No.

ケニア共和国
中等理数科教育強化計画フェーズII
実施協議報告書

平成15年7月
（2003年）

国際協力事業団
社会開発協力部

社 協 二
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03-013

序　　文

ケニア共和国の国家開発計画によれば、2020年に工業化を達成する目標を掲げていますが、同国の初・中等教育の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きました。こうした状況下、我が国はケニア共和国政府の要請を受け、中等理数科現職教員研修を通じた理数科教育改善を目標とする「中等理数科教育強化計画（SMASSE）」を1998年7月から2003年6月まで実施しました。この結果、現職教員研修（INSET）システムの有効性と持続発展性、及び経済持続性も高いことが確認できました。これを受けて、INSETを全国的に展開するフェーズIIプロジェクトの実施が提言され、ケニア共和国政府から日本政府に対して「中等理数科教育強化計画フェーズII」に対する支援が要請されました。

本報告書は、その要請背景、及びプロジェクト形成の経過と概略を取りまとめたもので、今後の本プロジェクトの実施にあたって広く活用されることを願うものです。

ここに、本調査にご協力とご支援を頂いた内外の関係各位に対し、心から感謝の意を表します。

平成15年7月

国際協力事業団
社会開発協力部
部長　末森　満

目　　次

ケニア全図
ナイロビ市内図

プロジェクトの拠点であり、中央研修施設でもあるケニア教員養成大学（Kenya Science TeachersCollege）

フェーズⅡから新たに中央研修施設として提供された技術教育センター（Centre for Research andTraining in Karen）

2003 年 4 月地方研修において実施した模擬授業の様子

1. 要請背景

ケニア共和国（以下、「ケニア」と記す）の国家開発計画によれば、2020年に工業化を達成する目標を掲げている。しかし、ケニアの初・中等教育の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きた。かかる状況下、ケニア政府の要請を受け、中等理数科現職教員研修を通じた理数科教育改善を目標とする「中等理数科教育強化計画（SMASSE）」（1998年7月～2003年6月）が9ディストリクトを対象として実施された。この結果、現職教員研修（INSET）システムは中央及び地方で構築され、その有効性と持続発展性が終了時評価で確認された。地方での研修については、ケニア側の受益者負担（コスト・シェアリング）が実践され、経済的持続性も高いと判断された。また、教育面からは、非対象地域と比較した場合、教員研修による授業改造（ASEI/PDSI[注1]）のインパクトが認められた。

このような情報は全国的に広まり、ケニア中等学校校長会は、2002年の総会において教育省に本研修の全国展開を強く要望した。他方、当該プロジェクトが実施する活動（ASEI/PDSI）はケニアと同様の問題を抱える周辺アフリカ諸国へ普及されるべきであるという要望が高く、SMASSEプロジェクトを事務局として域内ネットワーク「SMASSE-WECSA（Strengthening of Mathematics and Science in Secondary Education-Western, Eastern, Central and Southern Africa）」が設立された。2002年南アフリカで開催された「持続可能な開発のための世界首脳会議（World Summit on Sustainable Development：WSSD）」では、日本政府がタイプ2イニシアティブとして本ネットワークの強化を表明した。

これらを踏まえ、INSETを全国的に展開するフェーズIIプロジェクトの実施が提言され、ケニア政府から日本政府に対して、ケニア国内における研修事業と上記ネットワーク強化事業を2つの核とする「中等理数科教育強化計画フェーズII」の支援が要請された。

注1　ASEI（Activity, Student, Experiment, Improvisation）/ PDSI（Plan, Do, See, Improve）
本プロジェクトで導入した授業改造アプローチの理念を示すもの。教師中心ではなく生徒中心で、かつ生徒の到達度を確認するツールとしての実験の実施及び教師の創意工夫の発揚をめざす。ASEIアプローチに基づく授業の計画、実施、評価、改善というサイクルの実践を併せて啓発している。

2. 協議の経過と概略

2－1 プロジェクト形成の経過と概略

本プロジェクトの事前評価調査は在外事務所及びケニア側主導によって実施した。主な協議の実施時期と概略は以下のとおりである。各会議議事録は付属資料1、2、3を参照いただきたい。

（1）第4回合同調整委員会（2002年10月23日）

1） 概　要

本プロジェクトフェーズI終了時評価調査に併せて開催された。調査団からの評価結果報告に加えて、INSETの規模を拡大すべきであるとの提言に対するケニア側の対処方策について協議が行われた。

2） 協議結果

協議の結果、ケニア政府は以下のとおり対処する方針であることが確認された。

① ケニア側要員の増員

活動規模の拡大に応じて必要となる人員（ナショナルトレーナー及び事務要員）の増員について、教育省及び教員雇用委員会（TSC）が合意した。

② 予算配分

活動規模の拡大に応じて必要となる予算を中期支出枠組み（Mid-term Expenditure Framework：MTEF）の枠内で、現状の350万ケニア・シリングから2,000万ケニア・シリング（2003/2004ケニア予算年度、経常予算分）に増額することについて教育省が合意した。

③ 施設提供

プロジェクトが実施する研修の回数、種別、対象者数等が増加することに伴い、新たな研修用施設の提供について教育省が合意した。

④ ディストリクトトレーナー資格証明書の発行

プロジェクトが実施するINSET制度及び質を維持するために、ディストリクトトレーナーに対して公的な資格証明書を発行すべきである、との終了時評価調査団の提言に対して、TSCが承認する予定であることが表明された。

（2）ナショナルトレーナーワークショップ（2002年10月28日～11月1日）

プロジェクトチーム内で、終了時評価調査を受けて、フェーズIIの立ち上げに向けてプロジェクトチームが取り組むべき課題、INSETの質を保つための仕組みや、予算管理システム、モニタリング評価方法等に関して集中的に討議を行った。プロジェクト内部のワークショッ

プであるが、ケニア側主導により実施されたものであり、ケニア側が自らのプロジェクトとしてその実施運営方法、課題解決方策について議論されている。

（3）第5回合同調整委員会（2003年3月7日）

1） 概　要

本プロジェクト実施協議に先立ち、プロジェクト運営上の課題やケニア側実施体制の整備等についての協議が行われた。

2） 協議結果

① プロジェクト実施体制の整備

・フェーズII立ち上げにあたり、フェーズIで構築された実施体制を更に強化する。ディストリクトレベルでは、一定の教員数（理数科教員約200名）に対して1か所のディストリクトINSETセンターを設置する。National Working Committee（NWC）が教育科学技術省（Ministry of Education, Science and Technology：MOEST）を代表して中央研修センター及びプロジェクトを運営する。

・カウンターパートを29ポストから61ポストに増員する。

② ディストリクトトレーナーに対する資格証書交付

プロジェクトが定めた要件に沿って、ディストリクトトレーナーに対する資格証書を交付する。

③ 予算配分の増加

MOESTは、プロジェクト予算として2,000万ケニア・シリング（2003/2004予算年度）を配分する。

④ 教員のINSET参加の義務化

各校の校長が責任をもってプロジェクトが実施するINSETに教員を参加させる。

⑤ 域内活動への継続的協力の実施

フェーズI期間中に立ち上げた域内ネットワーク（SMASSE-WECSA）に対して、MOEST及びTSCは継続的に支援する。本ネットワークは、WSSD（2002年8月ヨハネスブルグ）で日本政府が登録したタイプ2イニシアティブ文書「アフリカにおける理数科教育のための能力開発」を具体化する活動として位置づけられている。

なお、本プロジェクトフェーズI期間中には、プロジェクト方式技術協力SMASSEとは別に、6ディストリクトを対象として同様のINSET（現地国内研修「中等理数科教員指導者養成計画（2001～2005年）」）を実施していたが、「中等理数科教育強化計画フェーズII」立ち上げに伴い、前述の現地国内研修も統合して一体の技術協力プロジェクトとして実施することとした。

2－2　討議議事録（R／D）の署名

前項の協議を経て、プロジェクト計画及びケニア政府・日本政府が取るべき措置について双方合意に達したので、2003年5月16日、JICAケニア事務所長及び教育省次官がR／Dに署名・交換した。署名後のR／Dは付属資料4.を参照頂きたい。

3. 事前評価表／プロジェクト・ドキュメント

3－1 事前評価表

案件名：ケニア中等理数科教育強化計画フェーズII
Strengthening of Mathematics and Science in Secondary Education（SMASSE）Project Phase II

対象国：ケニア及びSMASSE-WECSA参加国 （ケニア含めて13か国：ブルンジ、ガーナ、レソト、マラウイ、モザンビーク、ルワンダ、南アフリカ共和国ムプマランガ州、スワジランド、タンザニア、ウガンダ、ザンビア、ジンバブエ）	**実施地域：**ケニア全域 （ただしフェーズI対象パイロット・ディストリクト：ムランガ、マクエニ、カジアド、キシイ、カカメガ、グチャ、ルガリ、ブテレムミアス、マラグアは対象外）

実施予定期間：2003年7月1日～2008年6月30日（5年間）

1. プロジェクト要請の背景

ケニアの国家開発計画によれば、2020年に工業化を達成する目標を掲げている。しかし、ケニアの初・中等教育の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きた。係る状況下、我が国はケニア政府の要請を受け、中等理数科INSETを通じた理数科教育改善を目標とする「中等理数科教育強化計画（SMASSE）」（1998年7月～2003年6月）が9ディストリクトを対象として実施された。この結果、INSETシステムは中央及び地方で構築され、その有効性及び持続発展性が終了時評価で確認された。地方での研修については、ケニア側のコスト・シェアリングが実践され、経済的持続性も高いと判断された。また、教育面からは、非対象地域と比較した場合、教員研修によるASEI/PDSIのインパクトが認められた。

このような情報は全国的に広まり、ケニア中等学校校長会は、2002年の総会で、教育省に本研修の全国展開を強く要望した。他方、当該プロジェクトが推進するASEI/PDSIアプローチはケニアと同様の問題を抱える周辺アフリカ諸国へ普及されるべきであるという要望が高く、SMASSEプロジェクトを事務局としてSMASSE-WECSAが設立された。2002年南アフリカで開催されたWSSDでは、日本政府がタイプ2イニシアティブとして本ネットワークの強化を表明した。

これらを踏まえ、INSETを全国的に展開するフェーズIIプロジェクトの実施が提言され、ケニア政府より日本政府に対して、ケニア国内における研修事業と上記ネットワーク強化事業を2つの核とする「中等理数科教育強化計画フェーズII」の支援が要請された。

2. 相手国実施機関

プロジェクト監督機関　　MOEST
プロジェクト実施機関　　MOEST SMASSE INSET UNIT

3. プロジェクトの概要及び達成目標

ケニア国内でのINSETプロジェクト及びSMASSE-WECSAについて各々の目標、成果は以下のとおりである。

（1）達成目標

1） プロジェクト終了時の達成目標（プロジェクト目標）

〈目　標〉

① ケニア国内
現職教員再研修によりケニアの中等教育レベルの理数科教育が強化される。

② SMASSE-WECSA
SMASSE-WECSAメンバー国の教員養成機関及び中等学校でASEI/PDSI授業が実践される。

〈指　標〉

① ケニア国内
プロジェクトで開発したモニタリング・評価手法により、授業の質を評価（評価指標の50%以上の改善が認められる）

② SMASSE-WECSA
プロジェクトで開発したモニタリング・評価手法により、メンバー国の指導員のASEI/PDSIによる指導能力を測定し、一定の評価を得る。

2) 協力終了後に達成が期待される目標（上位目標）

〈目　標〉

① ケニア国内

理数科目についてのケニアの青少年の能力が向上する。

② SMASSE-WECSA

SMASSE-WECSA メンバー国の中等教育レベルの理数科教育が強化される。

〈指　標〉

① ケニア国内

国家試験の成績

② SMASSE-WECSA

ASEI / PDSI アプローチに基づく授業の実践

（2）成果（アウトプット）と主な活動

① ケニア国内

・中央研修センターにおいて、全国の理数科分野での研修指導員（教員）のための研修システムが強化される。

・全国に教員研修システムが確立される。

・リソースセンターとしての中央研修センター及び全国の地方研修センターの役割が強化される。

② SMASSE-WECSA

・SMASSE-WECSA メンバー国で ASEI-PDSI 授業を指導できる教員養成・研修指導者が養成される。

・中央研修センターが、アフリカの中等理数科教育のリソースセンターとして整備されると同時に、連携ネットワークの事務局機能を果たす。

（3）投入（インプット）

1) 日本側（総額　約 12 億円）

① 専門家派遣

長期専門家（チーフアドバイザー、業務調整、数学教育、理科教育、教育評価）（300M ／ M）

短期専門家（教育評価、教員研修運営・管理、数学教育、他）年間 4 ～ 5 名

各 1 か月程度（20 ～ 25M ／ M）

② 研修員受入れ

本邦研修：理数科教育（年間 4 名、5 年間計 20 名）

教員研修運営・管理（年間 20 名、3 年間計 60 名）

在外研修：フィリピン（University of the Philippines, National Institute for Science and Mathematics Education Development）における理数科教育（年間 20 名、3 年間計 60 名）

ケニアにおける SMASSE-WECSA メンバー国からの研修員受入れ（年間 30 名、5 年間計 150 名）

③ 機材供与（車両、地方研修センター資機材、専門図書、中央研修教材作成）2 億円

2) ケニア側

① カウンターパートの配置 61 名（責任者 1 名、中央研修指導員 60 名）

② 施設

中央研修センターにおける活動スペース、地方研修センターの活動スペース、免税措置、交通・車両提供、供与機材の維持・管理、その他ローカルコスト

（4）実施体制

ケニア教育次官を筆頭とする日本・ケニア合同調整委員会が本プロジェクト実施上のカウンターパート組織となり最高責任を負う。その下部組織として、中央研修センター内に、プロジェクトの日常業務調整を行うステアリング・コミッティーを設置し地方研修の運営・管理は地方教育長を長とする研修運営・管理委員会を設ける。

SMASSE-WECSA についても、本協力期間中は上記合同調整委員会の運営・管理下に置く。現在、本プロジェクトカウンターパート 4 名及びチーフアドバイザーの 5 名からなる暫定事務局が設置され、ネットワーク強化活動の行動計画を策定済である。

4. 評価結果（実施決定理由）

（1）妥当性

① ケニア国内

国家開発計画、教育開発計画、貧困削減戦略ペーパー（Poverty Reduction Strategic Paper：PRSP）等において、ケニアの工業化達成に理数科教育の強化が不可欠であると表明されており、政府の財政的コミットメントも認められる。また、社会ニーズとの整合性も高い。我が国のケニアに対する事業指針との整合性も高い。

② SMASSE-WECSA

アフリカ諸国の理数科教育はケニアと同様に低迷しており、その質的改善に対するニーズは、域内ワークショップのなかで確認されている。我が国の政策との関係では、TICAD II、WSSD 等で、域内連携を通したアフリカの人づくり支援が掲げられている。

（2）有効性

① ケニア国内

本計画は、フェーズ I において、協力終了後の持続的発展性のある研修システムを確立しており、そのシステムを活用し研修が継続される見通しも立っている。したがって、研修の全国展開を支援することで、全国的に持続的発展性のある研修システムが構築され、プロジェクト目標から、上位目標へ到達すると期待できる。

② SMASSE-WECSA

ASEI / PDSI に基づく授業に対して特に関心が高く、自国政府が本事業に対して積極性を示すメンバー国との連携を促進するため、プロジェクト目標は達成される見込みが高い。

（3）効率性

① ケニア国内

5 年間で全国約 900 人の研修指導員が養成され、約 1 万 2,000 人の理数科教員に研修を提供し、その成果は約 70 万人の生徒が裨益する。

② SMASSE-WECSA

5 年間で 150 名の教員養成関係者に直接、研修を提供する。

（4）インパクト

① ケニア国内

フェーズ I では、以下の 2 点が確認されている。

・ 理数科教員の教育に対する姿勢が改善される。

・ 生徒の理数科に対する関心が高まる。

したがって、このような生徒・教員双方の理数科教育に対する姿勢が全国的に改善されることにより、ケニアの理数科教育に対して大きなインパクトを与えることが期待できる。

② SMASSE-WECSA

ケニア国内の事業の成果を域内に普及するという観点から、本協力によってケニア国内で期待されるのと同様のインパクトが期待される。

（5）自立発展性

① ケニア国内

中央と地方に研修システムを構築すれば、それらが自立的に研修を継続し得る可能性はフェーズ I で実証された。フェーズ I のケニア側支出実績は、2002 年教育省予算 350 万ケニア・シリング（約 560 万円全額執行済み）、9 ディストリクトの学校拠出金約 1,000 万ケニア・シリング（約 1,600 万円）であり、財政的、制度的に自立発展性は高いものと期待できる。

② SMASSE-WECSA

現時点では、連携事業の自立発展性は確実なものではない。しかし、メンバー国に対する啓もう・啓発により、事業の重要性を理解させることで自立発展性の道は開けると考えられる。

5. 外部要因リスク（外部条件） ① ケニア国内 ・教員が ASEI / PDSI を継続的に実践する。 ・教員研修がほかの活動に妨げられない。 ・地方教育委員会の支援が継続する。 ・中央及び地方研修センターの研修指導員が定着する。 ② SMASSE-WECSA ・メンバー国で理数科教育振興政策が存在する。 ・メンバー国で ASEI / PDSI 授業が採用される。
6. 今後の評価計画（中間評価、終了時評価の実施時期） ・中間評価：2005 年 11 月ごろ ・終了時評価：2007 年 11 月ごろ

3－2 プロジェクト・ドキュメント

次に、ケニア側関係機関と協議のうえで作成したプロジェクト・ドキュメントの和訳を添付する。なお、プロジェクト・ドキュメント英文版は付属資料 5. を参照いただきたい。

ケニア中等理数科教育強化計画
フェーズII
プロジェクト・ドキュメント

2003年4月30日

ケニア教育科学技術省・国際協力事業団

目　　次

要　約

案件名：ケニア中等理数科教育強化計画フェーズ II
（Strengthening of Mathematics and Science in Secondary Education Project Phase II）

対象国：ケニア及び SMASSE-WECSA 参加国

実施地域：ケニア国内及び SMASSE-WECSA 参加国

実施予定期間：2003 年 7 月 1 日～ 2008 年 6 月 30 日

1．プロジェクト要請の背景

ケニアの国家開発計画によれば、2020 年に工業化を達成する目標を掲げている。しかし、ケニアの初・中等教育の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きた。係る状況下、ケニア政府の要請を受け、中等理数科現職教員研修を通じた理数科教育改善を目標とする「中等理数科教育強化計画（SMASSE）」（1998 年 7 月～ 2003 年 6 月）が 9 ディストリクトを対象として実施された。この結果、INSET システムは中央及び地方で構築され、その持続的発展性が終了時評価で確認された。ケニア側のコスト・シェアリングが実践され、経済的持続性も高いと判断された。また、教育面からは、非対象地域の理数科教育と比較した場合、教員研修による ASEI / PDSI のインパクトが認められた。このような情報は全国的に広まり、ケニア中等学校校長会は、2002 年の総会で、教育省に本研修の全国展開を強く要望した。他方、当該プロジェクトが推進する ASEI / PDSI はケニアと同様の問題を抱える周辺アフリカ諸国へ普及されるべきであるという要望が高く、SMASSE-WECSA が設立され、2002 年南アフリカで開催された WSSD において、タイプ 2 イニシアティブとして、本ネットワークの強化が表明された。これらを踏まえ、INSET を全国的に展開するフェーズ II が提言され、ケニア政府より日本政府に対して、ケニア国内における研修事業と上記ネットワーク強化事業を 2 つの核とする「中等理数科教育強化計画フェーズ II」の支援が要請された。

2．相手国実施機関：教育科学技術省

3．プロジェクトの概要及び達成目標

（1）達成目標

1）　プロジェクト終了時の達成目標

①　ケニア国内

・現職教員再研修により、ケニアの中等教育レベルの理数科教育が強化される。

②　SMASSE-WECSA

・SMASSE-WECSA メンバー国の教員養成機関及び中等学校で ASEI / PDSI 授業が実践される。

2）　協力終了後に達成が期待される目標

①　ケニア国内

・理数科目についてのケニアの青少年の能力が向上する。

②　SMASSE-WECSA

・SMASSE-WECSA メンバー国の中等教育レベルの理数科教育が強化される。

（2）活動・成果（アウトプット）

①　ケニア国内

・中央研修センターにおいて、全国の理数科分野での研修指導員（教員）のための研修システムが強化される。

・全国に教員研修システムが確立される。

・リソースセンターとしての中央研修センター及び全国の地方研修センターの役割が強化する。

②　SMASSE-WECSA

・SMASSE-WECSA メンバー国で ASEI-PDSI 授業を指導できる教員養成・研修指導者が養成される。

・中央研修センターが、アフリカの中等理数科教育のリソースセンターとして整備されると同時に、連携ネットワークの事務局機能を果たす。

（3）投入（インプット）

①　日本側（総額　約 12 億円）

・専門家派遣

長期専門家（チーフアドバイザー、業務調整、数学教育、理科教育、教育評価）（300M ／ M）

短期専門家（教育評価、教員研修運営・管理、数学教育、他）年間4～5名
各1か月程度（20～25M／M）

・研修員受入れ
本邦研修：理数科教育（年間4名、5年間計20名）
教員研修運営・管理（年間20名、3年間計60名）
在外研修：フィリピン（UP-NISMED）における理数科教育
（年間20名、3年間計60名）
ケニアにおけるSMASSE-WECSAメンバー国からの研修員受入れ
（年間30名、5年間計150名）
・機材供与（車両、地方研修センター基盤整備、理数科参考図書、中央研修教材作成）2億円

② ケニア側
・カウンターパートの配置61名（2003年3月時点で29名の理数科研修指導員が配置されている）
・施設
中央研修センターにおける活動スペース、地方研修センターの活動スペース、免税措置、交通・車両提供、供与機材の維持・管理、その他ローカルコスト

（4）実施体制
ケニア教育次官を筆頭とする日本・ケニア合同調整委員会が本プロジェクト実施上のカウンターパート組織となり最高責任を負う。その下部組織として、中央研修センター内に、プロジェクトの日常業務調整を行うステアリング・コミッティーを設置。地方研修の運営・管理は地方教育長を長とする研修運営・管理委員会を設ける。

SMASSE-WECSAについても、本協力期間中は上記合同調整委員会の運営・管理下に置く。現在、本プロジェクトカウンターパート4名及びチーフアドバイザーの5名からなる暫定事務局が設置され、ネットワーク強化活動の行動計画を策定済。

4．評価結果

（1）妥当性
① ケニア国内
国家開発計画、教育開発計画、PRSP等において、ケニアの工業化達成に理数科教育の強化が不可欠であると表明されており、政府の財政的コミットメントも認められる。また、社会ニーズとの整合性も高い。我が国のケニアに対する事業指針との整合性も高い。

② SMASSE-WECSA
アフリカ諸国の理数科教育はケニアと同様に低迷しており、その質的改善に対するニーズは、域内ワークショップのなかで確認されている。

我が国の政策との関係では、TICAD II、WSSD等で、域内連携を通じたアフリカの人づくり支援が掲げられている。

（2）有効性
① ケニア国内
本計画は、フェーズIにおいて、協力終了後の持続的発展性のある研修システムを確立しており、そのシステムを活用し、研修が継続される見通しも立っている。したがって、研修の全国展開を支援することで、全国的に持続的発展性のある研修システムが構築され、プロジェクト目標から、上位目標へ到達すると期待できる。

② SMASSE-WECSA
ASEI/PDSIに基づく授業に対して特に関心が高く、自国政府が本事業に対して積極性を示すメンバー国との連携を促進するため、プロジェクト目標は達成される見込みである。

（3）効率性

① ケニア国内

5年間で全国約900人の研修指導員が養成され、約1万2,000人の理数科教員に研修を提供し、その成果は約70万人の生徒に裨益する。

② SMASSE-WECSA

5年間で150名の教員養成関係者に直接、研修を提供する。

（4）インパクト

① ケニア国内

フェーズIでは、以下の2点が確認されている。

・理数科教員の教育に対する姿勢が改善される。

・生徒の理数科に対する関心が高まる。

したがって、このような生徒・教員双方の理数科教育に対する姿勢が全国的に改善されることにより、ケニアの理数科教育に対する本プロジェクトのインパクトは大きく、目標達成見込みは高い。

② SMASSE-WECSA

ケニア国内の事業の成果を域内に普及するという観点から、本協力によってケニア国内で期待されるのと同様のインパクトが期待される。

（5）自立発展性

① ケニア国内

中央と地方に研修システムを構築すれば、それらが自立的に研修を継続し得る可能性はフェーズIで実証された。フェーズIの予算実績は、2002年教育省予算350万ケニア・シリング（約560万円全額執行済み）、9ディストリクトの学校拠出金約1,000万ケニア・シリング（約1,600万円）。

② SMASSE-WECSA

現時点では、連携事業の自立発展性は確実なものではない。しかし、メンバー国に対する啓もう・啓発により、事業の重要性を理解させることで自立発展性の道は開けると考えられる。メンバー国から会費として、入会金300ドルと年会費100ドルを徴収することとなっており、4か国が支払い済み。

5. 外部要因リスク（外部条件）

① ケニア国内

・教員がASEI/PDSIを継続的に実践する。

・教員研修が他の活動に妨げられない。

・地方教育委員会の支援が継続する。

・中央及び地方研修センターの研修指導員が定着する。

② SMASSE-WECSA

・メンバー国で理数科教育振興政策が存在する。

・メンバー国でASEI/PDSI授業が採用される。

6. 今後の評価計画

（1）今後の評価に使う指標

① ケニア国内

・研修指導員養成人数（中央40人以上、地方約900人）。

・プロジェクトで開発したモニタリング・評価手法により、研修の質評価（0～4の5段階評価の3点以上）。

・中央及び地方センターでの教材開発数。

・ASEI/PDSI授業の質評価（50%以上）。

・国家試験の成績。

② SMASSE-WECSA

・研修参加国での授業改造度をモニタリング・評価手法により、ASEI/PDSI授業波及度測定。

・ASEI/PDSI授業計画書の評価。

（2）評価スケジュール

・中間評価：2005年11月ごろ

・終了時評価：2007年11月ごろ

・事後評価：プロジェクト終了後3年後

1．序　説

ケニアの国家開発計画によれば、2020年に工業化を達成する目標を掲げている。しかし、ケニアの初・中等教育の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きた。かかる状況下、ケニア政府の要請を受け、中等理数科現職教員研修を通して理数科教育改善を目標とし「中等理数科教育強化計画（SMASSE）」プロジェクト（1998年7月1日～2003年6月30日）が次の9ディストリクトを対象として実施された。

Nyanza州：グチャ、キシイ

Western州：カカメガ、ブテ／ムミアス、ルガリ

Rift Valley州：カジアド

Central州：マラグア、ムランガ

Eastern州：マクエニ

2000年には、現地国内研修スキームを活用して6ディストリクトを対象地域に加え、中学校約850校、生徒数約18万人、理数科教員約3,200人をカバーすることとなった（1998年度教育統計による）。

Coast州：タイタ／タベタ、キリフィ

Rift Valley州：バリンゴ

Central州：キアング

Eastern州：メルーサウス

North Eastern州：ガリッサ

協力活動の拠点は、ナイロビのケニア理科教員養成大学（Kenya Science Teachers College：KSTC）に置かれた。協力開始とともに、日本・ケニア共同で9ディストリクトにおいてベースライン調査を行った。この結果、プロジェクトで実施する教員研修は、教員中心から生徒中心の教育への授業改造を推進することを目的とし、その活動のモットーとしてASEI/PDSIを掲げることとされた。

また、プロジェクトの持続性に重点を置き、参加型活動を通して関係者のオーナーシップ意識の涵養に努め、そのために受益者負担（コスト・シェアリング）が実践された。コスト・シェアリングの財源は、関係者の新たな負担を避け、既存の財源の有効活用を通して確保された。このような方針の下で研修システムが中央及び地方で構築され、経済面と継続的研修実施体制の確立の二面から、その持続的発展性が終了時評価時に確認された。

また、本プロジェクトでは、プロジェクト内にモニタリング評価チームを設け、モニタリング評価手法の開発を行うとともに、それらを使用し、教育面から研修のインパクトについてプロジェクトの対象地域と非対象地域との比較を行った。その結果、教員研修によるASEI/PDSIのイ

ンパクトが認められた。このような情報は全国的に広まり、ケニア中等学校校長会は2002年の総会で、教育省に対して本研修の全国展開を強く要望した。また、非対象地域でも自発的に資金を確保し、プロジェクト対象地域の研修に参加するケースも現れた。

他方、プロジェクトでは、技術交換等を通じて、他のアフリカ諸国の理数科教育の課題を調査し、中等理数科教育の抱える課題の共通性を見いだした。そのため、プロジェクトの成果・課題への対応を発信することを目的として、2000年及び2001年にアフリカ域内ワークショップを開催した。参加13か国の代表からプロジェクトの推進するASEI/PDSIは周辺アフリカ諸国で広く普及されるべきであるという提言がなされ、SMASSE-WECSAが設立された[注i]。2002年南アフリカで開催されたWSSDにおいて、同ネットワークの強化がタイプ2イニシアティブとして表明・登録された。このような域内協力は、アジア・アフリカ協力にも向けられ、過去に我が国が実施したフィリピンの理数科教育の拠点となったUP-NISMEDに対してケニアから研修員を派遣するとともに、域内ワークショップにUP-NISMEDから講師を招へいするなどして連携を深めている。

これら協力の成果を受けて、ケニア政府は、ケニア国内においてINSETを全国的に展開すること、及びアフリカ域内ネットワークを強化拡充することについて、引き続き日本政府による支援が必要であるとして、「中等理数科教育強化計画フェーズII」の実施を正式に要請した。

注i　参加国は、ブルンジ、ガーナ、レソト、マラウイ、モザンビーク、ルワンダ、南アフリカ共和国ムプマランガ州、スワジランド、タンザニア、ウガンダ、ザンビア、ジンバブエ の13か国。

2．プロジェクト実施の背景

2－1．社会・経済状況（教育の視点から）

ケニアでは、1986年のSessional Paper No.1に従い、構造調整計画を導入、実施してきたが、実態として貧困の軽減及び貧困に基づく格差の解消には至っていない。教育に関しては、ケニア政府は、量・質的に地域格差や性格差のない教育の提供を政策として掲げており、法的に義務教育は制度化されていないが、すべての子どもが就学することは子どもの権利であると位置づけている。2003年1月には初等教育の無償化が実現した。ケニアの国家開発計画では、国の工業化に焦点があてられており、経済基盤を2020年までに工業に移行させるという目標を掲げている。しかし、この目標を達成するには以下にあげるようないくつかの課題の克服が求められる。

・貧困軽減
・教育へのアクセス
・公正・公平な教育の実施
・教育の質とニーズの適合

これらを実現する手段として、1988年には教育経費のコスト・シェアリングの原理が導入された。この制度の下で、政府と保護者の負担分担が行われることとなった。

政　府：教員給与、カリキュラム、教育指導・監督、奨学金
保護者：教材・教具、教科書、建物・施設、諸経費

現実には、貧困レベルの悪化に伴いコスト・シェアリングは十分機能しなかった。ではあるが、政府は、質の高い教育が国の変革につながるとして、教育分野については継続的に投資を続けてきた。これは、ケニア政府が、本プロジェクトの重要性を認識し、教員研修を全国に展開するという決定にも表れている。

他のアフリカ域内諸国についても、貧困削減は最大の目標とされており、PRSPの策定等を通じて国家計画・政策として取り組まれている。

2－2．教育の状況

現在、ケニアの教育制度は、8－4－4制である。初等教育は8年間で、8年修了時にケニア初等教育修了資格（Kenya Certificate of Primary Education：KCPE）と呼ばれる国家試験を受験する。この試験の成績によって中等教育への進路が決定される。一般に卒業生の約50%は中等学校の収容能力不足のために進学が不可能となっている。中等教育は4年間で4年修了時にケニア中等教育修了資格（Kenya Certificate of Secondary Education：KCSE）と呼ばれる国家試験を受験する。この成績により、大学進学の可否及び進路が決定される。現在国立大学には卒業生の約8%が進学できる。大学は基本的に4年生であるが医学部等では6年である。

ケニアについては2003年1月から、その他のアフリカ域内の複数の国において、2000年4月の世界教育フォーラムで採択された「ダカール行動の枠組み（The Dakar Framework for Action）」に基づいて、初等教育無料化（Free Primary Education / Universal Primary Education：FPE / UPE）が導入されている。他方、初等教育以降、すなわちポストプライマリー教育については、ほとんどの国で対応が遅れており、FPE / UPEによって増大した生徒の進路の確保等の対策が喫緊の課題となっている。

中等理数科教育については、プロジェクト及びケニア教育研究所（Kenya Institute of Education：KIE）の調査結果で以下の課題が指摘されている。

・教員の量的不足と能力的不足（その結果、理数科カリキュラムを十分教えきれない）
・過重なカリキュラム
・適正・適切な施設・教材の不足
・教員の教育に対する消極的・否定的な姿勢
・国家試験重視の教育
・生徒の理数科に対する消極的・否定的な姿勢
・初等教育と中等教育の間の教授法のギャップ
・教員の不適切な言語の使用
・授業における理論と実験の不統合

これらの課題は、これまで実施した2回のアフリカ域内ワークショップにおいて、参加各国でも問題となっていることが指摘されており、アフリカ諸国共通の課題としてとらえられる。

2－3．教育開発に対する政策と戦略：中等理数科教育を中心に

ケニア政府は、以下に掲げるポリシーペーパーを発表し、教育開発の指針としている。

1） Millennium Development Goals

本ペーパーによれば、2020年に工業化を達成するという目標を掲げ、この目標達成に理数科教育の改善は不可欠であり、改善の方途として理数科教員研修を恒常化し、教員の能力向上を進める必要性を掲げている。

2） Master Plan for Education and Training

このペーパーでは、中等教育の社会ニーズに対する適合性と質の向上を目的として、教員の能力向上の必要性を掲げている。特に教員研修の恒常的実施があげられている。

3） 2002～2008年国家開発計画

教育は国家開発達成の前提となる重要な分野と位置づけている。しかしながら、教育の質的低下と教育の社会ニーズに対する適合性の欠落が指摘されている。かかる現状を改善するため、大幅な教育改革の必要性を掲げている。

・初等教育

本開発計画に掲げられているUPE目標は、2003年1月に無償化が実施された。

・中等教育

アクセス、教育の質、教育の妥当性、教育運営・管理の改善を掲げている。これらの目標を達成する方途として、授業料支援の強化、(寄宿制でない)通学学校の建設促進、英語・理数科教育の強化、視学官の機能強化、教育法の改定、私学の拡充、既存の学校の拡充・修復が掲げられている。

・就学前教育

0～6歳の児童の50%を本計画期間中に就学前教育でカバーするという目標を掲げている。この目標を達成するため、地域の関係者のパートナーシップ形成・強化、就学前教育運営・管理の強化、弱者の児童(特別な配慮を要する児童)のアクセス改善、3歳以下の児童のケア、就学前教育施設の設置ガイドラインの設定が掲げられている。

4) 2001-2004 PRSP

本ペーパーにおけるセクター優先順位は、農業・農村開発がトップで、人的資源開発(教育・保健)、インフラ(道路、運輸、エネルギー等)、産業(観光、商工業等)、公秩序・法制等の順となっている。

2－4. 教育開発支援の状況

ケニアの初・中等教育における1995年以降の開発支援の状況は以下のとおりである。

・DfID(Department for International Development)(英国)

