確立に奔走するとともに，日本からの機材の開梱，据え付け等，訓練の準備を同時に開始せざるを得ないという状況であった。

新規のプロジェクトを開始する場合，当初の現地適応の時間に余裕を持たせることが重要であるが，この点本プロジェクトでは，専門家の現地着任が計画通りに進まなかったため，相当の無理を強いられることとなった。

スケジュールの点ではこの他，電気めっきコースの実習棟の建設が遅れたため，訓練計画の実施が遅れ，結局，協力期間を延長して対応せざるを得なくなった。

日本側及びマレイシア側の投入に関しては，当初マレイシア側が用意したカウンタパートの能力が指導員として必要なレベルに達していなかったため，日本人専門家は課外時間を利用して補講を行なうなど，指導力向上のための訓練を追加して対応している。このようにカウンターパートの質には問題があったものの，人数は予定どおりに配置されていた。

機材等については，日本からの供与のタイミングは適切であり，また，マレイシア側の予算確保等についても，ほぼ満足できる体制が取られていた。問題はスペア・パーツの入手に関してで，供与された機材のスペア・パーツは総て輸入品となるため，価格も日本の数倍になる。また，現地に予備がないため，注文して入手することとなると，3～4カ月かかるということが少なくない。手取り早く，日本人専門家を通じてパーツの補充を図るのは，相手側の自助努力を損うことになるなどの問題がある。結局，実習を中断し，講義に切り替えて対応することとなり，必要な技能の付与が十分に行なわれない，といった問題が生じている。

(3) 当初計画の妥当性

本案件は，工業化の進展を図るための中級技能者の育成という，国家計画の重点政策にも合致したもので，優先度も高い。また，国南部における重化学工業化の拠点として，ジョホールバルの育成が図られており，プロジェクト実施の緊急度も高く，かつ，地域のニーズにも即していたため，訓練コースの修了生の就業機会が地元にあり，就職率も高い。従って，本案件が我が国の協力プロジェクトとして採択されたことは，極めて妥当であったといえる。

また，事前にマレイシア側のニーズが十分に把握され，それが訓練コース設立の計画に適切に反映されており，専門家の分野，人数，派遣のタイミング，機材の種類と供与のタイミングについて当初の計画は，いずれも妥当であったと評価される。

ただし，カウンターパートの研修については，研修期間が4カ月程度と短いためか，研修前と研修後との技術レベルには大差がないというのが，日本人専門家の見方であった。現地で面接したカウンターパートからは，日本での研修が，指導員として訓練にあたる上で，大きな精神的支えとなっているように見受けられた。

(4) 案件の効果

本プロジェクトの実施によるプロジェクト・レベルの効果としては，訓練の実施により，

生徒の技能レベルを地域の企業のニーズに沿うレベルにまで向上させ，地域の工業振興に貢献した点を挙げることができる。今回の調査で，修了生の就職先でのヒアリングを実施したが，同校の修了生は基本を十分に体得しているとして，個々の企業の評価は高かった。

このように，受入先の企業の評価が高い理由は，一般的にカリキュラムやシラバスを作成する場合に，当該国の工業レベルの実態と，当該国の目指す到達目標に即して作成するが，往々にしてこれが実態とかけ離れたものになり勝ちであるにもかかわらず，本プロジェクトの場合は実態の把握が適切であり，マレイシアのレベルとの乖離が少なかったため，実効的なカリキュラム・シラバスの作成ができたことにあるといえる。

地域への効果として，造船関係の2コースについては，マレイシア南部の重化学工業地域であるジョホールバル／パシールグダン地域に進出している日系企業を含めて，現地の企業のニーズに即した中級技能者の供給が可能となり，地域の工業発展を促進させる効果があったといえる。しかし，電気めっきコースについては，必ずしも地域のニーズに基づいて設置されたコースではなく，また，実際に地域での就業機会も限定されたものであるため，地域への効果は少なかった。

今回の評価調査では，全体として本案件の協力について，マレイシア側は高く評価しているとの印象を受けた。これはプロジェクトに係わった専門家の，技術移転の進め方と意欲に対する評価とともに，プロジェクト方式技術協力の方式が，協力3コースの実を挙げる上で，非常に効果的であったという評価である。

また，マレイシアでは一般的に欧米志向が強いが，カウンターパート研修の機会を通じて，日本の技術水準に対する認識が高まったといえる。しかし，この点については，日本で研修を受ける機会を得られたカウンターパートの範囲に限られるものとみられる。

(5) フォローアップの必要性

本プロジェクトは，協力終了後の昭和58年6月にアフター・ケア調査団が派遣されジョホールバル職練校のその後の運営状況の調査を行なうとともに今後の円滑な運営を図るための方策についてマレイシア側との協議がなされた。その後，短期専門家2名を派遣して補完的指導を行った。このようなアフター・ケアについての日本側の対応はマレイシア側の高く評価するところであった。もとより，本案件のような，人造りに係わるプロジェクトでは，4年の協力期間だけで全て相手側の自立発展を期待するのは難しい。しかし，当初の4年間以降について，専門家が長期に滞在してプロジェクトを指導する必要は必ずしもない。従って，プロジェクト終了後の一定期間，短期専門家派遣プラス機材供与，それに必要に応じて研修を加え，協力を継続していくことが，プロジェクトの効果を高める上で適切かつ効率的な対応と考えられる。

機材の追加供与については，一般的にはMARA側が自己資金で調達すべきであろう。しか

し，派遣された短期専門家からみて，訓練用の機材を旧型から新型に切り替えた方が，訓練効果が高まると判断されるような場合もあり，しかもこのような観点での協力は日本の援助に対する評価を高めるものと考えられるので，この種の設備更新に対する協力が可能となるような配慮が望ましい。

