answered no, and 38.2% did not answer (N=76). However, as there are cases in which respondents from the same country answer differently, the information lacks reliability. The impact survey found that all the four countries own an INSET structure.

(c) Existence of a funding mechanism for INSET

According to the results of questionnaire of the evaluation team, 52.6% responded that their countries own a funding structure while 7.9% answered no, and 39.5% did not answer (N=76). However, as there are cases in which respondents from the same country answer differently, the information lacks reliability.

With regards to the results of the questionnaire distributed by the project team, 14 respondents among 18 answered that some kind of governmental funds for INSET are available in their countries[9]. Also, some respondents mentioned the availability of funds from donors. Zimbabwe

[7] Though a participant from Cameroon answered "There is a policy, which is not institutionalized", it was confirmed by the Ministry of Secondary Education that the country does not have a policy.

[8] As the policy document of the Gambia was made in 2004, and the country started sending participants to CEMASTEA in 2005, the policy was not developed as a result of the assistance of the Project. Also, as the policy document of Zambia was developed in 1996, they were not influenced by the Project.

[9] Answers from four respondents were not pertinent to the question.

and Uganda referred that they have a funding mechanism in which each school is required to pay certain amount to regional/district education office or committee so that these offices can organize INSET for teachers. The system in Uganda is called SESEMAT fund, which was developed through the JICA project.

(d) Existence of M&E systems of INSET

According to the results of the evaluation team questionnaire, 52.6% responded that their countries own an M&E system while 3.9% answered no, and 43.4% did not answer (N=76). However, as there are cases in which respondents from the same country answer differently, the information lacks reliability.

Regarding answers to the project team questionnaire, 16 respondents among 18 answered that some kind of M&E system exists in their countries[10]. Many answered that it includes lesson observation by principals and inspectors to monitor if teachers effectively apply what they learned through INSET, reporting the observation results to district/regional offices, and reporting the results further to the national level. Some also mentioned that there is a system in which inspectors, national trainers, and officials at the central level in M&E division monitor and evaluate INSET sessions/workshops. In addition, all the four countries studied by the impact survey had some type of M&E system.

1-6. Changes of Precondition and Important Assumptions of the Project

A pre-condition of the Project is "Member countries have or will have plans of improving Mathematics and Science Education at basic level". The assumption has not been changed, and it has been fulfilled. (Please refer "Policy of Kenya and WECSA member countries" in "3-1-1 Relevance" for details.).

An important assumption to achieve the Overall Goal is "Policy frameworks in participating countries will be supportive of INSET for Mathematics and Science teachers". It is fulfilled, considering the fact that the member countries keep sending trainees for TCTP, and representatives attend Delegates Meetings and Regional Conferences. However, if the Project aims to achieve the current Overall Goal, more assumptions will be needed because developing an INSET policy and establishing INSET structures in other countries are subject to many external conditions.

[10] An answer from a respondent was not pertinent to the question.

2. Implementation Process

2-1. Appropriateness of the Project Management Structure

Decision making and communication

SMASE-WECSA Association is an association registered in Kenya in 2003, which aims to promote mathematics and science education in Africa. The association currently has 27 member countries, which pay the subscription fee of 300 USD per year, and seven observers. The steering committee of the association composes of five members, being chaired by Mr. Edward Tindi in Zambia. Though the association now functions independently, the project team has maintained communication with the association regarding implementation of the project activities, such as TCTP, Technical Workshop and Regional Conference/Delegates Meeting as the project activities were targeted on the member countries of the association.

Communication with member countries regarding TCTP has been adequate. However, it was found that information sharing on other WECSA activities was not always satisfactory to other member countries. For example, Francophone countries were not aware of the first Technical Workshop held in Swaziland. Also, they were invited to the Technical Workshop in Zambia at the last minute while Anglophone countries have been invited well in advance.

Monitoring

Monitoring of the quality of TCTP has been conducted by means of pre- and post-training evaluation, in which participants assess their attitudes by 0-4 scale. Also, overall evaluation of the training has been conducted by participants with the same scale. These results are to be incorporated into TCTP reports, and to be reflected in the next TCTP. However, the evaluation team found that the report format is not standardized, items assessed are different from one report to another, the reports are not presented in a reader-friendly way, and the analysis is not sufficient. Therefore, it is difficult to retrieve necessary data/information from the current reports. Improvements in these aspects will enable effective utilization of TCTP reports, which will lead to improvement of the quality of TCTP.

Monitoring of indicators in PDM has not been conducted regularly by the project team because not all the members of the team had the same understanding regarding indicators and definitions of phrases, and related records have not been kept properly. This hinders regular monitoring of progress of the Project against the indicators by the project team.

Counterparts/Ownership

Activities to sustain the network are being conducted by CEMASTEA. For example, the Ministry of Education, Science and Technology (MOEST) of Kenya has sent a letter to the member countries in January 2013 to call for support to establish SMASE-Africa Association. CEMASTEA has also taken initiative to contact AU to seek their support after the termination of the Project, and to put SMASE-WECSA on the agenda of COMEDAF meetings. Moreover, the member countries initiated discussions in the last two Delegates Meetings regarding how to sustain SMASE-WECSA

Association. There is a growing sense of belonging among the member countries.

Meanwhile, during the interviews, it was pointed out by some staff that the motivation of working-level staff for the activities of WECSA Component is not very high. Though discussions about providing honorarium for conducting TCTP are ongoing, efforts to raise intrinsic motivation of the staff are needed as well.

In spite of increase of activities in this phase, the number of staff in CEMASTEA was decreased because sufficient replacement was not made. This is one of the reasons that some activities are behind the schedule and deadlines are often missed.

2-2. Appropriateness of the Training System

2-2-1. Third Country Training Program (TCTP)

Responses to the questionnaire for the terminal evaluation show that more than 92% of ex-participants evaluate TCTP positively as shown in Table 12 (Question5). They also evaluate trainers of CEMASTEA highly (Question 2). Meanwhile, opinions such as "a few trainers had challenges in facilitation" were heard through interviews and responses to the questionnaire. Responses to Question 4 reveal that not all the participants think that Kenyan trainers are more competitive than trainers in their own countries.

Both Anglophone and Francophone countries evaluated TCTP highly, but slight differences can be observed. The percentage who rated the positive sides (Rate 3: Sufficiently/Good, and Rate 4: Very much/Very good) is almost the same between Francophone and Anglophone countries except for Question 4. However, differences can be observed in the percentage who rated the highest (Rate 4: Very much/Very good). In all the questions, more Anglophone participants marked the highest than those of Francophone countries. This is mainly due to the fact that: (1) instruction language of CEMASTEA is English; (2) translators are not familiar with the vocabulary of the subject, (3) Francophone participants have chances to observe classes, but do not have an opportunity to teach in classroom because the language of instruction in Kenya is English. Answers from Lusophone countries could not be obtained, but it is assumed that the situation may be the same as Francophone participants because trainers of CEMASTEA often observed that Lusophone participants were not following because they did not understand English.

In addition, a questionnaire was distributed to Japanese experts in member countries by the evaluation team, and eight responses were collected. Seven of them assessed that their counterparts developed their capacities sufficiently (Rate 3) by TCTP[11], and seven of them answered that their counterparts sufficiently utilize what they learned through TCTP (Rate 3)[12]. Meanwhile, three of them think that it is not necessary to send their counterparts and other related stakeholders to TCTP in Kenya anymore because the countries have developed their own INSET system.

[11] One did not answer to this question.
[12] One did not answer to this question.

Table 12: Evaluation of TCTP by ex-participants

[F=Francophone country (N=24), A=Anglophone country (N=52), T=Total (N=76* **)]

Question		1 (low)	2	3	4 (high)	No answer
		Not at all	Sometimes	Sufficiently	Very much	
1 Do you utilize what you learned through the training?	F	0.0%	12.5%	54.2%	33.3%	0%
	A	1.9%	13.5%	23.1%	50.0%	11.5%
	T	1.3%	13.2%	32.9%	44.7%	7.9%
		Not good	Not very good	Good	Very good	No answer
2 How do you evaluate the trainers of CEMASTEA?	F	0%	0%	66.7%	33.3%	0%
	A	0%	0%	46.2%	42.3%	11.5%
	T	0%	0%	52.6%	39.5%	7.9%
		Not good	Not very good	Good	Very good	No answer
3 How do you evaluate the materials distributed during the training?	F	0%	4.2%	70.8%	25.0%	0%
	A	0%	0%	50.0%	40.4%	9.6%
	T	0%	1.3%	56.6%	35.5%	6.6%
		Not competitive	Not very competitive	Sufficiently	Very competitive	No answer
4 Do you think that trainers of CEMASTEA are more competitive than the trainers in your country?	F	4.2%	16.7%	58.3%	0.0%	20.8%
	A	3.8%	7.7%	53.8%	21.2%	13.5%
	T	3.9%	10.5%	55.3%	14.5%	15.8%
		Not good	Not very good	Good	Very good	No answer
5 Overall, how do you evaluate the training conducted at CEMSATEA Kenya?	F	0%	0%	62.5%	37.5%	0%
	A	0%	1.9%	42.3%	46.2%	9.6%
	T	0%	1.3%	48.7%	43.4%	6.6%

*The sample includes participants who attended TCTP before the Project started in January 2009.

**The 76 responses were collected from 15 member countries.

Box 1: Comments from the respondents of questionnaire regarding TCTP

1. Anglophone countries

Most beneficial contents of TCTP

- ASEI/PDSI approach
- Development of M&E tools
- How to develop and utilize lesson observation tools
- Identifying key questions
- Bridging ASEI lessons
- Questioning techniques
- How to manage large class
- How to develop lesson plans
- How to raise interest of learners
- Skills for improvisation
- Developing activity-based content
- Subject content
- Collaborating with other participants in lesson preparation and implementation

Suggestion for improvement

- Focus on teaching skills/methodologies as curricular differ.
- French speaking participants should not be included in the English speaking course.
- The duration should be longer.
- More time for development of producing materials is needed.
- Involve trainers from other countries as facilitators.
- More emphasis should be put on lesson study.
- More emphasis should be put on developing teaching/learning materials.
- More practical activities like lab experiments should be integrated.
- Follow upon trainees and evaluate their progress.
- More time for lesson implementation needs to be secured.
- Focus on how to deliver difficult lessons in a simple way.
- Assess capacities/background (past experience, education, etc.) of trainees before training starts.
- Managers should be able to attend training on management skill.

2. Francophone countries

Most beneficial contents of TCTP

- ASEI/PDSI approach
- How to use activities effectively in classroom
- How to implement child-centered approach in classroom
- How to develop and utilize lesson observation tools, Lesson observation
- How to make experimental materials using waste/local materials
- How to contextualize lessons
- Improvisation
- How to organize and facilitate teacher training session
- How to collaborate with colleagues
- Learning about experiences of Kenya and other countries

Suggestion for improvement

- Translation (during training and documents) needs to be improved/ It is better to conduct the training in Francophone countries.
- It is better to leave participating countries to present their education system for better sharing.
- The topics dealt in the course need to be informed to participants well in advance.
- Follow up after the training (how to put into practice in each member country) is necessary especially for countries without JICA project.
- The duration should be longer.
- It is better to secure time for experience sharing with other participating countries (even with Anglophone countries).
- Improve the contents constantly by reflecting feedback from participants.
- How to use ITC in math and science needs to be introduced.
- More emphasis should be placed on making teaching-learning materials/Examples of how to make teaching/learning materials need to be put into data center of CEMASTEA.
- It is better not to mix INSET trainers with teachers in a course because their levels are different.