小学校運営・管理強化計画(Primary School Management : PRISM)は1995年に全国の小学校長の能力向上を目標に開始され2000年に終了した。全国に設置されたTeacher Advisory Centre(TAC)をベースに、コスト・シェアリングによる持続性に配慮した協力であったが、協力終了後地域によっては活動が停止している。初等教育強化計画(Strengthening Primary Education：SPRED)は、全国を対象に学校をベースにした英語、数学及び理科の教員研修を通して教育の改善を目標としている。現在研修支援は終了し、初等教育の教科書配布支援へ移行している。また、教育政策に対する知的活動支援(マスタープラン作成、教育改革策定、教育投資計画策定、学校設置基準作成等)を積極的に行っている。英国は、プロジェクト支援からセクター・ワイド・アプローチ／財政支援にシフトしている。また、初等教育の無償化を全面的に支援すると表明している。

・DANIDA(Danish International Development Agency)(オランダ)

1997年から2000年にかけて、初等教育教科書出版・配布の自由化を基本とする、教科書供給支援を行い、試行段階では成功したと評価されている。しかし、本格実施の段階でケニア

政府の干渉等不透明性が発現し、計画は凍結され、その後オランダは対ケニアに対する支援から撤退した。2002年12月に発足した新政府に対して、援助の再開を表明したが、教育分野が含まれるかは明確にされていない。

・世界銀行

1996年に立案された初・中等教育強化計画（STEPS）は現在も実施は凍結されており、進展はない。しかし、初等教育の無償化を全面的に支援すると表明しており、具体的な支援の開始が見込まれている。なお、教材開発及び教員養成のためのトレーナー訓練等の就学前教育支援については実施中。

・GTZ（ドイツ）

初等教育の技能教科強化計画を3ディストリクトで終了し、協力の拡大を検討していたが、ケニア側ニーズとの整合性が取れず、協力を終了した。

・UNICEF

就学前教育、AIDS教育、女子教育、ノンフォーマル教育等幅広く支援をしている。初等教育の無償化に伴って教材の配布を実施。

・CIDA（カナダ）

環境及び女子教育の啓もう・啓発支援を行っているが、積極的な活動は行っていない。

・WFP

乾燥・半乾燥地（Arid/Semi-Arid Land：ASAL）地域を中心に小学校給食における食糧援助を実施。

・JICA（日本）

青年海外協力隊理数科教員隊員の派遣を1974年に開始し、2002年9月までに316人を派遣している。1994年からキシイ地域でグループ派遣を開始した。現在は東部州マクエニ地域を対象としており、SMASSEプロジェクトとの連携活動も行っている。1997年には、KSTCに対して無償資金協力によって理科教育機材供与を実施。

1998年から5年間の予定で、プロジェクト方式技術協力としてSMASSEを実施中。

その他アフリカ域内諸国での支援状況としては、Forum for African Women Educationists（FAWE）の下でFemale Education in Mathematics and Science in Africa（FEMSA）というNGOにより、女子の理数科教育支援がナミビア等数か国で行われている。DfIDはウガンダでINSSTEP、ザンビアでAIMSという理数科及び英語教員の研修を支援していたが、いずれもプログラム支援へ移行するとして1990年代後半に終了。アフリカ域内では、初等教育特に女子教育に焦点があてられ、欧米のドナーはその分野の支援に集中しているといえる。

3．中等理数科教育における課題と現状

ケニアの中等教育では、下表のとおり、理数科の成績が著しく低い。AからEの12段階評価で、数学及び化学の2教科とも、受験生の約70%前後が下位3ランクにあるという惨憺たる状況である。

表－1　国家試験の成績分布（数学）

（%）

Grade categories	Year	
	2000	2001
A	1.26	1.68
A-	0.83	1.08
D	14.23	13.19
D-	22.38	21.24
E	40.08	39.16

表－2　国家試験の成績分布（化学）

（%）

Grade categories	Year	
	2000	2001
A	2.15	0.99
A-	1.84	0.90
D	30.04	27.63
D-	22.62	34.26
E	2.76	6.27

このような状況は、アフリカ域内諸国でも発生している。フェーズIで実施した技術交換（ガーナ、マラウイ、ウガンダ、ザンビア）、2回にわたって開催された域内ワークショップ等において、ケニアと同様の現状及び課題が指摘されており、それらを整理すると以下のとおりである。

（1）カリキュラム

アフリカ諸国の中等教育のカリキュラムは多岐・多様なトピックを含み、試験科目が多い。また、履修内容が、特に理数科において、過剰であるほか、カリキュラムを十分こなせない教員が多い。また、カリキュラムが社会のニーズに適合していないという指摘もある。カリキュラム改革は緊急の課題と考えられている。

（2）教授法

アフリカに共通する教授法は、「チョークとトーク」といわれる、先生からの一方通行の授業である。また、試験指向が強く、詰込み式の授業になっている。その他、教室でのジェン

ダー配慮に欠けた授業や、生徒の個人差を無視した授業、教員の教室運営能力の不足、授業の評価の力不足があげられている。教員の能力不足は特に代用教員の多い国で深刻である。

(3) 教　材

教科書不足、実験室不足、実験器具不足、試薬不足等が深刻である。しかしながら、問題は、それらを有しながら実験が行われていないという状況が多々みられることであり、教員の理科教育に対する姿勢の変換が求められている。

(4) 教　員

有資格の理数科教員の不足している国がアフリカには多い。特に、急速に中等教育が拡大している国(マラウイ、タンザニア等)では、この問題は深刻である。ケニアはアフリカでは珍しいながら、教員は量的に充足しており、その質の向上が求められている。また、教員の理数科に対する姿勢(理数科は難しいという既成概念)が生徒に反映し、生徒の理数科恐怖症の原因となっているといわれている。

(5) 生　徒

上述の要因のほかに、貧困や家庭の問題も生徒の学習に影響を与えている。

(6) 学校運営・管理

校長等による施設管理、資機材調達、カリキュラム管理、財務管理、生徒や教員の管理能力が不足している。教科の教員だけの能力向上では不十分で、教育関係者全員の能力向上がアフリカでは求められている。

4．プロジェクト戦略

3. で取り上げた課題は、教育の質及びマネージメントの問題として整理されると同時に、直接・間接的に教員に起因するものと考えられる。なかでも、教授法は、教育の質の向上において決定的な要素である。

ケニアにおいては、教員が量的に充足していることから、これら課題の解決に向けては現職教員の強化を選択すべきである。

したがって、プロジェクトの戦略としては、教授法の改善、教員の意識・姿勢の転換を促進するための INSET の実施、及び持続的な INSET の運営管理体制の強化を行うこととする。パイロット地域における INSET のシステム化及び研修を通じて導入した ASEI / PDSI の有効性はフェーズ I において確認されており、フェーズ II ではフェーズ I で実証されたアプローチをケニア全国に展開することをめざす。

アフリカ域内諸国においては、教育の質に関して共通の問題を抱えており、解決に向けた情報・経験の共有を目的として、フェーズ I 期間中に SMASSE-WECSA が構築されている。域内各国でケニアと同様の研修制度を確立することは短期間では困難であるが、効率的な問題解決の観点からもケニアでの経験を生かすことを基本戦略とし、本 SMASSE-WECSA を活用しながら、ネットワーク参加国に対するケニアでの研修事業及び技術交換事業を行い、ASEI / PDSI を普及させる。参加国のなかには教員の量的不足が問題となっている国も多いため、各国の状況に応じて、教員養成段階に対する取り組みも行っていく。これらの事業は、TICAD 等で提言されているアフリカ諸国相互の連携を強化する活動としても位置づけられる。

5．プロジェクトの基本設計

5－1．プロジェクト目標

〈ケニア国内〉 現職教員再研修により、ケニアの中等教育レベルの理数科教育が強化される。

〈SMASSE-WECSA〉SMASSE-WECSA メンバー国の教員養成機関及び中等学校で ASEI / PDSI 授業が実践される。

5－2．上位目標

〈ケニア国内〉 理数科目についてのケニアの青少年の能力が向上する。

〈SMASSE-WECSA〉SMASSE-WECSA メンバー国の中等教育レベルの理数科教育が強化される。

5－3．成果と活動

〈ケニア国内〉

（1）研修センター（SMASSE National INSET Centre）において、全国の理数科分野での研修指導員（教員）のための研修システムが強化される。

1-1 地方の中等理数科教育の現状、問題点、ニーズについて調査・分析・評価を行う。

1-2 カウンターパートのプロジェクト実施能力の向上を図る。

1-3 選定した中等学校で演示授業を行う。

1-4 INSET 用のカリキュラム（理数 4 教科）を見直し、開発・作成する。

1-5 INSET に必要な教材（理数 4 教科）を開発・作成する。

1-6 地方研修指導員を選定する。

1-7 中央研修センターにおいて、地方研修指導員を養成する。

1-8 INSET について、あらゆるレベルにおいてモニタリング評価を行う。

1-9 INSET を補足するためのフォローアップ活動を行う。

1-10 地方の状況に適用可能な、ASEI 授業計画と、それに伴う教材を開発・作成する。

（2）全国に教員研修システムが確立される。

2-1 地方研修センターのための学校を選定する。

2-2 地方研修センターのための学校において、理数科教育用の教育・学習施設を改善する。

2-3 地方研修センターでの地方研修実施を促進する。

2-4 教育科学技術省の行政官及び地方の学校管理職等を対象に、研修システム管理ワークショップを実施する。

（3）リソースセンターとしての中央研修センターと全国の地方研修センターの役割が強化する。

3-1 プロジェクトニュースレター等を発行し、関連情報を普及する。

3-2 必要に応じ、理数科教育活動を実施・促進する。

3-3 必要に応じ、中等理数科教員間で教科に関して情報交換する仕組みを作る。

〈SMASSE-WECSA〉

（1）SMASSE-WECSA メンバー国で ASEI-PDSI 授業を指導できる教員養成・研修指導者が養成される。

1-1 メンバー国の現状に関し、調査・分析・評価を行い、INSET に対するニーズ調査をする。

1-2 第三国研修のカリキュラムを開発・作成する。

1-3 第三国研修用教材を開発・作成する。

1-4 第三国研修を実施する。

1-5 第三国研修に適用し得るモニタリング・評価ツールを開発する。

1-6 第三国研修の実施インパクトに関するモニタリング・評価を実施する。

1-7 メンバー国に理数科分野の INSET カリキュラム作成法を指導・助言する。

1-8 メンバー国にモニタリング・評価手法の助言・指導をする。

（2）中央研修センターがアフリカの中等理数科教育のリソースセンターとして整備される。

2-1 ニュースレター等の情報発信と発行を行う。

2-2 メンバー国との技術交換を行う。

2-3 メンバー国と合同ワークショップを開催する。

2-4 メンバー国に対する持続的教員研修制度構築の助言・指導をする。

（3）中央研修センターが連携ネットワークの事務局機能を果たす。

3-1 SMASSE-WECSA 会議を開催する。

3-2 メンバー国の中等教育担当省に対して、理数科の教育・学習に関する ASEI / PDSI アプローチの啓もう・啓発活動を行う。

3-3 ドナー間協調活動を促進する。

5－4．投　入

（1）日本側：投入

a. 長期専門家派遣

b. 必要に応じた短期専門家派遣

c. カウンターパートの本邦研修

d. カウンターパートの第三国での研修

e. メンバー国を対象とした、ケニアにおける INSET（第三国研修）の実施

f. 資機材供与

g. プロジェクト実施に必要な諸経費

（2）ケニア側：投入

a. プロジェクトに必要な建物及びオフィス及びその他の施設

b. 中央研修センターにおけるフルタイムのケニア人カウンターパート配置

c. プロジェクト管理運営のための人員配置

d. プロジェクト実施のために必要な経費

e. 中央研修及び地方研修に理数科教員が参加するために必要な経費

5－5．外部条件の分析

〈ケニア国内〉

・教員が ASEI / PDSI 授業を実践し続ける。

・他のプログラムが教員の研修参加を妨げない。

・教育省の協力が今後とも維持される。

・中央研修センターのカウンターパートと地方研修指導員が、プロジェクト活動に従事し続ける。

〈SMASSE-WECSA〉

・メンバー国の教育政策が理数科振興を支持している。

・ASEI / PDSI に基づく教員養成・研修が継続される。

・メンバー国で ASEI / PDSI 授業が実践される。

・メンバー国が SMASSE-WECSA 事業を継続するための支援をする。

5－6．プロジェクトの運営・実施体制

別添資料（7 組織図）のとおりである。

5－7．事前の義務及び必要条件

（1）プロジェクト実施の前提条件

〈ケニア国内〉

教員組合がプロジェクト実施に反対しない。

〈SMASSE-WECSA〉

メンバー国が中等教育レベルでの理数科教育を向上させる計画を有している、あるいは将来有する。

(2) 義　務

ケニア政府はプロジェクト活動に必要な十分な予算及び適切な施設を提供する。

6．プロジェクトの総合的実施妥当性

6－1．妥当性

（1）ケニア国内

2．で記載したとおり、国家開発計画、教育開発計画、PRSP 等において、ケニアの工業化達成に理数科教育の強化が不可欠であると表明されており、政府の財政的コミットメントも認められる。また、社会ニーズとの整合性も高い。我が国の途上国における基礎教育支援政策（BEGIN）、ケニアに対する援助指針・国別事業実施計画と整合するものである。

（2）SMASSE-WECSA

アフリカ諸国の理数科教育はケニアと同様に低迷しており、その質的改善に対するニーズは、域内ワークショップのなかで確認されている。

我が国の政策との関係では、TICAD II、WSSD タイプ 2 イニシアティブ等において、域内連携を通したアフリカの人づくり支援が高く掲げられている。

6－2．有効性

（1）ケニア国内

本計画は、フェーズ I において、協力終了後の持続的発展性のある研修システムを確立しており、そのシステムを活用した研修が継続される見通しも立っている。したがって、研修の全国展開を支援することで、全国的に持続的発展性のある研修システムが構築され、プロジェクト目標から、上位目標へ到達すると期待できる。

（2）SMASSE-WECSA

ASEI / PDSI に基づく授業に対して特に関心が高く、政府が本事業に対して積極性を示すメンバー国との連携を促進するので、プロジェクト目標は達成される見込みである。

6－3．効率性

（1）ケニア国内

5 年間で全国約 900 人の研修指導員が養成され、約 1 万 2,000 人の理数科教員に研修を提供し、その成果は約 70 万人の生徒が裨益する。

（2）SMASSE-WECSA

5 年間で 150 名の教員養成関係者に直接、研修機会を提供する。

6－4．インパクト

（1）ケニア国内

フェーズIでは、以下の2点が確認されている。

・理数科教員の教育に対する姿勢が改善される。

・生徒の理数科に対する関心が高まる。

したがって、このような生徒・教員双方の理数科教育に対する姿勢が全国的に改善されることにより、ケニアの理数科教育に対する本プロジェクトのインパクトは大きく、目標達成見込みは高い。

（2）SMASSE-WECSA

ケニア国内の事業の成果を域内に普及するという観点から、本協力によってケニア国内で期待されると同様のインパクトが期待される。

6－5．自立発展性

（1）ケニア国内

中央と地方に研修システムを構築すれば、それらが自立的に研修を継続し得る可能性はフェーズIで実証された。フェーズIの予算実績は、2002年教育省予算350万ケニア・シリング（約560万円全額執行済み）、9ディストリクトの学校拠出金約1,000万ケニア・シリング（約1,600万円）となっており、5. で記載したとおり、フェーズII実施に向けて、中央研修センターの確保、ケニア側予算の確保等、事前のコミットメントが表明されている。

（2）SMASSE-WECSA

現時点では、連携事業の自立発展性は確実なものではない。しかしながら、メンバー国の啓もう・啓発によって事業の重要性が理解され、自立発展の可能性を高めていくことができると考えられる。メンバー国からの会費として、入会金300ドルと年会費100ドルを徴収することとなっており、4か国が支払い済みである。

6－6．総合的実施妥当性

フェーズIに係る上記5項目での評価は高いことが報告されており、インパクトの量的・面的拡大及び上位目標を達成するために、本プロジェクト（フェーズII）を実施することの合理性・必然性（Relevence）は高い。自立発展性においても、全国展開にあたって、ケニア政府側のコミットメントも高く、本研修事業の国家レベルでの制度化が見込まれている。アフリカ域内連携事業についても、フェーズIの成果を継続発展させることは我が国政策とも整合している。

したがって、本プロジェクトは妥当な協力内容であると判断される。

7．添付資料

別添－1　　プロジェクト・デザイン・マトリックス（Program Design Matrix：PDM）
別添－2（1）　Plan of Operation for INSET in Kenya（ケニア国内）
　　（2）　Plan of Operation for SMASSE-WECSA（域内ネットワーク）
別添－3　　Tentative Schedule of Implementation
別添－4　　長期専門家の TOR
別添－5　　ケニア人カウンターパートの TOR
別添－6　　主な投入機材
別添－7　　組織図
別添－8　　General Information for Training for INSET in Kenya
別添－9　　参考資料一覧
別添－10　　略語一覧
別添－11　　補足資料

別添－1　プロジェクト・デザイン・マトリックス（Program Design Matrix：PDM）

1．プロジェクト名：ケニア中等理数科教育強化計画フェーズII：ケニア国内

実施機関：教育科学技術省（MOEST、ケニア）、国際協力事業団（JICA、日本）

実施時期：5年間（2003年7月1日から2008年6月30日）

作成時期：2003年4月　プロジェクト・ドキュメント作成委員会ワークショップ

プロジェクトの要約	指　標	指標の入手手段	外部条件
（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。	ディストリクトレベルにおける、中等レベルの国家試験の成績。	ケニア国家試験委員会が公表する試験結果。	
（プロジェクト目標） 現職教員再研修により、ケニアの中等教育レベルの理数科教育が強化される。	プロジェクト終了時までに、モニタリング評価特別委員会が開発したモニタリング評価ツールの活用により得られる「授業改造度指標」の値が50%以上となる。	SMASSEプロジェクトのモニタリング評価報告書	教員がＡＳＥＩ/PDSI授業を実践し続ける。
（成　果） 1. 中央研修センターにおいて、全国の理数科分野での研修指導員（教員）のための研修システムが強化される。	プロジェクト終了時までに、 1（a）　中央研修センターで、61人以上のケニア人アカデミックスタッフと12人以上の管理スタッフがプロジェクト活動に従事する。 （b）　中央研修センターで、4回の中央INSETが実施され、900人以上の地方研修指導員が研修を受ける。 （c）　中央研修センターのINSETが、モニタリング評価特別委員会が開発したI評価ツールの活用により得られる「INSETの質評価指標」において、3以上（0～4の評価範囲）の総合評価を獲得する。 （d）　中央研修センターは、14タイトル以上の教材を作成し、それぞれ900冊以上が印刷・配布される。	1（a）～（d） SMASSEプロジェクトのモニタリング評価報告書	1. 他のプログラムが教員の研修参加を妨げない。
2. 全国に教員研修システムが確立される。	2（a）　毎年、900人以上の地方研修指導員と200人以上の地方行政スタッフが、地方でのプロジェクト活動に従事する。 （b）　プロジェクト終了時までに、4回の地方研修（ディストリクトINSET）を実施し、1万人以上の教員が参加する。 （c）　プロジェクト終了時までに、地方研修指導員が、モニタリング評価特別委員会が開発したツールの活用により得られる「能力強化指標」において、3以上（0～4の評価範囲）の総合評価を獲得する。 （d）　プロジェクト終了時までに、地方研修が、モニタリング評価特別委員会が開発したINSET前後／各セッションの評価ツールの活用により得られる「INSETの質評価指標」において、2.5以上（0～4の評価範囲）の総合評価を獲得する。	2（a）～（d） SMASSEプロジェクトのモニタリング評価報告書	2. 教育省の協力が今後とも維持される。

3. リソースセンターとしての中央研修センターと全国の地方研修センターの役割が強化する。	3(a) プロジェクト終了時までに、中央研修センターは10以上のニュースレターを発行・配布する。 (b) プロジェクト終了時までに、地方で独自に、INSETのための教材等が1回以上作成される。	3. SMASSEプロジェクトの記録簿	
(活　動) 1-1 地方の中等理数科教育の現状、問題点、ニーズについて調査・分析・評価を行う。 1-2 カウンターパートのプロジェクト実施能力の向上を図る。 1-3 選定した中等学校で演示授業を行う。 1-4 INSET用のカリキュラム(理数4教科)を見直し、開発・作成する。 1-5 INSETに必要な教材(理数4教科)を開発・作成する。 1-6 地方研修指導員を選定する。 1-7 中央研修センターにおいて、地方研修指導員を養成する。 1-8 INSETについて、あらゆるレベルにおいてモニタリング評価を行う。 1-9 INSETを補足するためのフォローアップ活動を行う。 1-10 地方の状況に適用可能な、ASEI授業計画と、それに伴う教材を開発・作成する。 2-1 地方研修センターのための学校を選定する。 2-2 地方研修センターのための学校において、理数科教育用の教育・学習施設を改善する。 2-3 地方研修センターでの地方研修実施を促進する。 2-4 教育科学技術省の行政官及び地方の学校管理職等を対象に、研修システム管理ワークショップを実施する。 3-1 プロジェクトニュースレター等を発行し、関連情報を普及する。 3-2 必要に応じ、理数科教育活動を実施・促進する。 3-3 必要に応じ、中等理数科教員間で教科に関して情報交換する仕組みを作る。	(投　入) 1. ケニア側 a. プロジェクトに必要な建物及びオフィス及びその他の施設 b. 中央研修センターにおけるフルタイムのケニア人カウンターパート配置 c. プロジェクト管理運営のための人員配置 d. プロジェクト実施のために必要な経費 e. 中央研修及び地方研修に理数科教員が参加するために必要な経費 2. 日本側 a. 長期専門家派遣 b. 必要に応じた短期専門家派遣 c. カウンターパートの本邦研修 d. カウンターパートの第三国での研修 e. 資機材供与 f. プロジェクト実施に必要な諸経費		中央研修センターのカウンターパートと地方研修指導員が、プロジェクト活動に従事し続ける。 前提条件： 教員組合がプロジェクトに反対しない。

2．プロジェクト名：ケニア中等理数科教育強化計画フェーズII：SMASSE-WECSA

実施機関：教育科学技術省（MOEST、ケニア）、国際協力事業団（JICA、日本）

実施時期：5年間（2003年7月1日から2008年6月30日）

作成時期：2003年4月　プロジェクト・ドキュメント作成委員会ワークショップ

プロジェクトの要約	指　標	指標の入手手段	外部条件
（上位目標） SMASSE-WECSAメンバー国の中等教育レベルの理数科教育が強化される。	SMASSE-WECSAメンバー国でASEI/PDSI授業が実践される。	プロジェクトのモニタリング・評価調査結果ならびにメンバー国からの報告	メンバー国の教育政策が理数科振興を支持している。
（プロジェクト目標） SMASSE-WECSAメンバー国の教員養成機関及び中等学校でASEI/PDSI授業が実践される。	プロジェクト終了時までに、メンバー国の理数科教員に関するASEI/PDSI授業実践度が向上する。	プロジェクトのモニタリング・評価調査結果	ASEI/PDSIに基づく教員養成・研修が継続される。
（成　果） 1. SMASSE-WECSAメンバー国でASEI-PDSI授業を指導できる教員養成・研修指導者が養成される。	プロジェクト終了時までに、 1-1 SMASSE研修センターでの第三国研修を5回実施する。 1-2 プロジェクト終了時までに、メンバー国から150人以上の授業指導員が第三国研修に参加する。 1-3 40セット以上の研修用教材を作成する。 1-4 メンバー国に適用可能なSMASSE-WECSA用モニタリング・評価ツールを開発し、実践する。	1. プロジェクトの報告書	メンバー国でASEI/PDSI授業が実践される。
2. 中央研修センターが、アフリカの中等理数科教育のリソースセンターとして整備される。	プロジェクト終了時までに、 2-1 メンバー国からの第三国研修参加者からASEI/PDSI授業計画案が開発・作製される。 2-2 10回以上ニュースレターが発行される。	2-1～2-2 プロジェクトの報告書	
3. 中央研修センターが、連携ネットワークの事務局機能を果たす。	プロジェクト終了時までに、 3-1 SMASSE-WECSA総会を最低4回開催する。 3-2 最低6名のケニア人カウンターパートが連携ネットワーク事務局活動に従事する。 3-3 最低14のアフリカ諸国が連携ネットワークに参加する。	3-1～3-3 プロジェクトの報告書	
（活　動） 1-1 メンバー国の現状に関し調査・分析・評価を行い、INSETに対するニーズ調査をする。 1-2 第三国研修のカリキュラムを開発・作成する。 1-3 第三国研修用教材を開発・作成する。 1-4 第三国研修を実施する。 1-5 第三国研修に適用し得るモニタリング・評価ツールを開発する。 1-6 第三国研修の実施インパクトに関するモニタリング・評価を実施する。	（投　入） 1. ケニア側 a. プロジェクトに必要な建物及びオフィス及びその他の施設 b. 中央研修センターにおけるフルタイムのケニア人カウンターパート配置 c. 中央研修センターにおける補助作業のための人員配置 2. 日本側 a. メンバー国を対象とした、ケニアにおけるINSET（第三国研修）の実施 b. 長期専門家派遣 c. 資機材供与		メンバー国がSMASSE-WECSA事業を継続するための支援をする。

1-7 メンバー国に理数科分野のINSETカリキュラム作成法を指導・助言する。 1-8 メンバー国にモニタリング・評価手法の助言・指導をする。 2-1 ニュースレター等の情報発信と発行を行う。 2-2 メンバー国との技術交換を行う。 2-3 メンバー国と合同ワークショップを開催する。 2-4 メンバー国に対する持続的教員研修制度構築の助言・指導をする。 3-1 SMASSE-WECSA会議を開催する。 3-2 メンバー国の中等教育担当省に対し、理数科の教育・学習に関するASEI/PDSIアプローチの啓もう・啓発活動を行う。 3-3 ドナー間協調活動を促進する。	d. プロジェクト実施に必要な諸経費		前提条件： メンバー国に中等理数科教育開発政策が存在する。

Appendix-2 (1)　Plan of Operation for the Whole Period (Kenya)

Name: Strengthening of Mathematics and Science in Secondary Education Project, Phase II

Project Purpose: Quality of Mathematics and Science education at secondary level is strengthened in Kenya through In-Service Traininig (INSET) of teachers.

Output	Activities	Target	2003 I	II	III	IV	I	II	III	IV	I	II	III	IV	2006 I	II	III	IV	I	II	III	IV	I	II	III	IV	Responsible Person in Project Team	Actual input
1. A system of training for the District trainers in Mathematics and Science will be strengthened at National INSET Centre.	1) To investigate, analyse and evaluate the present situation, problems and needs of Mathematics and Science education at secondary level in the Districts.	More than 1 reports are published and distributed. However, this is a continuous process.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	Head of National INSET Centre	
	2) To enhance the ability of counterparts in implementation of the Project	Each academic department produces more than 1 reports. However, this is a continuous process.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	Head of National INSET Centre	
	3) To teach demonstration lessons in selected secondary schools.	National INSET Centre obtain mean of over 3 on the scale of 0 to 4 in the Quality of INSET Assessment Index.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	Head of National INSET Centre	
	4) To review and develop curricula for INSET on the Mathematics and Science.	Each academic department produces syllabi / curricula for INSET.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	Head of National INSET Centre	
	5) To develop training materials for the INSET on the Mathematics and Science.	150 sets of INSET materials are produced for each subject.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	Head of National INSET Centre	
	6) To select District Trainers.	Over 900 District Trainers are selected.	―	―																						Head of National INSET Centre	
	7) To train key trainers for the Districts at National INSET Centre.	National INSETs are conducted at least once a year.			―	―			―	―			―	―			―	―			―	―				Head of National INSET Centre	
	8) To carry out monitoring and evaluation of the INSET.	Comprehensive INSET monitoring and evaluation report is published once a year.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	Head of National INSET Centre	
	9) To carry out follow-up activities to supplement INSET.	After 3 cycles of INSET, this will be considered.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	Head of National INSET Centre	
	10) To develop model ASEI lesson plans and other teaching materials which are applicable to local situations in the Districts.	After 3 cycles of INSET, useful teaching know how for teachers will be compiled and published.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	Head of National INSET Centre	
2. A system of INSET in Mathematics and Science will be established in the Districts.	1) To select schools for INSET Centres in the Districts.	Over 900 trainees and over 50 District INSET Centres are selected.	―	―																						Head of National INSET Centre	
	2) To improve teaching and learning facilities in Mathematics and Science at the selected schools in the Districts.	Over 50 district INSET Centres are equipped to function as INSET Centre as well as resource centre.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	Head of National INSET Centre	
	3) To facilitate implementation of the INSET at the Districts INSET Centres.	District INSETs are implemented at least once a year.			―	―			―	―			―	―			―	―			―	―				Head of National INSET Centre	
	4) To organize INSET system management workshops for relevant officials of MOEST and school managers in the Districts.	More than one educational management course are conducted.		―				―				―				―				―						Head of National INSET Centre	
3. Role of SMASSE National INSET Centre and District INSET centres as resource centres will be strengthened.	1) To publish the Project Newsletter etc. and disseminate relevant information.	More than 10 newsletters are published and distributed.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	Head of National INSET Centre	
	2) To promote and implement Mathematics and Science activities when need arises.	On needs basis. For example, SMASSE staff acted as judge of science congress at various levels.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	Head of National INSET Centre	
	3) To establish the mechanism to exchange information on subject matters among secondary school teachers when need arises.	On needs basis. In collaboration with JOCV their activities will be assisted by the project.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	Head of National INSET Centre	

Appendix-2 (2) Plan of Operation for the Whole Period 2 (SMASSE-WECSA)

Name: Strengthening of Mathematics and Science in Secondary Education Project, Phase II

Project Purpose: ASEI/PDSI lessons are practiced in teacher training institutions and secondary schools in member countries.

Output	Activities	Target	2003 I	II	III	IV							2006 I	II	III	IV							Responsible Person in Project Team	Actual input
1. Trainers for ASEI/PDSI based INSET will be produced in member countries.	1) To investigate, analyse and evaluate the present situation, problems and needs of INSET systems in member countries.	Comprehensive reports is published.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	Head of National INSET Centre	
	2) To develop curricula for INSET (Third Country Training).	Each academic department produces syllabi / curricula for INSET.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	Head of National INSET Centre	
	3) To develop training materials for Third Country Training.	At least 40 sets of INSET materials are produced for each subject.			▬				▬				▬				▬				▬		Head of National INSET Centre	
	4) To organise Third Country Training.	Third country trainings are conducted at least once a year, and at least 150 trainers attend.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	Head of National INSET Centre	
	5) To develop monitoring and evaluation instruments adaptable for the Third Country Training.	Comprehensive INSET monitoring and evaluation report is published once a year.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	Head of National INSET Centre	
	6) To conduct monitoring and evaluation on the impact of Third Country Training	Comprehensive reports is published.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	Head of National INSET Centre	
	7) To assist to develop INSET curricula for Mathematics and Science in member countries	Comprehensive reports is published.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	Head of National INSET Centre	
	8) To assist to develop of monitoring and evaluation tools for project activities.	Comprehensive report is published.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	Head of National INSET Centre	
2. SMASSE National INSET Centre will be consolidated as resource centre for Mathematics and Science in Africa.	1) To publish newsletter and other publications for disseminating information.	More than 10 newsletters are published and distributed.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	Head of National INSET Centre	
	2) To conduct technical exchange with member countries.	Comprehensive report is published.		▬				▬				▬				▬				▬			Head of National INSET Centre	
	3) To hold joint workshops with member countries.	Workshop is organised at least once a year.			▬				▬				▬				▬				▬		Head of National INSET Centre	
	4) To assist to construct sustainable INSET systems in member countries.	Comprehensive report is published.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	Head of National INSET Centre	
3. SMASSE National INSET Centre will function as secretariat of SMASSE-WECSA.	1) To organise SMASSE-WECSA meetings.	Meeting is organised at least once a year.	▬				▬				▬				▬				▬				Head of National INSET Centre	
	2) To sensitise education Ministries from member countries on ASEI and PDSI approaches to teaching/learniig of Mathematics and Science.	Member countires' commitment is assessed.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	Head of National INSET Centre	
	3) To promote coordination activites with other donor agencies.	Exchange of information is reported.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	Head of National INSET Centre	

別添－2(2) Plan of Operation for SMASSE-WECSA(域内ネットワーク)

Appendix-3

TENTATIVE SCHEDULE OF IMPLEMENTATION

PROJECT TITLE: Strengthening of Mathematics and Science in Secondary Education Project, Phase II

YEAR (JFY)	IMPLEMENTATION																							
	2003																				2008			
I. PROJECT DURATION	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
II. INPUTS BY THE KENYAN SIDE																								
1. ASSIGNMENT OF COUNTERPART PERSONNEL																								
2. ASSIGNMENT OF ADMINISTRATIVE PERSONNEL																								
3. BUILDINGS & FACILITIES																								
4. ALLOCATION OF BUDGET																								
III. INPUTS BY THE JAPANESE SIDE																								
1. LONG-TERM EXPERTS																								
2. SHORT-TERM EXPERTS																								
3. PROVISION OF EQUIPMENT																								
4. TRAINING OF KENYAN COUNTERPART PERSONNEL IN JAPAN																								
5. TRAINING OF KENYAN COUNTERPART PERSONNEL IN THE THIRD COUNTRY																								
6. EVALUATION STUDY TEAM																								
IV. IN-SERVICE TRAINING (INSET)																								
1. NATIONAL INSET																								
2. DISTRICT INSET																								
V. REGIONALACTIVITIES																								
1. THE THIRD COUNTRY TRAINING IN KENYA																								
2. REGIONAL CONFERENCE																								
IV. JOINT COORDINATING COMMITTEE																								

別添－３ Tentative Schedule of Implementation

別添－４　長期専門家の TOR

1．　チーフアドバイザー

1－1　派遣目的

日本・ケニア双方を含むプロジェクトチームを取りまとめ、プロジェクト運営に関する助言・指導、特に、中央と地方を結ぶ理数科教員研修実施体制の確立に係る助言・指導を行う。

1－2　活動内容

1）　専門家・カウンターパートを含むプロジェクトチーム及び中央レベルの INSET 運営にかかわる助言・指導。
2）　教育省関係者に対する INSET 運営に係る周辺業務に関する助言・指導。
3）　ディストリクトの教育関係者に対する地方レベルの INSET 運営に関する助言・指導。
4）　専門家チームの取りまとめ
5）　教育セクターにおける他ドナーの動向の確認
6）　年間活動計画の策定
7）　各種報告書の策定
8）　広域活動（第三国研修等）の助言・指導

2．　業務調整

2－1　派遣目的

プロジェクト実施に係る経理、資機材の調達・維持・管理、専門家派遣に係る受入れ準備等のプロジェクト運営に係る各種ロジ業務を遂行する。また、年間計画策定作業においては、チーフアドバイザーを補佐する。また、ケニア側運営（特に財務・資機材管理）能力向上に対して、助言・指導する。

2－2　活動内容

1）　プロジェクト運営（現地業務費、機材供与費等）に係るすべての経理業務
2）　年間計画策定作業の補佐
3）　現地調達分資機材の調達及び関連業務
4）　本邦調達資機材の引き取き
5）　購入機材の維持・管理
6）　専門家受入れに係る各種手続き

7） 広報（ホームページ維持管理、パンフレット作製等）
8） その他、プロジェクト運営に係る各種促進業務
9） ケニア側運営管理部門との調整・助言・指導
10）広域活動の支援業務