また，本プロジェクトは既設の訓練校の中に一部のコースを設立し，これに日本が協力するというものであったが，他のコースはマレイシアの従来からの方法で運営されているため，どうしても木に竹をついだ感じが日本人専門家の側にも，マレイシア側にもあったようである。他のコースからみれば，日本の機材供与，専門家派遣，研修は全て協力3コースのみ（当然のことではあるのだが）で，どうしても冷やかな目で見られ勝ちとなるし，また協力期間終了後は，折角実りつつあった協力の成果，例えば仕事への取り組みに対する意識などについても，他のコースが取っている伝統的で，安易な方式に立ち戻ってしまうおそれがない訳ではない。この種の協力においては，例え小さくとも1つの独立機関を設立する方が，協力の実が挙がるとも考えられよう。

1－3　マレイシアにおける職業訓練

(1)　第4次マレイシア計画期間における雇用の動向

マレイシアでは，マレイ系，中国系，インド系と多様な民族の政治的統一を図りつつ，経済開発を進めていくことが最重要課題となっており，1980-85年の第4次マレイシア計画においても，人材開発と人材の有効活用を計ることは最優先政策事項となっている。

計画における具体的施策としては，第1に教育訓練施設の拡大と，教育訓練の質的充実が挙げられており，第2に雇用機会の拡大を計り，農村部，都市部を含めて労働力の増強と失

表－1 人口，労働力及び雇用（1980－85）

（単位：千人，％）

	1980	1985	年平均増加率
人口	13,745.2	15,548.1	2.5
生産年令人口	7,837.0	9,095.0	3.0
労働力人口	5,108.9	5,947.1	3.1
就業者数	4,816.9	5,575.9	3.0
失業者数	292.0	371.2	
失業率（％）	5.7	6.2	

出所：EPU, Mid-Term Review of the Fourth Malaysia Plan, 1981-1985, Table 4－1.

表－２ セクター別雇用の動向

Sector	1980[1] ('000)	1980[1] (%)	1983 ('000)	1983 (%)	1985 ('000)	1985 (%)	Average annual growth rate (%) 1981-83	1984-85	1981-85	FMP
Agriculture, forestry, livestock and fishing	1,910.9	39.7	1,940.9	37.0	1,980.9	35.5	0.5	1.0	0.7	0.7
Mining and quarrying	80.8	1.7	64.9	1.2	63.4	1.1	−7.0	−1.2	−4.7	0.5
Manufacturing	750.5	15.6	800.3	15.3	876.3	15.7	2.2	4.6	3.2	5.9
Construction	267.8	5.5	345.6	6.6	386.8	6.9	8.9	5.8	7.6	4.4
Electricity, gas and water	50.8	1.0	56.8	1.1	59.2	1.1	3.8	2.1	3.1	4.4
Wholesale and retail trade, hotels and restaurants	597.8	12.4	662.1	12.6	718.8	12.9	3.5	4.2	3.8	3.0
Finance, insurance, real estate and business services	46.4	1.0	50.7	1.0	54.7	1.0	3.0	3.9	3.4	4.7
Transport, storage and communications	199.1	4.1	241.8	4.6	272.3	4.9	6.7	6.1	6.5	4.4
Government services	692.7	14.4	837.1	16.0	895.5	16.1	6.5	3.4	5.3	4.6
Other services	220.1	4.6	244.6	4.6	268.0	4.8	3.6	4.7	4.0	4.5
TOTAL	4,816.9	100.0	5,244.8	100.0	5,575.9	100.0	2.9	3.1	3.0	3.2
LABOUR FORCE	5,108.9		5,580.3		5,947.1		3.0	3.2	3.1	3.1
UNEMPLOYMENT	292.0		335.5		371.2					
UNEMPLOYMENT RATE (%)	5.7		6.0		6.2					

出所：EPU, Mid-Term Review of the Fourth Malaysia Plan, 1981－85.

業者の減少を図ることが挙げられている。

なお，1980 年に発表された第 4 次計画の人口ならびに雇用に関する基礎数値は，1980 年に実施された「人口・住宅センサス，1980 」の結果を踏まえて，1984 年 3 月に発表された「第 4 次マレーシア計画中間レビュー」（以下，「中間レビュー」）において改訂されているが，「中間レビュー」では，人口については計画期間 5 カ年間に 1,375 万人から 1,555 万人へと年平均 2.5% の伸びを予想しており，労働力人口については，510 万人（1980 年）から 595 万人（1985 年）へと年平均 3.1 %の増加を見込んでいる。

労働力人口のうち，失業者数は 29 万人（1980 年）で失業率は 5.7% であったが，計画期間前期（1980－83 年）に経済発展のペースが鈍化した影響で，新規労働力供給は 47 万人あったのに対し労働力需要の伸びは 43 万人にとどまったことから，1983 年の失業者数は 34 万人，失業率は 6.0% へと高まっている。

セクター別に雇用動向をみると，建設部門は好調で年平均 8.9% の伸びを達成したものの，第 3 次マレイシア計画期間（1975－80 年）でのリーディング・セクターであった製造業は僅かに年平均 2.2% の伸びに止まり，鉱業部門では石油・ガスは好調であったものの，錫の市場価格の低迷によって錫鉱山の閉鎖が相次ぎ，雇用者数の減少を招いたことによって，鉱業部門全体としては減少しており，さらに最大の雇用者を抱える農業部門では僅かに 0.5% の伸びを達成するに止まった。

以上のような計画期間前期の実績に対して，後期についての見通しも必ずしも明るい材料が見られないこともあって，「中間レビュー」では計画終期の失業者数を 37 万人，失業率は 6.2 %に達するものと見込んでいる。

(2) 職業訓練の動向

マレイシアの職業訓練の方向は，マレイシアの長期的開発方向を示した，新経済政策 (The New Economic Policy) の諸目標に照して設定されている。マレイシア人を構成する諸民族の間の雇用及び就業構造をバランスのとれたものにするために，職業訓練及び他の雇用政策は各次の国家開発計画の中でも重視されてきたが，マレイシアのＧＤＰの半分が輸出に依存している状況からしても，世界市場におけるマレイシア産品の質的な競争力，ならびに価格競争力を更に高めていくためには，教育のレベルを全般的に高めることとならんで職業訓練を充実させ，技術水準の高い労働力を供給していくことが必要とされている。