Some of the most prevalent opinions shared by evaluation questionnaire respondents and interviewees are: 1) increase more practical work/actualization; 2) create a website where ex-participants can exchange opinions, and related documents can be downloaded; 3) follow-up activities/visits are necessary after the training, and 4) the duration is too short.

2-2-2. Third Country Expert (TCE) Dispatch

As shown in Table 13, those who had received technical assistance from Kenyan experts are mostly satisfied with it. Similarly to the responses on TCTP, Anglophone countries evaluate TCE more highly than Francophone countries.

According to a Japanese expert in a member country, who had experiences in accepting TCEs from CEMASTEA, the quality of experts is different from one person to another. As the current system of CEMASTEA does not allow requesting countries to choose which expert they would like to invite, the project of this member country stopped asking for assistance of TCE.

Table 13: Evaluation of TCE

[F=Francophone country, A=Anglophone country, T=Total* **]

Question		1 (low)	2	3	4 (high)
		Not good	Not very good	Good	Very good
1 How do you evaluate the Kenyan experts dispatched to your country?	F (N=5)	0%	0%	80.0%	20.0%
	A (N=11)	0%	0%	36.4%	63.6%
	T (N=16)	0%	0%	50.0%	50.0%
2 How do you evaluate the technical assistance provided by the Kenyan experts?		Not good	Not very good	Good	Very good
	F (N=5)	0%	0%	80.0%	20.0%
	A (N=12)	0%	0%	58.3%	41.7%
	T (N=17)	0%	0%	64.7%	35.3%

*Responses regarding TCE before the Project started in January 2009 are included.

**The 16 responses were collected from seven countries.

2-2-3. Technical Workshop

Participants of Technical Workshop are highly satisfied with it as shown in Table 14. 79.2% of respondents marked "Very good (highest)" for the evaluation of the Technical Workshop. Among eight Japanese experts in member countries, three answered that the capacities of their counterparts were strengthened by Technical Workshops. Others answered not sure or not very much mainly because Technical Workshop in Zamia was held only one month ago.

Table 14: Evaluation of Technical Workshop

[F=Francophone country, A=Anglophone country, T=Total*]

Question		1 (low)	2	3	6 (high)
		Not good	Not very good	Good	Very good
1. How do you evaluate the Technical Workshop of SMASE-WECSA?	F (N=5)	0%	0%	25.0%	75.0%
	A (N=20)	0%	0%	20.0%	80.0%
	T (N=25)	0%	0%	20.8%	79.2%

*The 25 responses were collected from 13 countries.

3. Evaluation by the Five Criteria

3-1. Evaluation by Means of the Five Criteria

3-1-1. Relevance

Relevance is high.

Policy of African nations

The Project is in line with the policies of African nations. African Union prioritizes teacher development along with mathematics and science education in its strategic paper "Second decade of education for Africa (2006-2015)". Also, the activities of the WECSA Component are at the same time activities of the working group of mathematics and science education of the Association for the Development of Education in Africa.

Japanese aid policy

The Project is coherent with the Japanese aid policy to Kenya. Firstly, assistance for human development is categorized as one of the five priority assistance areas based on the perspective that human development is indispensable for poverty reduction and economic development. The policy also stipulates that region-wide capacity development of teachers will be implemented with CEMASTEA. Secondly, "expanding projects under "Strengthening Mathematics and Science in education (SMASE)" is listed as one of the activities of Yokohama Action Plan (2013-2017), which was adopted by TICAD V held in June 2013.

Needs of Kenya and WECSA member countries

The Project is relevant to the needs of target countries. The member countries, which implement JICA INSET projects, have needs to expose their counterparts to the basics of ASEI-PDSI, and strengthen their capacities especially at the initial phase of their projects. Other member countries also promote the learner-centered approach, but most of the INSET trainers had few ideas on how to practice it in classroom. Therefore, the Project, which develops capacities of INSET trainers on ASEI-PDSI, was coherent with the needs of the member countries. Meanwhile, it also matches the needs of Kenya, which aims to maintain and further strengthen partnership with Japan and other countries in the field of science and mathematics education.

To better respond to the emerging needs of the member countries, the project team has revised contents of training constantly: the team developed a more practically-oriented course in 2009 to cater for the needs of participants with basic knowledge; the modular approach was trialed in 2010 and 2011, and the Advanced Anglophone secondary course was introduced in 2012 to meet the needs for repeaters. Moreover, in response to the increasing demands for the primary course, the project team has started accepting more participants for the primary course since 2011. Also, the Project increased the frequency of Technical Workshop to fulfill the needs for more technical-oriented conference and opportunities for experience-sharing.

Appropriateness of the means

The means that the Project adopted was appropriate. Firstly, Kenya has accumulated sufficient knowledge and skills to assist other countries by implementing JICA projects for more than a decade. Secondly, many Sub-Saharan African countries have same challenges that Kenya used to have, and the context and education system of these countries, especially Anglophone nations, are very similar to those of Kenya. Therefore, Kenya is well positioned to provide relevant assistance to other African countries. From these reasons, it is pertinent that the Project was designed as a region-wide South-South Cooperation project, which revolves around CEMASTEA, Kenya.

3-1-2. Effectiveness

Effectiveness is moderately high.

Likelihood of Achieving the Project Purpose

The Project Purpose was mostly achieved as explained in "1-4. Achievement of the Project Purpose".

Effectiveness of regular TCTP, TCE and Technical Workshop for capacity development

As shown in "2-2 Appropriateness of the Training System", TCTP, TCE and Technical Workshop are evaluated highly. Also, more than 97% of the respondents answered that their capacities were developed by assistance from Kenya as shown in Table 15. Moreover, the impact survey team observed INSET sessions, and noted that the capacities of ex-trainees were developed; they could compare and contrast the ASEI lesson plan with the existing model, the sessions were conducted in a participatory manner, and they demonstrated ability to develop training curriculum, organize well-planned training, and monitor and evaluate the training.

Table 15: Degree of capacity developed by assistance from CEMASTEA

[F=Francophone country, A=Anglophone country, T=Total]

Question		1 (low)	2	3	4 (high)
		Not at all	Not very much	Sufficiently	Very much
1 Overall, do you think that assistance from CEMASTEA (training, technical assistance and technical workshop) was useful to develop your capacity?	F (N=9)	0%	0%	11.1%	88.9%
	A (N=38)	2.6%	0%	50.0%	47.4%
	T (N=47)	2.1%	0%	42.6%	55.3%

Meanwhile, it is assumed that the effectiveness to Francophone and Lusophone participants is lower than that of Anglophone participants due to the barrier of language. Many Francophone ex-participants responded that the quality of translation was not good, and they often had hard time understanding the translation. Moreover, according to CEMASTEA staff, Lusophone participants had difficulties to follow English course. CEMASTEA staff also acknowledge that Francophone and Lusophone participants are not learning as much as Anglophone participants.

One of the challenges on the effectiveness of TCTP and Technical Workshop is that the contents tend to be general so that they will be relevant for all the member countries. If TCTP and Technical Workshop target country-specific issues, the effectiveness of these activities will be enhanced.

Another challenge heard from ex-participants of Cameroon, which does not have a JICA project, is the difficulty to adapt and spread ASEI/PDSI without additional support. According to them, two-week TCTP is sufficient to expose them to the idea of ASEI/PDSI, but it is neither sufficient to be confident in their knowledge/skills nor to train other trainers on it. Therefore, they would like follow ups from Kenyan experts, but they do not know the way to link with the project team after the training. This opinion was prevalent among the countries, which do not have science and mathematics projects supported by JICA. The effectiveness for these countries could have been more visible by leveraging the follow-up activities.

Effectiveness of customized assistance

For South Sudan, a customized TCTP course was developed based on their needs, and it was conducted for 73 participants in 2009. At the same time, Third Country Experts were dispatched three times to provide assistance for project formulation, development of training curriculum/ modules, and tools for evaluation and baseline survey. It was proved, by the observation of INSET sessions by the impact survey team, that this country-specific assistance was effective to develop their INSET capacities significantly. Meanwhile, though a series of customized assistance, which are four-time expert dispatch to assist facilitation of INSET, was provided to Angola, , there were no opportunities to measure the outcome in the country.

3-1-3. Efficiency

Efficiency is mixed.

Achievement of Outputs

While Output 1 and 2 have been mostly achieved, the achievement level of Output 3 is low due to the delay in the activities. The progress of Output 3 started to be accelerated after NPC and PPC meetings started, and Japanese experts were dispatched for this component.

Cost Efficiency

South-South Cooperation such as regional training and technical exchange often require lower costs, and produce outcomes equal to or more than North-South Cooperation. Also, past inputs to Kenya, which are Kenyan human resources and experiences strengthened over a decade of cooperation and equipment provided previously were utilized effectively in the Project. These factors increased the efficiency of the Project.

Though the main target for TCTP was INSET providers, 282 among 694 participants, which accounts for 40%, were teachers[13][14]. The project team needed to accept regional trainers and even teachers because most of the national trainers in the member countries had been already trained in CEMASTEA. Although TCTP is beneficial to each individual, training teachers of other countries is not efficient considering costs incurred and limited chance they have to spread what they learned. Also, the project team needed to spare time and energy to reconfirm whether or not these teacher applicants are in a position to train other teachers.

Project management system

Currently, the tasks related to the WECSA Component are delegated to two committees; while WECSA Committee coordinates TCTP and Technical Workshop, an ad hoc committee coordinates Regional Conference. It caused a challenge in terms of communication regarding the WECSA Component. Meanwhile, as CEMSATEA has decided that the WECSA committee will be in charge of all the WECSA activities from now onwards, it is expected that this issue will be solved shortly.

Documents produced by the Project, such as reports, lesson plans and TCTP evaluations (of Francophone countries) have not been kept properly by the project team. Therefore, it took time for the project team to retrieve them when they are necessary.

Coordination with other donors

VVOB, the Belgian NPO, has been assisting CEMASTEA on ICT capacity development. Though a direct collaboration was not made, the Project benefitted from ICT expertise of CEMASTEA developed by VVOB especially in terms of development of CEMASTEA website, which is necessary to achieve Output 3.

Coordination with other schemes

Additional buildings are being constructed by JICA grant, and expected to be completed by the end of September 2013. As a library is included in the construction, a complete library will be established by the end of the Project, which will strengthen the achievement level of Output 3.

3-1-4. Impact

Impact is medium.

Likelihood of Achieving the Overall Goal

As indicated in "1-5 Achievement of the Overall Goal", it is impossible to assess the achievement level due to unclear definitions, targets, baseline data, and obtained information on the

[13] Teachers and senior teachers were counted. Head teachers/Principals/Superintendents, Assistant head teachers, Teachers who are JOCV counterparts, Teachers who are also divisional trainers/teacher support team members were not counted.