3． 数学／理科教育

3－1 派遣目的

数学／理科教育にかかわる資機材管理・授業法・教材作成法・実験手法・教育評価手法に関する助言・指導、及び、同分野のケニア国内における現状の把握を行う。

3－2 活動内容

1） INSET Unit における数学／物理／化学／生物学科の資機材の購入・管理に係る助言・指導
2） 数学／理科教育に係る授業法・教材作成法・実験手法・教育評価手法に関する助言・指導
3） 数学／理科教育 INSET の内容及び運営に係る助言・指導
4） ディストリクトへの ASEI 授業普及に関する助言指導
5） ケニア国内における数学／理科教育に係る現状の分析・把握
6） 広域活動支援

4． 教育評価

4－1 派遣目的

すべての教科の教育評価に関する助言・指導を行う。本プロジェクトがケニア全土で実施する中央・地方 INSET が教育現場へ及ぼすインパクトに関し、カウンターパートとともにモニタリング・評価活動を実施し、この活動によって得た資料を基に評価・分析を行い、かかる分析手法を指導する。また、本プロジェクトのめざすアフリカ域内協力に関連して、各国での理数科教育教科活動の進捗状況把握や、ケニアから各国への知的支援をカウンターパートとともに実施する。

4－2 活動内容

プロジェクト内に設けられた、専門家とカウンターパートから構成される評価タスクフォースとともに、以下の業務を遂行する。

1） 学習評価ツール開発に対する指導・助言
2） 中央研修センター及び地方で計画されている評価活動に対する指導・助言

3） 評価調査結果の分析手法に対する指導・助言

4） 授業観察とその解析に対する指導・助言

5） 自動マークシート読み取り機とコンピューターによる統計処理法に対する指導・助言

6） 評価報告書作成に対する指導・助言

7） ケニア人による自立的評価手法の確立に対する指導・助言

8） 広域活動支援

別添－5　ケニア人カウンターパートのTOR

1．ナショナル・プロジェクト・コーディネーター

1－1　役割

日本・ケニア双方を含むプロジェクトチームを取りまとめ、プロジェクト運営に関する助言・指導、特に、中央と地方を結ぶ理数科教員研修実施体制の確立に係る助言・指導する。

1－2　活動内容

1）　専門家・カウンターパートを含むプロジェクトチーム及び中央レベルのINSET運営にかかわる助言・指導
2）　教育省関係者に対するINSET運営に係る周辺業務に関する助言・指導
3）　ディストリクトの教育関係者に対する地方レベルのINSET運営に関する助言・指導
4）　ケニア人チームの取りまとめ
5）　ケニア側予算の責任
6）　年間活動計画の策定
7）　各種報告書の策定
8）　広域活動（第三国研修等）の助言・指導

2．ナショナル・INSETセンター長

2－1　役割

プロジェクトの研修活動の取りまとめ、センターに所属するカウンターパートと専門家の業務調整、地方INSETセンターとの調整、地方のINSET運営・管理委員会に対する助言・指導等プロジェクトの研修に係る最高責任者である。

2－2　活動内容

1）　プロジェクトの研修計画立案
2）　研修カリキュラム開発に対する助言・指導
3）　研修用教材開発に対する助言・指導
4）　モニタリング・評価活動に対する助言
6）　ケニア側行政部門との調整・助言・指導
7）　広域活動に対する助言・指導

3． 教科長

3－1 役　割

数学教育にかかわる組織運営・業務管理・資機材管理・授業法・教材作成法・実験手法・教育評価手法に関する助言・指導及び教科内専門家とケニア人の間の調整を行う。

3－2 活動内容

1） INSET センターにおける各教科の組織運営、業務管理、資機材の購入・管理に係る助言・指導
2） 各教科に係る授業法・教材作成法・実験手法・教育評価手法に関する助言・指導
3） 各教科の INSET の内容及び運営に係る助言・指導
4） ディストリクトへの ASEI 授業普及に関する助言指導
5） ケニア国内における各教科に係る現状の分析・把握
6） 広域活動支援

4． 研修指導員

4－1 役割

各教科に係る資機材管理・授業法・教材作成法・実験手法・教育評価手法の開発と研修の実施。同分野のケニア国内における現状の把握を行う。

4－2 活動内容

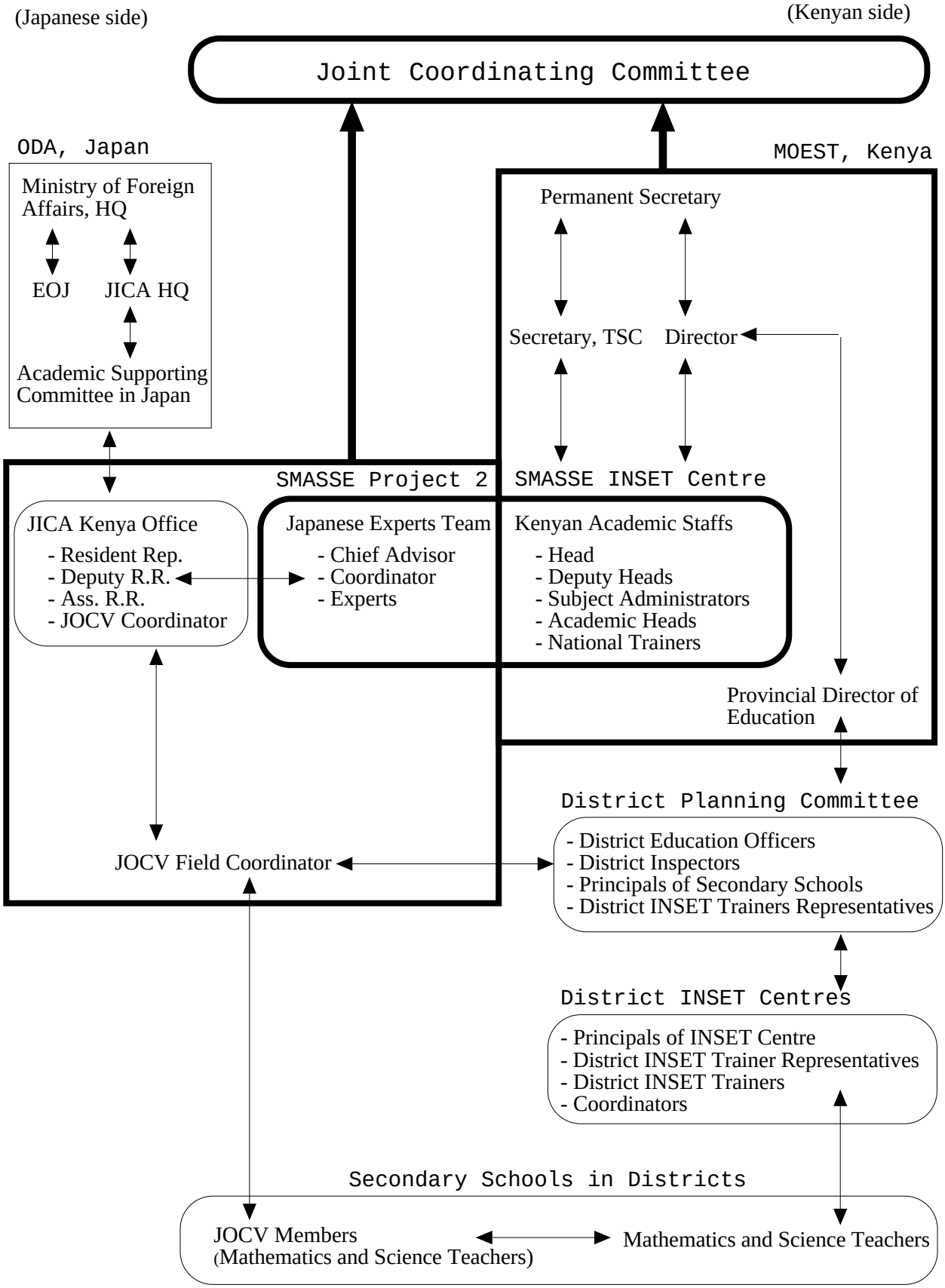
1） INSET センターにおける各教科の資機材の購入・管理に係る研修
2） 各教科に係る授業法・教材作成法・実験手法・教育評価手法に関する研修
3） ディストリクトへの ASEI 授業普及に関する研修
4） 広域活動支援

別添－6　主な投入機材

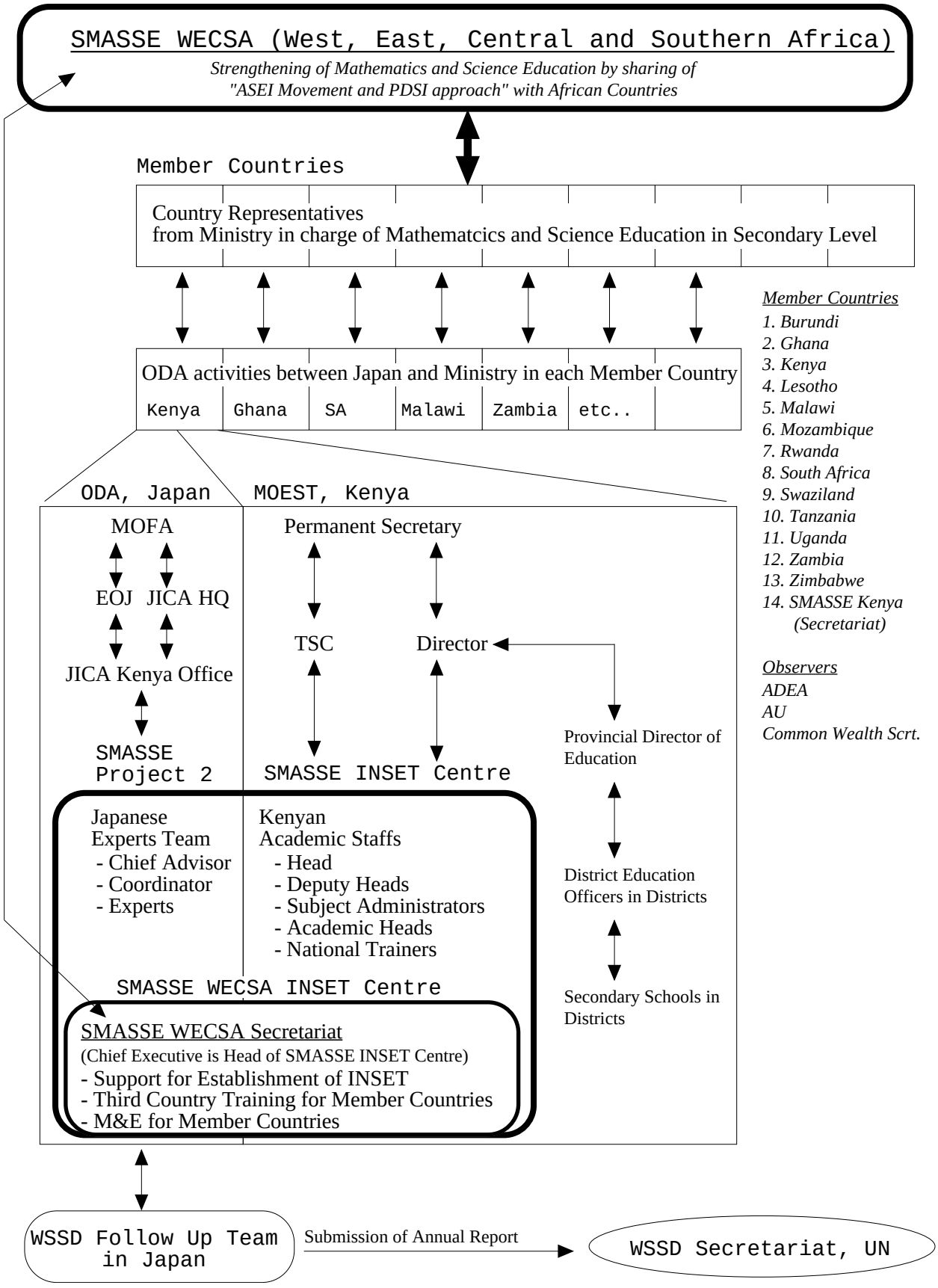
1. 車両（4輪駆動自動車、ステーション・ワゴン）
2. コンピューターセット
3. 印刷機
4. コピー機
5. オーバーヘッドプロジェクター
6. ビデオカメラ・デッキ、TVセット
7. 顕微鏡
8. 化学天秤
9. 理科実験用資機材
10. 理数科参考図書
11. 教材等収納キャビネット

別添－7　組織図

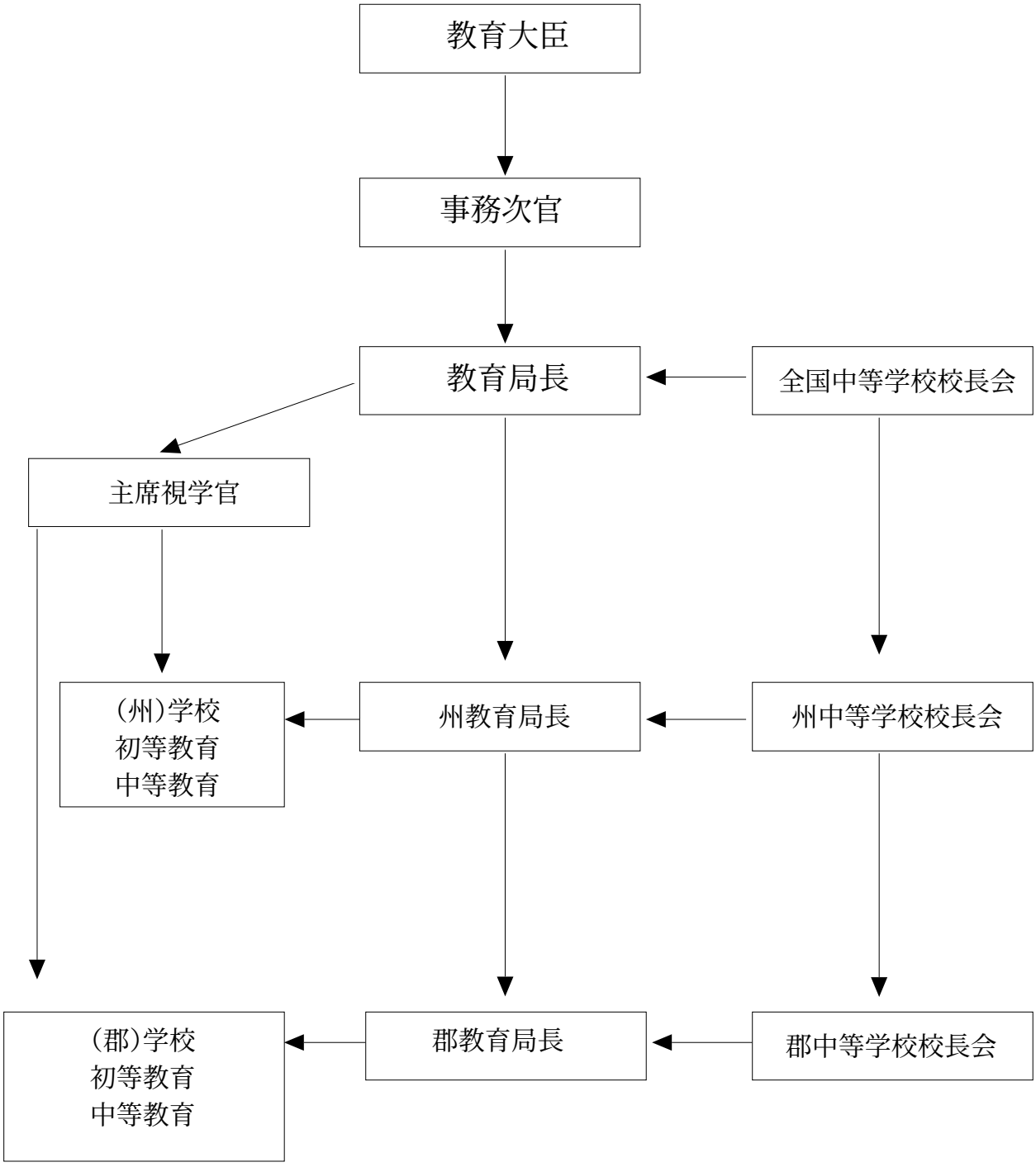
（1）Design of SMASSE National Organisation and Administration



(2) Design of SMASSE Regional Organisation and Administration



（3）教育科学技術省　組織図



教育省･校長会組織図（出典：教育省)

別添－8　General Information for Training for INSET in Kenya

GENERAL INFORMATION, MODE OF APPLICATION AND REQUIREMENTS

I. GENERAL INFORMATION

1. Introduction

Mathematics and Science form the basis for any technological development in any society. Kenya, aiming to become industrialized in the year 2020 has therefore put more emphases on inculcating a scientific culture in her people. It is this realization that prompted the Government of Kenya through the Ministry of Education, Science and Technology (MOEST), with the assistance of the Government of Japan through Japan International Cooperation Agency (JICA) to initiate a programme on Strengthening of Mathematics and Science in Secondary Education (SMASSE) Project in 15 pilot districts. From the baseline studies carried out by SMASSE Project, a number of issues that inhibit/limit the capability of young Kenyans in mathematics and sciences were isolated. Some of the issues are within the scope of the project while others are beyond the scope of the project. Those issues within the scope of the area are addressed in the programme of the SMASSE Project.

This new programme of Phase II for Strengthening of Mathematics and Sciences in Secondary Education is, therefore, an outcome of the SMASSE Project Phase I, and a desire of MOEST to benefit more teachers in the remaining districts.

2. Duration

The programme begins on 1st July, 2003 and ends on 30th June, 2008.

3. Participants

This course is designed for all mathematics and science teachers from 55 districts, namely Nairobi, Thika, Kirinyaga, Nyandarua, Nyeri, Meru Central, Meru North, Nathaka, Embu, Mbeere, Machakos, Kitui, Mwingi, Marsabit, Isiolo, Ijara, Wajir, Mandera, Moyale, Turkana, West Pokot, Samburu, Marakwet, Trans Nzoia, Uagin Gishu, Keiyo, Nandi, Koibatek, Kericho, Bomet, Buret, Trans Mara, Narok, Nakuru, Laikipia, Siaya, Kisumu, Nyando, Rachuonyo, Suba, Homa Bay, Nyamira, Migori, Kuria, Bondo, Mount Elgon, Bungoma, Teso, Busia, Vihiga, Lamu, Tana River, Malindi, Kwale, Mombasa Districts. The number of participants is basically 4 teachers in one of the four subjects (mathematics, biology, physics and chemistry) from one district totaling 16 teachers from one district.

4. Goal

Capacity of young Kenyans in Kenya is upgraded in Mathematics and Science Education.

5. Project Purpose

Quality of Mathematics and Sciences Education at Secondary level in Kenya is strengthened through INSET.

6. Outputs

a) A system of INSET for Mathematics and Science Education will be established in Kenya
b) Capacity of mathematics and science teachers for INSET in Kenya will be strengthened.

7. Training Programme

a) The outline of the training programme and schedule are shown in Annex VIIIa and VIIIc.
b) The programme is subject to review from time to time depending on the needs of the participants.

8. Venue of Training

The training will be carried out at Centre for Training and research, Karen and Kenya Science Teachers College (KSTC) in Nairobi.

9. Certificates

There are INSET guidelines and regulations for all levels and a District Trainers' Certificate qualifying Criterion as shown below: -

a) The Participants who successfully complete the course with 90% participation at National and District levels will be awarded a Certificate of Participation by the Project and MOEST. Signatories for the may be distributed to reduce the burden from the current signatories.
b) District Trainers who fulfill the criteria for the award of certificate will be issued with the same. Signatories of this certificate will be Director of Education, TSC Secretary and Head, SMASSE National INSET Centre.

II. CONDITIONS FOR APPLICATION

1. Requirements for Application

SMASSE National INSET Centre at Centre for Training and Research, Karen in collaboration with District Planning Committee will co-ordinate the selection and invitation of mathematics and science teachers for the course.

The requirements for participation are as follows:

a) To be nominated by the District Planning Committee.
b) To be mathematics and science teachers practicing in public secondary schools and

employed by TSC in Kenya.

c) The age should be under 48 years

2. Procedure for application

a) The SMASSE National Office will send the SMASSE General Information (GI) Forms to the District Planning Committee in the Districts.

b) The District Planning Committee will distribute the Forms to the nominated mathematics and science teachers in the district.

c) The District Planning Committee will receive the Forms from the teachers and forward five (5) copies of the prescribed application forms with their comment for each nominee to SMASSE National office.

d) The District Planning Committee will send the filled Forms by the nominated four (4) applicants in each subject (Biology, Physics, Chemistry and Mathematics), to Centre for Training and Research, Karen sixty days (60) prior to commencement of the course, which is 31st October, 2003.

e) The District Planning Committee will also submit a copy of the minutes of the Committee meeting where selection is made to SMASSE National Office together with the Forms.

f) SMASSE National Office will inform the successful applicants through the District Planning Committee not less than 30 days prior to commencement of the course, which is 30th November, 2003.

g) The application form is attached to this GI. (ANNEX VIIIb)

III. EXPENSES

a) The District Planning Committee will meet for each participant a single return transport expense between their stations and the National INSET Centre in Nairobi.

b) SMASSE National Office will provide accommodation and meals from supper of the previous night of commencement of the course to breakfast of the following day of closure of the course.

c) Neither the SMASSE National Office nor District Planning Committee will give allowance during the training.

d) Accommodation will be provided in the halls of residence at Centre for Training and Research, Karen or K.S.T.C.

IV. OTHER INFORMATION

1. General Facilities

a) Public telephone booths are situated at convenient points within the premises.

b) Mail services are available at the premises.

c) Meals will be served at the venues-dining halls.
d) Kiosk and canteen are operating within the venues for essential commodities.

2. General information

a) Participants are expected to strictly observe the INSET guidelines and regulations.
b) Participants are expected to strictly observe the course schedule and its regulations.
c) Requests to extend the training or period of stay will not be accepted.
d) Participants are advised not to bring any dependents.
e) Centre for Training and Research, Karen is situated Mbogani road about 20 Km from city centre while K.S.T.C is situated on Ngong Road about 8 Km from the city centre.
f) Stationery and course materials will be provided during the course.

V. CONTACT ADDRESS

For further information on the course contact

The Head, SMASSE National INSET Centre
P. O. Box 30596, NAIROBI
Tel.: 02-573811, 573680, Fax.: 02-573811, Email: info@smasse.org

VI. GENERAL INFORMATION FOR SMASSE-WECSA THIRD-COUNTRY PARTICIPANTS

The General information, Training Programme and Application Form for Third-Country Training will be developed when participating countries identity and training needs have been identified.

ANNEX VIIIa

TENTATIVE CURRICULUM OF THE FIRST COURSES

January-July 2004

Day	Time	Activities	Personnel	Remarks
		Arrival and registration of participants	SMASSE Personnel Karen and KSTC Hostel staff	
1	09:00 09:30 10:00 11:00	a) Guidelines for participants b) Pre-INSET evaluation c) Presentation and discussion of subject reports. d) SMASSE and ASEI movement	Head, SMASSE Project SMASSE science personnel Ditto SMASSE subject specialists.	All participants Ditto Ditto All participants (in each subject group)
	LUNCH			
	14:00-16:00	Opening ceremony (Speeches, Key note address)	Head, SMASSE Project Project Coordinator CIS Chief Guest Key note speaker	All participants
	Evening		Free	
2	09:00 11:00	a) Analysis of baseline survey b) Discussion of INSET Programme	SMASSE staff SMASSE staff	All participants All participants (in each subject group)
	LUNCH			
	14:00 15:30 14:00-17:00	a) Rationale for INSET b) Trends in the teaching and learning of science c) History of mathematics education in Kenya	SMASSE staff SMASSE science staff Resources personnel	Science participants Science participants Mathematics participants
	Evening		Free	
3	09:00-13:00 09:00-13:00	a) Teaching approaches and methods. b) Difficulties in the Mathematics classroom	SMASSE science staff SMASSE mathematics staff	Science participants Mathematics participants
	LUNCH			
	14:00-17:00	Adolescent psychology (knowledge attitude and motivation)	Consultant on Adolescent psychology	All participants
	Evening	Free		
4	09:00-13:00	a) Teachers attitude b) Discussion on difficult topics	SMASSE science staff SMASSE Mathematics staff	Science participants Mathematics participants
	LUNCH			

	14:00-17:00	a) Work Planning b) Error analysis	SMASSE Science staff SMASSE Mathematics staff	Science participants Mathematics participants
	Evening	Free		
5	09:00-11:00 11:30-13:00	Work planning (PDSI approach) Gender issues in science and mathematics education	SMASSE subject specialists Resources personnel	All participants All participants
	LUNCH			
	14:00-17:00	a) Communication skills b) Kenya/Japan video on classroom practices/ discussions	SMASSE science staff SMASSE mathematics staff	Science participants Maths participants
	Evening	Free		
6,7	WEEKEND (FREE)			

WEEK 2 INSET CONTENT BY SUBJECT

Day	Time	Activities			
		Biology	**Chemistry**	**Physics**	**Mathematics**
8	09:00-13:00	Ecology	Classroom activities: Practical and theory sessions	Pressure	Textbook and syllabus analysis
	LUNCH				
	14:00-17:00	Ecology: Field activities	Work plans and PDS Approach Pressure	Circular motion	New trends in the teaching of mathematics
	Evening	Free			
9	09:00-11.30	Ecology: Peer teaching and follow-up discussion	The mole concept a) Teaching approaches and methods. b) Working plans. c) Scientific language	Fluid flow	Socio-cultural aspects of mathematics education
	LUNCH				
	14:00-17:00	Classification: Collection and preservation of biological specimens	a) Calculations b) Making laboratory solutions.	Sound 1	Production of lesson plans on Socio-cultural aspects. Topic: Geometry
	Evening	Free			
10	09:00-13:00	Construction and use of identification keys	Electrochemistry a) teaching approaches and methods b) work plans	Sound II	Introduction of the open ended approach
	LUNCH				
	14:00-17:00	Classification: Peer teaching and follow-up discussions	c) scientific language d) calculations	Waves I	Production of lesson plans using the open-ended approach

	Evening	Free			
11	09:00-11:30	a) resources and facilities for teaching and learning biology b) cell biology: Discussion of current status and alternative strategies	Organic Chemistry a) teaching approaches and methods b) work plans	Waves II	TIMSS video/discussion Evaluation Checklist/ discussion
	LUNCH				
	14:00-17:00	Preparation of material for microscopic examination	a) Scientific language b) Calculations c) Selection of experiments	Excursions: Visit to meteorological Department at Dagoretti Corner	Plan for Post-INSET activities
	Evening	Free			
12	09:00-10:30	a) Cell Biology: Peer teaching and follow-up discussion b) Brief feedback from participants c) Post-INSET evaluation d) Clearance	a) open discussion on INSET issues b) brief feedback from participants c) post-INSET evaluation d) clearance	Post-INSET evaluation	
	LUNCH				
	14:00-16:00	Closing ceremony		Head, SMASSE Project	All participants
13	09:00-11:00	Clearance and Departure		SMASSE Personnel Karen and KSTC Hostel staff	All participants Hostels

ANNEX VIIIb

SAMPLE APPLICATION FORM FOR THE TRAINING PROGRAMME

PLEASE USE BLOCK LETTER TO FILL IN THIS FORM

FULL NAME (as they appear in T.S.C Record)	
T. S. C. Number	
Age	
Marital Status	
School Name, Address and Tel. No.	
District	
Subject	
How long have you been teaching as a trained professional teacher?	
Have you been involved in other professional activities like subject panel, national examiner, and science congress?	
General Health, Physical and Mentally fit (yes or no) specify.	
Signature of the applicant	

RECOMMENDATIONS BY THE D.P.C (Attach the minutes of the meeting.)

SIGNATURE ……

DATE …….

CHAIRMAN (D.P.C)

DISTRICT PLANNING COMMITTEE

ANNEX VIIIc

Tentative Training schedule for INSET at the venues

Month	Centre for Training and Research, Karen	KSTC	District
January	Teachers INSET (80)		
February	Teachers INSET (160)		
March	Teachers INSET (80) Principals INSET (80)		
April		Teachers INSET (300)	Teachers INSET
May	Teachers INSET (80) Principals INSET (80)		
June	Teachers INSET (160)		
July	Teachers INSET (80) Inspectors INSET (80)		
August		Stakeholders Workshop (500) DEOs Workshop (72)	Teachers INSET
September	Inspectors INSET (80) Principals INSET (80)		
October	Third-Country Training (30)		
November	Inspectors INSET (80)		
December			

別添－９　参考資料一覧

1. Totally Integrated Quality Education And Training（TIQET）
2. National Development Plan 2000-2001
3. Master Plan of Education and Training（MPET）
4. Poverty Reduction Strategy Paper（PRSP）
5. Monitoring the performance of educational programmes in developing countries. Educational research paper No. 38-DfID
6. Information for final evaluation -SMASSE-doc.
7. Stakeholders report（SMASSE）
8. Regional conference report-2
9. SMASSE Curriculum Review Committee report
10. SMASSE Project Final Evaluation report, 2002
11. SMASSE/Malawi joint workshop report
12. Inspectors workshop report
13. SMASSE Internal workshop report（Tabor Hill）
14. SMASSE Bulletin 1

別添－10　略語一覧

1. ASAL　Arid and Semi-Arid Lands
   乾燥・半乾燥地
2. ASEI　Activity Student Experiment Improvisation
   活動、生徒、実験、工夫の頭文字で表したプロジェクトのスローガン
3. INSET　In-service Education and Training
   現職教員研修
4. JICA　Japan International Cooperation Agency
   国際協力事業団
5. JOCV　Japan Overseas cooperation Volunteers
   青年海外協力隊
6. KCPE　Kenya Certificate of Primary Education
   ケニア初等教育修了資格
7. KCSE　Kenya Certificate of Secondary Education
   ケニア中等教育修了資格
8. KIE　Kenya Institute of Education
   ケニア教育研究所
9. KSTC　Kenya Science Teachers College
   ケニア理科教員養成大学
10. PDSI　Plan Do See Improve
    計画、実施、評価、改善
11. PRSP　Poverty Reduction Strategy Paper
    貧困削減戦略ペーパー
12. SMASSE　Strengthening of Mathematics And Science in Secondary Education
    中等理数科教育強化計画（プロジェクト名称）
13. TICAD　Tokyo International Conference for African Development
    アフリカ開発東京国際会議
14. WECSA　Western, Eastern, Central and Southern Africa
    プロジェクトが構築したネットワークの名称（西アフリカ、東アフリカ、中央アフリカ、南アフリカの頭文字を取ったもの）
15. WSSD　World Summit for Sustainable Development
    持続可能な開発のための世界首脳会議

別添－11　補足資料

1．ケニアの社会・経済的状況

ケニアは地理的には赤道をはさみ、南北両半球にまたがる国で、国のほぼ中央を大地溝帯（グレート・リフト・バレー）が南北に縦断している。国土は約58万Km^2で我が国の約1.5倍、人口は約2,900万人である[注1]。人口増加率は1960年代後半から3.4%という高率であったが、現在は2.9%に低下している。人口ピラミッドは15歳以下の経済的依存人口が約44%と圧倒的大多数を占めている。首都であるナイロビは214万人の人口を有し、東アフリカ最大の都市である。ナイロビは高度約1,800mの高地に位置し、気候的に非常に過ごしやすい。ケニアは気候的に海岸部や低地の熱帯気候、高地の温帯乾燥気候、北部の砂漠気候と多様な気候帯を有している。したがって、そこに居住する住民の生業形態も遊牧（マサイ族等）、農業（キクユ、ルヒヤ族等バンツー系民族）、漁業（ヴィクトリア湖畔に居住するルオ族やインド洋沿岸の人々）と多様である。人種的には40数民族からなる多民族国家でバンツー系民族が多数を占めている。独立以降政府の掲げた国民国家形成に対する政策は政治的スローガンにとどまり、21世紀の現在においても近代的国民国家形成に成功したとはいえない状況にある。言語は、スワヒリ語を国語とし、英語を公用語と定めているが、各民族の言語も日常的に使用されている。ケニアは1963年英国より独立した立憲共和国で、大統領（5年任期2期を上限とする）を国家元首とする1院制議会制度の政体をとっている。初代が独立の父として崇められているケニャッタ大統領、2代目モイ大統領で、2002年12月の総選挙の結果独立以来続いたKANU（Kenya African National Union）党の独裁が終焉を告げ、3代目大統領としてキバキ氏が就任した。この政権移譲は平和裏に行われ、ケニアは政治的に成熟したと国際社会から高い評価を得ることとなった。行政的には、8プロビンス（州）、70ディストリクト（郡）からなり、行政の地方分権化としてそれぞれに地方自治体が設けられている。通貨はケニア・シリング（2002年現在1ケニア・シリングは約1.6円）で、100セントを1ケニア・シリングとしている。

独立以降、ケニアは東アフリカの商業・金融等経済的中心とみなされてきたが、現在、経済的には、HIPC国に属し、国民1人当たりGNPは360ドルである[注2]。ケニアの経済の基盤は農業であり、GDPの約25%を占め、労働人口の75～80%が農業に従事している[注3]。しかし、農業の大半は天水に依存しているが、年間平均降雨量は地域によって大きく異なり、400～2000mmであるので気象変動によって生産性が大きく左右される不安定な農業である。また農業適地は国土の20%で国内の比較的高度の高い地域に広がっている[注4]。主要輸出産品はコーヒー、紅茶、園芸作物、等があるが、国際市場の価格変動に左右されやすい体質となっている。トウモロコシは主食産物と

注1　1999 POPULATION AND HOUSING CENCUS, Central Bureau of Statistics, 2001、以下人口に関するデータは本資料による。

注2　African Development Indicators 2002, The World Bank, 2002

注3　National Development Plan 1997-2001, Government Printer, 1997

注4　Statistical Abstract 2000, Central Bureau of Statistics, 2001

して最も大きな栽培面積を占めている。独立以降、国家の近代化イコール工業化という開発ポリシーを掲げ、工業化に努力を払い、1970年代には東アフリカ域内で唯一工業化に成功するかにみえたが、1980年代以降の経済自由化政策の導入とともに国内産業は低迷ないしは衰退状態に陥っている。近年、東アフリカ三国（ケニア、タンザニア及びウガンダ）間では、ケニアの工業のGDPに占める割合が15%くらいでウガンダに大きく差をつけられている。独立当初、この三国で経済共同体を構成していたが、1979年初頭政治的理由により崩壊した。その後新たな共同体が1999年に再築され、経済的成長に対する地域統合の成果が期待されている。ケニアの経済の低迷は、人口の急速な増加と相まって社会開発分野に大きなしわ寄せとなり、都市周辺のスラムの肥大化、教育や保健・医療サービスの低下、ひいては環境汚染・破壊問題につながっている。経済の低迷は、旱魃・洪水等自然の影響も大きいが、政治の腐敗等統治の問題、経済政策等人為的要因も見逃すことができない。このような状況にあるので、社会不安要素が多い。そのなかでも最大の要因は失業問題であろう。失業率の正確な数字は不明であるが（40%ともいわれている）、失業者問題は、貧困層の増加にとどまらず国内の治安悪化の原因ともなっている。さらには、HIV/AIDSの問題等貧困が貧困を生むという悪循環に陥っているし、近い将来経済的改善の兆しはみえなく、出口のみえないトンネルに入っている状況である。したがって、新政府は、汚職・腐敗の撲滅、雇用の創出、初等教育の無償化、保健・医療サービスの改善等積極的に社会・経済状況の改善に乗り出している。ケニアとドナーの関係は、1997年以来、世界銀行・IMF等国際金融機関から緊急かつ人道的支援を除き、財政支援が凍結されてきたが、新政府の公正・公平な政治姿勢を支援するということで国際金融機関からの援助は近々再開される。したがって、二国間の経済支援もケニアに対しては消極的であったが、新政府の掲げる政策支援を表明するドナーが増えている。