世界銀行では，マレイシアは今後，6,000 人の技術者ならびに 35,000 人の熟練労働者を毎年供給していくことが必要とされるとみているが，1980 年現在の実績では技術系の Degree 取得者（学士レベル）は 450 人，Diploma 取得者（専門学校レベル）940人と，技術者の供給力は必要水準の 4 分の 1 を満たすに過ぎず，また熟練労働力についても各種学校を合わせて 13,000 人程度の供給力しか持っておらず，今後の訓練能力の拡充を必要とし

ている。

このためマレイシア4次計画では，文科系と理工系の比率が1980年現在で52対48であったものを，理工系優位に切り替える施策がとられており，1983年現在ではこれが48対52にまで逆転するに至っており，引き続き理工系の充実が図られている。

また，熟練及び半熟練レベルの労働力の供給については，第4次計画期間中とくに製造業及び建設関係が重視されている。このため，既存の諸施設の拡充とともに，新施設の設立によって入校者数を増大させることに重点が置かれており，1983年までに中級職業学校（Vocational School）4校，中級技術学校（Technical School）1校，工業訓練所（ITI）1校，青少年訓練センター（Youth Training Center）1校，MARA職業訓練校（IKM）1校，MARA商業訓練校1校の設立を達成しており，さらに現在建設中の5施設を合わせて，第4次計画の最終年次である1985年には21,400人の中級労働力の供給体制を確立できる予定である。これは1980年の13,000人に比べて，65％の向上となるが，世界銀行の試算による35,000人にはまだ，遠く及ばない。

各コースの種別では，機械関係及び電気関係のコース修了者に対する需要が高いことから，これら2コースの充実に重点が置かれており，機械関係では1980年の4,300人／年から1985年には7,200人／年へ，電気関係では1980年の2,300人／年から1985年には3,900人／年へと拡充する計画が進められつつある。

この他，既存の施設では，企業のニーズに合わせて訓練内容の改訂が図られており，また新設の施設では，従来の訓練施設には設置されていなかったコースで企業からの新しい需要が見込まれるコースの設置が図られている。

またルック・イースト政策との関連で，日本，韓国などの工業先進国で，マレイシア内では提供できないような訓練内容ならびに訓練手法での訓練にも力が注れている。

2. マレイシア，ペナン下水道・排水計画調査（開発調査）

2－1　プロジェクトの概要

(1) 協力の目的

バタワース・ブキットメルタジャム都市圏に於ける急激な人口増加に対応して，下水道・排水施設を整備し，より衛生的な生活基盤施設を提供する為のマスター・プラン（MP）及びフィージビリティ調査（F／S）を実施する。

(2) 協力相手機関

バタワース・ブキットメルタジャム都市委員会

(Municipal Council, Province of Wellesley)

表－３マレイシアの職業訓練施設における入校者及び修了者数（1980-85）

（単位：人）

Institutions	*Enrolment*			*Increase 1981-85*	*Output*						*Total output*		
	1980	*1983*	*1985*	*(%)*	*1980*	*1981*	*1982*	*1983*	*1984*	*1985*	*1981-83*	*1984-85*	*1981-85*
Vocational schools	12,675	13,438	15,748	*24.2*	6,001	6,362	5,831	6,717	7,255	7,963	18,910	15,218	34,128
Technical schools	5,370	5,342	5,600	*4.3*	2,607	2,726	2,436	2,705	2,800	2,800	7,867	5,600	13,467
Youth Training Centres	975	1,429	1,510	*54.9*	667	594	878	1,027	1,347	1,219	2,499	2,566	5,065
Agricultural Institutes	1,017	1,251	854	*−16.0*	195	253	402	367	364	454	1,022	818	1,840
Industrial Training Institutes ..	1,472	2,321	4,181	*184.0*	965	808	1,639	1,658	3,163	3,951	4,105	7,114	11,219
MARA Vocational Institutes ..	4,198	3,187	4,337	*3.3*	1,696	1,873	2,128	1,938	2,214	2,826	5,939	5,040	10,979
MARA Commercial Institute ..	323	400	1,000	*209.6*	19	166	124	167	250	250	457	500	957
Tunku Abdul Rahman College ..	451	1,061	1,128	*150.1*	118	153	200	473	333	362	826	695	1,521
Ungku Omar Polytechnic	1,455	1,883	2,039	*40.1*	594	679	736	878	858	897	2,293	1,755	4,048
Kuantan Polytechnic	575	970	1,980	*244.3*	129	172	230	270	348	615	672	963	1,635
Batu Pahat Polytechnic	—	120	234	—	—	—	—	—	—	100	—	100	100
TOTAL ..	28,511	31,402	38,611	*35.4*	12,991	13,786	14,604	16,200	18,932	21,437	44,590	40,369	84,959

出所：EPU, Mid-Term Review of the Fourth Malaysia Plan, 1981－85.

(3) 協 力 期 間

1) マスター・プラン　　1976～1977年

2) フィージビリティ・スタディ　　1977～1978年

(4) 協力の当初計画

1)イ) マスター・プラン

① 事 前 調 査　　1976年5月～6月

② プ ラ ン 作 成　　1976年10月～1977年5月

ロ) フィージビリティ・スタディ　1977年10月～1978年3月

2) マスター・プランはバタワース及びブキットメルタジャム地区を対象とし，セクターは下水道及び雨水排水施設とする。

3) フィージビリティ・スタディはマスター・プラン対象の全地域になされるのでは無く，下水道，雨水排水施設の緊急度の高い地域のみを対象とする。

2－2 評 価 結 果

1) マスター・プラン及びフィージビリティ調査が実際に役に立ったかどうかという事を考えて見る時，終局的にはそれらを元にして実際に施設の建設がなされたかどうかが問題になる。この点に於てこの協力案件は既に実施につながった為に効果があったといえる。