[14] According to the project team, though their title is teacher/senior teacher, there is a possibility that they are also involved in some type of teacher training as trainers.

indicators. Also, the causality between intervention of the Project and the indicators is limited.

Other Impacts

SMASE-WECSA Association is a registered organization in Kenya. It was borne out of SMASSE Kenya project in 2001, but it has been functioning independently from the Project. The association currently has 27 member countries and 7 observers, and chaired by Mr. Edward Thindi in Zambia. In view of termination of the Project in 2013, issues regarding the sustainability of the network are increasingly discussed among the member countries of the association during this project period. As a consequence, the Strategic Plan 2014-2018 was developed by the association in 2011, and 13 resolutions have been adopted in the following year, which include raising registration and subscription fee, establishing country chapters, and collaboration with CONFEMEN, ADEA and National Commissions for UNESCO. Moreover, COMEDAF has recognized CEMASTEA as the lead agency for improving science, mathematics and technology (SMT) in Africa.

Moreover, the network enabled the member countries to conduct technical exchanges of their own. For example, Niger, Burkina Faso and Senegal conducted experience-sharing workshops in 2009 and 2010. Also, Senegal and Zambia are planning to hold a joint workshop on lesson study. At the lower level, ex-participants still keep in touch with other participants, and exchange information and/or documents though e-mails. The culture of mutual learning is gradually being formed in the region.

3-1-5. Sustainability

Sustainability is mixed.

Policy

Currently, CEMASTEA is mandated by MOEST to conduct WECSA Component activities. There are strong indications, through the bill to convert CEMASTEA to ICADETA and the commitment of MOEST to COMEDAF that CEMASTEA will serve as a lead agency for improving SMT, that the Kenyan government will continue to support WECSA activities.

Budget

No alternative funding has been confirmed to run WECSA Component activities after the project period. In order to secure financial sustainability, a resolution to raise subscription fee of SMASE-WECSA Association was adopted, but it is not sure if all the countries are ready to pay 1,500 USD per year, which is five times more expensive than the previous fee.

Meanwhile, MOEST mentioned that it may be possible to cover the budget for regional activities by calling for financial contributions from the member countries after CEMASTEA has been transformed to ICADETA.

Institutional/Personnel/Organizational Issue

The bill to convert CEMASTEA to the Institute of Capacity Development of Teachers in Africa (ICADETA) was developed by MOEST to re-engineer CEMASTEA and empower the center so that its mandate can be carried out more effectively with more autonomy. It is expected that the bill will be approved by the parliaments within this year. Once the bill is approved, a governing council of its own will be created, and staff will be employed directly by the council. It will be easier, under this more autonomous system, to create a section solely in charge of WECSA Component (or future SMASE-Africa Component), which will enhance the activities and network. In the meantime, the current management system of CEMASTEA needs to be streamlined in order to ensure smooth transition to ICADETA.

It was pointed out, through interviews, that ownership and motivation for routine activities such as TCTP is limited among working-staff levels. Meanwhile, some staff perceived that the interests of the top management of CEMASTEA regarding routine activities such as TCTP are not sufficient.

As described in "3-1-4 Efficiency", data and documents are not properly kept. The documentation and the quality of reports need significant improvement so that information and lessons learned can be shared with all the staff, and institutional memories can be retained.

Capacity Development

CEMASTEA staff have sufficient capacities to continue the current activities. Meanwhile, it is important to keep upgrading their capacities in order to further improve the current activities and to meet the needs of the member countries. Moreover, their capacities to conduct quality evaluation/monitoring and studies need to be further improved to keep upgrading the activities.

In addition, the logistics arrangement to invite participants has been managed by JICA expert team and one CEMASTEA staff to date. Therefore, the information and the skills to arrange logistics needs to be transferred to other staff in CEMASTEA.

3-1. Contributing and Preventing Factors

3-1-1. Contributing Factors

(1) Long-term and continuous assistance and collaboration between Kenya and Japan

JICA has been conducting projects of mathematics and science education since 1998 in Kenya. The domestic INSET experiences and knowledge accumulated by Kenya during the 15 years were indispensable for conducting TCTP. Also, counterparts' capacities have been continuously strengthened during the projects, and their contribution for producing outputs of the Project is significant. Moreover, the trust established between Kenya and Japan facilitated implementation of the Project. Lastly, during the 15 years, the name of "SMASE (previously SMASSE)-Kenya" and "CEMASTEA" came to be well known in Sub-Saharan Africa as an institution/project which

implements innovative and quality training. CEMASTEA has therefore been able to attract many participants from member countries.

(2) Existence of JICA projects in member countries

The Project and the projects in member countries made synergistic effects to strengthen capacities of ex-participants. Firstly, there have been continuous demands to train counterparts or to sensitize officials of new JICA projects in the member countries as these projects also adopted more or less the similar concept. Secondly, experience-sharing and discussions during Regional Conferences and Technical Workshops became more relevant and active since many of them face similar challenges during the project implementation. Thirdly, existence of Japanese experts and their counterparts in the member countries facilitated organizing regional events such as Technical Workshops and technical visits across borders. Lastly, the achievement of the Project, capacity development of INSET providers in member countries, was further enhanced by the projects in the member countries. Follow-ups of ex-participants, which are often beyond control of the Project, were taken care of by the projects in these countries.

3-2-2. Constraining factors

(1) Inadequate understandings regarding PDM by the project team

The definition of narrative summary of the Project Purpose, logic between the Project Purpose and the Overall Goal, and definitions as well as relevance of some of the indicators were not sufficient. Moreover, the evaluation team found that common understandings regarding the PDM among the project team are missing. These factors hindered regular monitoring of the progress against the indicators, and the progress of Output 3.

(2) Inadequate number of staff

Efforts were made by CEMASTEA staff to implement project activities as scheduled. However, due to the limited number of staff, they have been occupied with competing tasks, and observance of deadlines and the quality of work have been compromised to some extent.

(3) Inadequate information sharing on the WECSA Component activities

Sharing of information regarding WECSA Component among WECSA Committee members is not sufficient as explained as a challenge in "3-1-3 Efficiency". Because results of activities such as Regional Conference, Technical Workshop, and other WECSA activities are not sufficiently shared among the committee members, it was sometimes difficult for them to pursue allocated tasks without information resulted from these activities.

4. Conclusion

The Project Purpose was mostly achieved mainly by the high achievement levels of Output 1 and 2. Regarding evaluation by the five criteria, while Relevance is high and Effectiveness is

moderately high, Impact is medium, and Efficiency and Sustainability are mixed.

The evaluation team concluded that the Project has made steady progress towards the target by conducting TCTP, Technical Workshop, Regional Conference/Delegates Meeting, and other technical supports and exchanges, which have been highly appreciated by the member countries. Meanwhile, the implementation process, which includes ownership/motivation regarding routine WECSA activities, communication, and monitoring requires further improvement in order to achieve the target with quality and to ensure sustainability of the component.

Annex 1: Project Design Matrix (WECSA Component)

Project Title: Strengthening of Mathematics and Science Education (SMASE)
Executing Bodies: Ministry of Education, Science and Technology (MOEST) and Japan International Cooperation Agency (JICA)
Duration: 5 years from January 2009 to December 2013

Super Goal: Quality of Teaching and Learning of Mathematics and Science in member countries is improved.

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumptions
(Overall goal) INSET systems in member countries are established/strengthened.	(a) Existence of Policy on INSET (b) Existence of Administrative structure on INSET system (c) Existence of a funding mechanism for INSET (d) Existence of M&E systems of INSET	Project documents, project reports, sector programs, policy papers, etc. in member countries	
(Project Purpose) Capability of INSET providers (trainers and administrators) to implement ASEI/PDSI based INSET in member countries is strengthened	By the end of the project period: (a) INSET providers obtain a mean of 2.5 on a scale of 0-4 in the overall assessment of Capacity Building Index (*1) for INSET provision. (b) The extent to which the ASEI-PDSI concept is reflected in the training manual/ materials in the member countries.	SMASE Project Monitoring and Evaluation Reports	Policy frameworks in participating countries will be supportive of INSET for Mathematics and Science teachers
(Outputs) 1. ASEI/PDSI based INSET providers (trainers) from member countries are trained.	1. By the end of the project period: a) TCTP at CEMASTEA is carried out five times. b) At least 500 participants attend the TCTP at CEMASTEA c) At least 15 sets of training materials are produced (one set of training materials is all materials prepared for one TCTP course) d) Lesson Innovation Index (*2) attains a mean of 2.5.	1. SMASE Project M&E reports.	
2. SMASE-WECSA network is strengthened.	2. By the end of the project period: a) Regional conferences and SMASE-WECSA delegates meetings are held at least four times b) Increased number of countries participating in SMASE-WECSA activities and implementing INSET. c) Technical workshops organized by Kenya or in collaboration with member countries are held at least three times.	2. SMASE Project M&E reports.	
3. Role of CEMASTEA is strengthened as a resource centre for Mathematics and Science education in Africa.	3. By the end of project period: a) ASEI/PDSI prototype lesson plans, developed by member countries, are compiled and disseminated.	3. SMASE Project M&E reports.	

	b) One of the TCTP materials (write-ups) is revised/refined for publication. c) The revised material is digitized and made available through the CEMASTEA website.		
(Activities) 1-1 To assess the current situation and needs of INSET systems in SMASE-WECSA member countries. 1-2 To review and develop TCTP course content for mathematics and science educators from SMASE-WECSA member countries. 1-3 To review and develop training manuals and materials for the TCTP. 1-4 To train INSET providers from SMASE-WECSA member countries. 1-5 To offer technical support in the construction and strengthening of INSET system for mathematics and science education for member countries. 1-6 To monitor and evaluate the quality of TCTP. 1-7 To monitor and evaluate the impact of TCTP. 2-1 To sensitise officials of education ministries in member countries on ASEI-PDSI classroom practices as need arises. 2-2 To conduct technical exchange visits with member countries as need arises. 2-3 To organize technical workshops by Kenya or in collaboration with member countries. 2-4 To organise and participate in SMASE-WECSA Regional conferences and delegates meetings. 2-5 To participate in relevant regional and international conferences and other activities. 3-1 To establish / strengthen networks with Regional and International organisations involved in related activities 3-2 To collect materials and reference books for SMASE-WECSA activities. 3-3 To establish/equip a library. 3-4 To revise/refine TCTP materials (write-ups) materials for publication. 3-5 Revised materials are digitized. 3-6 To disseminate information on SMASE-WECSA activities through the website, and other publications.	**(Inputs)** **1.Kenya side:** a Buildings, offices and other facilities necessary for the project at CEMASTEA b Assignment of adequate Kenyan full-time counterpart personnel at CEMASTEA c Assignment of adequate support personnel at CEMASTEA **2. Japanese side:** a Dispatch of long term experts b Expenses necessary for Training of SMASE-WECSA Counterpart personnel at CEMASTEA c Expenses necessary for dispatch of teams for Technical exchange visits, Technical assistance and Third Country Expertise among member countries d Expenses necessary for holding Regional conferences and SMASE-WECSA delegates meetings e Expenses necessary for SMASE-WECSA counterparts to attend international conferences f Provision of machinery, equipment and materials to CEMASTEA as resource centre	**Pre-condition** *Member countries have or will have plans of improving Mathematics and Science Education at basic level.*

*1 Capacity Building Index: To evaluate the capacity of INSET trainers to manage INSET, e.g., PDSI of INSET implementation by third persons.