2. ケニアの教育概要

1) 教育行・財政

ケニアの教育の主管官庁は、MOESTである。本省の役割は、教育政策と質の高い教育の機会提供を保証することにある。独立以降ケニアの教育行政は幾多の変革を経てきている。教育の実践は1968年に制定された教育法（Education Act）が教育の根幹となっており、非常に中央集権的色彩の濃い制度となっている。したがって、独立以降40年を経て、行政の地方分権、教科書の自由化、私学設置規制緩和等現在のケニア社会に本法が馴染まないものになっており、教育法の全面的改定の必要性が各所で指摘されており、新政府はその改訂に乗り出すと表明している。

教育予算は次表に示されるように、初・中等教育への配分を増加させており、教育予算も厳しい国家財政のなかでかなり手厚く予算手当されている。特に新政府は2003年1月に初等教育の無償化を実施したので、2004年度以降の予算にそれが反映され教育予算は更に増加すると考えられる。

表－1　教育省予算内におけるサブ・セクターの配分[注5]

（%）

	1993/1994	1994/1995	1995/1996	1996/1997	1997/1998	1998/1999
初等教育	57.6	55.2	54.7	55.6	57.0	57.7
中等教育	16.2	20.7	21.1	22.5	24.1	27.6
大学教育	14.6	16.3	16.2	14.7	12.2	8.1

表－2　国家予算に占める教育予算の割合

（ケニア・100万ポンド[注6]）

	1993/1994	1994/1995	1995/1996	1996/1997	1997/1998	1998/1999
教育省予算	941	1,284	1,405	1,521	2,110	2,208
国家予算	2,708	3,737	4,397	4,745	5,860	5,752
教育予算（%）	35	34	32	32	36	38

予算支出の8割以上が人件費であり、教育の活動予算はほとんどゼロに近いのが現状である。しかし、2000年以降、3年ごとのMTEFを組み、国家予算全体に上限と毎年の予算伸び率を設け、各省への配分は、それぞれのPRSPを基に査定するようになった。各省予算も上限を設けられているので、その枠内で優先度を確保した予算費目に関しては、予算の執行過程での不透明性がなくなり、資金の流れがよくなっている。

2）　教育制度（正規教育）

独立以降の正規教育の大きな改革は、1985年7－4－2－3（初等教育7年、中等教育O－レベル4年、A－レベル2年、大学3年）制から現行の8－4－4（初等教育8年、中等教育4年、大学4年）制への改革であった。そして、正規教育内に限ると8－4のレベルを基礎教育と位置づけている。

3）　試験制度

ケニアでは、初・中等修了時に国家試験、（初等ではKCPE、中等ではKCSE）が実施され、その成績により将来の進路が決まる仕組みになっている。国家試験は、教育省の外郭団体であるKenya National Examinations Council（KNEC）が実施している。現在初等教育では、英語、数学、スワヒリ語、理科及び宗教・道徳の5科目が受験教科となっている。中等教育では、8科目が必須で、英語、数学、スワヒリ語、生物、化学、物理の3教科から2科目、宗教・道徳、地理等その他の教科から2科目を受験する。初等教育の試験は、選択式であるが中等教育では記述式である。

国家試験の成績の傾向は、理数科の成績が低く、特に数学の成績が低いことが常に指摘され

注5　Education Statistical Booklet 1990-1998, Ministry of Education, Science and Technology, 2000、以下教育にかかわる統計値は標記資料による。

注6　1ケニア・ポンドは20ケニア・シリングであるが通貨としては存在しない。

ている。したがって、中等教育では、物理を選択する生徒が極めて少ない。また、理数科の成績は一般に女子が低く女子教育と理数科教育の調和が大きな課題となっている。

初・中等教育双方の国家試験の成績は、新聞に学校名入りで全国、州あるいは県（ディストリクト）別に順位が発表され、発表はケニアの一大イベントとなっている。併せて最優秀の生徒名も公表される。

4） シラバス

初・中等教育のシラバスは、1964年に設立された教育省の外郭組織であるKIEがシラバス開発、改定、教育指導要領、教科書検定、シラバス改定に伴う教員研修を主管している。

5） 初等教育

1998年度の統計によれば、公立学校数は1万6,695校、私立学校が385校存在する。公立学校の全生徒数は、576万4,855人（うち男子：293万3,982人、女子：283万873人）在籍し、男女比はほぼ1対1である。教員は、18万5,736人（うち男性：10万7,008人、女性：7万8,728人）である。したがって、単純計算による教員：生徒比は、1：31となり、平均的には理想的な数字になる。しかし、ナイロビやモンバサといった大都市では、教員が過剰状況を呈し、地方では教員不足が深刻であるという地域格差が大きいので、平均値では実態が把握できない。粗就学率は87.7%（うち男子88.7%、女子86.6%）、初等教育修了率は、46.1%（うち男子46.3%、女子45.8%）と非常に内部効率に問題があることが理解できる。中等教育への進学率はおおよそ44%である。しかし、初等教育の無償化により、正確な統計は出ていないが、就学率が大幅に増加したことは容易に推測できる。

6） 中等教育

上記統計によると公立学校は2,776校、私立学校が252校存在する。生徒数は、68万7,473人（うち男子36万3,848人、女子32万3,625人）であり、教員は、3万8,427人（うち男性2万4,900人、女性1万3,527人）が配属されている。このうち、理数科教員は約8,700人である。教員：生徒比は、1：18となり、極端に教員が多い現象を示している。粗就学率は、23.2%（うち男子24.5%、女子21.9%）である。修了率は、88.3%（うち男子88.6%、女子87.9%）で、初等教育と比較すれば、修了率は著しく高く、児童が中等教育まで到達した場合の内部効率は改善されることがわかる。中等教育に対する政府の財政的責任は、教員の給与負担にとどまり、授業料等教育経費及び学校の運営・管理経費は保護者の負担となっている。中等学校の多くは男女別学の全寮制で、これらの学校への負担額は学校間で差があるが寮費込みで年3万ケニア・シリング前後である。ディストリクトの学校の多くは、その発足がハランベーによって建設された学校で、通

学制で男女共学が多い。これらの学校への保護者の負担は8,000～1万5,000ケニア・シリング程度である。

7） 教員養成

ケニアの教員養成の課題は、上述した「教員：生徒比」からも明らかなように量的に充足しているが、質的に問題があるということができる。実際、国際金融機関は政府に新規教員養成の削減や既存教員の削減を勧告している。独立後、各地に初・中等教員養成学校が設立され、現在では公立の教員養成機関として初等教育教員養成機関21、中等教育教員養成機関（ディプロマ・レベル）2、工業教員及び特殊教育教員養成機関（ディプロマ・レベル）2、及び5国立大学の教育学部が存在する。教員資格は、これら教員養成機関及び大学の教員養成課程を修了したものに付与される。したがって、教育学部以外の学部卒業生が教員になれば、無資格教員と位置づけられている。

ケニアの初・中等教育の教員は、1967年に設立されたTSCに雇用されている。ディプロマの教員は、奉職すると人事院の定める職階Kに格付けされるが、大学卒業者はLに格付けされる（表－3参照）。我が国のような教員免許制度はなく、教員養成機関を卒業することで教員資格が賦与されることになっている。

教員の待遇の悪さが教育の低迷の原因であると各所で指摘されているが、ケニアの教員の待遇例を、表－3に示すとおりである[注7]。基本給に加え、住宅手当、医療手当及びへき地手当が支給され、P1の教員がナイロビで奉職した場合は、給与総額は約2倍になる。また、中等教育の理数科教員の場合には、初任給が職階Lの場合でも少し上の初任給から始まる特典を賦与されている。したがって、教育の低迷を教員の処遇に原因を求めることが途上国では一般的になっているが、必ずしもケニアの場合は公務員（大卒はKから始まる）と比較しても低いものではなく、教育の不振を論じる際には他の要因も見落とすべきではないといえる。

表－3　TSCの給与体系　（ケニア・シリング）

教員分類	職　階	初任給（月額）
初等（P1）	F	5,175
中等（Diploma）	K	10,280
中等（大卒）	L	12,130
中学校長	P	18,725
カレッジ校長	R	23,925

注7　TEACHERS' IMAGE, TSC News Letter, June 2002

付　属　資　料

1. 第4回合同調整委員会（2002年10月23日）議事録
2. ナショナル・トレーナー・ワークショップ報告書
3. 第5回合同調整委員会（2003年3月7日）議事録
4. 討議議事録（R／D）
5. ミニッツ（プロジェクト・ドキュメント英文版を含む）

1. 第４回合同調整委員会（2002年10月23日）議事録

MINUTES OF 4th JOINT COORDINATING COMMITTEE MEETING HELD AT MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY (MOEST) HEADQUARTERS ON 23rd OCTOBER, 2002, AT 14:30

Attendance

The Kenyan Side

Prof. Japheth C. KIPTOON	Permanent Secretary, MOEST / Project Director
Mrs. Naomy W. WANGAI	Director of Education, MOEST
Mr. Benjamin K. SOGOMO	Secretary, Teachers Service Commission
Mr. Naftal J. ONDIJO	Senior Deputy Secretary, MOEST
Mr. Enos O. OYAYA	Ag. Chief Inspector of Schools, MOEST / National Project Coordinator
Mrs. M. MWIROTSI	Ag. Senior Deputy Director of Education, MOEST
Ms. Alice W. GICHU	Ag. Chief Finance Officer, MOEST
Mr. Kariuki MUNI	Assistant Chief Inspector of Schools (Science and Mathematics Applied and Technical Subjects), MOEST
Mr. Patrick W. KIBUI	Principal, Kenya Science Teachers College / Technical Manager
Prof. S. W. WAUDO	Dean, School of Pure and Applied Sciences, Kenyatta University
Mr. E. K. KOIMET	Deputy Director, Kenya Institute of Education
Mr. Paul M. WASANGA	Deputy Secretary, Kenya National Examinations Council
Mr. Peterson MUTHATHAI	National Chairman, Kenya Secondary School Heads Association
Mrs. Elizabeth I. KALOKI	Staffing Officer, Teachers Service Commission
Mrs. Florence W. THUKU	Provincial Director of Education Representative, Rift Valley Province
Mr. Maurice O. OCHIENG	Economist, External Resources Desk, Ministry of Finance and Planning
Mr. Bernard M. NJUGUNA	Head, SMASSE In-Service Training Unit, KSTC
Mr. Michael M. WAITITU	Subject Administrator, Physics Education, SMASSE / Chairman of M&E Task Force
Mr. John G. MUIRURI	National Trainer, Mathematics Education, SMASSE / M&E Task Force member
Mr. Patrick A. KOGOLLA	Subject Administrator, Chemistry Education, SMASSE / M&E Task Force member
Mrs. Peula J. LELEI	Subject Administrator, Biology Education, SMASSE

The Japanese Side

Prof. Shinji ISHII	Evaluation Team Leader / Director, Centre for the Study of International Cooperation in Education, Hiroshima University
Prof. Hideo IKEDA	Evaluation Team Member (Science Education) / Professor, Graduate School of Education, Hiroshima University
Ms. Minako SUGAWARA	Evaluation Team Member (Evaluation Planning) / Staff, JICA
Mr. Kunio NISHIMURA	Evaluation Team Member (Evaluation Analysis) / Senior Consultant, Consulting Group, CRC Overseas Cooperation Inc.
Mr. Takahiko SUGIYAMA	Chief Advisor
Mr. Keiichi NAGANUMA	Project Coordinator
Prof. Shigekazu TAKEMURA	Japanese Expert, Physics Education / M&E Task Force member
Mr. Tomoki TOKUDA	Japanese Expert, Mathematics Education / M&E Task Force member
Mr. Shimboku MIYAKAWA	Japanese Expert, Chemistry Education
Ms. Hisako FUKAI	Japanese Expert, Biology Education
Mr. Hiromasa HATTORI	Japanese Expert, Education Evaluation / M&E Task Force member
Ms. Keiko SANO	Assistant Resident Representative, JICA Kenya Office
Mr. Samuel K. KIBE	Education Specialist, JICA Kenya Office
Ms. Hazuki UCHIYAMA	JOCV Senior Volunteer, Makueni District

The Japan International Cooperation Agency (JICA) dispatched the Project Evaluation Team for the Strengthening of Mathematics and Science in Secondary Education (SMASSE) Project. The Team presented the Joint Evaluation Report to the Joint Coordinating Committee (JCC) in the meeting held on 23rd October 2002, at 14:30 hours, chaired by the Permanent Secretary, MOEST. The meeting made the following comments: -

Min. 1 Preliminary

The Chairman welcomed members of JCC to the meeting. He requested the Team leader to table the draft Report. The Team leader made the following comments: -

(1) Quality of education is one of the critical issues in Education in many developing countries. It is generally agreed that quality of education in any country is dependent on the quality of teachers on delivery of curriculum (pedagogy) and the provision of teaching and learning materials.

(2) JICA set out to collaborate with Kenyan authorities to improve the teachers' quality through establishment of INSET System.

(3) The Japanese and Kenyan personnel who have been co-operating in SMASSE are all happy that their efforts have established the INSET System with assistance from the two governments.

(4) The Evaluation Team concurs with previous Reports that the Project is a very successful one as based on the five parameters of Relevance, Effectiveness, Efficiency, Impact, and Sustainability. However, the Project requires more time and a national coverage to achieve the Overall Goal.

(5) It is the Team's hope that the Government of Kenya (GOK) and the Government of Japan (GOJ) will continue to support the project besides expanding it nationally and in the African region.

(6) The Team is confident that the principles and partnership set by SMASSE can work in other developing countries towards improving quality of education.

(7) Kenyan stakeholders will need to make the necessary provisions, policies and structures that will support the expanded project if the Project Overall Goal is to be realised faster.

Min.2 Comments and Discussion

(1) Assignment of more academic and administrative staff

On the recommendation that "the Government of Kenya should secure enough academic and administrative staff for the INSET Unit at KSTC. Current establishment of 7 members per subject should be increased to at least 10. Similarly, current administrative staff of 9 should be increased to at least 12."

The Secretary, Teachers Service Commission (TSC) agreed to provide additional academic staff while MOEST agreed to provide administrative staff including an accounts clerk.

(2) Allocation of enough budget

On the recommendation that "MOEST will increase current SMASSE recurrent budget of KSh 3.5 million to at least KSh 20 million with effect from GOK fiscal year 2003/04 as had been agreed earlier. However, it was noted that this increase must be effected within MTEF. MOEST further assured the Team that MOEST would put extremely high priority on SMASSE during its budget allocation for 2003/04. MOEST also assured the Team that it would request all DEBs to authorise their District Planning Committees (DPCs) to collect SMASSE funds as is the case under current operation."

The Chief Finance Officer, MOEST will factor at least KSh 20 million in the KFY2003/04 recurrent budget for SMASSE INSET Unit, under in-service sub-vote head of KSTC.

(3) Provision of buildings and other facilities

On the recommendation that "To meet the increased size, type, nature and frequency of INSET activities, e.g. Inspectors, District Education Officers (DEOs) and Head-teachers in the management of Mathematics and Science, as well as Regional collaborative activities which may not wait for school holidays; MOEST should take necessary measures to acquire adequate physical facilities for SMASSE such as accommodation, laboratories, offices and other facilities through such a measure as conversion of existing Institution into SMASSE National INSET Centre and/or provision of land."

MOEST agreed to provide facilities at Highridge Teachers Training College and at KSTC. The National Working Committee (NWC) headed by National Project Coordinator was mandated to work on the modalities of implementation.

(4) Issuance of District Trainer's Certificate

On the recommendation that "SMASSE INSET Certificate for District Trainers based on the agreed Criteria should be issued by MOEST as an official recognition in order to sustain the INSET system and its quality."

TSC will recognise the SMASSE certificates according to the set criteria.

Min.3 Adoption of the draft Report

The meeting commended the GOJ, GOK and SMASSE Team for successfully implementing the Project. The meeting also expressed gratitude to the Evaluation Team for the Report. Arising from this, the Report was unanimously adopted.

Prof. Shinji ISHII, Ph.D.
Leader,
Project Evaluation Team
The Japan International Cooperation Agency
Japan

Prof. Japheth C. KIPTOON, Ph.D., EBS
Permanent Secretary,
Ministry of Education, Science and Technology
Republic of Kenya

REPORT

ON

SMASSE NATIONAL TRAINERS WORKSHOP

ON

SMASSE PROJECT

Held at TABOR HILL from 27th October to 1st November 2002

November 2002

P.O.Box 30596, Nairobi

SMASSE PROJECT

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TABLE OF CONTENTS

PREFACE

The SMASSE unit personnel held an internal workshop on the way forward from the 28th October to 1st November 2002 at Tabor Hill, Nyahururu. The final evaluation for the phase 1 had just ended and the way forward was the task at hand. The SMASSE Unit personnel were joined by the acting Chief Inspector of Schools, Mr. E. Oyaya, a JICA representative, Ms. Sano and the Principal of Kenya Science Teachers College, Mr. P. Kibui. The workshop was rich with ideas.

After the scene setting by the head of INSET Unit, Mr. B. Njuguna, it was apparent that there was a challenging task ahead for the group. Among the tasks ahead was to design an INSET system at the National and District Level with the prospect of having INSET systems through out the country. The numbers of personnel required to carry out the exercise both at National and District level were proposed. Also proposed was a new administrative structure at both levels. A proposal to have SMASSE INSET UNIT become a Semi Autonomous Government Agency (SAGA) was a welcome idea. INSET quality control systems and budget control system had to be put in place. The issues on Monitoring and Evaluation were addressed and the modalities of monitoring and evaluation of the project were suggested. A brief outline of Principal Component Analysis was presented for application on M & E tools. The ASEI/ PDSI approaches were discussed in details and the workshop came up with new-look ASEI. The workshop generated new meaning to "HANDS-ON" activities. INSET sessions outcomes were analyzed and weaknesses and strength of the past sessions carefully addressed to. For effective and efficient planning, implementation and monitoring of SMASSE activities, the composition of committees and their roles were suggested. The introduction of the TSC District staffing officer to join the DPC was also suggested. On regional collaboration, the workshop distinguished between SMASSE "the project" and SMASSE "the Association" with Kenya SMASSE Unit being the secretariat of SMASSE-WECSA forming the 14th member to the Association. The workshop agreed on safeguarding the vast material produced by the SMASSE INSET Unit by publishing them and acquiring the copyright of those publications.

This report addresses itself to all the areas necessary for the SMASSE project to go National. Essentially the workshop aimed at reflecting on the past and strategizing for the future. Sure for SMASSE INSET Unit- proper prior planning prevents poor performance.

SMASSE National Office.

Chapter 1: INSET SYSTEM CONSTRUCTION AT NATIONAL LEVEL

Introduction

The following recommendations were made for INSET construction at National level

1.1 Number of Cycles

There will be a total of four cycles of INSET for district trainers at the National level (KSTC). Each cycle will last 10 days.

1.2 Number of Trainees for each Cycle

Based on the number of teachers and geographical proximity, some administrative districts may be merged into 'INSET Districts' as follows:

Keiyo/Marakwet
Isiolo/Marsabit/Moyale
Lamu/Malindi/Tana River
Kwale/Mombasa
Busia/Teso
Turkana/West Pokot
Kuria
Homa Bay/Suba/ Rachuonyo
Kisumu/Bondo
Mbeere/Tharaka
Bungoma/Mt. Elgon
Trans Mara

However, for logistical reasons it may be difficult to merge the following six administrative districts into 'INSET District':

Wajir, Samburu, Mandera, Tana River, Moyale and Ijara..

There are approximately 200 mathematics and science teachers from these districts. These may be trained by certified District Trainers from the original nine Pilot Districts in any one of the already established INSET centres, e.g. N. E. P. Girls High School at Garissa.

With the proposed mergers, about 50 new INSET centres may be established countrywide.

National INSET for District Trainers for these centres may be conducted using any one of the following alternatives:

Alternative 1:

Select and train 4 district trainers per subject leading to a total of 4 x 4 = 16 per centre. With about 50 centres, an approximate total of 50 X 16 = 800 District Trainers

nationwide have to be trained. The training can be conducted as follows:
2 sets of INSETs per school holiday involving 13 districts in the first 2 weeks and 12 districts in the last 2 weeks of holiday. As such, during the first INSET 13x16=208 participants are trained and 12x16=192 in the second INSET giving the total number trained as 400. With this done in April and August, a total of 800 District Trainers will have been trained during the year.

Alternative 2:
Select 3 district trainers per subject per centre giving a total of 3 x 4 = 12. With 50 District INSET Centres nationwide, this gives a total of 50 X 12 = 600 participants to train. These can be trained in 3 sets of INSETs per year. There should, therefore, be 2 sets of INSETs in the 4-week holiday during which a total of 2 X 200 = 400 participants are trained. The remaining 1 set of INSET should be held in the 3-week holiday, during which a total of 200 participants are trained

In both alternatives, those districts whose trainers attend National INSET in April should hold District INSET in August and those who attend National INSET in August should conduct District INSET in April of the following year.
For monitoring and evaluation purposes, selection of districts that should send District trainers to the national INSET during any given year should be based on geographical proximity.

Alternative 3:
Consider the possibility of conducting National INSETs in April, August and November.

Note:
District INSET should continue in the Pilot and In-Country Training Programme Districts. 3rd and 4th Cycles of National INSET for In-country Training Programme Districts are to be held in 2003 and 2004. For the Pilot Districts, National INSETs will be held when need to address emerging issues arise.

1.3 Number of Personnel in Each Subject:
1 Subject Administrator
1 Subject Academic Head
9 National trainers (Total: 11 academic personnel per department)

1.4 Number of Rooms Required:

250 hostel rooms
3 laboratories for Physics and Chemistry 2 for Biology
1 Discussion room for physics and 2 each for Mathematics, Chemistry and Biology

1.5 Number of Assistants in the INSET Unit:
4 Secretaries
4 Office Assistants
2 Cleaners
2 Laboratory Assistants per subject for physics, chemistry and biology (total 6)
4 Drivers for now, but the number may change as the number of vehicles increases

1.6 Sensitization Workshops for School Inspectors and Head Teachers
Inspectors' workshops similar to the one held in July 2002 should be conducted once a year for 3 years; to keep all school inspectors sensitized.
Sensitization for school heads can be done during KSSHA meetings at the Provincial and National levels. DPCs may also organize sensitization workshops for all head teachers in their districts.

1.7 Administrative Structure
1.7.1 National INSET Unit
Rationale for increased number of personnel
The duties and responsibilities of the INSET Unit have expanded to include the following:

i. SMASSE INSET Unit will conduct INSET for all districts effective from 2003, and for KSTC and Kagumo TTC tutors.
ii. SMASSE project has been and will continue to conduct third country training for counterparts from other African countries.
iii. SMASSE INSET Unit has officially become the Administrative centre for Education in mathematics and science in Africa, and the secretariat for the regional association (SMASSE – WECSA).

It is therefore proposed that the administrative structure be as follows:

Head of INSET Unit	1
Deputy Head of INSET Unit	2
Subject Administrators	4
Subject Academic heads	4
National Trainers	9 per department

Rationale for two deputy Heads of INSET

In addition to increased responsibilities arising from the project going National, the Head of SMASSE INSET Unit is also the Head of Secretariat and the Chief Executive of SMASSE WECSA. These increased responsibilities nationally and internationally necessitates the creation of these two offices to assist. The duties and responsibilities of these officers will include but not be limited to the following:

a) Deputy Head of INSET Unit (National Administration):

i. Personnel Management of the National staff
ii. Quality control of national INSET system (i.e. facilities, materials, National INSET)
iii. All programmes at National level
iv. Any other duties as may be assigned by the Head of INSET Unit

b) Deputy Head of INSET Unit (District INSET Administration)

i. Attend DPC meetings
ii. Co-ordinating, controlling, planning district INSET activities
iii. Co-ordinating District INSET quality control system
iv. Ex-official of Monitoring and Evaluation (M/E) taskforce
v. Co-ordinate the planning and implementation of stakeholders' workshops
vi. Any other duties as may be assigned by the Head of INSET Unit

Proposals:

In order to attract and retain well qualified personnel for these demanding tasks and enhance efficiency, the lowest job group in this structure should be job group N. Being the lowest, all National Trainers should automatically be promoted to this job group. Upward mobility thereafter should be based on staff appraisal and performance and through normal interview procedure.

In the light of the afore-mentioned, it is strongly recommended that SMASSE INSET Unit be considered for Semi-Autonomous Government Agency status and be re-named as the 'SMASSE INSET Centre'.

Recommendations:

In order to recruit, motivate and retain highly qualified personnel, the following is recommended:

i. Provide opportunities for further education, training and research, especially

beyond Masters' degree level.

ii. Staff who undergoes training or further education of more than six months sponsored through the project should be bonded to work for the project for at least two years after qualifying.

iii. Upward professional mobility should not be pegged to the existing administrative positions in SMASSE Project.

1.7.2 District INSET Structure

District Trainers Representative	Job Group P
District Subject Representative	Job Group N
District Trainers (Certified)	Job Group M

Chapter 2: INSET SYSTEM CONSTRUCTION AT DISTRICT LEVEL

2.1 Introduction

Kenya is divided into 72 administrative districts but SMASSE project after merging; the number is reduced to 47 SMASSE District INSET Units.

2.2 Rationale for creating SMASSE merged district Unit

Some districts have small number of teachers, which is uneconomical to create training centres. So, the district with less than 100 teachers should be merged with other districts.

Communication network affected by landform and utility of land should be taken into consideration and districts should be within the same Provincial administration boundary. However vastness of the district is not a criterion for merging.

2.3 Number of Maths and Science teachers

According to the data given in the appendix 1,the number of Maths and Science teachers is approximately 16000 and it does not include Busia, Moyale and Ijara. Further, there could be some errors in the data, e.g. in Bondo with three teachers.

2.4 Number of Training centres

SMASSE project currently has 22 SMASSE training centers and through merging some districts as explained earlier, 66 new SMASSE district INSET centers have been created giving a total of 88. √

2.5 Consideration for determining number of SMASSE District INSET centres

By assuming 80% of teachers attend and that maximum and minimum number of participants per subject be 40 and 20 respectively

Number of district trainers who were required for pilot and in-country districts were 312, while number of trainers who have gone through four cycles is 102. The other 210 should continue to be trained to complete the cycles.

2.6 Criteria for setting number of district trainers in a district:

The table below shows the computation of number of trainers per centre.

No of centres	1	2	3	4	n
No. Of trainers	4	3x2x4	2x3x4	2x4x4	2xnx4
Total no. of trainers	16	24	24	32	8n

Applying the above criteria to the data provided by Teachers Service Commission (See Appendix 1), the number of SMASSE district centres and district trainers are as follows:

Table1. Number of Maths and Science teachers, proposed District trainers and SMASSE centres in District

	SMASSE DISTRICT Units	No. of teachers in merged District	No of teachers	SMASSE district centres	No of District trainers
1	Baringo		121	1	16
2	Bomet +Trans-Mara	196+ 36	232	2	24
3	Bungoma + Teso +Mt.Elgon	495+ 66 +45	606	4	32
4	Buret		243	2	24
5	Butere/ Mumias		173	1	16
6	Embu		273	2	24
7	Gucha		387	2	24
8	Homabay + Suba	132 +10	142	1	16
9	Isiolo+Meru-North +Marsabit	23+125+13	161	1	16
10	Kajiado		101	1	16
11	Kakamega		376	2	24
12	Keiyo-Markwet	131+17	148	1	16

13	Kericho		266	2	24
14	Kiambu		660	4	32
15	Kilifi		177	1	16
16	Kirinyaga		399	2	24
17	Kisii		262	2	24
18	Kisumu		153	1	16
19	Kitui		271	2	24
20	Koibatek		103	1	16
21	Kuria + Migori	68+185	253	2	24
22	Kwale+ Mombasa	105+95	200	1	16
23	Laikipia + Samburu	175+29	204	1	16
24	Lamu + Malindi + Tana River	22+50+41	113	1	16
25	Lugari/Malava		106	1	16
26	Machakos		632	4	32
27	Makueni		578	3	24
28	Mandera+ Garissa+ Wajir	28+42+25	95	1	16
29	Maragua		370	2	24
30	Mbeere		126	1	16
31	Meru Central+Tharaka	247+42	289	2	24
32	Meru South		228	2	24
33	Murang'a		385	2	24
34	Mwingi		137	1	16
35	Nairobi		308	2	24
36	Nakuru District + Narok	542+70	612	4	32
37	Nandi		260	2	24
38	Nyamira		379	2	24
39	Nyandarua		421	2	24
40	Nyando + Rachuonyo	226+65	291	2	24
41	Nyeri		681	4	32
42	Siaya + Bondo	260+3	263	2	24
43	Taita Taveta		178	1	16
44	Thika		430	2	24
45	Trans-Nzoia + West Pokot + Turkana	216+69+43	328	2	24

46	Uasingishu		216	2	24
47	Vihiga		391	2	24
	Total		13,728	88	1032

Shading represents districts where SMASSE project is operating. .

2.7 Recommendations

1. Where districts merged,
   DEOs have to agree who will become the chairperson of DPC.
   Districts inspectors become co-coordinators.
   Chairperson of head association in different districts champion collection of funds.
   A representative of trainers from any of the merged districts becomes a member of DPC
   Amount chargeable per student is harmonized across the merged districts.
2. Where a district has more than one centre
   Heads of INSET centres are members of DPC.
3. TSC personnel be incorporated in DPC.
4. In a stakeholder's workshop, stakeholders bring actual number of teachers in the respective subjects.
5. Where teachers teach minor subjects or subjects not trained for, DPC should give teachers a chance to be trained in whatever subject they are teaching.
6. SMASSE approves centres and equip them according to the population of teachers within a District. Then, train trainers in readiness for district INSET and invite teachers to specific centres.
7. Invite teachers to specific centres for the District INSET

Chapter 3: INSET QUALITY CONTROL SYSTEM

3.1 Introduction

INSET Quality control system is dependent on quality of write-ups, facilitation, materials and INSET attendance among others. However, the number of districts, and therefore participants involved, when the project goes National, is a major challenge. It is therefore necessary to put in place a mechanism of check and balances on inputs and outputs so that quality is not compromised. An attempt is made in this chapter on possible mechanism that can be put in place to ensure that quality of National INSET system is maintained and enhanced.

3.2 Write-ups

Participants should make their INSET program and have them harmonized before they leave after National INSET.

Participants should be required to make Modifications/Adaptations during their free time, as an assignment, during National INSET. The following are the advantages of this exercise;

(i) Availability of a variety of reference materials at National office

(ii) Participants from the same district have the opportunity of consulting and reflecting on the situation in their respective district. This enables them to:

Remove and add activities that are relevant to their needs.

Reflect on materials/facilities available in their district

Decide on whether to adapt any given write-up or whether they need to write a completely new one

(iii) Availability of National trainers for consultation, if need arises

In the case of new write-ups, participants would be required to prepare drafts and discuss with the National trainers. If drafts are acceptable, the participants would be required to refine and send the new write-up to the National office within a month after the end of National INSET.

The following checklist may be used by the National trainers to check on the quality of the write-ups;

Relevance:	Session objectives
	Target group
	Specific topic area of concern
Activities:	Varied activities so that session objectives are achieved
	Focused specific topic area
Originality:	Creativity/Modification of content
	New write-ups to substitute those not relevant
	Anything to improvise as part of creativity

3.3 Facilitation

There is need to monitor the quality of facilitation of National and District INSETs. This is essential in order to make sure that the sessions are suitable in terms of:

Classroom focus

Specific topic area of concern

Meaningful discussions by having reasonable group size
Ability of trainers to consolidate issues raised during discussion
Ability of trainers to guide and interject, at the right time, during the discussion
Trainers' ability to internalize the contents of the write-ups
Trainers' competence and preparedness

M&E team at the National office should be expanded and divided into two groups. One group monitors District INSET during the 1st two weeks while the second group monitors during the 2nd two weeks. Actual number of members and logistics to be worked out basing on the number of INSET centres

In the long run (future plans), M&E team from National office monitors by sampling a few districts, train two district trainers, in each district, to conduct M&E activities in their respective districts.
District trainers, conducting M&E activities, may use simplified/modified fashion of quality of facilitation instrument to check on

(a) Suitability of session
(b) Learner centredness of classroom focused session
(c) Specific towards area of concern

3.4 Certification

Considering the large number of certificates involved;
Certificates should be given after 3 cycles
Certificates to be given out only to those who have successfully completed 3 cycles of INSET.
Those who do not qualify may be given a transcript to indicate the cycles successfully attended.
District in-charge, at National office, should keep and maintain their Districts' record.s
District trainers continue to get the district trainers certificate.

3.5 Attendance

To be enhanced through:
(i) Sensitization of:
DPC members during stakeholders' workshop
Head teachers during Heads' conferences and Principals' workshops
Teachers through meeting organized by DPC and by Head teachers

(ii) A TSC personnel in the district be a member of the expanded DPC.
(iii) Harmonisation of INSET programs by working in collaboration with KIE, KNEC, KESI, CHE, NCST
(iv) Sensitisation of DPC and District trainers on need to keep accurate records in the district
(v) Records of attendance; the person in charge of two or three districts, at National level, should maintain records of INSET attendance at the districts

3.6 Materials

Participants should come with list of materials required at their District centres when they come for National INSET.
Materials (lists) to be harmonized before participants leave after National INSET
National office should maintain a record of materials/equipment supplied to the districts. The record may be used to maintain frequency of use of the materials supplied as well as avoiding duplication of materials already supplied.
Improvisation should be encouraged, and improvised materials should be well documented in inventories and stores ledgers in the district.

Chapter 4. BUDGET CONTROL SYSTEM

4.1 Rationale for Budget Control System

Budget management is a critical function towards the achievement of defined objectives. The success of a good program requires that appropriate sustainable measures be put in place and funding is a necessary component of sustainability. Funding for SMASSE activities is a collective responsibility for both the benefactors and the beneficiaries. The cost sharing through the DEB as a subsidy towards what MoEST and JICA are giving to the districts is a sure way of achieving effective, efficient and sustainable INSET through self-help effort. It is therefore important that the budget functions through facilitation, regulation and development of a clear control system that is understood and effectively practiced by all concerned.

For the project to be implemented countrywide, certain organizational structures need to be put in place. These include the wider sensitization of stakeholders in each district especially with respect to their duty and responsibility towards the budget control system. It is important for us to portray transparency and accountability in budget management. To do these we need a budget control system to assist in avoiding irregular expenditure resulting from unnecessary solicitation and unwarranted inclusions such as:

too many resource persons, allocation of night outs, budgeting for out-of pocket allowances, misappropriation of funds for personal use, paying for services not provided and inaccuracies in/or inefficient financial reporting. Our budget system should be clear, observable and dependable. We need to be open and ready to take responsibility about all decisions and actions on the budget. Transparency in our budget management is expected and refers to the quality of being trusted and appreciated by the benefactors, implementers, beneficiaries, stakeholders and society.

The budget control system is based on good management principles of collection, expenditure, reporting and so on. These principles require us to give an explanation for our budget actions and expenditure. It also requires that we be answerable, reliable or responsible in our budgetary dealings. Holders of the INSET office will have to be accountable for their decisions and actions to sponsors, beneficiaries and the public through evaluation and reviewing funding process and expenditure process. The Kenya Secondary School Heads Association is the prime movers of funds collection and it is expected to spearhead this activity honestly. District Education Officers will support this activity by making follow-ups where default is detected. Remittance of funds collected needs to be made to the SMASSE district accounts by the end of February of every year. All vote heads of expenditure should remain the same and all the expenditure should strictly adhere to the budget guidelines issued by the SMASSE National office. Misappropriation of SMASSE funds will lead to disciplinary and legal action. Reports on expenditure of SMASSE funds must always be submitted to the SMASSE national office and to the District Secondary Schools Heads Associations. Our discussions and actions on budget control will be open, honest and trustworthy at all times. We should uphold the obligation to act in a fair and just manner so as to promote the culture of respect for justice and the law. We should act in a way that promotes respect for all people through service and the fundamental moral principles on which a successful project can be implemented and sustained.