2) 即ち上記フィージビリティ・スタディに基づいて下水道整備の実施計画が1980～81年になされた。更に建設工事が1981年12月から1985年3月にわたり施工されている。工事はフィージビリティ調査計画で提案された第一期事業建設計画に基づくものであり，下水道整備面積として1,066ヘクタール（2,633エーカー），バタワース及びブキットメルタジャム地区で合計84,000人の人々が恩恵をこうむることが推定されている。また下水道工事と並行して雨水排水施設の実施設計が1981年7月～1982年4月の間に完成されている。

3) この協力案件の背景としてはこの地域に於ける日本企業の進出，それに関係する水濁汚染のうわさ等が有り，また同時にWHOが1973年にこの地域に於てセクター分析をすでにやった事も相まってMunicipal Councilは連邦政府を通じて日本政府に上記調査を要請。こういう背景で日本政府がこの要請を受け入れたのは妥当であったといえる。

4) では何故このマスター・プラン，フィージビリティ・スタディが施設建設まで持って行く事が出来たかという点を分析して見る時，次の点を上げる事が出来る。

(イ) マスター・プラン作成，フィージビリティ・スタディに関係した日本のコンサルタントが，フィージビリティ完了後も，そのコンサルタントがその近辺で関係していた他のプロジェクトを機会に，定期的にMunicipal Councilを訪れフォローアップをやり，実施まで持って行く気を持続させた。

(ロ) 当初マレイシアの景気が良かった所に見積りが 30 億円（実際には 100 億円かかった）という事でマレイシアの連邦政府から資金を借りる事が出来た。

5) しかしフィージビリティ・スタディが上記 4) 項の如く施工まで持っていく事が出来たというはっきりした効果をもたらしたが，しかし一方充分な分析がなされなかった点もありそれが原因で現在問題が存在している。即ち

(イ) 新しく開発される土地からは下水道料金をとる事が出来るが既存の開発された地域からは住民達が connection sewer のお金を払う意思が少ない。これは当初のF／Sで予想しなかったもので，現在サービスのカバレージを伸ばす上の問題及び財政難の原因のひとつになっている。

(ロ) 当初の見積り額が 30 億円。ところが実際には 100 億円とふくれ上がり，現在の経済，財政状態を考えると連邦政府に返済出来る能力は今の時点及び近い将来では見通しが暗い。

(ハ) 施設が出来たものの施設を維持・管理するマンパワーに欠けている。これから早急にこのマンパワーを強化する必要がある。（この点で将来日本の専門家派遣もフォローアップとして考えられる）

6) 上記 4) 及び 5) 項から次の様な点を将来の同種プロジェクトへの教訓としてとらえ，取り入れて行く必要がある。

(イ) マスター・プラン及びフィージビリティ・スタディの協力の後も何らかの型でフォローアップがあれば施工まで持って行くことが可能であり，我が国援助の継続性を強化する事が出来る。

(ロ) F／Sに於て『住民がどこまでサービスを自前で払う気があるかどうか』の elasticity の分析等を含む必要がある。

(ハ) operation 及び maintenance の為の manpower development に必要な activities を必要条件としてF／Sに列記する必要がある。

2－3 マレイシアにおける下水道・排水事業

(1) 下水道・雨水排水事業の概況

マレイシアの下水道計画で最も古いのは，ペナン島のジョージタウン市に敷設されたもので，1935 年に開始されたといわれている。当初は 20 カ所の下水ポンプ場が建設されたが，その後改良されて 15 カ所の下水ポンプ場で運転するシステムとなっている。処理施設は持っておらず，マレイ半島に面した海峡側に直接海中放流している。

首都のクアランプール市には 2 カ所の下水処理場があるが，うち 1 カ所は陸軍キャンプ内であり，本格的な下水処理場はパンタイ地区の 1 カ所のみである。ここでの下水処理は沈砂，コンミュニタ，普通沈澱のみであって，汚泥は 2 槽式の汚泥消化槽，乾燥床で処理されてい

る。

既にクアラルンプールについては，下水道マスター・プランが1972年に完成しているが，これに基づいての実施は遅れており，他にイポ市についてのM/PおよびF/Sはニュージーランドのコンサルタントによるスタディがあり，またペナン州バタワースおよびブキット・メルタジャム地区についてはJICAによるM/PおよびF/Sに基づいて，現在建設工事が進んでいる。

以上のように，マレイシアの下水道事業は，まだスタートしたばかりの段階であり，従って下水道建設についての計画技術，建設技術は全く他の先進諸国に依存しなければならない状況にある。

また，現在建設中のペナン州バタワースおよびブキット・メルタジャム地区の下水道システムについても，建設完了後の維持管理をいかに行なうかについて，技術的，経営的な側面での協力が今後の円滑な下水道運営にとって必要な段階にあるといえる。

(2) 下水道・排水事業に関与する組織

公共事業として実施される下水道および雨水排水事業は，公共施設の整備や環境の保全などの政策と密接に係っているため，これらを所管する連邦政府レベルの部局，州政府レベルの部局，ならびに市町レベルの地方自治体が直接，間接に，事業の計画・実施・運営に関与することになる。

連邦政府レベルで関係する主要な部局は，

1) 総理府経済企画庁 (Economic Planning Unit, EPU)
2) 保健省環境衛生・技術局 (Ministry of Health, Environmental Health and Engineering Unit)
3) 農業省雨水灌漑局 (Ministry of Agriculture, Drainage and Irrigation Department)

等である。このほかに，地方自治省，科学技術・環境省，公共事業省が，それぞれの所管事項との関連で関与している。

以上のうち，総理府経済企画庁は，マレイシアにおける社会経済開発計画の計画策定ならびに実施において中心的な機関である。同庁は下水道および雨水排水事業の計画についても，計画策定，各州に対する予算配分，先進諸国・国際援助機関による経済技術協力に際しての調整等の任に当っている。

保健省環境衛生・技術局は，下水道および農村地域の公衆衛生関係事業を所管しており，都市周辺の開発地区における下水道整備に関しては，計画，設計，監理監督等の技術面について責任を負っている。