*2 Lesson Innovation Index: To evaluate the perception of the participants (teacher trainers/teachers) on lessons by themselves.

Annex 2: Plan of Operation of WECSA Component (after mid-term review)

Output 1. ASEI/PDSI based INSET providers (trainers) from member countries are trained.		2011						2012												2013					
		7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
1) To assess the current situation and needs of INSET systems in SMASE-WECSA member countries.	Plan																								
	Actual																								
2) To review and develop TCTP course content for mathematics and science educators from SMASE-WECSA member countries.	Plan																								
	Actual																								
3) To review and develop training manuals and materials for the TCTP.	Plan																								
	Actual																								
4) To train INSET providers from SMASE-WECSA member countries.	Plan																								
	Actual																								
5) To offer technical support in the construction and strengthening of INSET system for mathematics and science education for member countries.	Plan																								
	Actual																								
6) To monitor and evaluate the quality of TCTP.	Plan																								
	Actual																								
7) To monitor and evaluate the impact of TCTP.	Plan																								
	Actual																								
Output 2. SMASE-WECSA network is strengthened.		2011						2012												2013					
		7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
1) To sensitise officials of education ministries in member countries on ASEI-PDSI classroom practices as need arises.	Plan																								
	Actual																								
2) To conduct technical exchange visits with member countries as need arises.	Plan																								
	Actual																								
3) To promote joint workshops with member countries as need arises.	Plan																								
	Actual																								
4) To organise and participate in SMASE-WECSA Regional conferences and delegates meetings.	Plan																								
	Actual																								
5) To participate in relevant regional and international conferences and other activities.	Plan																								
	Actual																								
Output 3. Role of CEMASTEA is strengthened as a resouce centre for Mathematics and Science education in Africa,		2011						2012												2013					
		7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
1) To establish / strengthen networks with Regional and International organisations involved in related activities.	Plan																								
	Actual																								
2) To collect materials and reference books for SMASE-WECSA activities.	Plan																								
	Actual																								
3) To establish/equip a library.	Plan																								
	Actual																								
4) To revise/refine TCTP materials(write-ups) materials for pubication.	Plan																								
	Actual																								
5) Revised materials are digitized	Plan																								
	Actual																								
6) To disseminate information on SMASE-WECSA activities through the website, and other publications.	Plan																								
	Actual																								

Annex3: Activities Implemented

Activities Planned	Activities Implemented
1-1. To assess the current situation and needs of INSET systems in SMASE-WECSA member countries.	・An impact survey was conducted in four countries (Zambia, Uganda, South Sudan, and Gambia) during March-May 2013, and the current situation and needs were assessed. The report was finalized in August 2013. Please refer activity 1-7 for details. ・Each country submitted a country report, which describes the current INSET situation, before each Delegates Meeting.
1-2. To review and develop TCTP course content for mathematics and science educators from SMASE-WECSA member countries.	・Five TCTP courses were developed as follows: 1) Anglophone primary course, 2) Anglophone secondary course, 3) Advanced Anglophone secondary course, 4) Francophone primary course, and 5) South Sudan customized course.
1-3. To review and develop training manuals and materials for the TCTP.	・Training manuals for each of the above-mentioned courses (in 1-2) were developed. The contents have been updated/improved during the project period.
1-4. To train INSET providers from SMASE-WECSA member countries.	・As of August 2013, four rounds of TCTP (12 TCTP courses) have been conducted, and attended by 694 participants. ・One customized TCTP course was conducted for South Sudan. ・The fifth round (three TCTP courses) is being planned, and will be implemented in September-October 2013.
1-5. To offer technical support in the construction and strengthening of INSET system for mathematics and science education for member countries.	・OJT was conducted for Uganda (2 participants, 13-27 September 2009), Rwanda (5 participants, I1-15 July 2010), and South Sudan (4 participants, 24 January-4 February, 2011).
1-6. To monitor and evaluate the quality of TCTP	・The project team monitored the quality of TCTP by having TCTP trainees respond to two kinds of questionnaire during the TCTP course, and compiling the results.
1-7. To monitor and evaluate the impact of TCTP	・An on-line survey was conducted targeting 69 ex-participants in 17 countries in November 2011. ・Tools for impact survey were developed by the project team, and the survey was conducted in March-May 2013 (as described in activity 1-1). It was conducted through observation of INSET training, interviews to government managers, trainers (ex-participants of TCTP) and participants, and analysis of documents.
2-1. To sensitize officials of education ministries in member counties on ASEI-PDSI classroom practices as need arises.	・Technical visits from officials of education ministries to CEMASTEA was conducted by Senegal (17 officials, 23-28 February 2009), Mali (12 officials, 7-14 March 2010), South Africa (12 officials, October 3, 2010), and Nigeria (16 officials, 17-21 September 2012).
2-2. To conduct technical exchange visits with member countries as need arises.	・30 TCEs have been dispatched to seven countries (Angola, Niger, Nigeria, Rwanda, Senegal, South Sudan and Tanzania) upon 16 requests. No new

	dispatches have been made after the mid-term review. ・The project team had participated and assisted four workshops conducted in three member countries (Uganda 23-29 March 2009, Zambia 8-12 February 2010, Botswana 24-28 May 2010, Uganda 22-26 March 2010).
2-3. To organize technical workshops by Kenya or in collaboration with member countries.	・In total three Technical Workshops were organized; Swaziland in 2009, Nairobi in 2012 and Zambia in 2013. Please refer Table 9 in "1-3 Achievement of Outputs" for details.
2-4. To organize and participate in SMASE-WECSA Regional Conferences and Delegates Meetings.	・Since 2009, Regional Conference and Delegates Meeting have been held annually. Please refer Table 6 and 7 in "1-3 Achievement of Outputs" for details.
2-5. To participate in relevant regional and international conferences and other activities.	・The project team (five participants) participated in COMEDAF IV meeting in November 2009. An exhibition of CEMASTEA was made.. ・The project team (four participants) participated in ADEA Triennale in 2012 and introduced the strategic plan of SMASE-WECSA Association. ・The project team (two participants) participated in ADEA Steering Committee meeting from May 11 to 16 2013. ・The project team (one participant) participated in "Improving mathematics, Science & Technology in Basic Education Summit 2012" organized by AMC International in September 2012.
3-1. To establish/strengthen networks with Regional and international organizations involved in related activities	・Discussions between AU and CEMASTEA about integrating WECSA activities into AU are ongoing. ・Collaboration with FAWE was reactivated through workshop held in January 2013, expecting to exchange information on sustainability of SMASE-WECSA Association.
3-2. To collect materials and reference books for SMASE-WECSA activities.	・A draft concept paper for resource center was developed and shared in November 2012 with all the CEMASTEA staff. It will be finalized by September 2013. ・The national syllabus and textbooks were collected from participants of TCTP and Technical Workshops, and the list of all the documents and materials were made.
3-3. To establish / equip a library.	・The collected books and documents mentioned above in the activity 3-2 are being arranged in the shelves in a temporary library.
3-4. To revise/refine TCTP materials (write-ups) materials for publication. 3-5. Revised materials are digitized.	・TCTP materials for primary and secondary courses are being revised. They will be finalized and uploaded immediately after TCTP 2013.
3-6. To disseminate information on SMASE-WECSA activities through the website, and other publications.	・CEMASTEA website was developed by CEMASTEA during 2012. ・Newsletter is being developed, and will be disseminated during TCTP 2013.

Annex 4: Evaluation Grid for Terminal Evaluation of SMASE-WECSA Kenya, JICA

Question	Data Required	Findings
1. Achievement		
Progress made toward Outputs		
Progress toward Output 1: ASEI/PDSI based INSET providers from member countries are trained.	a) TCTP at CEMASTEA is carried out five times.	・The regular TCTP courses are categorized as Anglophone primary course, Anglophone secondary course, Francophone primary course and Advanced Anglophone secondary course. Three of them are held each year, and the three courses compose one round. As of August 2013, four rounds have been carried out . The fifth round is planned to be held from September 2 to October 18, 2013 (TCTP 23 Advanced Anglophone Secondary Course: September 2-20, 2013, TCTP 24 Francophone Primary Course: September 2-13, 2013, and TCTP 25 Anglophone Primary Course: September 30-October 18).
	b) At least 500 participants attend the TCTP at CEMASTEA.	・In total, 694 participants have attended the TCTP since January 2009. Among them 410 participants are INSET trainers at the national, regional or divisional levels or in a position to train other teachers as principals/vice principals or teachers who are JOCV counterparts.
	c) At least 15 sets of training materials are produced (one set of training materials is all materials prepared for one TCTP course).	・In total, 12 regular TCTP courses, which are categorized into four types, and one customized course were organized, and one set of training material was produced for each course. As the Project plans to conduct three more courses, and is developing a set of material for each, in total16 sets of training materials will be developed by the end of the Project.
	d) Lesson Innovation Index attains a mean of 2.5.	・The impact survey was conducted by the project team in the Gambia, South Sudan, Uganda and Zambia from March to May 2013, and the team found that the mean of Lesson Innovation Index was 3.06. However, Lesson Innovation Index is not a relevant tool to evaluate whether or not training for INSET providers was appropriately conducted, and whether or not participants have learned sufficient knowledge/skills on INSET because it is a tool to assess teachers' practices in classroom . Conducting a test for trainees after each TCTP would have been more pertinent to directly assess quality/appropriateness of the training, and the degree of knowledge gained by participants. ・ Therefore, the evaluation team decided to utilize proxy indicators to assess quality of TCTP as follows - The project team assesses the quality of training by conducting an evaluation during TCTP. The usefulness of training and quality of facilitation are assessed by 5 scale (from 0 to 4), and all are more than 3, which is satisfactory. - The evaluation team sent a questionnaire to ex-participants and asked if they utilize what they learned during TCTP. The team confirmed that more than 77% utilize what they learned through the training. This result can show, to certain extent, that the training was relevant to the participants, and they gained solid knowledge and skills.
Progress toward Output 2: SMASE-WECSA network is strengthened.	a) Regional conferences and SMASE-WECSA delegates meetings are held at least four times.	・SMASE-WECSA Regional Conference and Delegates Meeting were held four times. The last two regional conferences were dedicated to the discussion on the sustainability of WECSA activities. The fifth Regional Conference will be held from October 28 to November 1, 2013, and Delegate Meeting will be held from 28 to 29 October, 2013.
	b) Increased number of countries participating in SMASE-WECSA activities and implementing INSET.	・The number of member countries has increased from 25 to 27. The number remains unchanged since 2010.
	c) Technical workshops organized by Kenya or in collaboration with member countries are held at least three times.	・Three technical workshops were conducted to date. Ex-participants evaluate technical workshops highly, and are satisfied with them.
Progress toward Output 3: Role of CEMASTEA is strengthened as a resource center for Mathematics and Science education in Africa.	a) ASEI/PDSI prototype lesson plans, developed by member countries, are compiled and disseminated.	・At the moment, ASEI/PDSI prototype lesson plans have not been compiled and disseminated. During the remaining project period, the Project team plans to select well-developed lesson plans made during TCTP, and compile and digitize them to upload to the website to share with member countries.
	b) One of the TCTP materials (write-ups) is revised/refined for publication.	・The Project team is developing digitized TCTP materials for primary and secondary basic courses. They will be finalized immediately after TCTP 2013.
	c) The revised material is digitized and made available through the CEMASTEA website.	・The digitized materials will be made available through the CEMASTEA website after they have been revised.