This chapter discusses the budget control system guidelines under the following sub headings,

Role of DPC meetings
Budgeting
Expenditure
Fund collection strategies
Financing

It is the intention of these guidelines that an efficient and prudent budget management control system is put in place at all times for the benefit of all.

4.2 The DPC: The District Planning Committee.

(a) Membership of the DPC include the following:-DEO as chairman, District coordinator (District Inspector of schools)as secretary, Heads representative as treasurer, Principal INSET center, District trainers representative, TSC representative(Human Resource Officer).

(b) The roles of the DPC include collection of funds for SMASSE project activities, preparation of budgets for the district INSETS, acts as an accounting body for the money collected/received and spent in the various project activities in the district. It also sensitizes stakeholders in the district on project activities, organizes and conducts seminars, workshops, etc, based on Project activities in the district. Other roles include the preparation of financial expenditure reports and submission of the same to the national office and District Heads Association, sensitization of District Head teachers on the importance of timely remittance of SMASSE funds, assists and ensure that SMASSE funding is drawn from the School development Fund/Activity Fund, and that schools do not make illegal levies. The DPC must ensure that all officers handling SMASSE finances are transparent to boost confidence.

4.3 Budgeting

Accommodation and transport vote heads to be flexible to allow for commuters,

Cater for inter-INSET activities, Economic uncertainties, Demonstration and sensitization workshop and Monitoring and evaluation. Budget should not cater for non-SMASSE activities.

To strengthen budget control:

Cheques should be signed on minutes authorization only and auditing be done by district or provincial auditors.

Budget guidelines

All districts to establish a transparent and accountable method as stipulated in these guidelines.

All vote heads to remain the same with all the expenditure following the budget guidelines.

All vote heads for materials should remain at the total budget 15% and should not be used for any other purpose.

When budgeting is done well but the money is not collected and remitted in time, it is advisable to borrow from other funds than stop INSET.

When collection of funds is not done in time, the number of trainers can be reduced if need be but the number of trainees may remain the same.

Trainers, DEOs, coordinators and heads representatives who come more than 30 minutes late or miss sessions should not be paid.

Chairpersons of District Head Teachers' Association and Provincial Coordinators should be included in the list of those to be paid.

The District Planning Committee is the only authority to incur expenditure, which must be included in the minutes of the committee's meetings duly signed by the chairman and the secretary. Any expenditure not accompanied by the minutes shall be treated as unauthorized and the treasurer shall be held responsible.

Misappropriation of SMASSE funds should lead to discipline and legal action.

Reports on expenditure on SMASSE must always be submitted to the National office and the District Secondary Schools Heads Association

4.4 Expenditure

The following expenditure vote heads have been prepared as a guide when preparing your budget.

As a general guideline, maximum allocation in percentages has been given.

Expenditure vote head allocation	Percentage
1 Accommodation	45%
2 Travel and transport	10%
3 Materials	15%
4 Maintenance	10%
5 Training allowance	15%
6 Contingencies	5%

Recommendation

National office should consider enhancing the District INSET centre.

4.4.1 Bank account

All districts will be required to open bank accounts. The signatories of the bank accounts will be the District Education Officer, the District Trainers Representative and the Heads Association Representative (treasurer).

4.4.2 Monthly financial returns

The financial returns required to be submitted to the National Office include the monthly income and expenditure report.

4.4.3 Authority to Incur Expenditure

All expenditure should be authorized by the DPC

Expenditure should be in accordance with the government regulations

Districts should make provisions for petty cash vouchers

Up to Ksh 10,000 – direct purchases can be made

Ksh 10,000 – 30,000 – quotations

Beyond 30000 – tendering

Registration fee to attend INSET should not be paid at the district level

4.4.4 Payment of facilitation fee.

Only a maximum of 20 persons may be paid facilitation fee. This includes District Trainers, the District and Provincial Coordinators, Head Teachers Representative and the DEO. Any other person will not be paid.

4.5 Funds Collection

The national policy on funding of SMASSE activities at the district level is such that funds should be derived from either development or activity fund. The DPC is expected to come up with a budget for the proposed SMASSE yearly activities. From this budget, the District Heads Association should determine how much a student would pay per year, which should be between Ksh. 70 and Ksh. 150. This fund must be approved by the DEB before collections are effected.

The following strategies have been identified to be effective in collection of funds *sensitization, mobilization, economizing and cost sharing.*

Each school will be expected to have submitted its' collection to the SMASSE account by the end of February of each year. However it shall be the responsibility of the heads Association to collect funds from schools with the DEO's backing. It is a recommendation that setting and beating of deadlines is an important aspect of funds collection. The DEO's office should take authoritative measures, demanding explanation from heads where funds are not remitted in time and that physical follow-up by DEO'S office on defaulters be made.

Stakeholders should be aware of the following problems identified earlier as problems in non-remittance of funds by head teachers; *non collection: Some school heads collect but do not remit this fund to the SMASSE account, wrong priorities: Some school heads collect and allocate the funds to other school uses and insensitive BOG and PTA: Some heads have a problem with authority from these bodies in spending school funds on SMASSE activities.*

To solve these problems the following have been recommended; *follow-up by the*

DEO's office for heads who show reluctance in remitting the funds and appropriate disciplinary action taken, SMASSE to be treated by all heads as a preferred project and be given priority during school fees collection, BOG and PTA members be sensitized and invited to attend opening and closing ceremonies of SMASSE INSET as way of sensitsation and transparency and accountability must be seen to be practiced in the use of the funds to encourage more heads to have confidence in the committee collecting funds.

4.6 Financing

4.6.1 Sources of Finance

SMASSE has three sources of funding, namely

JICA

MoEST

Heads Association through DEB`s

Other sources include Parastatals, the private sector, County Councils, NGO`s such as PLAN International and CARE- Kenya, Business ventures such as printing. In future, INSET training levy could be charged on teachers to finance the training.

4.6.2 Financial monitoring and evaluation instruments

The instruments will be used in the monitoring and evaluation of expenditure/ transactions of SMASSE funds in the districts.

Documents /reports required.

The following documents are required:

Bank account

Chequebooks

Bank statements

Banking-in-slips

Receipts issued

Payment vouchers

Supporting documents to payment vouchers i.e. receipts, invoices, bills, attendance lists, payment schedules etc.

Schedule/record of schools, enrolment, projected income, SMASSE fund received, receipt number, balance and date.

Inventory (stores) ledgers

Minutes/record file-DPC

Cashbook

Counter foil receipts registers

Registers of accountably documents like cheque register, payment registers etc

Financial reports required by National Office
Income and expenditure reports
Duplicates of payment vouchers
Duplicates of receipts issued
Copies of bank-in-slips
Copies of bank statements
Bank reconciliation
Budget
Order requisitions/ procurement

4.6.3 What to evaluate

1. SMASSE District Account

The three signatories for the SMASSE Account as stated in 4th Stakeholder Documents are D.E.O, District Heads Association Chairman, and Trainers representative.

2. District Planning Committee minutes

All expenditure should be authorized through minutes of DPC meeting. A DPC member(s) making irregular unminuted payments should repay such money and cease to handle SMASSE monies/activities

3. Issuance of receipts

Details of cheques must be clearly indicated. All must have a SMASSE letter head. DEB/DEO stamp should have a SMASSE inscription.

4. Banking/Banking-in slips

All money received should be banked immediately and intact.

5. Custody and maintenance of financial accountable documents should be with the treasurer and should be available on demand.

6. Payment vouchers should always have vote heads indicated. Supporting documents should be attached.

7. Schools record of payment should indicate name of the schools, enrolment, SMASSE funds due, funds received and balance. Records should be submitted to the National office after every District INSET or on demand.

8. Filling/maintenance of accounting records.

Accountable documents are bank statements, banking-in slips, payment vouchers, cheque books, stores ledgers, cash books and supporting documents. These documents should be recorded in chronological order in respective registers

9. Stores register

Record of inventories should be properly maintained at the SMASSE office

10. Required reports

Income and expenditure report

Bank reconciliation

Copies of receipts

Payment vouchers

Banking statements

Banking-in slips

These documents should be submitted to the National office after every District INSET or on demand

Chapter 5. MONITORING AND EVALUATION

5.1 Introduction

Some M&E instruments were developed at the beginning of the project and others in course of the project. They have been in use over the whole project period. M&E taskforce was established early 2000. The Importance of M&E taskforce was recognized during the midterm evaluation and it was entrenched in revised PDM,(details of the rationale and history can be found in the 4th Stakeholders' Workshop report pp36). The areas assessed are; INSET implementation at National level, District level and Quality of teaching/learning.

5.2 Purpose of M&E

To assess progress and impact of the project and provide feedback for improvement of implementation of project activities.

5.3 M&E Instruments

M&E instruments are applied at three levels:

National INSET

District INSET

Classroom activities

5.3.1 National INSET Instruments

The instruments applied at the National level are supposed to assess various aspects such as change in attitude, change in pedagogical skills, and ability of the National

trainers to implement and facilitate the INSET. The instruments to be used are:

Pre-INSET Questionnaire
Post-INSET Questionnaire
Session Evaluation instrument
Ability of National trainers
Content/Pedagogy instrument
Quality of participation instrument (New proposal)

5.3.2 District INSET Instrument

At the district level, the instruments to be applied are:

Pre-INSET Questionnaire (Adoption from National)
Post-INSET Questionnaire (Adoption from National)
Session evaluation instrument
Quality of INSET instruments
District INSET checklist No.1 and 2
Financial instrument

5.3.3 Classroom Instruments

There are two aspects to be evaluated.

(i) Quality of teaching

Instruments to be used for the purpose are

ASEI/PDSI checklist to be combined with Lesson observation instrument
Free description of lesson

(ii) Quality of learning

Instruments to be applied are

The extent of students' participation
SMASSE achievement test

5.4 M&E of District INSET

It was suggested that for effective M&E of District INSET;

SMASSE INSET centre zones each of 20 centres
Each zone to be monitored and evaluated by five teams of two persons each (2x5=10 persons)
Each team to visit 4 centres in two weeks
40 centres be assessed in 4 weeks
Each center be monitored in two and a half days
Two zones to have their INSETs in April and two in August

10 people (five teams) to be sent out in the first two weeks and 10 people sent out in the second two weeks (10teams in total)

5.5 M&E Team.

20 persons at National office (5 x 4subjects)

One Japanese counterpart for M&E

Consideration of training District personnel in the future

5.6 Administration of instruments

The proposed method of administration is as follows:

National to continue as currently done

District:

Pre INSET: At the start of first cycle

Post INSET: At the end of third cycle

Sample 20% of 14,000 teachers (Instruments to be administered by District trainers)

Session evaluation questionnaire: Sample 10% of 2,000 (10 x 4 x 50) (instruments to be administered by District trainers)

Classroom instruments:

Administered by one person per subject

The person should be familiar with assessment of lesson

Administered in 60 schools (2% of 3,000) every year

Administer in consecutive years to see progress

Overall goal to be assessed by KCSE

5.7 Improvement of Instrument

Validate using accepted statistical methods (such as Principal component analysis method)

5.8 Reporting

Retain current format (to be improved when necessary)

5.9 Follow-through activities

Meeting teachers at District level when necessary

A session on feedback of classroom activities be put in District INSET programs

Chapter 6. ASEI/PDSI APPROACHES

6.1 Introduction

At the start of the project, baseline survey was done. One of the purposes of the survey was to determine/identify factors that contribute to poor performance in mathematics and sciences. Some of the factors identified were:

Teaching method was mostly teacher centred

Poor planning

Lack of inadequate teaching/learning resources

SMASSE project then recognized the need to enhance the teachers role in planning, developing of activities and teaching/learning materials that would contribute to effective teaching and learning. The project came up with ASEI movement and PDSI approach as a measure to reverse the situation.

ASEI is an acronym for Activity, Student, Experiment and Improvisation

PDSI is an acronym for Plan, Do, See and Improve

It emphasizes on the importance of planning, doing and evaluating ASEI lessons. Evaluation is aimed at getting feedback from students which can be used for future lesson planning and implementation.

6.2 Current emphasis in ASEI

1. Hands 0n, minds on and hearts on activities
2. Student centred activities
3. The activities must include experiments
4. Improvisation using locally available materials when there are no conventional apparatus or conventional apparatus are inadequate

6.3 Other areas to be emphasized on activities

Human developmental stages so that appropriate activities and skills are introduced

Activities should enhance the teaching and learning of the intended concept

6.4 Weaknesses in our ASEI lessons

1. There is limited link between activities and concept to be learned
2. Time wasting if not connected to the intended theory
3. Over- emphasis of improvised material without paying attention to the use of the conventional material may lead the pupils not to have the necessary skills of using the conventional ones.

6.5 Relationship: activities and theory

Currently there is limited link between activities done and the concept taught. Therefore, when teaching the concept, emphasis should be put on bridging the activities with concept to be learned.

6.6 Development of NEW-LOOK ASEI Lesson

All the aspects of the current ASEI lesson remain the same except for activities. The following proposals have been made as far as the activities are concerned:

Activities in new-look ASEI should directly target particular skills namely:

Knowledge-data collection, facts collection, observations process etc.

Comprehension – terminologies, meaning of principles, establishing relationships etc.

Analysis – Variable control, prediction, data organization etc

Synthesis – Generalisation,formulating hypothesis etc.

Application – problem solving, production of tools and materials etc.

Evaluation – approximation and estimation, consistency between evidence and conclusion etc.

Distinctions among these skills may not be clear therefore the teacher should try to identify the skills to be developed.

As the student progress, emphasis on the skills should be those which are at higher order not forgetting recall and comprehension.

The skills should be included on the ASEI lesson Plan to ensure that the skill intended is captured in the activities. Skills should be listed after the objectives.

A bridging between activities, skills and theory must be brought out in an ASEI lesson

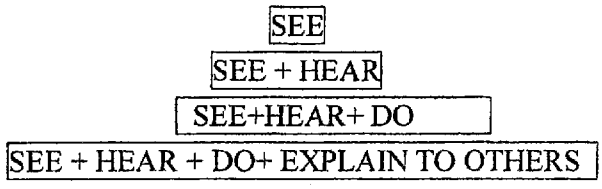
PDSI approach should continue to be emphasized in ASEI lessons.

Chapter 7. HANDS-ON ACTIVITIES

7.1 Introduction

Hands-on activities are those activities, which mainly involve actual use of body parts to manipulate equipment, apparatus or materials and making observations (seeing, hearing, feeling etc). However, in all these the mind is actively involved.

The importance of hands-on activities is based on the fact that understanding is enhanced by active involvement in the learning process i.e. the use of more senses. The pyramid below illustrates how the degree of retention increases with increased use of senses.



7.2 Roles of Hands-On Activities in INSET

Hands-on activities should be designed to enhance the INSET participant as a classroom teacher and a District Trainer.

Generally INSET hands-on activities should be directed at:

a) Illustrating the importance of including such hands-on activities in teaching/learning of science.
b) Showing the participants how theoretical concepts can be concretized so as to promote learning of the concepts.
c) Helping participants to appreciate the use of locally available material in promoting teaching and learning.
d) Changing the teachers' attitude towards hands-on activities.
e) Enabling the teacher to make teaching/learning of science interesting to the students.
f) Making INSET interesting to participants i.e. to serve as stimulus variation. Continuous lectures would be boring.
g) Making participants to clearly understand certain concepts which they are expected to teach in the classroom since baseline studies showed that certain concepts are difficult to teach.

7.3 Relationship between Activities and Topics of Concern.

The choice of activities should be such that they address particular areas of concern. Activities should be simple enough for the learners to succeed if they invest adequate time and effort but also challenging enough to constitute meaningful teaching/learning experience. There should be a variety of activities ranging from simple to complex.

7.4 Role of Hands-On Activities in INSET and Strengthening Teaching and Learning

Hands-on activities strengthen teaching/learning by concretizing theoretical concepts, raising curiosity and interest of the learner and provides opportunity for the teacher to incorporate locally available materials in the teaching/learning process.

INSET hands-on activities that strengthen teaching/learning in the classroom should:

a) Aim at enhancing particular skills
b) Be designed in such a way as to be used directly in the classroom
c) Not be too elaborate and time consuming
d) Involve attempt to link the activities to theory by giving guiding/probing questions to enable students deduce a law or principle from these observations (make inference from observations). Students should be encouraged to discus observations and report on findings under the guidance of the teacher.
e) Strike a balance between the activities and the theoretical aspect of the topic by allocating adequate emphasis for both the activities and related theoretical concepts.
f) Be those which have been carefully selected or identified by taking into account syllabus consideration.

7.5 Hands-On Activities Done For Sake's Sake.

Any hands-on activity that does NOT serve any of the roles listed in (2) above is for sake's sake. However, some activities may seem to be for sake's sake but serve to create interest or curiosity in the learner. Departments may be requested to identify any hands-on activities that according to their evaluation are for sake's sake.

7.6 New philosophy on hands-on activities

Hands-on activities should be designed to develop INSET participants into effective classroom teachers and District Trainers. The activities should be simple, relevant, brief and geared towards developing concepts or principles. Appropriate balance between activities and theory is crucial. Teaching/learning activities should be referred to simply as activities and not 'hands-on', 'mind-on', etc. The teachers should create **Bridges** between the activities and the theory. A **Bridge** is a sequential linkage between the activity, theory and the concept being learnt. Also in the new look ASEI the activities should directly target particular skills namely:

a) Knowledge -data collection, facts collection, observation process etc.
b) Comprehension - terminologies, meaning of principles, establishing relationships etc.
c) Analysis - variable control, prediction, data organization etc

d) Synthesis - generalization, formulating hypothesis etc.
e) Application - problem solving, production of tools and materials etc.
f) Evaluation - approximation and estimation, consistency between evidence and conclusion etc.

The teacher should try to identify the skills to be developed. As the student progresses, emphasis should be those skills which are at higher order not forgetting the lower ones.

A bridging between activities, skills and theory must be brought out in an ASEI lesson. The bringing can be achieved through; Class discussion, Question/Answer technique, Teacher explanation, Group discussion, Calculation and Assignments.

It is only when teachers engage learners in meaningful activities, which they then link to the intended theory or content that we can we say learning has taken place. Note there is continued emphasis on PDSI approach in ASEI lessons.

Chapter 8. INSET SESSION OUTCOMES

8.1 INSET objectives as guide to outcomes

1st cycle – Attitude change
2nd cycle –Hands-on activities
3rd cycle – Actualization of ASEI
4th cycle –Impact transfer

a) The objective of the 1st cycle INSET was adequately achieved. It required the teacher to shift from the old teaching approach to the new approach brought in by homegrown solutions to common problems.

In addition to attitude change, important outcomes were observed such as the willingness to adopt new trends in teaching and learning of mathematics and science and putting INSET system in place. This means that 'attitude' as an objective for cycle 1 was not enough to describe the outcomes.

The following was suggested to be the objective for cycle 1 INSET

Attitude change
Assimilation of professionalism (content mastery, pedagogy and willingness to develop oneself through INSET)
Development of trainer of trainers

b) The idea of ASEI lesson planning does not come out clearly from 'hands-on activities' as an objective for 2nd cycle INSET

Suggested objectives for the 2nd cycle should be ASEI lesson planning and Hands-on activities

The objective 'hands-on activities' was thus achieved including other aspects in ASEI lesson planning

c) The 3rd cycle INSET objective 'Actualization of ASEI' was achieved alongside other INSET outcomes not described by the INSET objectives. The suggested objective should be:
Further development of ASEI
Student assessment
Enhanced classroom interactions (change of classroom environment)

d) The 4th cycle INSET objective 'impact transfer' effectively described the intended outcomes of the INSET. This aimed at empowering the district trainer as an individual to be able to design and conduct INSET with minimum supervision. This was achieved. Since impact transfer may also imply effect at the classroom level a more appropriate objective for the 4th cycle. The 4th cycle should be "District trainer empowerment INSET".

8.2 Session objectives and outcomes

All the four cycles' outcomes should be classroom oriented

State clearly the expected classroom outcome in every INSET cycle objective

The session objectives should clearly state the intended classroom outcomes

To achieve the session objectives the following should be adopted

a) Suitable topic area
b) Relevant and adequate content
c) Appropriate activities
d) Effective facilitation method
e) Continuous monitoring of the intended classroom outcomes

8.3 Relationships: session and classroom out comes

Within each session, time should be set aside for the discussion of adapting the session outcomes to the classroom situation.

8.4 Suggestions for the improvement of the failure sessions

All the items of evaluation used in the session evaluations should be fully understood by the trainees. Each item should be exhaustively examined and clearly explained to the trainees so that the responses given by the trainees are unambiguous.

There should be variation in facilitation method.

Peer teaching should be spread to as many trainees as possible. All District trainees should peer teach.

Team work should be exercised in preparing and presentation of the materials.

All materials intended for presentation should be tried out.

8.5 SCRC report analysis

It is a useful reference material

It needs review as some the findings and resolutions are based on topics that have been shelved from the new syllabuses.

8.6 New thinking on session and outcomes

The session write-ups should be bound to form training manuals.

In all INSET sessions outcomes should be clearly stated and at the end of sessions, participants should state how those outcomes would help them in the classroom situation.

Linking session outcomes with actual classroom activities.

Participants from same environment e.g. same districts need to come together after a given session to discuss how the session outcomes could be applied in their home situations.

Developed tests should be given to participants who then would be required to come up with an ASEI lesson plan based on the test.

All models and teaching aids produced for INSET should be catalogued and patented if possible.

Chapter 9. COMMITTEES (COMPOSITION AND ROLE)

9.1 Introduction

There are various committees in the project at different levels and they are charged with the responsibility of overseeing the activities of the project at those levels.

9.2 Joint co-coordinating committee

Composition and roles remain as they are. (Quote the reference: Report on 3rd workshop

on effective operation of the SMASSE project, Annex VII, p10)

9.3 National working committee

Composition:

National project co-coordinator ... MOEST (National Chairman)
Head of INSET unit ... (Secretary)
Chief adviser
Principal of KSTC
Finance officer of KSTC (Treasurer)
T.S.C
Heads Association Representative.

Roles

Staffing at the National office
Feedback to T.S.C. on National INSET and attendance
Clearing SMASSE personnel on overseas trips
Policy making body for the project
Approve budgeting for the project INSET activities (both national and district)
Approve project activities e.g. workshops, monitoring and evaluation
Approve establishment and appointments at the National INSET Unit. E.g. Subject administrators, M&E etc.
Three of these members are the signatory to the SMASSE account (Principal, head of INSET, National coordinator)
Approve district INSET centers
Approve counterpart external training

9.4 Planning Committee (PC)

(Suggesting to be named 'National INSET Planning Committee (NIPC)')

Composition:

Chief adviser, head of INSET, Project coordinator, subjects administrators.

Roles

Approve National INSET budget prepared by department
Design the SMASSE establishment and recommend appointment
Determine the number of district INSET centers
Select personnel for further training both at National and district level.
Prepare plan of operation for the project at National level
Procurement of National and district INSET materials
Appoint committee within the INSET unit,

9.5 District Planning Committee (DPC)

Composition:

DEO (chairman), Provincial co-ordinator, District co-ordinator (secretary), Principals of INSET cetnres), District heads representative, District trainers representative, TSC representative (Human Resource)

Roles:

- Organize district training
- Collect funds for SMASSE project
- Prepare a budget for the District INSETs
- Act as the accounting body for the money collected/received and spent in various project activities in the district.
- Sensitize stakeholders in the district on project activities.
- Prepare financial expenditure reports and submit the same to the National office and district head association
- Organize and conduct seminars, workshops etc based on project activities in the district
- Selection of district trainers
- Sponsoring district trainers for National training
- Suggest location of district INSET centres
- Keep updated records of district INSET activities
- Recommending those who qualify for district trainers certificate

9.6 T.S.C Representative at District Level

Role

Give feedback to TSC on district training and attendance.

Chapter 10. REGIONAL COLLABORATION

10.1 PROJECT vs. ASSOCIATION

10.1.1 SMASSE Project

Strengthens maths and science at secondary Schools through: -

- INSETs at National level and
- INSETs at District level

10.1.2 Association

It provides for maths/science teachers' interactions towards strengthening Mathematics and Science.
SMASSE association Kenya has three committees
National, Provincial and District committees
Executive secretaries are inspectors at all levels
SMASSE-Kenya is affiliated to SMASSE-WECSA and represented by two country representatives (currently Mr. Oyaya and Mrs. Otieno Ruth)

Note: The SMASSE project personnel are not members of SMASSE association.
Proposal 1: SMASSE project should be the 14th member country of SMASSE-WECSA.
Proposal 2: All chairpersons of National Associations in member countries should be delegates to the regional conference.

10.2 Third country group training

10.2.1 Curriculum

The SMASSE INSET personnel can handle: -

- Baseline studies
- INSET System Construction
- INSET Administration
- INSET Implementation
- ASEI/PDSI
- Monitoring and Evaluation
- Conference Organization
- Information Technology

10.2.2 Trainers

The SMASSE personnel who are experts in specific fields should train on behalf of the project. However arrangement should be made to invite facilitators on other areas of interest such as: -

- Financial management
- Pre-service training
- School management
- Curriculum development
- Assessment [KNEC], where SMASSE personnel cannot handle

Hence interested countries/individuals should be asked to write a proposal of their expectations from this broad curriculum so that specific curriculum can be developed according to the duration of the training.

10.3 Role of SMASSE personnel

The SMASSE personnel and the facilities serve as the secretariat for SMASSE – WECSA. However, the head of INSET Unit is the only formal official of the secretariat as the Chief Executive. The roles of other personnel are not defined, but so far perform duties as they arise. For example

Facilitation during conferences
Planning conferences
Disseminating information to member countries
Keeping official records

Whenever there is a regional conference, organizing committee and secretariat committee is constituted. This need to be reviewed from time to time so that virtually all the members learn from the exercise.

10.4 FAIRS AND CONGRESSES

From the second regional conference report, this has not been implemented in most member countries. Efforts should be made in such countries to establish this, before a regional dimension is introduced.

Chapter 11. INFORMATION DISSEMINATION

11.1 Who owns information generated by SMASSE?

Information generated by SMASSE project through its personnel or other commissioned group would be owned by the project.

Type of materials

M & E tools
Training materials and manual
Regional Reports
Workshop Reports
M & E Reports
Materials by District trainers
Any other Reports prepared on behalf of the Project

11.2 Who Can Publish?

The documents produced by SMASSE project can only be published by the project. That is, only the project has a copyright to publish the documents. The publications

should bear the names of those people who authored different areas of the document.

11.3 How to Publish?

SMASSE project author manuscript
Prepare Manuscripts
Take to the Publisher and pay for the work (professional touch)
Materials can be vetted by the Publication Committee to determine what to publish and some that can be sent to establish Journals, newspapers.
Write an article to other educational institutions
Prepare materials for workshops
Make brochures, pamphlets, Homepage
Acknowledge sources by putting down references where applicable

11.4 Use of SMASSE information for personal gain

There are several ways SMASSE information may be used for personal gain. The following are among them:

i. Interviews
ii. Research purposes
iii. Presentations
iv. Contributions to web-sites, journals and other periodicals
v. Plagiarism (copying or bootlegging)

With acknowledgement the first three purposes may be acceptable for SMASSE personnel, except for research proposal. Contributions to web-sites, journals and other periodicals require written permission of SMASSE/publisher.
Use for *research proposal* and *plagiarism* is a criminal offence.

11.5 Copyright

A statement of copyright must appear on all SMASSE publications as shown below:

3. 第５回合同調整委員会（2003年３月７日）議事録

MINUTES OF 5th JOINT COORDINATING COMMITTEE MEETING
HELD AT SMASSE OFFICE, KENYA SCIENCE TEACHERS COLLEGE ON 7th March 2003

Attendance

The Kenyan Side

Prof. Karega MUTAHI	Permanent Secretary (PS), MOEST, Chairman
Mr. Enos O. OYAYA	Ag. Chief Inspector of Schools, MOEST / National Project Coordinator
Mr. Samuel M. KAVISI	Senior Deputy Secretary, Teachers Service Commission
Mrs. Roseline A. ONYUKA	Senior Deputy Director of Education, Secondary
Mr. J. B. NGERECHI	Senior Deputy Director of Education, Technical
Mrs. Anne C. A. OLUBENDI	Desk Officer, Japan, Treasury
Mr. Patrick W. KIBUI	Principal, Kenya Science Teachers College / Technical Manager
Mr. Kimathi MUGAMBI	Senior Principal Finance Officer, MOEST
Mrs. K. A. KARIM	Provincial Director of Education, Coast
Mr. J. R. MADANGUDA	Provincial Director of Education, Eastern
Mr. K. P. YATOR	Provincial Director of Education, Western
Mr. A. H. ABDI	Provincial Director of Education, North Eastern
Mr. P. M. MACHARIA	Provincial Director of Education, Central
Mrs. M. K. KILONZO	Provincial Director of Education, Nairobi
Mr. Paul M. WASANGA	Deputy Secretary, Kenya National Examinations Council
Mr. J. N. NDUATI	Deputy Chief Inspector of Schools, MOEST (Secondary)

Project side

Mr. Bernard M. NJUGUNA	Head, SMASSE In-Service Training Unit, KSTC
Mr. Takahiko SUGIYAMA	Chief Advisor
Mr. Keiichi NAGANUMA	Project Coordinator
Prof. Shigekazu TAKEMURA	Japanese Expert, Physics Education
Mr. Tomoki TOKUDA	Japanese Expert, Mathematics Education
Mr. Shimboku MIYAKAWA	Japanese Expert, Chemistry Education
Mr. Hiromasa HATTORI	Japanese Expert, Education Evaluation

The Japanese Side

Ms. Minako SUGAWARA	Staff, JICA Headquarters
Ms. Keiko SANO	Assistant Resident Representative, JICA Kenya Office
Mr. Samuel K. KIBE	Education Specialist, JICA Kenya Office

Absent

Mr. Gabriel MUITA	Director, Kenya Institute of Education
Mr. David SIELE	Provincial Director of Education, Nyanza

In Attendance

Mr. Kala IKUTU	Deputy Chief Inspector of Schools, MOEST
Mr. G. M. NJOROGE	Treasurer, KSSHA
Mr. Sylvester M. GAKUMU	Chairman, SMASSE-WECSA, Kenya Chapter
Mrs. Elizabeth I. KALOKI	Staffing Officer, TSC
Mr. B. A. OMANYA	Assistant Secretary, KSSHA
Mr. Kariuki MUNI	ACIS, MOEST
Mr. Benson ABWAO	Ag. ACIS, MOEST
Ms. Florence THUKU	Representative, Provincial Director of Education, Rift Valley

The Ministry of Education, Science and Technology (MOEST) and Japan International Cooperation Agency (JICA) held Joint Coordinating Committee (JCC) meeting for preliminary study on Phase II of the Strengthening of Mathematics and Science in Secondary Education (SMASSE) Project on 7th March 2003, at 9:00 hours.

Min. 1 Preliminary

The Chairman expressed his and the Minister's concern over the poor performance in mathematics and sciences at KCSE and in particular by girls. When releasing the KCSE results, the Minister for Education, Science and Technology stated that regular INSET is top priority if good performance in mathematics and science has to be realised. The Chairman said that Kenya was lucky to have SMASSE project already in place. In addition, he emphasised that what SMASSE project is doing is part of the work of the Ministry. He then urged all concerned with education to give maximum support to the project.

Min.2 Comments and Discussion

1 **Legality to operationalise institutionalisation and regularisation of INSET on going National**

During Phase I SMASSE has operated under several committees. At policy level there is Joint Coordinating Committee (JCC) chaired by PS. Implementation policy formulation has been done by National Working Committee (NWC) chaired by National Project Coordinator – the CIS. The day to

day running of National INSET Unit has been done by National Planning Committee (NPC) chaired by the Head of SMASSE Unit at KSTC. At district level implementation is carried out by District Planning Committees (DPCs) chaired by DEOs.

On going national (Phase II), SMASSE will expand the National INSET Unit. In addition, SMASSE will set up and equip District INSET Centres in the districts. However, neighbouring districts that have less than 200 mathematics and science teachers will be merged appropriately and will have one centre. The NWC will be expanded and mandated to run the National Centre and the Project on behalf of the Ministry. This operational structure does not require any legal enactment.

2 Location of the National Centre

As agreed during final evaluation meeting of JCC on 23rd October 2002, facilities at the current National Unit are limited in space and unavailable during college time. With the institutionalisation and regularisation of Inspectors' and Principals' INSETs, and SMASSE-WECSA regional training programmes an institutional arrangement more appropriate to carry out the functions of the National Centre is urgently required. The Ministry is now in the process of identifying the place to house the National Centre.

3 National structure and Personnel establishment for INSET providers

The Ministry and TSC have created a structure at national level for INSET providers, which was commensurate to 15 districts workload and staff establishment. As the Project goes national and regional a more elaborate structure, with an appropriate establishment and corresponding Job Groups, is necessary. The new structure should also stretch down to the districts level.

The existing structure is as follows:

- Establishment: 29 Kenyan academic staff, 7 Japanese academic staff, 2 Secretaries, 2 Office assistants, 4 drivers and one grounds-man.
- Structure for academic staff:

Head of INSET Unit	1 post	Job group Q
Subject Administrators	4 posts	Job group P
Academic Heads	4 posts	Job group N
National Trainers	20 posts	Job group M

A proposal that National Trainers be at least principal lecturer level (Job group N) or equivalent was discussed and accepted by the meeting so as to reduce the loss of staff.

Agreed structure for National and District Trainers

National:

- Establishment: At least 61 academic staff

- Structure:

Head of INSET Unit	1 post	Job group R
Deputy Head of INSET Unit	2 posts	Job group Q
Subject Administrators	4 posts	Job group Q
Academic Heads	4 posts	Job group P
National Trainers	50 posts	Job group N

The Ministry and TSC have agreed to recognise the District Trainers' certificates for consideration in promotion. With this development there is now need to operationalise it through the formulation of an appropriate structure.

Agreed structure per district:

District Trainers Representative	1 post	Job group P
District Subject Representative	4 posts	Job group N
District Trainers	(posts depending on number of centres)	Job group M

4 Regular progress meetings under Director of Education

There is a need to have regular progress meetings chaired by Director of Education (DE) to solve issues that do not have to wait for JCC meetings. This gives JCC time to only tackle policy issues.

5 District Education Officers (DEOs) participation

The success of SMASSE in the districts has to a large extent depended on DEOs. However, in the past some DEOs have not performed their roles as stipulated in the stakeholders' document. This has led to poor funds collection, low INSET attendance, and lack of adequate coordination. Such districts include Gucha, Kisii, Kilifi and Kajiado. Some other districts have done well through efforts outside the DEO. These include Butere-Mumias, Makueni and Meru South. PS assured the meeting that all relevant field officers will participate fully in the programme and will be required to achieve expected standards.

6 Head Teachers' commitment in funds remittance

Some Head Teachers especially those in Kisii, Gucha, Kajiado and Kilifi have not been remitting these funds to the respective SMASSE accounts. This strains the district INSET activities and DPCs are sometimes forced to borrow money from other organisations in order to meet their obligations. PS assured the meeting that all Head Teachers will remit SMASSE funds, in full, to the account.