農業者排水灌漑局は，都市灌漑部門を有しており，排水路および自然水路等の幹線の改良

と維持管理を担当している。

科学技術・環境省環境局は，海域，河川，湖沼などの公共水域における水質の保全に関して，下水道計画に関与している。同局は，1974 年に制定された環境法に規定されている環境水質の保全の観点から，汚染源より放流されるすべての汚水の規制ならびに汚染問題の解決について責任を負っている。

州政府レベルでの関連部局については，それぞれの州での行政機構によるが，ＪＩＣＡベースでマレイシアの下水道計画に関与したもののうちで最も新しいプロジェクトである，アロースター下水道および排水計画の際のケダ州についてみると，州経済企画局，州衛生部，都市計画部，公共事業部，州排水灌漑局，州経済開発公社等が，直接，間接に関与している。

さらに，市町レベルでは，し尿処理，し尿浄化槽の汚泥処分などの衛生事業を担当する保健部と，公共事業の計画，建設，維持を手がける技術部とが関与するのが一般的といえる。

以上のように各レベルでの行政機関が，計画，建設，維持運営の各段階で関与するが，施設の建設・維持に直接的に係わるのは，市町レベルの保健部および技術部である。

(3) 関 係 法 規

下水道事業の施行にあたって，実際の建設工事を担当する町村レベルでの技術担当部門が依拠する法令規則類は次のとおりである。

1) 地 方 行 政 法 (Local Government Act)，1986

2) 街路，排水および建築に関する法令 (Street, Drainage and Building Act)，1974

3) 都 市 計 画 法 (Town and Country Planning Act)，1976

4) 環 境 基 準 法 (The Environmental Quality Act)，1974

このうち，「地方行政法」では，下水道および排水に関連する事項として，①地方公共団体による用地の取得，②建物・恒久物の築造の権限，③事業運営資金としての課税の権限，④事業実施の権限，⑤公共下水道の利用義務等について規定している。

「街路，排水および建物に関する法令」は，1974 年 6 月に立法化されたもので，①下水道および排水事業の建設，維持管理に関する執行権限，②投資した事業資金を回収するための間口料金として負担金の徴収の権限，③下水道使用及び維持管理に対する料金制定の権限，④家屋の敷地境界線から100フィートの範囲内に公共下水道が敷設された場合の下水道利用義務，⑤私用処理施設，屋内排水管施設に関する条項，⑥公共下水道に対する汚水，工場排水の事前許可規定等の条項を含んでいる。下水道事業を推進するにあたって，最も重要な法令といえよう。

都市計画法は全マレイシアの地方公共団体が行なう都市計画を規定したものであり，環境基準法は汚水の土壌，土地，陸水，海域への投棄に関する規制ならびに有害廃棄物に対する

除害施設の設置義務等の条項を含んでいる。

以上，マレイシアの現行法体系は，下水道事業を実施する上で十分に機能しうる体系となっているといえる。

3. マレイシアの経済発展動向

3－1　経済発展の推移

(1) 歴史的背景

マレイシアの経済発展過程を他の東南アジア諸国における発展過程と対比させた場合，いくつかの明確に異なる初期条件のもとに展開してきた点が指摘できる。

その第1は，マレイシアでは 18 世紀以降の植民地開拓者が求めた貴金属，各種の香辛料を産出しなかったため，ヨーロッパ人の進出が遅れ，1957 年に独立した時点では国土の大半がまだ開発の手をつけられていなかったことを挙げることができる。このため，周辺諸国に比べて，人口圧力に苦しむことがなく，また大規模かつ近代的技術によるゴム，オイルパーム等のプランテーション農業，錫を中心とする鉱業開発を植民地時代と同様に拡大していくことが可能であった。

第2に，民族間の対立という問題を内包していたとはいえ，独立以降基本的には自由主義体制の下に，安定的な議会制民主主義を維持し続け，民間企業の自由な活動を保障する経済システムが確立されていた点を挙げることができる。

(2) 経済成長とその要因

独立直後の 1960 年時点でのマレイシア経済は，GDP の 38 %を農業に依存し，製造業は僅かに 9 %を占めるにすぎなかった。その後 24 年の間にマレイシアの経済構造は大きな変化を遂げ，1984 年のＧＤＰにおける農林漁業のシェアは 22 %にまで低下する一方，製造業は19 %を占めるに至っている。

この間，ＧＤＰの年平均成長率は，60 年代で5.5 %，70 年代にはさらに加速されて7.8 %の伸びを示し，好調に推移したといえる。ただし 80 年代に入って，世界的不況による一次産品市場の低迷等の影響を受け，貿易収支も赤字に転じるなど，60 年代から 70 年代にかけて順調な成長を遂げたマレイシア経済もややかげりが見え始めた。

過去4半世紀におけるセクター別の成長率をみると，農業部門では5年毎の平均伸び率で3.3 ～ 6.9 %を示し，農業としては必ずしも低い伸び率とはいえないが，経済全体における比重は相対的に低下した。

一方，製造業は政府の工業化重視政策に沿って拡大を続け，1960 年から 84 年までの24 年間に年平均 11 %の伸びを記録しており，まさにマレイシア経済発展のリーディング・セクターの役割を果してきたものと評価できる。

表－4 GDP 構成比

（単位：%）

	1960[1]	1965[1]	1970	1975	1980	1984[2]
農林漁業	37.9	31.5	32.1	29.8	23.8	21.5
鉱業	5.9	9.0	5.7	4.0	4.5	4.9
製造業	8.7	10.4	12.2	14.4	18.6	18.6
建設	3.0	4.1	4.5	4.6	4.6	5.5
電力・水・公共サービス	1.3	2.3	2.3	2.6	2.3	2.6
運輸・通信	3.6	4.3	5.7	7.2	6.9	8.3
商業	15.7	15.3	13.3	13.6	13.5	13.8
金融・保険・住宅サービス	6.1	6.0	7.8	7.2	7.8	8.1
行政・国防	6.5	6.2	7.4	7.8	12.2	13.3
その他	11.4	10.8	8.2	8.1	5.9	3.4
計	100.0	100.0	100.0	100.0	100.0	100.0

注： 1) 半島マレイシアのみ

2) Ninistry of Finance による推計値。

出所：1960～75年は，各次5カ年開発計画，1980年及び1984年は Economic Report 1984/85 による。

表－5 セクター別GDP成長率（年平均）

（単位：%）

セクター	1961～65	1966～70	1971～75	1976～80	1981～84[1]
農林水産業	3.3	6.9	5.7	4.5	3.4
鉱業	2.8	1.1	－1.3	10.2	8.8
製造業	12.1	9.9	11.3	13.0	6.1
建設	11.5	4.1	4.8	12.0	10.8
その他サービス	5.8	4.4	8.6	7.7	7.2
GDP	5.6	5.5	7.5	8.1	6.4

注： 1) 1984年データはMinistry of Finance による推計値。

出所：1961～70 Bank Negara Malaysia, Quarterly Economic Bulletin, Sept. 1979.