Annex 4: Evaluation Grid for Terminal Evaluation of SMASE-WECSA Kenya, JICA

Question	Data Required	Findings
Progress made toward Project Purpose		
Is the Project Purpose 【Capability of INSET providers (trainers and administrators) to implement ASEI/PDSI based INSET in member countries is strengthened.】likely to be achieved considering the status of Inputs, Activities and achievement of Outputs?	(a) INSET providers obtain a mean of 2.5 on a scale of 0-4 in the overall assessment of Capacity Building Index for INSET provision.	・Capacity Building Index is an INSET providers' self-assessment on their capacities to conduct INSET. They assess their capacities by answering 19 questions by 5-scale. According to the on-line survey conducted in November 2011 to 69 ex-participants of 17 countries , the mean was 3.08. The results of the project impact survey show higher attainment, which is 3.29. The impact survey team also observed INSET sessions, and objectively confirmed that the ex-participants' facilitation skills have been developed sufficiently, and INSET contents were relevant. The contents of South Sudan, for which the project team provided extensive assistance, have the highest score. ・Regarding administrators, the Project intended to strengthen their capacities through experience-sharing in Regional Conferences, accepting technical visits of officers, and providing TCTP for some of them. Though an indicator to directly measure capacities of administrators is not set, the impact survey sought to confirm their capacities via observing managerial aspect of INSET sessions, and interviews with managers. The impact survey team found that the INSET sessions were well managed with good preparation, and the managers were supportive of the training, providing necessary assistance and participating in M&E activities.
	(b) The extent to which the ASEI-PDSI concept is reflected in the training manual/materials in the member countries.	<u>Countries with limited reflection</u> Responses to the questionnaire distributed by the project team show that a participant from Zanzibar answered that the reflection is limited because it takes time to convince officials to change. A participant of Namibia answered that it is reflected to some extent in that lesson observation/post discussions is conducted, but the country uses its own learner-centered approach material; this does not necessarily mean that ASEI-PDSI was incorporated in their material after TCTP. Cameroon replied that "the training contents are in line with the ASEI-PDSI model in that teaching/learning materials need to be cost-effective, the contents are learner-centered, and the contents include activities", but this does not also mean the country revised its manual after TCTP. In fact, a national teacher training manual on learner-centered approach in Cameroon does not include the very concept of ASEI-PDSI, and it is more similar to manuals of other Francophone countries, which adopt competency-based approach. <u>Countries with reflection</u> A participant from Ethiopia replied that it is reflected 95-100%. Respondents of Ghana, Tanzania, Lesotho and Zambia answered that some ideas of the concept were incorporated. A participant of Malawi replied that their training contents even cover shortfalls of ASEI-PDSI. The results of the impact survey indicate that the aspects of ASEI-PDSI feature extensively in the INSET contents in South Sudan. The training materials of the Gambia are also quite similar to those of Kenya. The team also found that Uganda adopts a similar concept but it was adapted to the Ugandan contexts, and the contents incorporate ideas which are different from ASE I-PDSI as well. These countries, except for Lesotho and the Gambia, either implement JICA projects or received extensive assistance from CEMASTEA. On this basis, it is assumed that the existence of these projects and special assistance from CEMASTEA are important factors to enable the incorporation of the concept into the manuals. Moreover, new country, such as South Sudan and a country, which had not have specific manuals such as the Gambia, tend to directly adopt the Kenyan concept as it is while countries with their own projects incorporate or adapt only the necessary parts. <u>Others</u> A participant from Angola replied that the country shall reflect inputs from TCTP in the national INSET material future. Though the country is implementing ASEI-PDSI based INSET gradually, the approach has not yet been officially authorized.

Annex 4: Evaluation Grid for Terminal Evaluation of SMASE-WECSA Kenya, JICA

Question	Data Required	Findings
Progress made toward Overall Goal		
Is the Overall Goal (INSET systems in member countries are established/strengthened) likely to be achieved in 3 to 5 years after the completion of the Project?	(a) Existence of policy on INSET	・According to the results of questionnaire of the evaluation team, 43.4% responded that their countries own INSET policy while 17.1% answered no, and 39.5% did not answer (N=76). However, as there are cases in which respondents from a same country answered differently, the information lacks reliability. ・Another questionnaire was distributed by the project team to the participants of the Technical Workshop in Zambia, and answers were collected from 16 respondents (16 countries). Six respondents (countries) replied that there are policies, but one added it is under review, another explained that it is not properly documented, and another describes that it is not implemented properly . It is not certain what they mention are policies/bills approved by the parliaments, education sector strategies which cover a certain period, regulations/recommendations issued by related ministries, or just practices. ・Meanwhile, the impact survey team confirmed that the Gambia and Zambia (both were developed before they started sending their trainers to CEMASTEA) had INSET Policy documents while they have not been made in South Sudan and Uganda
	(b) Existence of administrative structure on INSET system	・This indicator seeks to assess whether or not a section responsible for INSET exists in the respective ministries of education, and if appropriate personnel are allocated. According to the results of the evaluation team questionnaire, 60.5% responded that their countries own an administrative structure while 1.3% answered no, and 38.2% did not answer (N=76). However, as there are cases in which respondents from a same country answer differently, the information lacks reliability. The impact survey found that all the four countries own INSET the structure.
	(c) Existence of a funding mechanism for INSET	・According to the results of questionnaire of the evaluation team, 52.6% responded that their countries own a funding structure while 7.9% answered no, and 39.5% did not answer (N=76). However, as there are cases in which respondents from a same country answer differently, the information lacks reliability. ・With regards to the results of questionnaire distributed by the project team, 14 respondents among 18 answered that some kind of governmental funds for INSET are available in their countries . Also, some respondents mentioned the availability of funds from donors. Zimbabwe and Uganda referred a funding mechanism in which each school is required to pay certain amount to regional/district education office or committee so that these offices can organize INSET for teachers. The system in Uganda is called SESEMAT fund, which was developed through the JICA project.
	(d) Existence of M&E systems of INSET	・According to the results of questionnaire distributed by the evaluation team, 52.6% responded that their countries own an M&E system while 3.9% answered no, and 43.4% did not answer (N=76). However, as there are cases in which respondents from a same country answer differently, the information lacks reliability. ・Regarding answers to the project team questionnaire, 16 respondents among 18 answered that some kind of M&E system exists in their countries . Many answered that it includes lesson observation by principals and inspectors to monitor if teachers effectively apply what they learned during INSET, reporting the observation results to district/regional offices, and reporting the results further to the national level. Some also mentioned that there is a system in which inspectors, national trainers, and officials at the central level in M&E division monitor and evaluate INSET sessions/workshops. In addition, all the four countries studied by the impact survey had some type of M&E system.
Status of Inputs		
Have the Inputs been made by the Kenyan side as		Kenyan side ・All the CEMASTEA staff were made available for the activities of WECSA Component such as Third Country Training Programme (TCTP), Third Country Expert (TCE) Dispatch, Technical Workshop, and Regional Conference. Some staff were specially assigned to the WECSA Component as follows. ・ WECSA committee, which consists of five members, coordinates TCTP and Technical Workshop. ・ A temporary committee is organized for each Regional Conference under Coordinator Academic Programme. ・ One non-academic staff supports logistics and administration.
* Personnel	Number of counterparts assigned to the Project, and his/her title	
* Project Management/Implementation System	Project implementation/management/support system including administrative personnel	
* Facilities	Type and quantity of facilities provided, Purpose of the provision	

Annex 4: Evaluation Grid for Terminal Evaluation of SMASE-WECSA Kenya, JICA

Question	Data Required	Findings
* Equipment	Equipment provided (type, quantity, timing)	・WECSA Component activities utilized CEMASTEA facilities as the Kenya Component. Please refer to 1-1 of Kenya Component report for details.
* Budget and materials required for the Project	Budget and details of disbursement (amount and timing), materials provided (type, quantity, timing)	・The Kenyan side provided a quarter per diem for staff who travel outside Kenya on top of the travel allowance provided by JICA.
Have the Inputs been made by the Japanese side as		Japanese side
* Japanese experts	Number of experts allocated to required technical area, Duration and timing of expert dispatch	・All the Japanese experts assigned to the Project served for both of Kenya and WECSA Components. Please refer 1-1 of the Kenya Component report. ・Training was held in Japan from January 29 to February 4, 2012 under the title of "Strengthening for Implementation Capacity of Development Training under South-South Cooperation". Two CEMASTEA staff of WECSA Committee participated in the training. ・All equipment and facilities provided by the Japanese side were utilized for both of Kenya and WECSA Components. ・The cost disbursed so far by the Japanese side for the WECSA Component amounts to Ksh. 317,308,219 in total.
* Training in Japan	Purpose & contents of the training, Number of trainees, Period and timing of the training	
* Project Management/Implementation System	Project implementation/management/support system	
* Equipment	Equipment provided (type, quantity, timing)	
* Budget and materials required for the Project	Budget and details of disbursement (amount and timing) , materials provided (type, quantity, timing)	・Please refer the Kenyan report for details.
2. Implementation Process		
Progress of Activities		
Have the Activities been implemented as planned?	Progress of the Activities	・Some of the activities under Output 1 were not implemented as scheduled. The implementation of the impact survey needed to be rescheduled due to the abrupt cancellation of INSET in Malawi, which the survey team planned to observe. TCTP 18 and 19 were planned to be held within 2011, but they were postponed until January and February 2012 due to the mid-term review held at the end of 2011. Though TCTP 22 was implemented as planned, there was a challenge in meeting deadlines during the preparation stage due to other competing tasks allocated to the CEMASTEA staff. ・Regarding activities under Output 2, the preparation of the Technical Workshop in Zambia was delayed because the task team of Zambia had been occupied with other tasks, and the project team had difficulty to control the preparation process from Kenya. ・Activities under Output 3 are behind the schedule because the project team has been occupied with other activities, which have more immediate deadlines. It also took time to develop a common understanding regarding the vision of the resource center.
Are there any problems which influenced the progress of the Activities?	Problems which influenced the progress of the Activities	
When there are problems which hinder progress of the Activities, how were they solved?	Measures and system employed for problem-solving	
Decision-making and communication		
How have the important decisions regarding the Project been made?	Process of decision-making	・JCC was conducted four times, but WECSA Component was seldom on the agenda. ・SMASE-WECSA Association is an association registered in Kenya in 2003, which aims to promote mathematics and science education in Africa. The association currently has 27 member countries, which pay the subscription fee of 300 USD per year, and seven observers. The steering committee of the association composes of five members, being chaired by Mr. Edward Tindi in Zambia. Though the association now functions independently, the project team has maintained communication with the association regarding implementation of the project activities, such as TCTP, Technical Workshop and Regional Conference/Delegates Meeting as the project activities were targeted on the member countries of the association.
	Frequency of JCC meeting, NPC meetings, and other alternative meetings	