7 Accountability in collected funds

The stakeholders' document gives guidelines on how to budget, collect and spend funds. Some districts like Kisii, Gucha and Kajiado have not adhered to these guidelines and some of their expenses

were not authorised. PS assured the meeting that SMASSE funds will be used only for authorised activities within the SMASSE budget guidelines.

8 Harmonisation of KESI, KIE, KNEC and SMASSE activities

Activities of these institutions are useful to teachers and need to be harmonised so that teachers benefit from all of them. In particular, the work plans of all these institutions should be harmonised in scheduling and costing. PS authorised CIS and the Secretary TSC to convene a harmonisation meeting to address this issue.

9 Signing of SMASSE Certificates

There is a need to classify certificates to identify those to be signed by DE and those that can be signed by other officers according to SMASSE INSET guidelines and criteria for awarding District Trainers Certificates.

10 Policy on funding of SMASSE- JICA, Ministry and District Education Boards (DEBs)

Funding of SMASSE activities comes from three sources; JICA, Ministry and DEBs. The DE should impress upon DEOs that DEB levy, which comes from development or activity funds, is supported by Ministry. However, to ensure ownership of SMASSE activities it is necessary to hold dialogue with all partners at district level.

11 Science and Technology Education Policy

Without a Science and Technology Education Policy the vision "Industrialisation 2020" may not be realised. The meeting advised that policy dialogue be initiated.

12 Budgetary Allocation

A budget provision, from GOK, of at least KSh 20 million has been recommended and factored in the Ministry budget for 2003/4 Financial Year to cover all districts. A budgetary projection will be put in place to reflect additional funding as need arises.

13 Attendance of INSET by teachers

Participation in INSET by teachers has continued to raise concern. However, the problem is especially serious in Gucha, Kisii, Kajiado and Kilifi. Cooperating partners are sponsoring INSET materials and there is no justification for GOK to spend funds on these teachers after the project period. According to the stakeholders document Head Teachers are responsible for teachers' attendance. The document also states that every teacher must attend INSET. To ensure compliance all Head Teachers will be required to facilitate attendance and will be held accountable for any failures.

14 Participation in INSET by mathematics and science Head Teachers

Mathematics and science Head Teachers, especially in small schools, which make the majority of our secondary schools, do not attend INSET. This sends signals, to the teachers, that SMASSE activities do not cover all teachers equally. These Head Teachers, who in essence, are teachers need professional skills development in their subjects and will attend all INSETs.

15 Promotion of mathematics and science teachers

Mathematics and science teachers who attend SMASSE INSET will have an added advantage when it comes to promotions. This will encourage all mathematics and science teachers to avail themselves for professional development.

16 Retention of District Trainers within the districts

There has been a good understanding between the project and TSC on the need to retain District Trainers within the districts. This has worked very well and transfers have been to the teachers advantage e.g. on request or promotion. On going national, it will be necessary to continue with this policy due to the increased needs for teachers to be trained.

17 INSET for pre-service tutors

In order to improve the teaching of mathematics and sciences, pre-service tutors of these subjects will need to undergo SMASSE INSET.

18 Continued support for SMASSE-Western, Eastern, Central and Southern Africa (WECSA) activities

SMASSE-WECSA is an inter-regional activity aimed at strengthening mathematics and science education in Africa. The SMASSE INSET Unit in Kenya, having the necessary experience and infrastructure, was made the Secretariat, by member countries, and the administrative centre by Japanese Government during the World Summit on Sustainable Development (WSSD), in Johannesburg, August 2002. As the centre SMASSE INSET Unit is involved in assisting member countries to start SMASSE-type activities and from time to time staff have to travel to other countries. The Ministry and TSC have so far been very supportive and have agreed to continue to support the programme.

19 More TSC involvement

SMASSE project activities are basically aimed at professional skills development. Many issues will, therefore, revolve around TSC for action and/or implementation. In addition to being JCC member, the TSC will be a member of NWC and DPCs.

20 Implementation and Supervision

The Head of SMASSE INSET Unit will liaise with CIS and Chief Financial Officer (CFO) in following up the issues contained in this document.

Min.3 Adoption of the discussed issues

The meeting unanimously adopted issues discussed as those required for preparation and implementation for Phase II of SMASSE project.

Nairobi, 10th March, 2003

Mr. Shinich MATSUURA

Deputy Resident Representative,
Kenya Office
The Japan International Cooperation Agency
Japan

Prof. Karega MUTAHI

Permanent Secretary,
Ministry of Education, Science and Technology
Republic of Kenya

RECORD OF DISCUSSIONS ON JAPANESE TECHNICAL COOPERATION FOR THE STRENGTHENING OF MATHEMATICS AND SCIENCE IN SECONDARY EDUCATION (SMASSE) PROJECT PHASE II

With regard to the Japanese technical cooperation for the Strengthening of Mathematics and Science in Secondary Education (SMASSE) Project (hereinafter referred to as the Project) Phase II, the Resident Representative of the Japan International Cooperation Agency (hereinafter referred to as JICA) in the Republic of Kenya held a series of discussions with the Kenyan authorities concerned. The discussions were in accordance with the results of the joint project evaluation on the Project Phase I by the Kenyan and Japanese teams conducted in Nairobi, in October 2002.

As a result of the discussions, both sides agreed to recommend to their respective Governments the matters referred to in the document attached hereto.

Nairobi, 16th May, 2003

Mr. Masaaki OTSUKA
Resident Representative,
Kenya Office,
Japan International Cooperation Agency,
Japan

Prof. Karega MUTAHI
Permanent Secretary,
Ministry of Education, Science and Technology,
Republic of Kenya

Mr. Joseph MAGARI
Permanent Secretary,
Ministry of Finance,
Republic of Kenya

THE ATTACHED DOCUMENT

I. COOPERATION BETWEEN BOTH GOVERNMENTS

1. The Government of Kenya will implement the Strengthening of Mathematics and Science in Secondary Education (SMASSE) Project (hereinafter referred to as the Project) Phase II in cooperation with the Government of Japan.

2. The Project will be implemented in accordance with the Master Plan, which is given in Annex I.

II. MEASURES TO BE TAKEN BY THE GOVERNMENT OF JAPAN

In accordance with the laws and regulations in force in Japan, the Government of Japan will take, at its own expense, the following measures through JICA according to the normal procedures under the Technical Cooperation Scheme of Japan.

1. DISPATCH OF JAPANESE EXPERTS
   The Government of Japan will provide the services of the Japanese experts as listed in Annex II.

2. PROVISION OF MACHINERY AND EQUIPMENT
   The Government of Japan will provide such machinery, equipment and other materials (hereinafter referred to as the Equipment) necessary for the implementation of the Project as listed in Annex III. The Equipment will become the property of the Government of Kenya upon being delivered C.I.F. (Cost, Insurance and Freight) to the Kenyan authorities concerned at the ports and/or airports of disembarkation.

3. TRAINING OF KENYAN PERSONNEL IN JAPAN AND IN THIRD COUNTRIES
   The Government of Japan will receive the Kenyan personnel connected with the Project for technical training in Japan and will make arrangement for conducting of technical training in third countries.

4. TRAINING FOR PERSONNEL OF SMASSE-WECSA (WESTERN, EASTERN, CENTRAL AND SOUTHERN AFRICA) MEMBER COUNTRIES IN KENYA
   The Government of Japan will make necessary arrangements for conducting the

regional training for personnel of SMASSE-WECSA Member countries in Kenya.

Note SMASSE-WECSA is an inter-regional association which activities are aimed at strengthening mathematics and science education in member countries (Burundi, Ghana, Kenya, Lesotho, Malawi, Mozambique, Rwanda, South Africa, Swaziland, Tanzania, Uganda, Zambia, Zimbabwe). The Project plays the role of the Secretariat of SMASSE-WECSA.

III. MEASURES TO BE TAKEN BY THE GOVERNMENT OF KENYA

1. The Government of Kenya will take necessary measures to ensure that the self-reliant operation of the Project will be sustained during and after the period of Japanese technical cooperation, through full and active involvement in the Project by all related authorities, beneficiary groups and institutions as listed in ANNEX VIII.

2. The Government of Kenya will ensure that the technologies and knowledge acquired by the Kenyan nationals as a result of Japanese technical cooperation will contribute to the economic and social development of Kenya.

3. The Government of Kenya will grant, in the Republic of Kenya, privileges, exemptions and benefits as listed in Annex IV and will grant privileges, exemptions and benefits no less favourable than those granted to experts of third countries or international organisations performing similar missions to the Japanese experts referred to in II-1 above and their families.

4. The Government of Kenya will ensure that the Equipment referred to in II-2 above will be utilised effectively for the implementation of the Project in consultation with the Japanese experts referred to in Annex II.

5. The Government of Kenya will take necessary measures to ensure that the knowledge and experience acquired by the Kenyan personnel from technical training in Japan and in third countries will be utilised effectively in the implementation of the Project.

6. In accordance with the laws and regulations in force in the Republic of Kenya, the Government of Kenya will take necessary measures to provide at its own expense:

(1) Services of the Kenyan counterpart personnel and administrative personnel as listed in Annex V;

(2) Land, buildings and facilities as listed in AnnexVI;

(3) Supply or replacement of machinery, equipment, instruments, vehicles, tools, spare parts and any other materials necessary for the implementation of the Project other than the Equipment provided through JICA under II-2 above; and

(4) Means of transport and travel allowances for the Japanese experts and Kenyan counterparts for official travel within the Republic of Kenya.

(5) Suitably furnished accommodation for the Japanese experts and their families.

7. In accordance with the laws and regulations in force in the Republic of Kenya, the Government of Kenya will take necessary measures to meet:

(1) Expenses necessary for transportation within the Republic of Kenya of the Equipment referred to in II-2 above as well as for the installation, operation and maintenance thereof;

(2) Customs duties, internal taxes (VAT etc.) and any other charges imposed in the Republic of Kenya on the Equipment referred to in II-2 above; and

(3) Running expenses necessary for the implementation of the Project.

IV. ADMINISTRATION OF THE PROJECT

1. The Permanent Secretary, Ministry of Education, Science and Technology (hereinafter referred to as MOEST), as the Project Director, will bear overall responsibility for the administration and implementation of the Project.

2. The Chief Inspector of Schools, MOEST, as the National Project Coordinator, will be responsible for the managerial matters of the Project.

3. The Head, National INSET Centre, as the Technical Project Manager, will be responsible for the technical matters of the Project.

4. The Japanese Chief Advisor will provide necessary recommendations and advice to the Project Director, the National Project Coordinator, and the Technical Manager on any matters pertaining to the implementation of the Project.

5. The Japanese experts will give necessary technical guidance and assistance to the Kenyan counterpart personnel on technical matters pertaining to the implementation of the Project.

6. For the effective and successful implementation of technical cooperation for the Project, a Joint Coordinating Committee, National Working Committee, National Planning Committee and District Planning Committees will be established, whose functions and composition are described in Annex VII.

V. JOINT EVALUATION

Evaluation of the Project will be conducted jointly by the two Governments through JICA and the Kenyan authorities concerned, at the middle and during the last six months of the cooperation term in order to examine the level of achievement.

VI. CLAIMS AGAINST JAPANESE EXPERTS

The Government of Kenya undertakes to bear claims, if any arises, against the Japanese experts engaged in technical cooperation for the Project resulting from, occurring in the course of, or otherwise connected with the discharge of their official functions in the Republic of Kenya except for those arising from the wilful misconduct or gross negligence of the Japanese experts.

VII. MUTUAL CONSULTATION

There will be mutual consultation between the two Governments on any major issues arising from, or in connection with this attached document.

VIII. MESURES TO PROMOTE UNDERSTANDING OF AND SUPPORT FOR THE PROJECT

For the purpose of promoting support for the Project among the people of the Republic of Kenya, the Government of Kenya will take appropriate measures to make the Project widely known to the people of the Republic of Kenya.

IX. TERM OF COOPERATION

The duration of the technical cooperation for the Project under this Attached Document will be five (5) years from July 1, 2003.

ANNEX I MASTER PLAN

1. Objective of the Project

(1) Overall Goal

a) *National*

Capability of young Kenyans in Mathematics and Science is upgraded.

b) *Regional*

Quality of Mathematics and Science education at secondary level in member countries is strengthened.

(2) Project Purpose

a) *National*

Quality of Mathematics and Science education at secondary level is strengthened in Kenya through In-Service Training (INSET) of teachers.

b) *Regional*

ASEI(Activity, Student, Experiment, Improvisation) / PDSI (Plan, Do, See, Improve) lessons are practiced in teacher training institutions and secondary schools in member countries

2. Outputs of the Project

a) *National*

(1) A system of training for the District trainers in Mathematics and Sciences will be strengthened at National INSET Centre.

(2) A system of INSET in Mathematics and Science will be established in the Districts.

(3) Role of SMASSE National INSET Centre and District INSET Centres as resource centres will be strengthened.

b) Regional

(1) Trainers for ASEI/PDSI based INSET will be produced in member countries.

(2) SMASSE National INSET Centre will be consolidated as resource centre for Mathematics and Science in Africa.

(3) SMASSE National INSET Centre will function as secretariat of SMASSE-WECSA.

3. Activities of the Project

a) *National*

1-1 To investigate, analyse and evaluate the present situation, problems and needs of

Mathematics and Science education at secondary level in the Districts.

1-2 To enhance the ability of counterparts in implementation of the Project.

1-3 To teach demonstration lessons in selected secondary schools.

1-4 To review and develop curricula for INSET on the Mathematics and Science.

1-5 To develop training materials for the INSET on the Mathematics and Science.

1-6 To select District Trainers.

1-7 To train key trainers for the Districts at National INSET Centre.

1-8 To carry out monitoring and evaluation of the INSET.

1-9 To carry out follow-up activities to supplement INSET.

1-10 To develop model ASEI lesson plans and other teaching materials which are applicable to local situations in the Districts.

2-1 To select schools for INSET centres in the Districts.

2-2 To improve teaching and learning facilities in Mathematics and Sciences at the Districts INSET Centres.

2-3 To facilitate implementation of the INSET at the Districts INSET Centres.

2-4 To organize INSET system management workshops for relevant officials of MOEST and school managers in the Districts.

3-1 To publish the Project Newsletter etc. and disseminate relevant information.

3-2 To promote and implement Mathematics and Science activities when need arises.

3-3 To establish the mechanism to exchange information on subject matters among secondary school teachers when need arises.

b) Regional

1-1 To investigate, analyse and evaluate the present situation, problems and needs of INSET systems in member countries.

1-2 To develop curricula for INSET (regional training in Kenya).

1-3 To develop training materials for regional training.

1-4 To organise regional training.

1-5 To develop monitoring and evaluation instruments adaptable for regional training.

1-6 To conduct monitoring and evaluation on the impact of regional training.

1-7 To assist to develop INSET curricula for Mathematics and Science in member countries.

1-8 To assist to develop of monitoring and evaluation tools for project activities.

2-1 To publish newsletters and other publications for disseminating information.

2-2 To conduct technical exchange with member countries.

2-3 To hold joint workshops with member countries.

2-4 To assist to construct sustainable INSET systems in member countries.

3-1 To organize SMASSE-WECSA meetings.

3-2 To sensitise education Ministries from member countries on ASEI and PDSI approaches to teaching/learning of Mathematics and Science.

3-3 To promote coordinating activities with other donor agencies.

ANNEX II LIST OF JAPANESE EXPERTS

1. Long-term Experts

(1) Chief Advisor

(2) Coordinator

(3) Experts in the field of:

a. Mathematics Education

b. Science Education

c. Education Evaluation

2. Short-term Experts

Short-term experts will be dispatched, when necessity arises.

Note: Each long-term expert could concurrently act as expert in another field, if necessary.

ANNEX III LIST OF MACHINERY AND EQUIPMENT

1. Equipment for the field of Mathematics and Science
2. Equipment for the common and general use

Note:

1. The above-mentioned equipment is limited to equipment necessary for the transfer of technology by the Japanese experts and for implementing INSET activities at National INSET Centre and District INSET Centres.
2. The contents, specifications and quantity of the above-mentioned equipment to be provided each year will be discussed in principle every year between the Japanese experts and the Kenyan counterpart personnel based on the annual plan of the Project, within the allocated budget of the Japanese fiscal year.

ANNEX IV PRIVILEGES, EXEMPTIONS AND BENEFITS FOR JAPANESE EXPERTS

1. To exempt from income tax and the other charges of any kind imposed on or in connection with the living allowances remitted from abroad for the Japanese experts.
2. To exempt from internal tax (VAT etc.), custom duties and any other charges imposed on personal household effects of the Japanese experts and their families, including one motor vehicle per expert.
3. To use all its available means to provide medical and other necessary assistance to the Japanese experts and their families.
4. To issue, upon application, entry and exit visas for the Japanese experts and their families free of charge.
5. To issue identification cards to the Japanese experts and their families to secure the cooperation of all governmental organisations necessary for the performance of the duties of the experts.
6. To exempt from customs duties for import and export and internal tax (VAT etc.) of machinery and equipment purchased by the Japanese experts in connection with the Project activities.

ANNEX V LIST OF KENYAN COUNTERPART AND ADMINISTRATIVE PERSONNEL

1. Counterpart Personnel

(1) National

a) Chief Inspector of Schools, MOEST (National Project Coordinator)
b) Head of National INSET Centre 1 post (Technical Project Manager)
c) Deputy Head of National INSET Centre 2 posts
d) Subject Administrators 4 posts
e) Academic Heads 4 posts
f) National Trainers 50 posts

(2) District

a) District Education Officers in Districts
b) District Inspector of Schools in charge of SMASSE
c) Head Teachers of the District INSET Centres
d) Representative of Head Teachers Association in Districts
e) District Trainers Representative 1 post per one District INSET Centre
f) District Subject Representative 4 posts per one District INSET Centre
g) District Trainers posts depending on number of centres

2. Administrative Personnel

(1) One secretary at MOEST
(2) Administrative personnel at the District INSET Centres
(3) Eight administrative personnel at National INSET Centre
(4) Four secretaries at National INSET Centre

ANNEX VI LIST OF LAND, BUILDINGS AND FACILITIES

1. Land, buildings and facilities including those contained in final evaluation report for Phase I necessary for the Project

2. Rooms and facilities necessary for installation and storage of the equipment in selected schools/venues in Districts

3. Offices and necessary facilities for the Japanese experts and Kenyan personnel

4. Other facilities mutually agreed upon as necessary for the implementation of INSET

ANNEX VII ROLES OF VARIOUS COMMITTEES

I . Joint Coordinating Committee (JCC)

The Joint Coordinating Committee, which consists of both the Japanese and the Kenyan sides, will be established for the smooth and effective implementation of the Project.

1. Functions

The Joint Coordinating Committee will meet at least once a year or whenever the necessity arises, in order to fulfil the following functions:

(1) To formulate the Annual Plan of Operation of the Project;
(2) To review the overall progress of the Project and achievement of the technical cooperation programme; and
(3) To exchange views on major issues arising from or in connection with implementation of the Project

2. Composition

(1) Chairperson
Permanent Secretary, MOEST (Project Director)
(2) Members
a) The Kenyan side
Director of Education, MOEST
Chief Inspector of Schools, MOEST (National Project Coordinator)
Chief Financial Officer, MOEST
Commission Secretary, Teachers' Service Commission
Secretary, Kenya National Examinations Council
Director, External Resource Department, Ministry of Finance
Director, Kenya Institute of Education
Provincial Directors of Education
Representative, Kenya Secondary Schools Headteachers' Association
Head, National INSET Centre (Technical Project Manager)

Provincial Directors of Education will coordinate and ensure smooth implementation of project activities in their respective provinces.

b) The Japanese side
Chief Advisor
Coordinator
Experts
Representative of JOCV dispatched to Kenya
Representatives of JICA Kenya Office
Members of JICA study team, to be dispatched when necessary

Official(s) of the Embassy of Japan in Kenya may attend the Joint Coordinating Committee meetings as observer(s).

II. National Working Committee (NWC)

Full NWC will meet in January, May and September of every year but may hold meeting any other time when need arises. The Finance and General Purposes Committee (F & GPC) which is a sub-committee of NWC will however meet once a month to ease the day-to-day operation of the project.

1. Functions

The National Working Committee will have the following mandate:

(1) To run the project on behalf of the Ministry.
(2) To operate the project as the National INSET Centre Board of Governors.
(3) To act as the Project's Tendering Board in consultation with the Ministry of Education, Science and Technology.

2. Composition of full NWC

Chief Inspector of Schools, MOEST (National Project Coordinator)- Chairman
Senior Deputy Secretary - Staffing, TSC
Principal, Kenya Science Teachers College
Project Chief Advisor
Chairman, Kenya Secondary School Heads Association
Secretary, Kenya Secondary School Heads Association
Treasurer, Kenya Secondary School Heads Association
Head, National INSET Centre (Technical Project Manager) – Secretary
Finance Officer at the National INSET Centre

3. Composition of Finance and General Purposes Committee of NWC

Chief Inspector of Schools, MOEST (National Project Coordinator)- Chairman

Project Chief Advisor

Representative, Kenya Secondary School Heads Association

Head, National INSET Centre (Technical Project Manager) – Secretary

Finance Officer at the National INSET Centre

III. National Planning Committee

The National Planning Committee will run the project on a daily basis.

1. Functions

(1) To make annual working plan on the basis of the Plan of Operation

(2) To monitor the progress of the project activities

(3) To take responsibilities of the project's procurement

(4) To take daily administrative responsibilities of the project

2. Composition

Head, National INSET Centre - Chairman

Project Chief Advisor

Deputy Heads, National INSET Centre

Subject Administrators

JICA Project Coordinator

IV. District Planning Committee

1. Functions

(1) To collect funds for SMASSE activities in the District

(2) To be AIE holders of SMASSE district fund

(3) To prepare and implement a budget for the district

(4) To sensitise stakeholders in the district on project activities

(5) To prepare financial expenditure and SMASSE training programme reports and submit the same to the National office and district heads association

(6) To organise and coordinate implementation of district SMASSE programmes

(7) To recruit and sponsor district trainers for national training

(8) To recommend district INSET Centres

(9) To ensure updated records of SMASSE activities are kept

(10) To vet district trainers for certification and appraise them on their performance

(11) To invite teachers for training at district level

(12) To monitor and ensure attendance by the teachers for the training

(13) To prepare lists of successful teachers for certification

(14) To give feedback to TSC on district training

2. Composition

District Education Officer - Chairman

Principals of District INSET centres

Chairperson, District Heads Association - Treasurer

District Trainers' representative

Representative, TSC (staffing officer)

District Coordinator (Inspector of Secondary Schools in the district)- Secretary

ANNEX VIII REFERENCE DOCUMENTS

1. Minutes of the Meeting between Japan International Cooperation Agency and the Authorities concerned of the Republic of Kenya on Japanese Technical Cooperation for the Strengthening of Mathematics and Science Education in Secondary Schools (SMASSE) Project signed on 7 November 2001
2. Report on the 4th Workshop on Effective Operation and Management of the SMASSE Project published in July 2002 (Stakeholders reports)
3. Minutes of the Meeting between Japanese Evaluation Team and the Authorities concerned of the Republic of Kenya on Japanese Technical Cooperation for the Strengthening of Mathematics and Science Education in Secondary Schools (SMASSE) Project signed on 24 October 2002
4. Minutes of Joint Coordinating Committee meeting signed on 10 March 2003

5. ミニッツ（プロジェクト・ドキュメント英文版を含む）

MINUTES OF MEETING ON JAPANESE TECHNICAL COOPERATION FOR THE STRENGTHENING OF MATHEMATICS AND SCIENCE IN SECONDARY EDUCATION (SMASSE) PROJECT PHASE Ⅱ

With regard to the Japanese technical cooperation for the Strengthening of Mathematics and Science in Secondary Education (SMASSE) Project (hereinafter referred to as the Project) Phase Ⅱ, the Resident Representative of the Japan International Cooperation Agency (hereinafter referred to as JICA) in the Republic of Kenya held a series of discussions with the Kenyan authorities concerned. The discussions were in accordance with the results of the joint project evaluation on the Project Phase Ⅰ by the Kenyan and Japanese teams conducted in Nairobi, in October 2002.

As a result of the discussions, both sides agreed to summarize the matters referred to in the document attached hereto as a supplement to the Record of Discussions.

Nairobi, 16th May , 2003

Mr. Masaaki OTSUKA
Resident Representative,
Kenya Office,
Japan International Cooperation Agency,
Japan

Prof. Karega MUTAHI
Permanent Secretary,
Ministry of Education, Science and Technology,
Republic of Kenya

Mr. Joseph MAGARI
Permanent Secretary,
Ministry of Finance,
Republic of Kenya

THE ATTACHED DOCUMENT

The discussions were held at Nairobi with the participants listed below:

The Kenyan Side

Prof. Karega MUTAHI	Permanent Secretary (PS), MOEST / Project Director
Mrs. Naomy W. WANGAI	Director of Education, MOEST
Mr. Enos O. OYAYA	Chief Inspector of Schools, MOEST / National Project Coordinator
Mr. Samuel M. KAVISI	Senior Deputy Secretary, Teachers Service Commission
Mrs. Roseline A. ONYUKA	Senior Deputy Director of Education, Secondary
Mr. J. B. NGERECHI	Senior Deputy Director of Education, Technical
Mrs. Anne C. A. OLUBENDI	Desk Officer, Japan, Treasury
Mr. Patrick W. KIBUI	Principal, Kenya Science Teachers College
Mr. Kimathi MUGAMBI	Senior Principal Finance Officer, MOEST
Mrs. K. A. KARIM	Provincial Director of Education, Coast
Mr. J. R. MADANGUDA	Provincial Director of Education, Eastern
Mr. K. P. YATOR	Provincial Director of Education, Western
Mr. A. H. ABDI	Provincial Director of Education, North Eastern
Mr. P. M. MACHARIA	Provincial Director of Education, Central
Mrs. M. K. KILONZO	Provincial Director of Education, Nairobi
Mr. Paul M. WASANGA	Deputy Secretary, Kenya National Examinations Council
Mr. J. N. NDUATI	Deputy Chief Inspector of Schools, MOEST (Secondary)

Project side

Mr. Bernard M. NJUGUNA	Head, National INSET Centre, Technical Project Manager
Mr. Takahiko SUGIYAMA	Chief Advisor
Mr. Keiichi NAGANUMA	Project Coordinator
Prof. Shigekazu TAKEMURA	Japanese Expert, Physics Education
Mr. Tomoki TOKUDA	Japanese Expert, Mathematics Education
Mr. Shimboku MIYAKAWA	Japanese Expert, Chemistry Education
Mr. Hiromasa HATTORI	Japanese Expert, Education Evaluation

The Japanese Side

Mr. Masanori YUZAWA	First Secretary, Embassy of Japan
Mr. Masaaki OTSUKA	Resident Representative, JICA Kenya Office
Ms. Keiko SANO	Assistant Resident Representative, JICA Kenya Office
Mr. Samuel K. KIBE	Education Specialist, JICA Kenya Office

As a result of the discussions, both sides admitted the Project Document is for rationalising and justifying the plan and implementation of the Project as attached herewith.

ANNEX Project Document

Project Document
for
Strengthening of
Mathematics and Science
in Secondary Education Project
Phase II

Prepared by:
Ministry of Education, Science and Technology, Kenya
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Table of Contents

Summary

Title of Project:
Strengthening of Mathematics and Science in Secondary Education Project Phase II

Country: Republic of Kenya and SMASSE-WECSA member countries (*1)

Coverage:
All Districts in Kenya (except the 9 Pilot Districts) and SMASSE-WECSA member countries

Project Period: 1 July 2003 – 30 June 2008

1. Background:

According to National Development Policy, Kenya is aiming to be an industrialized country in 2020. However, performance of Mathematics and Science Education on which the industrialisation relies has been remarkably poor. The improvement of Mathematics and Science Education was, therefore, considered as a matter of urgency in Kenya.

As an intervention JICA and the Government of Kenya (GOK) started SMASSE Project (Phase I) in 1998, which covered 9 pilot districts of the 70 in Kenya. The Project aimed at strengthening Mathematics and three Science subjects (Biology, Chemistry and Physics) through In-Service Training (INSET) for teachers in these subjects. The Phase I Project achieved its outputs listed below successfully.

- Establishing a system of training district trainers at the National INSET centre
- Establishing a system of training in pilot districts
- Strengthening the role of the National INSET centre and district INSET (In-Service Education and Training) centres.

According to the final evaluation results of the Phase I Project, those attained outputs can be sustainable from viewpoints of financing and human resources. It also pointed that INSET can be regularly conducted at National and District level by cost-sharing. ASEI/PDSI (*2) approach during the Phase I Project attracted many other districts which were not covered by the Project. Consequently strong request from these districts, particularly from Secondary School Heads Association, was presented to the Ministry of Education, Science and Technology (MOEST) to expand INSET activities to cover whole nation. Besides, in the course of implementing the Project, SMASSE has interacted with other African countries and shared its experiences on ASEI / PDSI principles. This was done through technical exchange visits to and by other countries and through two regional conferences held in Kenya in 2001 and 2002. The conferences culminated in the formation of SMASSE-WECSA Association. This movement was coincided with Japanese type 2 initiative at the World Summit for Sustainable Development (WSSD) held in Johannesburg in 2002.

With these successful attainments of the Phase I, GOK requested the Government of Japan for continuous Technical Cooperation as SMASSE Phase II Project comprising SMASSE INST going national, and Strengthening SMASSE-WECSA Network.

2. Implementing Agency:
Ministry of Education, Science and Technology (MOEST) of the Government of Kenya

3. Outline and Objectives of Project

(1) Objectives

(i) Project Purpose

a) Kenya (National)
Quality of Mathematics and Science education at secondary level is strengthened in Kenya through In-Service Training (INSET) of teachers

b) SMASSE-WECSA (Regional)
ASEI/PDSI lessons are practiced in teacher training institutions and secondary schools

in member countries.

(ii) Overall Goal

a) Kenya (National)
Capability of young Kenyans in Mathematics and Science is upgraded.

b) SMASSE-WECSA (Regional)
Quality of Mathematics and Science Education at secondary level in member countries is strengthened.

(2) Output

a) Kenya (National)
1. A system of training for the District trainers in Mathematics and Sciences will be strengthened at National INSET Centre.
2. A system of INSET in Mathematics and Science will be established in the Districts.
3. Role of SMASSE National INSET Centre and District INSET Centres as resource centres will be strengthened.

b) SMASSE-WECSA (Regional)
1. Trainers for ASEI/PDSI based INSET will be produced in member countries.
2. SMASSE National INSET Centre will be consolidated as resource centre for Mathematics and Science in Africa.
3. SMASSE National INSET Centre will function as secretariat of SMASSE-WECSA.

(3) Input

Japanese side:
1. Dispatch of long-term experts.
2. Dispatch of short-term experts when necessary.
3. Training of Kenyan counterpart personnel in Japan and/or in third countries.
4. Provision of equipment.
5. Expenses necessary for the implementation of the Project.
6. Training of personnel of SMASSE-WECSA member countries in Kenya.

Kenya side:
1. Buildings, Offices and other facilities necessary for the project.
2. Assignment of Kenyan full-time counterpart personnel at National INSET Centre.
3. Assignment of administrative personnel.
4. Expenses necessary for the implementation of the Project.
5. Expenses for Mathematics and Science teachers to attend INSET at National INSET Centre and in the Districts.

(4) Administration

a) Kenya (National)
Joint Coordinating Committee (JCC) chaired by the Permanent Secretary of MOEST, and consisted of members from Kenyan and Japanese will take the highest authority and responsibility for the Project implementation. Under the JCC, National Working Committee (NWC) which is playing a role of Board of Directors/Governors at the SMASSE National Centre will be placed. SMASSE District Planning Committee (DPC) chaired by District Education Officer (DEO) will be established for SMASSE INSET implementation at districts.

b) SMASSE-WECSA (Regional)
As for SMASSE-WECSA activities, the Secretariat which has been attached in SMASSE National Centre will be placed under JCC and NWC during the Project period. The Secretariat currently consists of 4 Kenyans and Japanese Chief Advisor.

4. Feasibility of the Project

(1) Relevance

a) Kenya (National)

Various national development policy papers issued by the GOK such as 8th National Development Plan, Education Master Plan, PRSP etc. emphasise the importance of Mathematics and Science Education in order to achieve industrialisation in Kenya. Accordingly GOK is now prepared to go into financial commitment for implementation to strengthening Mathematics and Science Education. The phase II Project is highly in conformity with social needs of Kenyan society. It also concurs with Japan / JICA Country Strategy on development assistance to Kenya.

b) SMASSE-WECSA (Regional)

Performance of Mathematics and Science Education in Sub-Saharan African countries is similarly poor to that of Kenya. It has been confirmed through regional conferences held in 2001 and 2002 that improvement in Mathematics and Science Education is urgently needed in SMASSE-WECSA member countries. Japanese Government policy expressed in TICAD II and WSSD is also putting emphasis on capacity development in Africa through regional collaboration by forming a strong network such as SMASSE-WECSA in the region.

(2) Effectiveness

a) Kenya (National)

INSET systems constructed during Phase I Project have been recognised as sustainable systems for the future development leading to achieve overall goal. Such systems will play continuously as INSET centres. Hence, in this Phase II Project, sustainable INSET systems will be constructed throughout Kenya. As results of using such systems effectively, the overall goal of the Project will be achieved.

b) SMASSE-WECSA (Regional)

The Project will focus on collaborative works with member countries who accept and are eager to promote ASEI/PDSI approach more readily. Hence, the goal of the Project would be likely achieved.

(3) Efficiency

a) Kenya (National)

During the Phase I Project, number of beneficiary has exceeded to the expected number. Since the operation of the Phase II Project is based on the similar approaches and methodology to those in the Phase I, it will be quite possible to achieve to produce over 900 district trainers and offer INSETs to over 12,000 teachers in 5 years.

b) SMASSE-WECSA (Regional)

The Phase II Project is expected to directly offer ASEI based INSET to 150 mathematics and science educators from SMASSE-WECSA member countries.

(4) Impact

a) Kenya (National)

During Phase I Project, the following two impacts were confirmed.

- Attitude of mathematics and science teachers toward teaching has been changed positively
- Interests of students in mathematics and science have been enhanced.

Phase II Project can, therefore, be expected to give larger positive impacts on Mathematics and Science Education in Kenya through positive changes of attitude of teachers and students than Phase I Project.

b) SMASSE-WECSA (Regional)

The project aims to disseminate the experience and impacts of SMASSE Project to SMASSE-WECSA member countries. Hence, similar impacts obtained by the SMASSE Project will be expected in member countries.

(5) Sustainability

a) Kenya (National)

The Phase I Project proved that INSET centres created at National and Districts level are sustained and fully utilised for INSETs. As far as financial issues are concerned, both GOK and Districts contributed annually 3.5 million Kenya Shillings and 10 million Kenya Shillings respectively to INSET activities. The financial contribution from GOK and Districts will be expected to continue with larger amount as agreed in the official documents for the Phase II Project.

b) SMASSE-WECSA (Regional)

At this moment it is difficult to foresee the sustainability of SMASSE-WECSA Programme. However, it seems that there will be possibility to gain sustainability of SMASSE-WECSA activities through continued sensitisation of member countries particularly in those countries which will join regional training in Kenya. Among member countries of SMASSE-WECSA four countries have already paid 300 US dollars as Registration fee and 100 US dollars as annual subscription fee.