1971～77 Department of Statistics, Malaysia, National Accounts Statistics, 1971～77.

1978～84 Ministry of Finance, Malaysia, Economic Report, 各年度。

このような経済発展の要因としては，マレーシアの社会及び政治体制が安定的であったことと共に，適切な工業化政策がとられたこと及び物価が安定的に推移したことが挙げられる。とくに後者については，①マレイシアの主たる輸入相手先を欧米から低コストで生産される東アジアへとシフトさせていったため，輸入価格がほとんど上らなかったこと，②マレイシアの輸出産品の価格も同様に低下したことが国内需要を抑制する方向に働いたこと，③労働力の需給関係が雇用者側に有利に働き，賃金の上昇幅が小さかったこと，等が物価安定の要因として挙げられる。

3－2　セクター別開発動向

(1) 農　　業

マレイシアの農業セクターは大規模・商品生産・輸出向けのプランテーション部門と，伝統的な小規模・食糧生産農民の二重構造となっており，前者はゴム・オイルパームなどに特化した民間の大規模ミステートによって営まれている。

農業部門への公共投資は，50 年代後半から 60 年代前半にかけてゴムの改植に対し重点的な配分が行われ，60 年代にはさらに土地開拓，灌漑，排水施設などのインフラ整備が重視された。これらが軌道に乗ったことに加えて，オイルパームの植付け面積の拡大，木材生産の上昇，米の二期作の開始等の要因が加わり，60 年代後半の農業部門ＧＤＰの年平均伸び率は 6.9 ％を達成している。

農業部門の二重構造を改善する試みは，主として 1970 年代に入って，二重構造の下層にあたるブミプトラを中心とする零細農民の生活水準を引き上げ政策として具体化した。ブミプトラの生活水準引き上げは，マレイシアの長期開発政策として立案された新経済政策（New Economic Plan）の最重点課題として位置付けられており，連邦土地開発公社（Federal Land Development Authority，FELDA）を始めとする公社組織を通じて，小規模農民の組織化と技術移転が図られつつある。このような方向での改革は第２次開発計画以降，現行の第４次開発計画に引き継がれており，それなりの成果を挙げつつある。

最近４カ年の農業生産の動向をみると，ゴム及び米が停滞ないし漸減の傾向を示しているのに対し，オイルパームが生産量，作付面積，単位面積当り生産量とすべての指標について順調な伸びを示している。

今後の課題としては，工業化の進展に伴って農村から都市への人口流出が続き，ゴム，オイルパーム等に労働力不足が生じつつあることである。従って，80 年代は農業経営の集約化とともに，機械化による省力化などが重要となろう。

(2) 鉱　　業

70 年代前半はそれまでマレイシアの鉱業部門を支えてきた錫中心の構造から，半島東部のトレンガヌ州沖で発見された石油への移行期に相当した。70 年代後半には，石油生産が

表－6 主要農産物の生産動向

品　　目	1980	1981	1982	1983
Ⅰ 生 産 量（1,000トン）				
ゴ　　ム	1,530	1,526	1,517	1,530
パ ー ム 油	2,576	2,825	3,511	3,015
パーム核油	248	265	410	404
こ し ょ う	32	29	25	24
コ コ ア	33	48	62	65
丸 太 ＊	27,915	30,653	32,824	34,231
米	2,053	2,021	1,873	1,818
パイナップル	185	154	153	153
Ⅱ 耕地面積（1,000 *ka*）				
ゴ　　ム	2,010	2,006	1,966	1,990
オイルパーム	1,070	1,141	1,212	1,227
こ し ょ う	13	13	13	11
コ コ ア	109	150	190	205
木　　材	383	391	487	586
米	735	768	758	764
パイナップル	12	12	10	8
Ⅲ 単位面積当り生産量（*kg*/*ka*）				
ゴ　　ム	761	760	771	769
パ ー ム 油	2,408	2,476	2,896	2,458
パーム核油	231	232	338	329
こ し ょ う	2,492	2,148	1,969	2,068
コ コ ア	303	320	326	317
米	2,792	2,633	2,469	2,379
パイナップル	15,313	13,145	15,718	18,727

注　：＊単位は1,000 m^3

出所：EPU, Mid-Term Review of the Fousth Malaysia Plan 1981－85

順調に進展し，マレイシア第1の輸出品目となるまでに成長し，この結果鉱業部門は年平均10.2%の伸びを記録し，さらにその勢いは80年代に及んでいる。

錫はその主導的位置を石油，天然ガスに譲ったとはいえ，半島マレイシアの全域，オフショアに広く埋蔵されている。むしろ問題は，錫の開発に伴う土壌侵蝕，河川の汚染，肥沃土の流出などの環境問題への対応といえる。

石油の開発と生産は，国営会社のPETRONASによって進められており，新しい油田も加わりつつあるが，開発の主体は天然ガスに向けられつつある。これらの石油，天然ガスは，半島東側およびサバ，サラワクといった，マレイシアの中での低開発地域に産出するため，産出州へのロイヤルティーに加えて，これらの加工による化学工業の振興など地域開発効果も期待でき，地域間の経済格差の是正にも効果をもたらしつつある。