Annex 4: Evaluation Grid for Terminal Evaluation of SMASE-WECSA Kenya, JICA

Question	Data Required	Findings
Has the communication within the Project been made effectively? Has information been shared within the Project?	Process of takeover between JICA experts, Frequency and method of communication among JICA experts, among JICA experts and C/Ps, Measures taken when project plan is changed, Measures taken to solve problems collaboratively	・Currently, the tasks related to the WECSA Component are delegated to two committees; while WECSA Committee coordinates TCTP and Technical Workshop, an ad hoc committee coordinates Regional Conference. It caused a challenge in terms of communication regarding WECSA Component. ・Sharing of information regarding WECSA Component among WECSA Committee members is not sufficient. Because results of activities such as Regional Conference, Technical Workshop, and other WECSA activities are not sufficiently shared among the committee members, it was sometimes difficult for them to pursue allocated tasks without information resulted from these activities.
Has the communication between the Project, JICA Headquarters, JICA Kenya, project offices of WECSA member countries and other related Japanese organizations been adequate?	Frequency of communication, Measures taken when project plan is changed, Measures taken to solve problems collaboratively, Contents of support provided by related Japanese organizations	・ Communication with member countries regarding TCTP has been adequate. However, it was found that information sharing on other WECSA activities was not always satisfactory to other member countries. For example, Francophone countries were not aware of the first Technical Workshop held in Swaziland. Also, they were invited to the Technical Workshop in Zambia at the last minute while Anglophone countries have been invited well in advance.
Has the communication between the Project and relevant Kenyan agencies been adequate?	Frequency of communication, Measures taken when project plan is changed, Measures taken to solve problems collaboratively, Establishment of trust with relevant Kenyan agencies, Level of activeness and participation of C/Ps	・In order to ensure sustainability, close communication with Ministry of Education is necessary. Because of NPC, the communication between MoE and CEMASTEA is gradually improving.
Monitoring		
Has regular monitoring been conducted? How has it been conducted?	Monitoring plan, Record of monitoring	・Monitoring of the quality of TCTP is conducted for each TCTP by means of pre- and post-training evaluation, in which participants assess their attitudes toward INSET-related issues by 0-4 scale. Overall evaluation of the training is also conducted by participants with the same scale. These results are to be incorporated into TCTP reports, and to be reflected in the next TCTP. However, the report format is not standardized, items assessed are different from one report to another, the reports are not presented in a reader-friendly way, and the analysis is not sufficient. Therefore, it is difficult to retrieve necessary data/information from the current reports. Improvements in these aspects will enable effective utilization of TCTP reports, which will lead to improvement of the quality of TCTP. ・Monitoring of impacts of TCTP was conducted by on-line survey in 2011, and impact survey of four countries in 2013. Due to limited time, budget and human resources, it is difficult to conduct more frequent and regular monitoring activities. ・Monitoring of indicators in PDM has not been conducted regularly by the project team. It is indispensable that records be kept properly, and the progress of the Project be monitored regularly based on the indicators so that appropriate measures (change of indicators, setting definitions of indicators, etc.) can be taken timely.
Have the results of the monitoring been incorporated into the Project? If yes, how have they been incorporated?	Usage of monitoring results	
Have there been any changes in the PDM and the Activities? If yes, have they been appropriate?	Changes in the PDM and the reason for the changes	・Changes were made on PDM after the mid-term review. The logic of PDM, especially between the Project Purpose and the Overall Goal is not appropriate as the gap between the is too large. Also, some of the indicators are not appropriately set.

Annex 4: Evaluation Grid for Terminal Evaluation of SMASE-WECSA Kenya, JICA

Question	Data Required	Findings
Have there been any changes in the important assumptions? Has the Project been influenced by the changes of important assumptions? Have the influences adequately dealt with?	Changes in the important assumptions and the influences to the Project Measures taken to cope with the influences	・An important assumption to achieve the Overall Goal is "Policy frameworks in participating countries will be supportive of INSET for Mathematics and Science teachers". If the Project aims to achieve the current Overall Goal, more assumptions will be needed because developing and obtaining approval of policies as well as establishing structures in other countries are subject to many external conditions.
Counterparts/Ownership		
Are authorities and responsibilities of MoE, CEMASTEA and WECSA member countries clear?	Authorities, roles and responsibilities of the MoE, CEMASTEA and WECSA member countries	・Authorities and responsibilities were clear enough.
Has the participation of managers of the Kenyan side appropriate?	Levels of participation of the Kenyan managers	・Activities to sustain the network are being conducted by CEMASTEA. For example, the Ministry of Education, Science and Technology (MOEST) of Kenya has sent a letter to the member countries in January 2013 to call for support to establish SMASE-Africa Association. CEMASTEA has also taken initiative to contact AU to seek their support after the termination of the Project, and to put SMASE-WECSA on the agenda of COMEDAF meetings. Moreover, the member countries initiated discussions in the last two Delegates Meetings regarding how to sustain SMASE-WECSA Association. There is a growing sense of belonging among the member countries.
Have the number and quality of C/Ps assigned to the WECSA component been appropriate?	Evaluation regarding C/Ps from JICA experts	・In spite of increase of activities in this phase, the number of staff in CEMASTEA was decreased because sufficient replacement was not made. This is one of the reasons that some activities are behind the schedule and deadlines are often missed.
Have the C/Ps participated in the Project sufficiently?	Activities implemented and efforts made by C/P (including monitoring of the project, operational and budgetary efforts, etc.), Frequency of communication with JICA experts	・During interviews, it was pointed out by some staff that the motivation of working-level staff for the activities of WECSA Component is not very high. Though discussions about providing honorarium for conducting TCTP are ongoing, efforts to raise intrinsic motivation of the staff are needed as well.
Has the allocation of budget of the Kenyan side been sufficient?	Record of Inputs from the Kenyan side	・The Kenyan side provided a quarter per diem for staff who travel outside Kenya on top of the travel allowance provided by JICA.
3. Relevance		
Relevance of the project plan		
Are the Project Purpose and the Overall Goal consistent with the education policy of Kenya and WECSA member countries?	Education policy of Kenya Education policy of WECSA member countries	・The Project is in line with the policies of African nations. African Union prioritizes teacher development along with mathematics and science education in its strategic paper "Second decade of education for Africa (2006-2015)". Also, the activities of the WECSA Component are at the same time activities of the working group of mathematics and science education of the Association for the Development of Education in Africa.
Are the Overall Goal and Super Goal consistent with the Japanese aid policy?	Japanese aid policy for Kenya Japanese aid policy for WECSA member countries	・The Project is coherent with the Japanese aid policy to Kenya. Firstly, assistance for human development is categorized as one of the five priority assistance areas based on the perspective that human development is indispensable for poverty reduction and economic development. The policy also stipulates that region-wide capacity development of teachers will be implemented with CEMASTEA. Secondly, "expanding projects under "Strengthening Mathematics and Science in education (SMASE)" is listed as one of the activities of Yokohama Action Plan (2013-2017), which was adopted by TICAD V held in June 2013.

Annex 4: Evaluation Grid for Terminal Evaluation of SMASE-WECSA Kenya, JICA

Question	Data Required	Findings
Is the Project Purpose still consistent with the needs of Kenya and WECSA member countries?	Needs of the government (Kenya and WECSA member countries)	・The Project is relevant to the needs of target countries. The member countries, which implement JICA INSET project, have needs to expose their counterparts to the basics of ASEI-PDSI, and strengthen their capacities especially at the initial phase of their projects. Other member countries also promote the learner-centered approach, but most of the trainers had few ideas on how to practice it in classroom. Therefore, the Project, which develops capacities of INSET trainers on learner-centered approach, was coherent with the needs of the member countries. Meanwhile, it also matches the needs of Kenya, which aims to aintain and further strengthen partnership with Japan and other countries in the field of science and mathematics. ・To better respond to the emerging needs of the member countries, the project team has revised contents of training constantly: the team developed a more practically-oriented course in 2009 to cater for the needs of participants with basic knowledge; the modular approach was trialed in 2010 and 2011, and the Advanced Anglophone secondary course was introduced in 2012 to meet the needs for repeaters. Moreover, in response to the increasing demands for the primary course, the project team has started accepting more participants for the primary course since 2011. Also, the Project increased the frequency of Technical Workshop to fulfill the needs for more technical-oriented conference and opportunities for experience-sharing.
Was the selection of the target group (CEMASTEA staff, member countries and trainees from member countries) appropriate?	Selection process of counterpart agencies, member countries and trainees form the countries	・CEMASTEA was selected as a counterpart agency because of the experiences and expertise they have accumulated regarding INSET over a decade. ・The Project has been assisting the member countries of SMASE-WECSA Association, to which they pay subscription fee of USD300 per year. ・Though the main target for TCTP was INSET providers in the member countries, 282 among 694 participants, which accounts for 40%, were teachers because most of the national and regional INSET providers in member countries have already attended TCTP.
Were there any changes in the preconditions? Are the pre-conditions fulfilled?	Are there any changes in the current precondition, "Member countries have or will have plans of improving Mathematics and Science Education at basic level"? Are they fulfilled?	・The precondition is fulfilled as described above in "Is the Project Purpose still consistent with the needs of Kenya and WECSA member countries?".
Appropriateness of the means		
Is the Project appropriate as a means to develop capability of INSET providers to implement ASEI/PDSI in member countries?	Appropriateness as a measure, Status of utilization of Kenyan and Japanese know-how, Appropriateness as a type/formation of cooperation and method	・The means that the Project adopted was appropriate. Firstly, Kenya has accumulated sufficient knowledge and skills to assist other countries by implementing JICA projects for more than a decade. Secondly, many Sub-Saharan African countries have same challenges that Kenya used to have, and the context and education system of these countries are very similar to those of Kenya. Therefore, Kenya is well positioned to provide relevant and effective assistance to them. From these reasons, it is pertinent that the Project was designed as a region-wide south-south cooperation project, which revolves around CEMASTEA, Kenya.
Is the project approach appropriate?	Appropriateness the logic of the Project ("Activities"→ "Outputs"→ "Project Purpose" → "Overall Goal") Probability to fulfill important assumptions	・There is a gap between the Project Purpose and the Overall Goal. It is recommended that the Overall Goal is newly set.
Advantage of Japanese technology		
Has JICA ever assisted other countries in the same technical area? Have enough knowledge and experiences been accumulated?	Record of Japanese past aid project Evaluation of Japanese technology/skills by C/Ps	・JICA has been providing technical assistance on strengthening mathematics and science education through INSET in basic-education subsector in Kenya for more than 15 years. Therefore, JICA has accumulated rich knowledge and experiences in the area. Also, JICA has been accumulating knowledge and experiences in the member countries by operating several projects of the same type.