5. Important Assumptions

a) Kenya (National)

- Teachers continue to practice ASEI/PDSI
- Other programs do not adversely affect teachers' participation
- Assistance of MOEST will continue.
- The counterparts at National INSET Centre and key trainers in the Districts will continue to work

b) SMASSE-WECSA (Regional)

- Policy frameworks in member countries are supportive of Mathematics and Science Education.
- Teacher training and INSET based on ASEI/PDSI continue.
- Training for enhancing ASEI/PDSI lesson continues in member countries.
- Support and understanding are obtained from member countries to SMASSE-WECSA activities sustain

6. Plan for Evaluation

- Mid-Term Evaluation : November, 2005
- Final Evaluation : November, 2007
- Post-Project Evaluation : 3 years after the termination of Project

*1 SMASSE-WECSA

SMASSE-WECSA is an inter-regional association which activities are aimed at strengthening mathematics and science education in member countries (Burundi, Ghana, Kenya, Lesotho, Malawi, Mozambique, Rwanda, South Africa, Swaziland, Tanzania, Uganda, Zambia, Zimbabwe). The Project functions as the Secretariat of SMASSE-WECSA.

*2 ASEI/PDSI

ASEI (Activity, Student centred, Experiment, Improvisation) and PDSI (Plan, Do, See, Improve)

1. Introduction

Mathematics and Science Education face numerous challenges in Kenya and the region as a whole. There has been persistent poor performance of students in Mathematics and Science in the National Examinations in Secondary Education. In view of this, Strengthening of Mathematics and Science in Secondary Education (SMASSE) project was initiated in 1998 to provide solutions to some of the problems that contribute to the poor performance by establishment of In-service Education and Training (INSET) system.

The base for SMASSE activities is located at Kenya Science Teachers College (KSTC).
The Project was initiated in 9 pilot districts, namely Murang'a and Maragua in Central Province, Kisii and Gucha in Nyanza Province, Butere/Mumias, Kakamega and Lugari in Western Province, Kajiado in Rift Valley Province, and Makueni in Eastern Province, to run for a period of five years.

At the beginning of the Project, baseline studies were conducted which suggested that core of INSET should be placed in changing attitudes of teaching and learning on Mathematics and Sciences. The study also emphasised that teaching methodology should be reformed from teacher centred to more student-activity oriented. Thus **ASEI** (Activity, Student centred, Experiment, Improvisation) and **PDSI** (Plan, Do, See, Improve) approach has been introduced. The Project emphasised sustainability of the Project in order to institutionalise and regularise INSET systems through cost-sharing, participatory approach. As a result, the Project successfully attained the INSET system construction in districts.

Also the uniqueness of the Project was that Monitoring and Evaluation Task Force was established within the Project in order to assess the quality of INSETs and measure the progress of the Project using Monitoring and Evaluation tools developed by the Task Force. Their results showed clearly positive difference in INSET impact between SMASSE districts and non-SMASSE districts.

In the course of implementing the Project, SMASSE has interacted with other African countries and shared its experiences on ASEI and PDSI principles. This was done through technical exchange visits to and by other countries and through two regional conferences held in Kenya in 2001 and 2002. The conferences culminated in the formation of SMASSE-WECSA Association[1]. This movement was coincided with Japanese type 2 initiatives at the World Summit on Sustainable Development (WSSD) held in Johannesburg in 2002. The regional collaboration is moving towards Asia-Africa Cooperation through despatch of counterpart personnel to and from the Philippines, where Japan conducted technical cooperation for Mathematics and Science Education.

With these successful attainments of the Phase I, GOK requested the Government of Japan for continuous Technical Cooperation as SMASSE Phase II Project comprising SMASSE INST going national, and Strengthening SMASSE-WECSA Network.

[1]Member countries are Burundi, Ghana, Kenya, Lesotho, Malawi, Mozambique, Rwanda, South Africa (Mpumalanga), Swaziland, Tanzania, Uganda, Zambia, and Zimbabwe.

2. Background of the Project

2-1. Socio-economic conditions

In Kenya, poverty levels or gaps caused by poverty have not improved much even after the Structural Adjustment Programmes (SAPs) were implemented as suggested in Sessional Paper No.1 of 1986. However, the policy of GOK is to continue providing both qualitative and quantitative education without regional or gender bias. It is the position of GOK that although education is not compulsory by law, every child has the right of access to education. This was implemented through GOK's declaration of Free Primary Education in January 2003. The overall GOK plan focuses upon industrialisation and the objective is to move the economy to the industrialized status by the year 2020. Whereas this remains the position, certain challenges have to be overcome first. The challenges hinge on:

- alleviation of poverty
- improving access to education,
- improving equity in education (teacher/pupil ratio),
- quality and relevance in education.

In a bid to overcome some of the challenges, cost sharing was introduced in 1988. GOK provides; teachers' salaries, curriculum, inspection/supervision and bursaries/loans Parents on the other hand provide; teaching/learning materials, textbooks, physical infrastructure and other indirect costs.

It should be mentioned at this point that cost sharing has not worked well because the poverty levels in the country have continued to get worse. Nonetheless, the government continues to invest in quality education because that is the only way to transform the country. It is in this spirit in-service for Mathematics and science teacher was found necessary. Hence the need for SMASSE project to cover all districts is a national priority.

Other African countries also work and put first priority on poverty alleviation as national policy through production of PRSP .

2-2. Overview of Education sector

The current Education system is 8:4:4, which represents

- 8 years at primary school level. At the end, an examination called Kenya Certificate of Primary Education (KCPE) is offered to determine who goes to secondary. 50% of the STD 8 graduates miss places in secondary schools due to limited capacity.
- 4 years at secondary level. Kenya Certificate of Secondary Education (KCSE) is offered at the end of the 4 years. Results determine who goes to the University After sec school, 8% join public universities
- 4 years of University Education. Those who pass the examinations get the Bachelors degrees and can opt to pursue post graduate studies or job market

In Kenya, since January 2003, and already in other African countries, Free Primary Education (FPE or UPE) has been implemented in line with "The Dakar Framework for Action" which was adopted in April 2000. Although Post-primary education after introduction of FPE has not been focused so far, it must be considered with regard to increase of students by FPE.

Studies undertaken by Kenya Institute of Education (KIE) and SMASSE Project indicate the following as the current problems facing the education sector.

- Under-staffing and under-qualification of teachers in some areas of curriculum,
- An overloaded curriculum
- Inadequacy of teaching/learning facilities and materials
- Teachers' low morale

- Examination oriented teaching/learning
- Students' low morale
- Low transition in teaching/learning between Primary and Secondary
- Inappropriate teaching used by teachers
- Lack of integration of theory and practical work
- Inadequate education management

At the regional conference held in Nairobi, the participating countries pointed out similar problems. It can therefore be concluded that problems facing African countries are common; hence the need to come together and look for solutions.

2-3. Government policy and strategy on Education sector development

In Kenya, the following policy papers are presented on education sector development.

A) GOK Millennium Development Goals (MDGS)

According to MDGS Paper, the Ministry of Education, Science and Technology (MOEST) has put in place ways and means of meeting the set goals and targets. The GOK projects that the country be industrialized by 2020. To attain this target it becomes inevitable that GOK strengthens its Mathematics and Science Education base by re-sharpening of teachers through regularized INSET system.

B) Master Plan for Education and Training (MPET)

To raise relevance and quality in Secondary Education, MPET clearly stipulates that it should do this by evolving appropriate pre-service and in-service training at provincial/district, school, and teacher level. Regularisation of INSET is emphasised.

C) National Development Plan 2003-2008

This paper defines education as pre-condition for national development. However, it says that there is a tendency of deterioration of education quality. It also point lack of relevance of education to social needs. In order to improve these problems, it recommends comprehensive education sector reform as shown below.

- Primary Education
  Target was attained as free primary education in January 2003.
- Secondary Education
  The paper stresses access, quality, relevance and management in this sector. The measures to be taken to improve these issues are more support for bursary, more construction of day schools, strengthening of English, Mathematics and Sciences, strengthening of inspectorate, revision of Education Act, and enhancement of private schools, rehabilitation and expansion of existing schools.
- Pre-Primary Education
  Within this plan period, 50 % of children between 0 and 6 years old will be targeted to enrol pre-Primary Education. In order to achieve the target, strengthened partnership among stakeholders in community, strengthening of management, increased access for handicapped children, better care of children below 3 years old, and formulation of guideline for Pre-Primary Education facilities will be enhanced.

D) Poverty Reduction Strategy Paper (PRSP) for the Period 2000 - 2003

According to PRSP the GOK prioritises the following areas in order; agriculture and rural development, human resources development (education and health), infrastructure (roads, transport, energy etc.), industries (tourism, trade and industry), and public orders and administration.

2-4. Education sector development initiatives: Projects undertaken by the GOK, Donors, and NGOs etc.

a) Kenya

- DFID
  - PRISM-Primary School Management Project (INSET for head teachers in all districts using Teacher Advisory Centres)
  - SPRED (School based INSET in all districts for English, Maths and Science teachers)
- DANIDA
  From 1997 to 2000, support for distribution of textbook for Primary education was implemented.
- World Bank
  - STEPS (World Bank) never taken off
- GTZ
  Currently there is no active support in education sector.
- UNICEF
  - Early Childhood education, HIV/AIDS education, Girls education, Non-formal education
  - On introduction of FPE, distribution of teaching materials was implemented.
- CIDA
  Currently there is no active support in education sector.
- WHP
  Food support program has been implemented in ASAL area.
- JICA
  - SMASSE project
  - Dispatch of JOCV in Mathematics and Science Education at Secondary school level

b) In Region

FAWE /FEMSA (NGO) conducts support for Mathematics and Science education for girls in some countries including Namibia.

Primary education and Girls education are emphasised in terms of donor support.

3. Challenges Existing In Secondary Education Sub-Sector

The following statistics provided by the Kenya National Examination Council (KNEC) for 2000 and 2001 in Mathematics, Physics, Biology and Chemistry would attest to this assertion that year in year out the results of Mathematics and Science have been poor.

K.S.C.E Percentages of candidates in Grade Categories

i) Mathematics, Paper 121

Year	A	A-	D	D-	E	Entry
2000	2,259	1,495	25,416	39,974	71,592	178,608
2001	3,252	2,098	28,407	40,914	75,421	192,589

Percentage of candidates in grades A, A-, D, D- and E

Grade categories	Year	
	2000	2001
A	1.26	1.68
A-	0.83	1.08
D	14.23	13.19
D-	22.38	21.24
E	40.08	39.16

ii) Chemistry, Paper 233

Year	A	A-	D	D-	E	Entry
2000	2,430	2,085	33,877	25,515	3,113	112,851
2001	1,799	1,639	49,805	61,753	11,314	180,372

Percentage of candidates in grades A, A-, D, D- and E

Grade categories	Year	
	2000	2001
A	2.15	0.99
A-	1.84	0.90
D	30.04	27.63
D-	22.62	34.26
E	2.76	6.27

iii) Biology, Paper 231

Year	A	A-	D	D-	E	Entry
2000	795	1,705	26,359	13,442	2,413	107,100
2001	4,101	4,489	39,340	24,926	6,911	175,975

Percentage of candidates in grades A, A-, D, D- and E

Grade categories	Year	
	2000	2001
A	0.74	2.33
A-	1.59	2.55
D	24.61	22.35
D-	12.45	14.16
E	2.25	3.92

iv) Physics, Paper 232

Year	A	A-	D	D-	E	Entry
2000	960	671	7,980	6,190	2,358	39,258
2001	808	727	12,493	12,530	4,928	54,509

Percentage of candidates in grades A, A-, D, D- and E

Grade categories	Year	
	2000	2001
A	2.44	1.48
A-	1.71	1.33
D	20.28	22.93
D-	15.79	23.00
E	6.01	9.04

Similar situation is reported in other African countries during SMASSE-WACSA conferences and technical exchange visits. The reasons for the poor performance could be attributed to the following area in the secondary education sub-sector.

Curriculum

The secondary school curricular in African region is very diverse and the number of examinable subjects are many. It is overloaded especially in Mathematics and Science.

Poor content mastery by the teachers, which negatively affect the process of teaching and learning. Some of the curriculum in secondary schools contains content that fails to address local application.

Teaching methods

In many African countries, the teaching methods used are poor since they lack in many areas such as student-centredness, lack in students activities, experiments and improvisation. "Chalk and Talk" method is practiced in many of the African countries.

Most of the African countries reported that the teaching was examination oriented and rote learning more than practiced in most schools.

Little or no attention is paid to gender issues, individual differences, teaching methods, evaluation or classroom management in most countries.

Except for some few countries where enough qualified teachers are available most countries do with unqualified and under-qualified teachers who not only apply wrong teaching methods but at times lack content mastery.

Teaching/learning materials

In Africa, it was reported that teaching/learning resources are inadequate and at times not available. Many countries had the same problems with textbooks, laboratories and equipments/ chemicals. However, the problem is that there is no experiment / practice due to teachers' negative attitudes although materials are available.

Teachers

The common problems facing Kenya and the rest of regional countries are lack of qualified teachers especially in Mathematics and Science. The issue of very few Mathematics and Science female teachers is common in all the countries. Negative attitude towards Mathematics and Science by teachers eventually gets the same into the learners.

Learners
Students dislike some subjects especially Mathematics and Sciences. Some display negative attitude in learning and attending school. Poverty and family misunderstanding affect the teaching and learning in many of the countries.

Administration
The administrative processes of provision and maintenance of physical facilities, curriculum instruction, student and staff development and financial management are poor.

4. Strategy of the Project

The issues stated in Chapter 3 are categorised into quality and/or management of education in connection with teachers directly or indirectly. Particularly, teaching methods should be a decisive factor in improvement of quality of education.

In order to provide solutions to those problems, servicing teachers should be targeted and strengthened in Kenya since teachers are enough in number. Therefore, the Project will promote establishment of sustainable system for In-service education /training for the purpose of improvement of teaching methods and change of teacher's attitude in the class. Impact and effectiveness of ASEI/PDSI approach which was introduced through INSET has been proved in Phase I. Phase II can be expected to give larger impact by covering whole nation.

In African region, a regional network for sharing information and experiences among the region was formed during Phase I. Since it seems difficult to establish similar training systems in other African countries in a short period as Kenya did, it is much efficient that Kenya's experience should be shared and utilised through this network by conducting training for personnel of African countries in Kenya and technical exchange visits in order to promote ASEI/PDSI approach. Not a few countries face lack of teachers so that support for Pre-service education will also be targeted when necessity arises. These are in line with direction of strengthening cooperation within African region, which was expressed in TICAD etc.

5. Basic Design of the Project

5-1. Project purpose

a) Kenya
Quality of Mathematics and Science education at secondary level is strengthened in Kenya through In-Service Training (INSET) of teachers

b) SMASSE-WECSA
ASEI/PDSI lessons are practiced in teacher training institutions and secondary schools in member countries.

5-2. Overall goal

a) Kenya
Capability of young Kenyans in Mathematics and Science is upgraded.

b) SMASSE-WECSA
Quality of Mathematics and Science Education at secondary level in member countries is strengthened.

5-3. Output and Activity

a) Kenya

1. A system of training for the District trainers in Mathematics and Sciences will be strengthened at National INSET Centre.

1-1 To investigate, analyse and evaluate the present situation, problems and needs of Mathematics and Science education at secondary level in the Districts.
1-2 To enhance the ability of counterparts in implementation of the Project.
1-3 To teach demonstration lessons in selected secondary schools.
1-4 To review and develop curricula for INSET on the Mathematics and Science.
1-5 To develop training materials for the INSET on the Mathematics and Science.
1-6 To select District Trainers.
1-7 To train key trainers for the Districts at National INSET Centre.
1-8 To carry out monitoring and evaluation of the INSET.
1-9 To carry out follow-up activities to supplement INSET.
1-10 To develop model ASEI lesson plans and other teaching materials which are applicable to local situations in the Districts.

2. A system of INSET in Mathematics and Science will be established in the Districts.

2-1 To select schools for INSET centres in the Districts.
2-2 To improve teaching and learning facilities in Mathematics and Sciences at the Districts INSET Centres.
2-3 To facilitate implementation of the INSET at the Districts INSET Centres.
2-4 To organize INSET system management workshops for relevant officials of MOEST and school managers in the Districts.

3. Role of SMASSE National INSET Centre and District INSET Centres as resource centres will be strengthened.

3-1 To publish the Project Newsletter etc. and disseminate relevant information.
3-2 To promote and implement Mathematics and Science activities when need arises.
3-3 To establish the mechanism to exchange information on subject matters among secondary school teachers when need arises.

b) SMASSE-WECSA

1. Trainers for ASEI/PDSI based INSET will be produced in member countries.

1-1. To investigate, analyse and evaluate the present situation, problems and needs of INSET systems in member countries.

1-2. To develop curricula for INSET (regional training in Kenya).

1-3. To develop training materials for regional training.

1-4. To organise regional training.

1-5. To develop monitoring and evaluation instruments adaptable for regional training.

1-6. To conduct monitoring and evaluation on the impact of regional training.

1-7. To assist to develop INSET curricula for Mathematics and Science in member countries.

1-8. To assist to develop of monitoring and evaluation tools for project activities.

2. SMASSE National INSET Centre will be consolidated as resource centre for Mathematics and Science in Africa.

2-1. To publish newsletter and other publications for disseminating information.

2-2. To conduct technical exchange with member countries.

2-3. To hold joint workshops with member countries.

2-4. To assist to construct sustainable INSET systems in member countries.

3. SMASSE National INSET Centre will function as secretariat of SMASSE-WECSA.

3-1. To organize SMASSE-WECSA meetings.

3-2. To sensitise education Ministries from member countries on ASEI and PDSI approaches to teaching/learning of Mathematics and Science.

3-3. To promote coordinating activities with other donor agencies.

5-4. Input

Japanese side:

- Dispatch of long-term experts.
- Dispatch of short-term experts when necessary.
- Training of Kenyan counterpart personnel in Japan and/or the third countries.
- Provision of equipment.
- Expenses necessary for the implementation of the Project.
- Training of SMASSE-WECSA Counterpart personnel in Kenya.

Kenya side:

- Buildings, Offices and other facilities necessary for the project.
- Assignment of Kenyan full-time counterpart personnel at National INSET Centre.
- Assignment of administrative personnel.
- Expenses necessary for the implementation of the Project.
- Expenses for Mathematics and Science teachers to attend INSET at National INSET Centre and in the Districts.

5-5. Important assumptions

a) Kenya

- Teachers continue to practice ASEI/PDSI
- Other programs do not adversely affect teachers' participation
- Assistance of MOEST will continue.
- The counterparts at National INSET Centre and key trainers in the Districts will continue to work
- is highly in conformity with social needs of Kenyan society. It also concurs with JICA Policy on development assistance to Kenya.

b) SMASSE-WECSA

- Policy frameworks in member countries are supportive of Mathematics and Science Education.
- Teacher training and INST based on ASEI/PDSI continue.
- Training for enhancing ASEI/PDSI lesson continues in member countries.
- Support and understanding are obtained from member countries to SMASSE-WECSA activities sustain

5-6. Administration

a) Kenya (National)
Joint Coordinating Committee (JCC) chaired by the Permanent Secretary of MOEST, and consisted of members from Kenyan and Japanese will take the highest authority and responsibility for the Project implementation. Under the JCC, National Working Committee (NWC) which is playing a role of Board of Directors/Governors at the SMASSE National Centre will be placed. SMASSE District Planning Committee (DPC) chaired by District Education Officer (DEO) will be established for SMASSE INSET implementation at districts.

b) SMASSE-WECSA (Regional)
As for SMASSE-WECSA activities, the Secretariat which has been attached in SMASSE National Centre will be placed under JCC and NWC during the Project period. The Secretariat currently consists of 4 Kenyans and Japanese Chief Advisor.

5-7. Pre-conditions and commitments

A) Pre-conditions

a) Kenya (National)
Teacher's union dose not oppose the Project.

b) SMASSE-WECSA (Regional)
Member countries have or will have plans of developing Mathematics and Science Education at secondary level.

B) Commitments

The Government of Kenya will ensure enough budget and appropriate facilities for project activities.

6. Feasibility of the Project

6-1. Relevance

a) Kenya (National)

Various national development policy papers issued by the GOK such as 8th National Development Plan, Education Master Plan, PRSP etc. emphasise the importance of Mathematics and Science Education in order to achieve industrialisation in Kenya. Accordingly GOK is now prepared to go into financial commitment for implementation to strengthening Mathematics and Science Education. The phase II Project is highly in conformity with social needs of Kenyan society. It also concurs with Japan / JICA Country Strategy on development assistance to Kenya.

b) SMASSE-WECSA (Regional)

Performance of Mathematics and Science Education in Sub-Saharan African countries is similarly poor to that of Kenya. It has been confirmed through regional conferences held in 2001 and 2002 that improvement in Mathematics and Science Education is urgently needed in SMASSE-WECSA member countries. Japanese Government policy expressed in TICAD II and WSSD is also putting emphasis on capacity development in Africa through regional collaboration by forming a strong network such as SMASSE-WECSA in the region.

6-2. Effectiveness

a) Kenya (National)

INSET systems constructed during Phase I Project have been recognised as sustainable systems for the future development leading to achieve overall goal. Such systems will play continuously as INSET centres. Hence, in this Phase II Project, sustainable INSET systems will be constructed throughout Kenya. As results of using such systems effectively, the overall goal of the Project will be achieved.

b) SMASSE-WECSA (Regional)

The Project will focus on collaborative works with member countries who accept and are eager to promote ASEI/PDSI approach more readily. Hence, the goal of the Project would be likely achieved.

6-3. Efficiency

a) Kenya (National)

During the Phase I Project, number of beneficiary has exceeded to the expected number. Since the operation of the Phase II Project is based on the similar approaches and methodology to those in the Phase I, it will be quite possible to achieve to produce over 900 district trainers and offer INSETs to over 12,000 teachers in 5 years.

b) SMASSE-WECSA (Regional)

The Phase II Project is expected to directly offer ASEI based INSET to 150 mathematics and science educators from SMASSE-WECSA member countries.

6-4. Impact

a) Kenya (National)

During Phase I Project, the following two impacts were confirmed.

- Attitude of mathematics and science teachers toward teaching has been changed positively
- Interests of students in mathematics and science have been enhanced.

Phase II Project can, therefore, be expected to give larger positive impacts on Mathematics and Science Education in Kenya through positive changes of attitude of teachers and students than Phase I Project.

b) SMASSE-WECSA (Regional)

The project aims to disseminate the experience and impacts of SMASSE Project to SMASSE-WECSA member countries. Hence, similar impacts obtained by the SMASSE Project will be expected in member countries.

6-5. Sustainability

a) Kenya (National)

The Phase I Project proved that INSET centres created at National and Districts level are sustained and fully utilised for INSETs. As far as financial issues are concerned, both GOK and Districts contributed annually 3.5 million Kenya Shillings and 10 million Kenya Shillings respectively to INSET activities. The financial contribution from GOK and Districts will be expected to continue with larger amount as agreed in the official documents for the Phase II Project.

b) SMASSE-WECSA (Regional)

At this moment it is difficult to foresee the sustainability of SMASSE-WECSA Programme. However, it seems that there will be possibility to gain sustainability of SMASSE-WECSA activities through continued sensitisation of member countries particularly in those countries which will join regional training in Kenya. Among member countries of SMASSE-WECSA four countries have already paid 300 US dollars as Registration fee and 100 US dollars as annual subscription fee.

6-6. Conclusion of feasibility

The Project is considered to be quite relevant and feasible in terms of attaining overall goal and expanding positive impact in Kenya and the region, based on the evaluation results in above 5 categories for Phase I. With regard to Sustainability, regularisation and institutionalization of INSET in Kenya as national policy are expected with strong commitment of GOK. Regional collaboration through SMASSE-WECSA activities also meets Japanese policy. In conclusion, the overall relevance of the Project implementation is very high.

7. Appendix

Appendix 1-(1) PROJECT DESIGN MATRIX 1 (Kenya)

Project Title: Strengthening of Mathematics and Science in Secondary Education (SMASSE) in Kenya Phase II
Executing Bodies: Ministry of Education, Science and Technology (MOEST) and Japan International Cooperation Agency (JICA)
Duration: 5 years from 1st July, 2003 to 30th June, 2008

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumptions
(Overall goal) Capability of young Kenyans in Mathematics and Science is upgraded.	Performance in National examinations at secondary level in the District.	Kenya National Examinations Council	
(Project Purpose) Quality of Mathematics and Science education at secondary level is strengthened in Kenya through In-Service Training (INSET) of teachers.	By the end of the project, the lesson innovation index will obtain more than 50% improvement through the administration of the instruments formulated by the project's Monitoring and Evaluation Task Force	SMASSE Project Monitoring and Evaluation reports.	Teachers continue to practice ASEI/PDSI
(Output) 1. A system of training for the District trainers in Mathematics and Sciences will be strengthened at National INSET Centre.	1(a) By the end of the project, over 61 Kenyan Academic Staff and over 12 Administrative Personnel at National INSET Centre work for the project. 1(b) By the end of the project, INSET at National INSET Centre is carried out 4 times and trains over 900 district trainers. 1(c) By the end of the project, INSET at National INSET Centre obtain mean of over 3 on the scale of 0 to 4 in the Quality of INSET Assessment Index through the instruments administered by the project's Monitoring and Evaluation Task Force. 1(d) By the end of the project, over 14 titles of materials are prepared and more than target number of copies are printed and circulated to people engaged in education	1. SMASSE Project Monitoring and Evaluation reports.	1. Other programs do not adversely affect teachers' participation
2. A system of INSET in Mathematics and Science will be established in the Districts.	2(a) Every year, over 900 District Trainers and over 200 administrative staff in the Districts work for the project. 2(b) By the end of the project, INSETs in the Districts are carried out four times and train over 10,000 teachers 2(c) By the end of the project, District Trainers in the Districts obtain mean of over 3 on the scale of 0 to 4 in the overall assessment of INSET Building Capacity INDEX of the Project's Monitoring and Evaluation Task Force tools. 2(d) By the end of the project, INSETs in the Districts obtain mean of over 2.5 on the scale of 0 to 4 in the Quality of INSET Assessment Index of the project's Monitoring and Evaluation Task Force tools.	2. SMASSE Project Monitoring and Evaluation reports.	2. Assistance of MOEST will continue.

3. Role of SMASSE National INSET Centre and District INSET Centres as resource centres will be strengthened.	3(a) By the end of project, National INSET Centre publishes and distributes more than 10 newsletters. 3(b) By the end of project, the Districts prepare and produce INSET-training materials at least once.	3. SMASSE Project records	
(Activities) 1-1 To investigate, analyse and evaluate the present situation, problems and needs of Mathematics and Science education at secondary level in the Districts. 1-2 To enhance the ability of counterparts in implementation of the Project. 1-3 To teach demonstration lessons in selected secondary schools. 1-4 To review and develop curricula for INSET on the Mathematics and Science. 1-5 To develop training materials for the INSET on the Mathematics and Science. 1-6 To select District Trainers. 1-7 To train key trainers for the Districts at National INSET Centre. 1-8 To carry out monitoring and evaluation of the INSET. 1-9 To carry out follow-up activities to supplement INSET. 1-10 To develop model ASEI lesson plans and other teaching materials which are applicable to local situations in the Districts. 2-1 To select schools for INSET centres in the Districts. 2-2 To improve teaching and learning facilities in Mathematics and Sciences at the District INSET Centres. 2-3 To facilitate implementation of the INSET at the Districts INSET Centres. 2-4 To organize INSET system management workshops for relevant officials of	(INPUTS) 1. Kenya side: a. Buildings, Offices and other facilities necessary for the project. b. Assignment of Kenyan full-time counterpart personnel at National INSET Centre. c. Assignment of administrative personnel. d. Expenses necessary for the implementation of the Project. e. Expenses for Mathematics and Science teachers to attend INSET at National INSET Centre and in the Districts. 2. Japanese side: a. Dispatch of long-term experts. b. Dispatch of short-term experts when necessary. c. Training of Kenyan counterpart personnel in Japan. d. Training of Kenyan counterpart personnel in the third countries. e. Provision of equipment. f. Expenses necessary for the implementation of the Project.		The counterparts at National INSET Centre and key trainers in the Districts will continue to work for the project.

MOEST and school managers in the Districts. 3-1 To publish the Project Newsletter etc. and disseminate relevant information. 3-2 To promote and implement Mathematics and Science activities when need arises. 3-3 To establish the mechanism to exchange information on subject matters among secondary school teachers when need arises.			**Preconditions:** Teachers' union does not oppose the project.

Appendix 1-(2) PROJECT DESIGN MATRIX 2 (SMASSE-WECSA)

Project Title: Strengthening of Mathematics and Science in Secondary Education (SMASSE) in Kenya (Phase II): SMASSE-WCSA

Executing Bodies: Ministry of Education, Science and Technology (MOEST) and Japan International Cooperation Agency (JICA)

Duration: 5 years from 1st July, 2003 to 30th June, 2008

Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumptions
(Overall goal) Quality of Mathematics and Science Education at secondary level in member countries is strengthened.	Practice of ASEI lessons by mathematics and science teachers in member countries.	Country Reports.	Policy frameworks in member countries are supportive of Mathematics and Science Education.
(Project Purpose) ASEI/PDSI lessons are practiced in teacher training institutions and secondary schools in member countries.	By the end of the project period, ability of educators from member countries to practice ASEI/PDSI methods of teaching improves.	SMASSE Project Monitoring and Evaluation Reports.	Teacher training and INSET based on ASEI/PDSI continue.
(Output) 1. Trainers for ASEI/PDSI based INSET will be produced in member countries.	1. By the end of project period, 1(a) INSET at the SMASSE INSET Centre is carried out 5 times 1(b) At least 150 participants attend the INSET at the SMASSE INSET Centre 1(c) At least 40 sets of training materials are produced. 1(d) Monitoring and Evaluation tools applicable to member countries are developed and practiced.	1(a), (b) & (c) Records at the SMASSE INSET Centre. 1(d) SMASSE Project Monitoring and Evaluation Reports.	Training for enhancing ASEI/PDSI lesson continues in member countries.
2. SMASSE National INSET Centre will be consolidated as resource centre for Mathematics and Science in Africa.	2. By the end of the project period, 2(a) ASEI/PDSI prototype lesson plans are developed by the participants from member countries. 2(b) At least 10 newsletters are published.	2 INSET Reports and Country Reports.	
3. SMASSE National INSET Centre will function as secretariat of SMASSE-WECSA.	3. By the end of the project period, 3(a) Regional conferences are held at least 4 times. 3(b) At least 6 Kenyan Academic Staff at National INSET Centre work for the SMASSE WECSA secretariat. 3(c) At least 14 African counties participate in SMASSE WECSA.	3(a), (b) & (c) Records at the SMASSE INSET Centre.	

(Activities) 1-1. To investigate, analyse and evaluate the present situation, problems and needs of INSET systems in member countries. 1-2. To develop curricula for INSET (regional training in Kenya). 1-3. To develop training materials for regional training. 1-4. To organise regional training. 1-5. To develop monitoring and evaluation instruments adaptable for regional training 1-6. To conduct monitoring and evaluation on the impact of regional training. 1-7. To assist to develop INSET curricula for Mathematics and Science in member countries. 1-8. To assist to develop of monitoring and evaluation tools for project activities. 2-1. To publish newsletters and other publications for disseminating information. 2-2 To conduct technical exchange with member countries. 2-3 To hold joint workshops with member countries. 2-4 To assist to construct sustainable INSET systems in member countries. 3-1 To organize SMASSE-WECSA meetings. 3-2 To sensitise education Ministries from member countries on ASEI and PDSI approaches to teaching/learning of Mathematics and Science. 3-3 To promote coordinating activities with other donor agencies.	(Input) 1. Kenya side: a Buildings, Offices and other facilities necessary for the project. b Assignment of Kenyan full-time counterpart personnel at the SMASSE National INSET Centre. c Assignment of support personnel at the SMASSE National INSET Centre. 2. Japanese side: a Training of SMASSE-WECSA Counterpart personnel in Kenya. b Attachment of long-term Japanese experts. c Provision of equipment. d Expenses necessary for the implementation of the Project.		Support and understanding are obtained from member countries to SMASSE-WECSA activities sustain. **Pre-condition** Member countries have or will have plans of developing Mathematics and Science Education at secondary level.

Appendix- 2(1)

Plan of Operation for the Whole Period 1 (Kenya)

Name: Strengthening of Mathematics and Science in Secondary Education Project, Phase II

Project Purpose: Quality of Mathematics and Science education at secondary level is strengthened in Kenya through In-Service Training (INSET) of teachers.

Output	Activities	Target	2003				2004				2005				2006				2007				2008				Responsible Person in Project Team	Actual input
			I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV		
1. A system of training for the District trainers in Mathematics and Science will be strengthened at National INSET Centre.	1) To investigate, analyse and evaluate the present situation, problems and needs of Mathematics and Science education at secondary level in the Districts.	More than 1 reports are published and distributed. However, this is a continuous process.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―					Head of National INSET Centre	
	2) To enhance the ability of counterparts in implementation of the Project	Each academic department produces more than 1 reports. However, this is a continuous process.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―					Head of National INSET Centre	
	3) To teach demonstration lessons in selected secondary schools.	National INSET Centre obtain mean of over 3 on the scale of 0 to 4 in the Quality of INSET Assessment Index.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―					Head of National INSET Centre	
	4) To review and develop curricula for INSET on the Mathematics and Science.	Each academic department produces syllabi / curricula for INSET.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―					Head of National INSET Centre	
	5) To develop training materials for the INSET on the Mathematics and Science.	150 sets of INSET materials are produced for each subject.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―					Head of National INSET Centre	
	6) To select District Trainers.	Over 900 District Trainers are selected.	―																								Head of National INSET Centre	
	7) To train key trainers for the Districts at National INSET Centre.	National INSETs are conducted at least once a year.		―	―			―	―			―	―			―	―			―	―			―			Head of National INSET Centre	
	8) To carry out monitoring and evaluation of the INSET.	Comprehensive INSET monitoring and evaluation report is published once a year.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―					Head of National INSET Centre	
	9) To carry out follow-up activities to supplement INSET.	After 3 cycles of INSET, this will be considered.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―					Head of National INSET Centre	
	10) To develop model ASEI lesson plans and other teaching materials which are applicable to local situations in the Districts.	After 3 cycles of INSET, useful teaching know how for teachers will be compiled and published.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―					Head of National INSET Centre	
2. A system of INSET in Mathematics and Science will be established in the Districts.	1) To select schools for INSET Centres in the Districts.	Over 900 trainees and over 50 District INSET Centres are selected.	―																								Head of National INSET Centre	
	2) To improve teaching and learning facilities in Mathematics and Science at the Districts INSET Centres.	Over 50 district INSET Centres are equipped to function as INSET Centre as well as resource centre.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―					Head of National INSET Centre	
	3) To facilitate implementation of the INSET at the Districts INSET Centres.	District INSETs are implemented at least once a year.		―	―			―	―			―	―			―	―			―	―			―			Head of National INSET Centre	
	4) To organize INSET system management workshops for relevant officials of MOEST and school managers in the Districts.	More than one educational management course are conducted.		―				―				―				―				―							Head of National INSET Centre	
3. Role of SMASSE National INSET Centre and District INSET centres as resource centres will be strengthened.	1) To publish the Project Newsletter etc. and disseminate relevant information.	More than 10 newsletters are published and distributed.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―					Head of National INSET Centre	
	2) To promote and implement Mathematics and Science activities when need arises.	On needs basis. For example, SMASSE staff acted as judge of science congress at various levels.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―					Head of National INSET Centre	
	3) To establish the mechanism to exchange information on subject matters among secondary school teachers when need arises.	On needs basis. In collaboration with JOCV their activities will be assisted by the project.	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―	―					Head of National INSET Centre	

Appendix- 2 (2)

Plan of Operation for the Whole Period 2 (SMASSE-WECSA)

Name: Strengthening of Mathematics and Science in Secondary Education Project, Phase II

Project Purpose: ASEI/PDSI lessons are practiced in teacher training institutions and secondary schools in member countries.