(3) 製　造　業

マレイシアは植民地時代を通じて，ゴムと錫を主体とする伝統的一次産品を輸出し，工業製品を輸入するという貿易構造であったが，一次産品の価格変動による外貨収入の不安定性を回避し，雇用機会の創出を図るために，政府は1957年の独立以降，一貫して工業化重視政策をとってきた。

独立当初から現在に至るまで，輸入代替工業化を指向した1957～70年の時期（前期）と，輸出工業化を推進した1970年代以降（後期）に二分できる。前期に関しては，1966～70年の第1次開発計画における生産活動の多様化を目的とした製造業育成の目標に沿って輸入代替戦略がとられたが，政府の工業化における役割はむしろ受身であって，導入される製造業の業種についてもとくにどの分野を優先するということなく，主として民間のイニシアティブに依存して，結果として民間投資が輸入代替業種から着手されたというものであった。政府の役割は，1958年のパイオニア産業法に始まる各種優遇措置の適用，ペタリンジャヤ，クラン，バタワース，ペナン，イポ等における工業団地の造成等のインフラ整備，工業に関する情報提供が中心であったが，政府による原材料の優先割当て，企業税の減免措置，利益の国外移転の優遇措置を好感して，海外からの投資を引きつけた。

しかしながら，国内市場の規模自体がそれほど大きなものでなかったことから，輸入代替工業化はじきに行き詰ることとなり，政府は60年代後期から輸出工業推進政策へとシフトしていった。この点，マレイシアは工業化への参入が他の国々に比べて遅かったため，他国の輸入代替工業化政策の成否についての経験を学ぶことができ，あまり深入りする前に方向転換を可能にしたといえる。

70年代に入って，1971～75年の第2次開発計画では，工業化重視の姿勢を鮮明にし，1968年に制定された投資インセンティブ法による優遇措置と相まって，繊維・衣料，電気製品といった，マレイシア在来の資源に依存しない分野への海外直接投資を引きつけること

に成功した。

このような輸出工業化への転換が成功した背景としては，①マレイシア政治経済が，若干の民族間のあつれきを除いて，安定的であったこと，②インフラ整備の進展，③労働問題の発生が少なかったこと，④労働力の質的向上があったこと，等をあげることができる。

今後の課題としては，従来発展した業種以外の分野に拡大できるかどうか。また輸出向け自由貿易地区中心に発展したため，国内生産の裾野が小さい点をいかに克服していくか，を挙げることができる。従来の高成長を今後も維持していけるかどうかは，これらの点に依存しているといえる。

(4) インフラストラクチャー

半島西側のマレイシアのインフラ整備状況は，同程度の経済発展段階にある他の途上国に比べて，全般的に良く整備されている。これは植民地時代に，主要産品である天然ゴム及び錫の輸送を効率的に行うために，交通施設への投資が重点的になされたというメリットを受け継いだものである。従って，半島東側及びサバ，サラワクは整備が遅れている。

交通施設では，第1次開発計画以降道路整備に重点が置かれ，現在では開発の進んだ半島西側と，遅れた半島東側を結ぶ横断道路，あるいはタイ国境からジョホールバルに至る，半島西部を縦断する高速道路の建設が行われている。鉄道はタイからシンガポールに至る国際ルートの一部を形成しているが，道路，航空との競合の結果，次第にその重要性を低下させつつある。港湾は，ペナン，ポートケラン，ジョホール，クァンタンの4大港が重要で，経済発展に伴う輸出入貨物量の増加に従って拡張計画が進められつつある。航空輸送は急速に伸びつつある部門であるが，半島部では他の代替モードが発達していることもあり，国内航空旅客機はまだそれほど多いとはいえない。しかし，サバ，サラワクでは陸上交通施設が未発達であり，また都市間の距離が大きいこともあって，重要な交通手段となっている。

通信ネットワークに関しては，日本からの第1次，第2次円借款供与において，主たる対象分野となったが，主要都市及び半島西部の経済水準の高い州では，すでに相当なレベルのシステムが完成されている。

電力開発は，マレイシアの工業化の進展に伴って，火力，水力ともに整備が進められてきた。現在は火力主体であるが，半島マレイシアは降雨量が多く，背稜部に山脈があることから，水力の開発ポテンシャルは大きい。

その他のインフラの装備状況を含めて，マレイシアではインフラの不足が経済発展にとって，重大なボトルネックになるとは考えられない。今後の課題としては，今後の都市化の進展を考えあわせて，都市部の生活基盤整備に重点を置く必要があろう。

3－3　貿易と国際収支

(1)　貿　　易

マレイシアは独立の当初から天然ゴムと錫の生産国であり輸出国として，世界貿易に大きな地歩を占めており，この2品目に輸出額の80％を依存するという状況にあった。従って，国際収支は常に世界市場での価格動向に依存していたため，独立後の政府の政策は，輸出品目の多様化を図ることに置かれた。

この方向に基いて，農業品目についてはパームオイル，木材の生産増と輸出拡大が指向された。また，工業化の遅れにより，ほとんどの消費財について輸入に依存していたものを，国内生産の振興により輸入代替を図る方向が指向された。

1960年代の輸出は，金額ベースで年平均3.6％という低い伸びであったが，1970年代に入ってからの輸出は，天然ゴムの価格の回復，丸太・木材，パームオイル生産が軌道に乗ったこと等により，一転して速いペースで成長をはじめ，年平均18.4％の伸びを達成した。