Annex 4: Evaluation Grid for Terminal Evaluation of SMASE-WECSA Kenya, JICA

Question	Data Required	Findings
Change of the environment of the Project		
Have there been any changes in the environment (including trend of aid by other donors) of the Project? Have there been any influences by the changes?	Information about political, economic and social changes, Trend of aid by other donors in education	・There were no special changes in the environment.
4. Effectiveness		
Likelihood of achieving Project Purpose		
Is the Project Purpose likely to be achieved considering the status of Inputs, Activities and achievement of Outputs?	Trend of the project indicators, Achievement and progress of the Project	・The Project Purpose was mostly achieved judging from the status of indicators, results of impact survey, and responses from ex-participants to the evaluation team questionnaire.
Are there any constraining factors for the achievement of the Project Purpose?	Constraining factors and remedial measures taken	・Because the second indicator set in the PDM does not function, setting more robust indicators was desirable in order to prove the effectiveness of the approach more strongly.
Effectiveness/Quality of training conducted		
Did trainees from WECSA member countries acquire sufficient knowledge and skills through TCTP, TCP, and Technical Workshop? Do they utilize what they have learned in their daily practice?	Relevance of training to the needs of member countries, Degree of their knowledge and skills developed, Utilization of the skills and knowledge, Quality of the training contents, material and instructors evaluated by the training participants	・More than 97% of the respondents to the evaluation team questionnaire answered that their capacities were developed by assistance from Kenya. ・It is assumed that the effectiveness to Francophone and Lusophone participants is lower than that of Anglophone participants due to the barrier of language. ・One of the challenges on the effectiveness of TCTP and Technical Workshop is that the contents tend to be general so that they will be relevant for all the member countries. If TCTP and Technical Workshop target country-specific issues, the effectiveness of these activities will be enhanced. ・Another challenge is the difficulty for ex-participants to adapt and spread ASEI/PDSI without additional support and follow-ups in their own countries. This opinion was prevalent among the countries, which do not have science and mathematics projects supported by JICA. The effectiveness for these countries could have been more visible by leveraging the follow-up activities. For South Sudan, a customized TCTP course was developed based on their needs, and it was conducted for 73 participants in 2009. At the same time, Third Country Experts were dispatched three times to provide assistance for project formulation, development of training curriculum/ modules, and tools for evaluation and baseline survey. It was proved, by the observation of INSET sessions by the impact survey team, that this country-specific assistance was effective to develop their INSET capacities significantly.
Was the SMASE-WECSA Delegates Meeting/Regional Conferences effective to strengthen network?	Relevance of the conference to the needs of member countries, Degree of network strengthened, Utilization of the network	・The fact that the last two regional conferences were dedicated to the discussion on the sustainability of WECSA activities (or establishment of SMASE-Africa Association) proves that the network has been sufficiently strengthened. ・Niger, Burkina Faso and Senegal conducted experience-sharing workshops in 2009 and 2010. Also, Senegal and Zambia are planning to hold a joint workshop on lesson study as a result of Technical Workshop held in Zambia in June 2013.

Annex 4: Evaluation Grid for Terminal Evaluation of SMASE-WECSA Kenya, JICA

Question	Data Required	Findings
Correlation between Outputs and Project Purpose		
Are the three outputs enough to achieve the Project Purpose?	Important assumptions and logic of the Project	・Three outputs were sufficient. The contributions from Output 1 and Output 2 account for the major part of the achievement of the Project Purpose.
5. Efficiency		
Achievement of Outputs		
Have the Activities been implemented as planned?	Record of achievement of Outputs, Record of Activities	・Same as "Progress of Activities" in 2. Implementation Process". Remedial measures taken ・The Japanese expert team had kept reminding CEMASTEA staffs regarding deadlines through NPC and PPC. ・Two experts were newly dispatched to accelerate the progress of the WECSA Component (especially Output 3).
Are there any factors which constrained the achievement of the Outputs?	Constraining factors and remedial measures taken	
Correlation among Inputs, Activities and Outputs		
Have the Inputs been appropriate in terms of quantity, quality and timing?	JICA experts (number of experts, technical area, timing) Equipment and facilities provided from Japan side (type, quantity, quality, timing) Equipment and facilities provided from the Kenyan side (type, quantity, quality, timing) Training in Japan C/P (number of counterparts, technical area, timing) The status of utilization of all the Inputs (whether or not there are Inputs which were underutilized), The reason for underutilization	・Inputs from the Japanese side were mostly sufficient. Sending study missions between the mid-term review and the terminal evaluation would have been beneficial to ensure monitoring of the progress and the quality. ・In spite of increase of activities in this phase, the number of staff in CEMASTEA was decreased because sufficient replacement was not made. This is one of the reasons that some activities are behind the schedule and deadlines are often missed.
Are the Activities sufficient to achieve the Outputs?	Record of Activities, Achievement of the Outputs	・It was sufficient. It was desirable to leverage follow-up and monitoring activities to ensure the quality of Outputs.
Technical transfer		
Has the method employed for technical transfer from JICA Project experts to C/P been appropriate?	Level of C/P's satisfaction, Issues to be improved	・As JICA expert team focused on following up managerial issues of CEMASTEA, opportunities for direct technical transfer were limited.
Project management/implementation system		
Has the project management system been effective and efficient in promoting project activities? (Japanese side, Kenyan side, between Japanese and Kenyan sides)	Project management system of CEMASTEA, Project support system of JICA	・Currently, the tasks related to the WECSA Component are delegated to two committees; while WECSA Committee coordinates TCTP and Technical Workshop, an ad hoc committee coordinates Regional Conference. It caused a challenge in terms of communication regarding WECSA Component. Meanwhile, as CEMSATEA has decided that the WECSA committee will be in charge of all the WECSA activities from now onwards, it is expected that this issue will be solved shortly. ・Documents produced by the Project, such as reports, lesson plans and TCTP evaluations (of Francophone countries) have not been kept properly by the project team. Therefore, it took time for the project team to retrieve them when they are necessary.

Annex 4: Evaluation Grid for Terminal Evaluation of SMASE-WECSA Kenya, JICA

Question	Data Required	Findings
Cost efficiency		
Have the resources and experiences of Kenya been effectively used?	Examples of good practices	・Past inputs to Kenya, which are Kenyan human resources and experiences strengthened over a decade of cooperation and equipment were utilized effectively in the Project. ・Regional training and technical exchange often require lower costs, and produce outcomes equal to or more than the North-South cooperation.
Are there any effective measures taken in order to raise cost efficiency of the Project?	Measures taken to raise cost efficiency	
Coordination and cooperation with other donors and schemes		
Has there been coordination or cooperation with other donors to enhance the project effects? Has there been any coordination with other Japanese development schemes?	Cooperation and coordination with other donors and schemes	・VVOB, the Belgian NPO, has been assisting CEMASTEA on ITC capacity development. Though a direct collaboration was not made, the Project benefitted from ITC expertise of CEMASTEA developed by VVOB especially in terms of development of CEMASTEA website, which is necessary to achieve Output 3. ・Additional buildings are being constructed by JICA grant, and expected to be completed by the end of September 2013. As a library is included in the construction, a complete library will be established by the end of the Project, which will strengthen the achievement level of Output 3.
6. Impact		
Likelihood of achieving Overall Goal		
Is the Overall Goal likely to be achieved in 3 to 5 years after the completion of the Project?	Trend of the indicators of the Overall Goal, External factors which might have affected the trend of the indicators	・It is impossible to assess the achievement level due to unclear definitions, targets, baseline data, and obtained information on the indicators. Also, the causality between intervention of the Project and the indicators is limited.
Are there any constraining factors for the achievement of the Overall Goal?	Constraining factors and remedial measures taken	・The limited causality between intervention of the Project and the indicators is a constraining factor. It is recommended to change the Overall Goal/indicators.
Ripple effect		
Have there been any unexpected positive impacts?	Observation of the impacts in terms of aspects of policy, law, institution, equality/human rights, technical innovation, and economy. Activities implemented by the initiative of the Kenyan side	・SMASE-WECSA Association was established in 2001, and registered as an NGO in Kenya in 2003, aiming at promoting mathematics and science education, and reinforcing network among the member countries. This association was borne out of SMASSE Kenya project, but it functions independently from the Project. The association currently has 27 member countries and 7 observers, and chaired by Mr. Edward Thindi in Zambia. Especially, in view of termination of the Project in 2013, issues on the sustainability of the network are increasingly discussed among the member countries. As a consequence, the Strategic Plan 2014-2018 was developed by the association in 2011, and 13 resolutions have been adopted by the association in the following year, which include raising registration and subscription fee, establishing country chapters, and collaboration with CONFEMEN, ADEA and National Commissions for UNESCO. ・Moreover, the network enabled the member countries to conduct technical exchanges of their own. For example, Niger, Burkina Faso and Senegal conducted experience-sharing workshops in 2009 and 2010. Also, Senegal and Zambia are planning to hold a joint workshop on lesson study. At the lower level, ex-participants still keep in touch with other participants, and exchange information or documents though e-mails. The culture of mutual learning is gradually being formed in the region.
Correlation between Project Purpose and Overall Goal		
Considering the Project Purpose, is the Overall Goal adequately set ?	Project logic, Influences of important assumptions	・The causality between intervention of the Project and the indicators is limited.