Output	Activities	Target	2003 I II III IV	2004 I II III IV	2005 I II III IV	2006 I II III IV	2007 I II III IV	2008 I II III IV	Responsible Person in Project Team	Actual input
1. Trainers for ASEI/PDSI based INSET will be produced in member countries.	1) To investigate, analyse and evaluate the present situation, problems and needs of INSET systems in member countries.	Comprehensive reports is published.	———	———	———	———	———		Head of National INSET Centre	
	2) To develop curricula for INSET (regional training in Kenya).	Each academic department produces syllabi / curricula for INSET.	———	———	———	———	———		Head of National INSET Centre	
	3)To develop training materials for regional training.	At least 40 sets of INSET materials are produced for each subject.	—	—	—	—	—		Head of National INSET Centre	
	4)To organise regional training.	Regional trainings are conducted at least once a year, and at least 150 trainers attend.	———	———	———	———	———		Head of National INSET Centre	
	5) To develop monitoring and evaluation instruments adaptable for regional training.	Comprehensive INSET monitoring and evaluation report is published once a year.	———	———	———	———	———		Head of National INSET Centre	
	6) To conduct monitoring and evaluation on the impact of regional training.	Comprehensive reports is published.	———	———	———	———	———		Head of National INSET Centre	
	7) To assist to develop INSET curricula for Mathematics and Science in member countries	Comprehensive reports is published.	———	———	———	———	———		Head of National INSET Centre	
	8) To assist to develop of monitoring and evaluation tools for project activities.	Comprehensive report is published.	———	———	———	———	———		Head of National INSET Centre	
2. SMASSE National INSET Centre will be consolidated as resource centre for Mathematics and Science in Africa.	1) To publish newsletters and other publications for disseminating information.	More than 10 newsletters are published and distributed.	———	———	———	———	———		Head of National INSET Centre	
	2) To conduct technical exchange with member countries.	Comprehensive report is published.	—	—	—	—	—		Head of National INSET Centre	
	3) To hold joint workshops with member countries.	Workshop is organised at least once a year.	—	—	—	—	—		Head of National INSET Centre	
	4) To assist to construct sustainable INSET systems in member countries.	Comprehensive report is published.	———	———	———	———	———		Head of National INSET Centre	
3. SMASSE National INSET Centre will function as secretariat of SMASSE-WECSA.	1) To organise SMASSE-WECSA meetings.	Meeting is organised at least once a year.	—	—	—	—	—		Head of National INSET Centre	
	2) To sensitise education Ministries from member countries on ASEI and PDSI approaches to teaching/learning of Mathematics and Science.	Member countires' commitment is assessed.	———	———	———	———	———		Head of National INSET Centre	
	3) To promote coordination activites with other donor agencies.	Exchange of information is reported.	———	———	———	———	———		Head of National INSET Centre	

Appendix- 3

TENTATIVE SCHEDULE OF IMPLEMENTATION

PROJECT TITLE : Strengthening of Mathematics and Science in Secondary Education Project, Phase II

YEAR (JFY)	IMPLEMENTATION																							
	2003				2004				2005				2006				2007				2008			
I. PROJECT DURATION	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
II. INPUTS BY THE KENYAN SIDE																								
1. ASSIGNMENT OF COUNTERPART PERSONNEL		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
2. ASSIGNMENT OF ADMINISTRATIVE PERSONNEL		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
3. BUILDINGS & FACILITIES		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
4. ALLOCATION OF BUDGET		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
III. INPUTS BY THE JAPANESE SIDE																								
1. LONG-TERM EXPERTS		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
2. SHORT-TERM EXPERTS		—				—				—				—				—						
3. PROVISION OF EQUIPMENT		—	—	—		—	—	—		—	—	—		—	—	—		—	—	—				
4. TRAINING OF KENYAN COUNTERPART PERSONNEL IN JAPAN		—	—			—	—			—	—			—	—			—	—					
5. TRAINING OF KENYAN COUNTERPART PERSONNEL IN THE THIRD COUNTRY				—				—				—				—				—				
6. EVALUATION STUDY TEAM											—								—					
IV. IN-SERVICE TRAINING (INSET)																								
1. NATIONAL INSET					—	—			—	—			—	—			—	—			—			
2. DISTRICT INSET					—	—			—	—			—	—			—	—			—			
V. REGIONAL ACTIVITIES																								
1. THE THIRD COUNTRY TRAINING IN KENYA				—				—				—				—				—				
2. REGIONAL CONFERENCE		—				—				—				—				—						
IV. JOINT COORDINATING COMMITTEE			—				—					—			—				—					

Appendix - 4

Terms of Reference of Japanese Experts

1. Chief Advisor

The role of the Chief Advisor includes the following responsibilities:

- to provide necessary advice and recommendations to the Project Director (Permanent Secretary, MOEST), the National Project Coordinator (Chief Inspector of schools,) and the Project Technical Manager (Head of National INSET Centre) on any matters pertaining to the implementation of the project
- to oversee the planning, coordination and implementation of the activities of the project
- to liase with the Japanese Embassy-JICA, MOEST, Treasury, KSTC and the INSET Centre to ensure the smooth implementation of the SMASSE Project activities

2. Project Coordinator

The role of JICA coordinator include the following responsibilities:

- To coordinate of Japanese non-academic activities
- To take care of provision of equipment and materials from JICA
- To be in charge of any other duties assigned by the Chief Advisor

3. Long-term Experts

Their main duties may include:

- to work with Kenyan SMASSE personnel in Planning, coordinating and implementing the activities of the Project
- to provide technical guidance in matters pertaining to project implementation
- to facilitate INSET sessions
- to monitor and evaluating activities of INSET

Appendix - 5 Terms of Reference of Kenyan Counterparts

1. Head of the SMASSE National INSET Centre

Major duty is the general administration of INSET activities at all levels, which include the following responsibilities: -

- to link the INSET Unit with KSTC, TSC, JICA, MOEST, Pilot Districts, Regional Association member countries and other stakeholders
- to be Secretary to the SMASSE National Working Committee
- to implement decisions of National Working Committee
- to coordinate activities of INSET Centre Subject Administrators
- to formulate project policy guidelines and activities for Project implementation
- to prepare and provide Project updates to all visitors
- to approve leave of absence for INSET Centre personnel
- to be custodian of INSET facilities and materials
- to prepare, implement and control INSET Centre budget
- to coordinate and attend the start of the year District Planning Committee meetings in SMASSE districts (and any other if need arises)
- to coordinate and approve SMASSE District INSET budgets and Programmes
- to chair the National INSET Centre Planning Committee meetings
- to chair the National INSET Centre Procurement Committee meetings
- to chair the INSET Unit staff meetings
- to coordinate Monitoring and Evaluation Task Force activities
- to select and recruit National, District and Cluster Trainers
- to prepare and verify certificates issued to INSET participants at all level
- to coordinate formulation and execution of subject policies at all levels
- to carrying out duties of a National Trainer

2. Deputy Head of National INSET Centre

The duties of the deputies will include among others assigned by the Head of National INSET Centre:

2.1 Deputy Head of INSET Unit (National INSET and Regional Administration)

- Personnel management of national staff.
- Quality control of national INSET system (facilities, materials, National INSET)
- Coordination of national programs
- Planning, coordination and implementation of stakeholders workshops.
- INSET Curriculum development
- Coordination of third country training programs in Kenya.

2.2 Deputy Head of National INSET Centre (District INSET administration)

- Coordination of District Planning Committee (DPC) meetings.
- Planning, coordination and implementation of District INSETs.
- Coordinate quality control of District INSETS
- Member of monitoring and evaluation task force.
- Coordinating the selection of District trainers

3. Subject Administrators

The major duty is administration of subject department, which include the following responsibilities: -

- to plan, organise and coordinate the subject INSET activities at all levels of INSET
- to formulate and execute subject policy at all levels
- to procure and maintain records of equipment and materials in the subject department
- to Coordinate and conduct the monitoring and evaluation of activities in the subject
- to chair meetings of National INSET subject department
- to be member of the National INSET Centre Planning Committee
- to be member of the INSET Centre Procurement Committee
- to be member of the INSET Centre recruitment panel
- to Approve leave for members of the department (less than one day)
- to induct new personnel (both Kenyan and Japanese) in the subject
- to promote the subject at all levels (National, District and Cluster)
- to be in charge of either Gender issues, Publication, Research and Development or INSET Administration
- to assign duties to National Trainers in the subject
- to carry out duties of a National Trainer in the subject
- to be in charge of any other duties assigned by the Head of National INSET Centre

4. Academic heads

The major duty is academic matters of the department, which include the following responsibilities: -

- to coordinate development, trial out and production of departmental In-Service training materials
- to coordinate preparation and production of departmental In-Service Training programme
- to coordinate activities for designing/improving INSET curriculum
- to advise on academic matters in the department
- to coordinate requisition of materials for the Department INSET
- to coordinate quality assurance of district In-Service Training materials
- to prepare certification lists for participants
- to coordinate development and production of improvised materials
- to coordinate preparation and production of Experiment Manuals

- to coordinate preparation and production of Experiment Manuals
- to maintain records of write ups of all presentations by department staff
- to maintaining records and inventories for the department
- to carrying duties of a National Trainer in the subject
- to be in charge of any other duties assigned by the Head of National INSET Centre or Subject Administrator of the relevant department

5. National Trainers

Major duties and responsibilities:

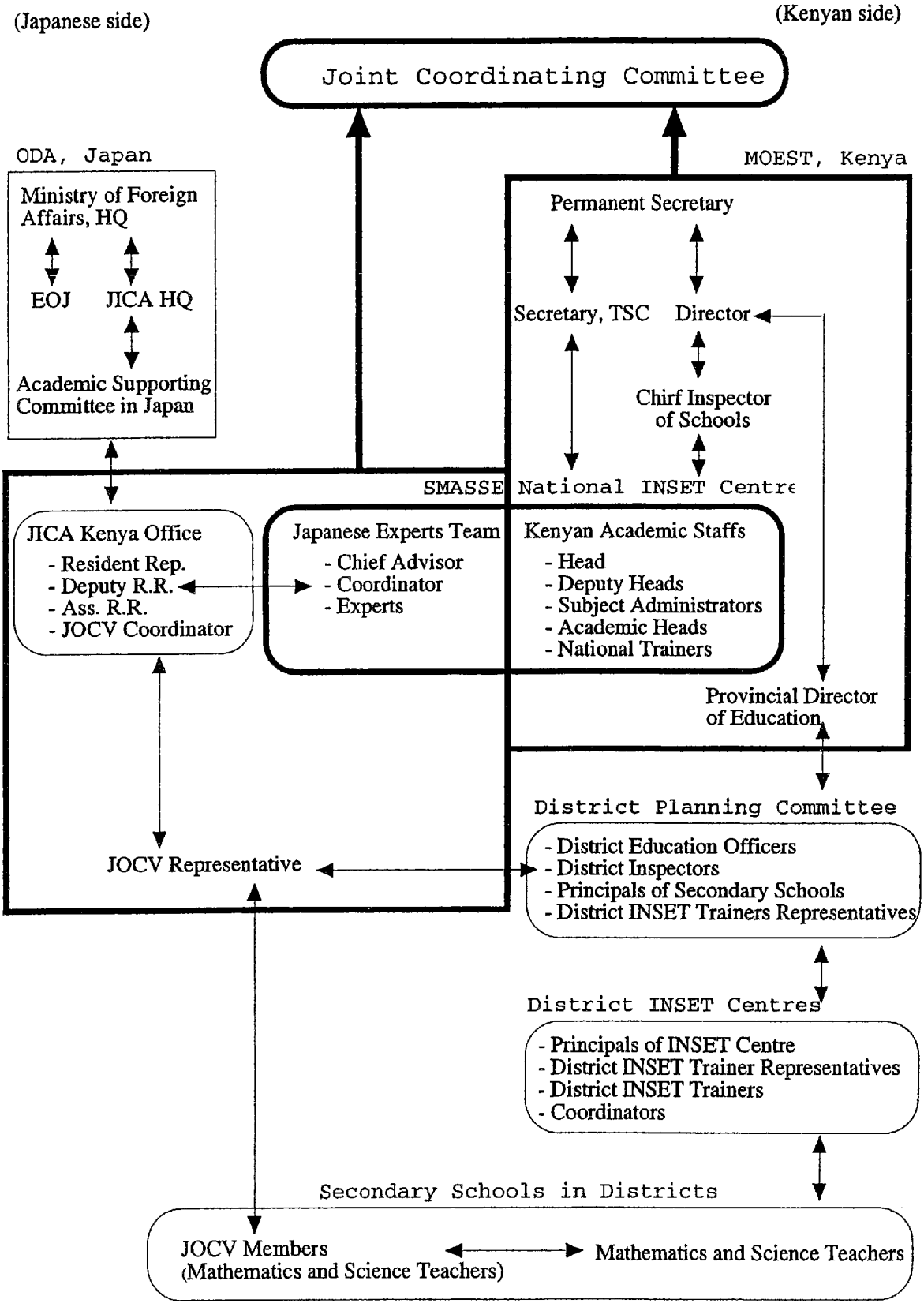
- to design/improve INSET curriculum
- to develop, try out and produce INSET materials
- to identify and requisition resources for development of training materials and for actual INSET
- to develop and produce improvised materials
- to develop and produce experimental manuals
- to prepare and implement INSET programmme
- to facilitate INSET sessions
- to carry out quality assurance on training materials/programmes from District trainers
- to monitor and evaluate INSET activities at all levels
- to write articles and news features for the newsletter
- to publish the newsletter
- to conduct research and analyse data
- to promote subject at all levels
- p to romote gender responsiveness in mathematics and science education
- to be in charge of any other duties assigned by the Head of National INSET Centre, Subject Administrator or Academic of the relevant department

Appendix - 6 List of major Equipment for the Project Period

1. Vehicles (4 WD vehicles, Station Wagon
2. Computer sets
3. Printing Machine sets
4. Photocopiers
5. Overhead Projectors
6. Video-deck, TV sets
7. Microscopes
8. Chemical Balances
9. Science Experimental apparatus
10. Mathematics and Science Reference Books
11. Cabinets for storing materials

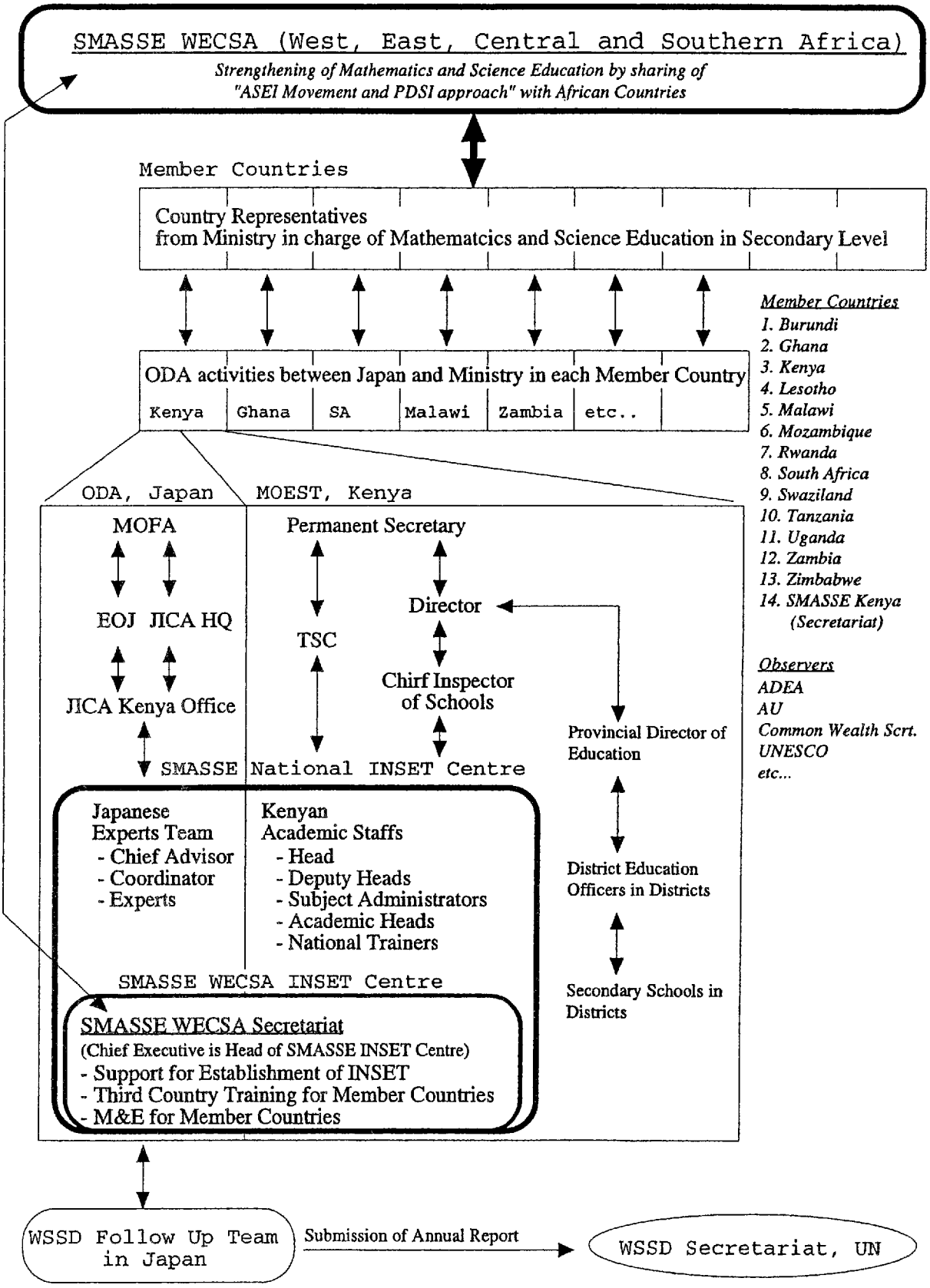
Appendix-7(1)

Design of SMASSE National Organisation and Administration



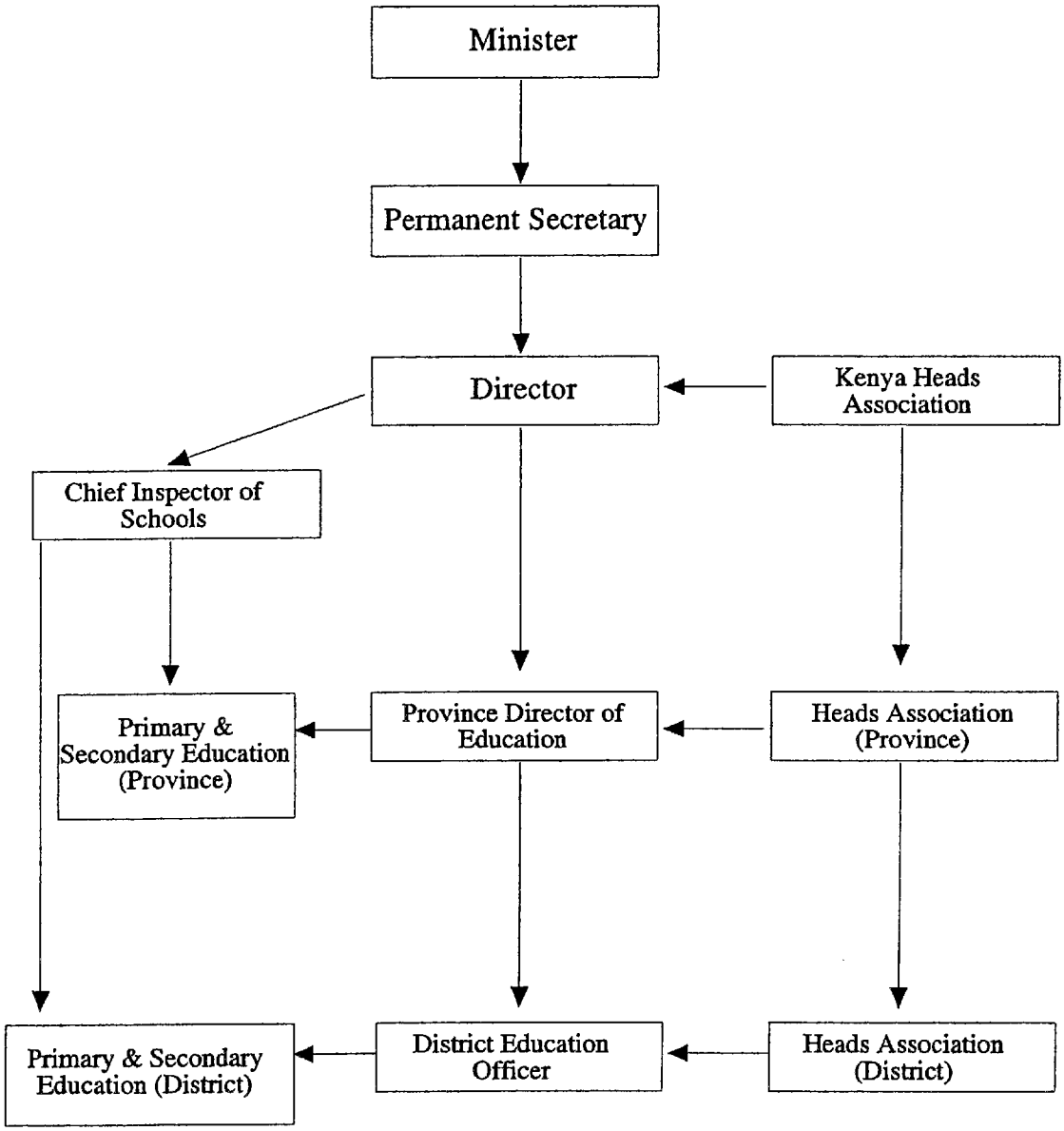
Appendix-7(2)

Design of SMASSE Regional Organisation and Administration



Appendix - 7(3)

Organisation of Ministry of Education, Science and Technology



Source: MOEST

Appendix - 8

GENERAL INFORMATION, MODE OF APPLICATION AND REQUIREMENTS

I. GENERAL INFORMATION

1. Introduction

Mathematics and Science form the basis for any technological development in any society. Kenya, aiming to become industrialized in the year 2020 has therefore put more emphases on inculcating a scientific culture in her people. It is this realization that prompted the Government of Kenya through the Ministry of Education, Science and Technology (MOEST), with the assistance of the Government of Japan through Japan International Cooperation Agency (JICA) to initiate a programme on Strengthening of Mathematics and Science in Secondary Education (SMASSE) Project in 15 pilot districts. From the baseline studies carried out by SMASSE Project, a number of issues that inhibit/limit the capability of young Kenyans in mathematics and sciences were isolated. Some of the issues are within the scope of the project while others are beyond the scope of the project. Those issues within the scope of the area are addressed in the programme of the SMASSE Project.

This new programme of Phase II for Strengthening of Mathematics and Sciences in Secondary Education is, therefore, an outcome of the SMASSE Project Phase I, and a desire of MOEST to benefit more teachers in the remaining districts.

2. Duration

The programme begins on 1st July, 2003 and ends on 30th June, 2008.

3. Participants

This course is designed for all mathematics and science teachers from 55 districts, namely Nairobi, Thika, Kirinyaga, Nyandarua, Nyeri, Meru Central, Meru North, Nathaka, Embu, Mbeere, Machakos, Kitui, Mwingi, Marsabit, Isiolo, Ijara, Wajir, Mandera, Moyale, Turkana, West Pokot, Samburu, Marakwet, Trans Nzoia, Uagin Gishu, Keiyo, Nandi, Koibatek, Kericho, Bomet, Buret, Trans Mara, Narok, Nakuru, Laikipia, Siaya, Kisumu, Nyando, Rachuonyo, Suba, Homa Bay, Nyamira, Migori, Kuria, Bondo, Mount Elgon, Bungoma, Teso, Busia, Vihiga, Lamu, Tana River, Malindi, Kwale, Mombasa Districts. The number of participants is basically 4 teachers

in one of the four subjects (mathematics, biology, physics and chemistry) from one district totaling 16 teachers from one district.

4. **Goal**

   Capacity of young Kenyans in Kenya is upgraded in Mathematics and Science Education.

5. **Project Purpose**

   Quality of Mathematics and Sciences Education at Secondary level in Kenya is strengthened through INSET.

6. **Outputs**

   a) A system of INSET for Mathematics and Science Education will be established in Kenya

   b) Capacity of mathematics and science teachers for INSET in Kenya will be strengthened.

7. **Training Programme**

   a) The outline of the training programme and schedule are shown in Annex VIIIa and VIIIc.

   b) The programme is subject to review from time to time depending on the needs of the participants.

8. **Venue of Training**

   The training will be carried out at Centre for Training and research, Karen and Kenya Science Teachers College (KSTC) in Nairobi.

9. **Certificates**

   There are INSET guidelines and regulations for all levels and a District Trainers Certificate qualifying Criterion as shown below: -

   a) The Participants who successfully complete the course with 90% participation at National and District levels will be awarded a Certificate of Participation by the Project and MOEST. Signatories for the may be distributed to reduce the burden from the current signatories.

f) SMASSE National Office will inform the successful applicants through the District Planning Committee not less than 30 days prior to commencement of the course, which is 30th November, 2003.

g) The application form is attached to this GI. (ANNEX VIIIb)

III. EXPENSES

a) The District Planning Committee will meet for each participant a single return transport expense between their stations and the National INSET Centre in Nairobi.

b) SMASSE National Office will provide accommodation and meals from supper of the previous night of commencement of the course to breakfast of the following day of closure of the course.

c) Neither the SMASSE National Office nor District Planning Committee will give allowance during the training.

d) Accommodation will be provided in the halls of residence at Centre for Training and Research, Karen or K.S.T.C.

IV. OTHER INFORMATION

1. General Facilities

a) Public telephone booths are situated at convenient points within the premises.

b) Mail services are available at the premises.

c) Meals will be served at the venues-dining halls.

d) Kiosk and canteen are operating within the venues for essential commodities.

2. General information

a) Participants are expected to strictly observe the INSET guidelines and regulations.

b) Participants are expected to strictly observe the course schedule and its regulations.

c) Requests to extend the training or period of stay will not be accepted.

d) Participants are advised not to bring any dependents.

e) Centre for Training and Research, Karen is situated Mbogani road about 20 Km from city centre while K.S.T.C is situated on Ngong Road about 8 Km from the city centre.

f) Stationery and course materials will be provided during the course.

V. CONTACT ADDRESS

For further information on the course contact

The Head, SMASSE National INSET Centre

c/o K.S.T.C.,

P. O. Box 30596, NAIROBI

Tel.: 02-573811, 573680, Fax.: 02-573811, Email: info@smasse.org

VI. GENERAL INFORMATION FOR SMASSE-WECSA THIRD-COUNTRY PARTICIPANTS

The General information, Training Programme and Application Form for Third-Country Training

will be developed when participating countries identity and training needs have been identified.

ANNEX VIIIa

TENTATIVE CURRICULUM OF THE FIRST COURSES

January-July 2004

Day	Time	Activities	Personnel	Remarks
		Arrival and registration of participants	SMASSE Personnel Karen and KSTC Hostel staff	
1	09:00 09:30 10:00 11:00	a) Guidelines for participants b) Pre-INSET evaluation c) Presentation and discussion of subject reports. d) SMASSE and ASEI movement	Head, SMASSE Project SMASSE science personnel Ditto SMASSE subject specialists.	All participants Ditto Ditto All participants (in each subject group)
	LUNCH			
	14:00-16:00	Opening ceremony (Speeches, Key note address)	Head, SMASSE Project Project Coordinator CIS Chief Guest Key note speaker	All participants
	Evening	Free		
2	09:00 11:00	a) Analysis of baseline survey b) Discussion of INSET Programme	SMASSE staff SMASSE staff	All participants All participants (in each subject group)

	LUNCH			
	14:00 15:30 14:00-17:00	a) Rationale for INSET b) Trends in the teaching and learning of science c) History of mathematics education in Kenya	SMASSE staff SMASSE science staff Resources personnel	Science participants Science participants Mathematics participants
	Evening	Free		
3	09:00-13:00 09:00-13:00	a) Teaching approaches and methods. b) Difficulties in the Mathematics classroom	SMASSE science staff SMASSE mathematics staff	Science participants Mathematics participants
	LUNCH			
	14:00-17:00	Adolescent psychology (knowledge attitude and motivation)	Consultant on Adolescent psychology	All participants
	Evening	Free		
4	09:00-1300	a) Teachers attitude b) Discussion on difficult topics	SMASSE science staff SMASSE Mathematics staff	Science participants Mathematics participants
	LUNC H			
	14:00-17:00	a) Work Planning b) Error analysis	SMASSE Science staff SMASSE Mathematics staff	Science participants Mathematics participants
	Evening	Free		

5	09:00-11:00	Work planning (PDSI approach)	SMASSE subject specialists	All participants
	11:30-13:00	Gender issues in science and mathematics education	Resources personnel	All participants
	LUNCH			
	14:00-17:00	a) Communication skills b) Kenya/Japan video on classroom practices/discussions	SMASSE science staff SMASSE mathematics staff	Science participants Maths participants
	Evening		Free	
6,7	WEEKEND (FREE)			

WEEK 2 INSET CONTENT BY SUBJECT

Day	TIME	ACTIVITIES			
		BIOLOGY	**CHEMISTRY**	**PHYSICS**	**MATHEMATICS**
8	09:00-13:00	Ecology	Classroom activities: Practical and theory sessions	Pressure	Textbook and syllabus analysis
LUNCH					
	14:00-17:00	Ecology: Field activities	Work plans and PDS Approach Pressure	Circular motion	New trends in the teaching of mathematics
	Evening		Free		

9	09:00-11.30	Ecology: Peer teaching and follow-up discussion	The mole concept a) Teaching approaches and methods. b) Working plans. c) Scientific language	Fluid flow	Socio-cultural aspects of mathematics education
	LUNCH				
	14:00-17:00	Classification: Collection and preservation of biological specimens	a) Calculations b) Making laboratory solutions.	Sound 1	Production of lesson plans on Socio-cultural aspects. Topic: Geometry
	Evening	Free			
10	09:00-13:00	Construction and use of identification keys	Electrochemistry a) teaching approaches and methods b) work plans	Sound II	Introduction of the open ended approach
	LUNCH				
	14:00-17:00	Classification: Peer teaching and follow-up discussions	c) scientific language d) calculations	Waves I	Production of lesson plans using the open-ended approach
	Evening		Free		

11	09:00-11:30	a) resources and facilities for teaching and learning biology b) cell biology: Discussion of current status and alternative strategies	Organic Chemistry a) teaching approaches and methods b) work plans	Waves II	TIMSS video/discussion Evaluation Checklist/ discussion
LUNCH					
	14:00-17:00	Preparation of material for microscopic examination	a) Scientific language b) Calculations c) Selection of experiments	Excursions: Visit to meteorological Department at Dagoretti Corner	Plan for Post-INSET activities
	Evening		Free		
12	09:00-10:30	a) Cell Biology: Peer teaching and follow-up discussion b) Brief feedback from participants c) Post-INSET evaluation d) Clearance	a) open discussion on INSET issues b) brief feedback from participants c) post-INSET evaluation d) clearance	Post-INSET evaluation	
LUNCH					

DAY	TIME	ACTIVITIES	PERSONNEL	REMARKS

12	14:00-16:00	Closing ceremony	Head, SMASSE Project	All participants
13	09:00-11:00	Clearance and Departure	SMASSE Personnel Karen and KSTC Hostel staff	All participants Hostels

ANNEX VIIIb

SAMPLE APPLICATION FORM FOR THE TRAINING PROGRAMME

PLEASE USE BLOCK LETTER TO FILL IN THIS FORM

FULL NAME (as they appear in T.S.C Record)	
T. S. C. Number	
Age	
Marital Status	
School Name, Address and Tel. No.	
District	
Subject	
How long have you been teaching as a trained professional teacher?	
Have you been involved in other professional activities like subject panel, national examiner, and science congress?	
General Health, Physical and Mentally fit (yes or no) specify.	
Signature of the applicant	

RECOMMENDATIONS BY THE D.P.C (Attach the minutes of the meeting.)

SIGNATURE .....

DATE .....

CHAIRMAN (D.P.C)

DISTRICT PLANNING COMMITTEE

ANNEX VIIIc

Tentative Training schedule for INSET at the venues

Month	Centre for Training and Research, Karen	KSTC	District
January	Teachers INSET (80)		
February	Teachers INSET (160)		
March	Teachers INSET (80) Principals INSET (80)		
April		Teachers INSET (300)	Teachers INSET
May	Teachers INSET (80) Principals INSET (80)		
June	Teachers INSET (160)		
July	Teachers INSET (80) Inspectors INSET (80)		
August		Stakeholders Workshop (500) DEOs Workshop (72)	Teachers INSET
September	Inspectors INSET (80) Principals INSET (80)		
October	Third-Country Training (30)		
November	Inspectors INSET (80)		
December			

Appendix- 9 List of Documents referred

1. Totally Integrated Quality Education And Training (TIQET)
2. National Development Plan 2000-2001
3. Master Plan Of Education And Training (MPET)
4. Poverty Reduction Strategy Paper (PRSP)
5. Monitoring the performance of educational programmes in developing countries. Educational research paper no. 38-DFID
6. Information for final evaluation –SMASSE-doc.
7. Stakeholders report (SMASSE)
8. Regional conference report-2
9. SMASSE Curriculum Review Committee report
10. Final Evaluation report
11. SMASSE/Malawi joint workshop report
12. Inspectors workshop report
13. SMASSE Internal workshop report (Tabor Hill)
14. SMASSE Bulletin 1

Appendix-10 Acronyms and abbreviations used

1.	AIE	Authority to Incur Expenditure
2.	ASAL	Arid and Semi-Arid Lands
3.	ASEI	Activity Student Experiment Improvisation
4.	BOG	Board of Governors
5.	DAC	Development Assistance Committee
6.	DANIDA	Danish International Development Agency
7.	DEB	District Education Board
8.	DEO	District Education Officer
9.	DFID	Department For International Development
10.	DPC	District Planning Committee
11.	FAWE	Forum for African Woman Educationist
12.	FEMSA	Female Education in Mathematics and Science in Africa
13.	GOJ	Government Of Japan
14.	GOK	Government Of Kenya
15.	HRD	Human Resource Development
16.	INSET	In-service Education and Training
17.	JICA	Japan International Cooperation Agency
18.	JOCV	Japan Overseas cooperation Volunteers
19.	KCPE	Kenya Certificate of Primary Education
20.	KCSE	Kenya Certificate of Secondary Education
21.	KESI	Kenya Education Staff Institute
22.	KIE	Kenya Institute of Education
23.	KSSHA	Kenya Secondary School Heads Association
24.	KSTC	Kenya Science Teachers College
25.	MDG	Millennium Development Goals
26.	M&E	Monitoring and Evaluation
27.	MoEST	Ministry of Education Science and Technology
28.	MPET	Master Plan for Education and Training
29.	MTEF	Mid-Term Expenditure Framework
30.	NEPAD	New Partnership for Africa's Development
31.	NIPC	National INSET Planning Committee
32.	NWC	National Working Committee
33.	ODA	Oversees Development Agency
34.	OECD	Organization for Economic Co-operation and Development
35.	PDSI	Plan Do See Improve

36. PRSP	Poverty Reduction Strategy Paper
37. SAP	Structural Adjustment Programmes
38. SMASSE	Strengthening of Mathematics And Science in Secondary Education
39. TICAD	Tokyo International Conference for African Development
40. TIQET	Totally Integrated Quality Education and Training
41. TSC	Teachers Service Commission
42. WECSA	Western, Eastern, Central and Southern Africa
43. WSSD	World Summit for Sustainable Development