Annex 4: Evaluation Grid for Terminal Evaluation of SMASE-WECSA Kenya, JICA

Question	Data Required	Findings
Are important assumptions still true? Are they likely to be fulfilled?	Is "Policy frameworks in participating countries will be supportive of INSET for Mathematics and Science teachers" fulfilled?	・The important assumption is true, and it is likely to be fulfilled. However, in order to achieve the current Overall goal, it is necessary to add important assumptions
7. Sustainability		
Policy		
Will the government of Kenya support the Project after the termination of Japanese support?	Policy and plan of the government regarding the Project and its approach Likelihood of the Project approach being incorporated into the Government of Kenya	・Currently, CEMASTEA is mandated by MOEST to conduct WECSA Component activities. There are strong indications, through the bill to convert CEMASTEA to ICADETA and the commitment of MOEST to COMEDAF that CEMASTEA will serve as a lead agency for improving SMT, that the Kenyan government will continue to support WECSA activities.
Budget		
Will the budget for this approach be secured as an activity of Government of Kenya?	Disbursement made so far by the Kenyan side for the Project, Budget plan of Kenyan side to continue or disseminate the Project after the end of the project period	・No alternative funding has been confirmed to run WECSA component activities after the project period. In order to secure financial sustainability, a resolution to raise subscription fee of SMASE-WECSA Association was adopted, but it is not sure if all the countries are ready to pay 1,500 USD per year, which is five times more expensive than the previous fee. ・Meanwhile, the Ministry of Education mentioned that it may be possible to cover the budget for regional activities by calling for financial contributions from the member countries after CEMASTEA has been transformed to ICADETA.
Organization		
Does the project implementation system have an organizational ability to conduct the activities effectively after the completion of the Project?	System within CEMASTEA Level of ownership at MoE, CEMASTEA	・The bill to convert CEMASTEA to the Institute of Capacity Development of Teachers in Africa (ICADETA) was developed by MOEST to re-engineer CEMASTEA and empower the center so that its mandate can be carried out more effectively with more autonomy. It is expected that the bill will be approved by the parliaments within this year. ・The data and documents are not properly kept. The documentation and the quality of reports need significant improvement so that information and lessons learned can be shared with all the staff, and institutional memories can be retained. ・It was pointed out, through interviews, that ownership and motivation for routine activities such as TCTP is limited among working-staff levels. Meanwhile, some staff perceived that the interests of the top management of CEMASTEA regarding routine activities such as TCTP are not sufficient.
Personnel		
Is it likely that C/Ps assigned will be retained in the Project? Are there any remedial measures prepared in case of staff rotation?	System of rotation of staff at CEMASTEA, System of retaining institutional memory	・It is likely that C/Ps will be retained in CEMASTEA as long as CEMASTEA functions. ・The number of staff in CEMASTEA is not sufficient. However, once the ICADETA bill is approved, a governing council of its own will be created, and staff will be employed directly by the council. It will be easier, under this more autonomous system, to create a section solely in charge of WECSA Component (or future SMASE-Africa Component), which will enhance the activities and network. In the meantime, the current management system of CEMASTEA needs to be streamlined in order to ensure smooth transition to ICADETA. ・It is necessary to ensure institutional memory be transmitted to new staff employed under ICADETA.
Capacity development		
Does the project team already have capacity to implement the Activities effectively? Are they motivated to continue the Project on their own?	The level of capacity of CEMASTEA developed, capacity still undeveloped, Level of motivation to sustain the Project, Examples of initiatives taken by the Kenyan side	・CEMASTEA staff have sufficient capacities to continue the current activities. Meanwhile, it is important to keep upgrading their capacities in order to further improve the current activities and to meet the needs of the member countries. Moreover, their capacities to conduct quality evaluation/monitoring and studies need to be further improved to keep upgrading the activities. ・In addition, the logistics arrangement to invite participants has been managed by JICA expert team and one CEMASTEA staff to date. Therefore, the information and the skills to arrange logistics needs to be transferred to other staff in CEMASTEA.

Annex 5: Terminal Evaluation Schedule (WECSA Component)

Date		Time	Activities	Stay
6/29	Sat	22:00	Depart Narita / Tokyo (EK319)	In-flight
6/30	Sun	03:50 07:55 14:15	Arrive in Dubai Depart Dubai (EK797) Arrive in Dakar	Dakar
7/1	Mon	09:00 10:15	Interview with PREMST 2 Project Manager Interview with Japanese expert	Dakar
7/2	Tue	10:30 12:10	Group interview with ex-participants in Fatick Interview with Inspecteur d'Adademie in Fatick	Dakar
7/3	Wed	10:10	Group interview with ex-participants in Thiès	Dakar
7/4	Thu	11:30	Group interview with ex-participants in Louga	Dakar
7/5	Fri	15:00 22:50	Interview with Directeur de l'Enseignement Elémentaire, Ministère de l'Education National Depart Dakar (AF719)	Dakar
7/6	Sat	06:10 13:55 19:20	Arrive in Paris Depart Paris (AF900) Arrive in Yaounde	Yaounde
7/7	Sun		Documentation	Yaounde
7/8	Mon	13:30	Group interview with ex-participants	Yaounde
7/9	Tue	13:15	Group interview with ex-participants	Yaounde
7/10	Wed	10:35 16:35	Depart Yaounde (KQ527) Arrive in Nairobi	Nairobi
7/11	Thu	09:00 11:30 13:00 15:30	Kick-off meeting with JICA Experts Interview with Mr. Patrick Kogolla, Coordinator Academic Programme Interview with Mr. Atsushi Matachi, Chief Advisor, SMASE Interview with Mr. Noriaki Tanaka, Project Coordinator, SMASE	Nairobi
7/12	Fri	09:40 10:15 13:00 14:00 15:30	Interview with Mr. James Mathenge, Deputy Coordinator Academic Programme Interview with Mr. Kenji Ohira, Project Coorinator II/INET Management Interview with Mr. Masoka Ndelela, WECSA Committee Member Interview with Mr. Nakajima, Deputy Chief Advisor/WECSA Advisor Interview with Mr. John Makanda, WECSA Committee Deputy Coordinator	Nairobi
7/13	Sat		Documentation	Nairobi
7/14	Sun		Documentation	Nairobi
7/15	Mon	09:30 14:00	Group Interview with TCTP facilitators Group Interview with TCTP facilitators	Nairobi
7/16	Tue	09:00 14:00 15:00	Interview with Mr. Thuo Karanja, WECSA Committee Member Interview with Ms. Priscilla Ombati, WECSA Committee Member Interview with Ms. Hazuki Uchiyama, Science Education, SMASE	Nairobi
7/17	Wed	09:30	Interview with Mr. Chesire Beregge, WECSA Committee Coordinator	Nairobi
7/18	Thu		Questionnaire Analysis	Nairobi
7/19	Fri	09:00	Interview with Mr. Kawa Moses Otieno, Director, CEMASTEA	Nairobi
7/20	Sat		Questionnaire Analysis	Nairobi
7/21	Sun		Questionnaire Analysis	Nairobi
7/22	Mon	14:00	Interview with Ms. Lydia Murithi, Deputy Director	Nairobi
7/23	Tue	14:00	Interview with Mr. Nakajima, Deputy Chief Advisor/WECSA Advisor	Nairobi
7/24	Wed	09:00	Interview with Mr. Nakajima, Deputy Chief Advisor/WECSA Advisor	Nairobi
7/25	Thu	09:00 16:00	Interview with Ms. Hazuki Uchiyama, Science Education, SMASE Interview with Mr. Atsushi Matachi, Chief Advisor, SMASE	Nairobi

		18:00	Interview with Mr. Nakajima, Deputy Chief Advisor/WECSA Advisor	
7/26	Fri		Drafting of report	Nairobi
7/27	Sat		Drafting of report	Nairobi
7/28	Sun		Drafting of report	Nairobi
7/29	Mon		Drafting of report	Nairobi
7/30	Tue	11:00 15:00	Interview with Ms. Sandra Barton, Education Advisor, DFID Observation of Quality Control Meeting for TCTP	Nairobi
7/31	Wed		Interview/Meeting with Ministry of Education	Nairobi
8/1	Thu	09:00 11:00 14:30 15:30 16:00 16:30	Observation of induction workshop for regional and cluster INSET NPO meeting Lesson Observation at Ndurarua Primary school Meeting with TAC tutor, Dagoretti District Meeting with head teacher Meeting with teachers and cluster trainers	Nairobi
8/2	Fri	08:00 08:45 09:30 10:00 11:20 12:00 14:15 18:00	Meeting with DEO Meeting with TSC Meeting with CDE, CQASO Meeting with DQASO, TAC tutors Meeting with principal, Kiambu High School Meeting with teachers and cluster trainers, Kiambu High School Meeting with Deputy Principal,and teachers, Kilimambogo PTTC Internal discussion on the report	Nairobi
8/3	Sat		Drafting of MM	Nairobi
8/4	Sun		Drafting of MM	Nairobi
8/5	Mon	14:00	Discussion of MM with Japanese experts	Nairobi
8/6	Tue	09:00	Discussion of MM with CEMASTEA	Nairobi
8/7	Wed	09:00	Discussion of MM with CEMASTEA	Nairobi
8/8	Thu	08:00 17:00 18:00	Discussion of MM with CEMASTEA MM signing Report to JICA Kenya Office	Nairobi
8/9	Fri		Documentation	Nairobi
8/10	Sat	16:40 22:40	Depart Nairobi (EK720) Arrive in Dubai	In-flight
8/11	Sun	02:50 17:35	Depart Dubai (EK318) Arrive in Narita	

ANNEX 6: List of Major Interviewees

Ministry of Education, Science and Technology	
Ms. Margaret Thiongo	Director, Field and Other Services
CEMASTEA	
Mr. Kawa Moses Otieno	Director, CEMASTEA
Ms. Lydia Murithi	Deputy Director
Mr. Patrick Kogolla	Coordinator Academic Programme
Mr. James Mathenge	Deputy Coordinator Academic Programme
Mr. Chesire Beregge	WECSA Committee Coordinator
Mr. John Makanda	WECSA Committee Deputy Coordinator
Mr. Masoka Ndelela	WECSA Committee Member
Mr. Thuo Karanja	WECSA Committee Member
Ms. Priscilla Ombati	WECSA Committee Member
Mr. Richard Jackomanyo	CEMASTEA staff, Chemistry
Ms. Mary Sichangi	CEMASTEA staff, Mathematics
Mr. John Odhiambo	CEMASTEA staff, Biology
Mr. George Gitau	CEMASTEA Staff, Physics
Mr. Benjamin Kilonzo	CEMASTEA Staff, Chemistry
Senegal	
Mr. Abdou Diao	Director of Elementary Education, Ministry of National Education
Mr. Biram Faye	Inspector, Fatick (Regional Trainer)
Mr. Djibril Ndiaye	Inspector, Fatick (Regional Trainer)
Mr. Nouah Sarr	Inspector, Fatick (Regional Trainer)
Mr. Ndiaye Amadou Moustapha	Inspecteur d'Académie, Fatick
Mr. Ibrahima Bar	Inspecteur d'Académie Adjoint, Thiès (National Trainer)
Mr. Bocar Sow	Pedagogic Advisor, Thiès (Regional Trainer)
Mr. Mohamadou Lamine Dia	Inspector, Thiès (Regional Trainer)
Mr. Papa Ibrahima Ly	Inspector, Louga (National Trainer)
Mr. Demba Fatim Sall	Inspector, Louga (Regional Trainer)
Mr. Ndiaye Al Hamadou	Inspector, Louga (Regional Trainer)
Mr, Ndiaye Ibrahim	Inspector, Louga (Regional Trainer)
Mr. Boubacar Sow	Inspector, Louga (Regional Trainer)
Mr.Alioune Badara Diop	National Coordinator, PREMST 2
Mr. Takeshi Miyazaki	Chief Advisor, PREMST 2
Cameroon	
Ms. Agborbesong Helen	National Pedagogic Inspector
Mr. Adjaba Biwoli Jean Pierre	National Pedagogic Inspector
Mr. Eto Monevondo Bernard	National Pedagogic Inspector
Ms. Babila née Ghogomu Emilia Yopuku	National Pedagogic Inspector
Ms. Priloa Akomoavi Marie-Thérèse	National Pedagogic Inspector
Ms. Akamba Ekotto Salomé Evelyne	Regional Pedagogic Inspector
Mr. Billa Sylvester Neqnyek	Regional Pedagogic Inspector
DFID	
Ms. Sandra Barton	Education Advisor
SMASE Project	
Mr. Atsushi Matachi	Chief Advisor
Mr. Motoe Nakajima	Deputy Chief Advisor/WECSA Advisor
Mr. Hazuki Uchiyama	Science Education
Mr. Kenji Ohira	Project Coordinator II/INSET Management
Mr. Noriaki Tanaka	Project Coordinator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