表－7　マレイシアの輸出動向

品　目	年	1960	1965	1970	1975	1980	1983
天然ゴム	輸出量(1,000t)	852	966	1,345	1,460	1,526	1,563
	輸出額(100万M$)	2,001	1,462	1,724	2,026	4,617	3,664
	単　価(M$/t)	2,348	1,513	1,281	1,388	3,026	2,344
すず	輸出量(1,000t)	78	75	93	78	70	57
	輸出額(100万M$)	508	872	1,013	1,206	2,506	1,718
	単　価(M$/t)	6.5	11.6	10.9	15.5	36	30
丸太	輸出量(1,000m^3)	2,088	4,781	8,914	8,473	15,152	18,774
	輸出額(100万M$)	119	263	644	670	2,622	2,797
	単　価(M$/$m^3$)	57	55	72	79	173	149
木材	輸出量(1,000m^3)	582	753	1,415	1,890	3,306	3,454
	輸出額(100万M$)	75	97	208	442	1,352	1,350
	単　価(M$/$m^3$)	129	129	147	234	409	391
パームオイル	輸出量(1,000t)	98	143	402	1,163	2,260	2,958
	輸出額(100万M$)	61	107	264	1,318	2,604	3,003
	単　価(M$/$m^3$)	621	749	658	1,133	1,152	1,015
石油	輸出量(1,000t)	2,515	1,747	4,778	3,763	11,221	14,224
	輸出額(100万M$)	147	87	202	853	6,687	7,871
	単　価(M$/t)	58	50	42	227	596	553
工業製品	輸出額(100万M$)	110	189	334	1,600	6,106	9,554
その他	輸出額(100万M$)	613	706	774	1,118	1,566	2,871
輸出計	輸出額(100万M$)	3,633	3,783	5,162	9,231	28,060	32,828

出所：世界銀行資料およびBank Negara Malaysia, Quarterly Economic Bulletin, Dec. 1984.

サバ，サラワクおよびトレンガヌ沖の石油開発も順調に進み，1980 年には石油がマレイシア第1の輸出産品となるまでに至っている。

しかし，マレイシア経済にとって特筆すべき点は，1970 年代に入って従来の輸入代替工業化政策から輸出指向型工業化政策へと転換を図ったことが成功し，電気製品を中心に各種工業製品の輸出が大幅に伸びたことである。この結果，1970 年代の 10 年間に工業製品の輸出は年平均 34 %の高い伸びを記録している。

このように工業化が急速に進展した結果，輸入の構造も大きな変換を遂げ，1980 年には全輸入の 80 %が資本財ないし中間財となるに至っている。

表－8 マレイシアの輸入動向

（単位：100万Mドル）

品　目	1961	1965	1970	1975	1980	1983
消費財：	1,315(47)	1,421(42)	1,222(28)	1,890(22)	4,325(18)	5,701(19)
食　品	595	600	496	705	1,177	1,743
耐久消費財	169	238	134	265	992	1,241
そ の 他	552	583	593	920	2,156	2,717
資本財：	480(17)	712(21)	1,079(25)	2,706(32)	7,030(30)	9,771(32)
機　械	127	242	451	965	2,578	3,260
輸送機器	117	106	140	163	919	1,754
金属製品	122	191	252	485	1,767	1,988
そ の 他	114	173	236	1,093	1,766	2,768
中間財：	800(28)	996(30)	1,515(35)	3,527(41)	11,689(50)	14,775(48)
工 業 用	220	374	950	1,921	6.670	8,420
建 設 用	87	108	88	262	580	1,583
農 業 用	80	135	158	327	893	599
石　油	190	188	104	539	1,890	1,639
そ の 他	223	190	216	478	1,655	2,535
再輸出：	220(8)	228(7)	472(11)	408(5)	406(2)	474(2)
合　計	2,816(100)	3,356(100)	4,288(100)	8,530(100)	23,451(100)	30,721(100)

注：（　）内は構成比。

出所：Bank Negara Malaysia, Quarterly Economic Bulletin, Dec. 1984.

(2) 国 際 収 支

1960 年代，70 年代の国際収支状況は，一次産品の輸出が好調に推移したことによる貿

表－9 マレイシアの国際収支

（単位：100万Mドル）

	1970	1975	1980	1981	1982	1983
I 貿易						
輸出	5,020	9,057	28,013	26,900	27,967	32,070
輸入	3,953	8,443	22,775	27,143	29,166	30,729
貿易収支	+1,067	+ 614	+5,238	− 243	−1,199	+1,341
II 貿易外（ネット）						
運賃保険	− 304	− 621	−1,781	−2,008	−2,186	−2,257
その他運輸	− 21	+ 98	− 56	+ 7	+ 87	+ 63
観光	− 105	− 105	− 885	− 672	− 544	− 875
投資収益	− 355	− 727	−1,820	−1,836	−2,240	−3,707
政府取引	+ 68	+ 47	− 7	+ 7	+ 13	+ 6
その他サービス	− 145	− 414	−1,264	− 810	−1,151	−1,654
貿易外収支	− 862	−1,722	−5,813	−5,312	−6,021	−8,424
III 移転（ネット）						
民間	− 199	− 79	− 45	− 78	− 78	− 50
政府	+ 19					
経常収支	+ 25	−1,187	− 620	−5,633	−7,298	−7,133
IV 長期資本取引（ネット）						
公的資本	+ 21	+ 872	+ 322	+2,916	+4,589	+4,649
民間投資	+ 287	+ 839	+2,033	+2,914	+2,940	+2,797
商業借款	+ 5	− 18	− 140	+ 101	+ 580	+1,593
長期資本収支	+ 313	+1,693	+2,215	+5,931	+8,109	+9,039
基礎収支	+ 338	+ 506	+1,595	+ 298	+ 811	+1,906
V 金融勘定等（ネット）						
商業銀行	− 16	− 108	+1,253	+ 643	− 557	+ 482
その他	+ 6	+ 25	− 314	− 557	+ 482	− 197
短期資本取引および誤差脱漏	− 260	− 252	−1,532	−1,477	−1,350	−2,246
総合収支	+ 68	+ 171	+1,002	−1,097	− 614	− 55
VI SDR配分	+ 64	−	+ 76	+ 73	−	−
VII IMF勘定	−	−	−	+ 510	+ 152	+ 166
VIII 外貨準備	− 132	− 171	−1,078	+ 510	+ 462	− 111

出所：Bank Negara, Quarterly Economic Bulletin, 各年版。

易収支の黒字を基調として，貿易外収支，移転収支の赤字にもかかわらず，直接投資を中心とする資本収支の黒字もあって，総合収支では常に黒字で推移してきた。

1981 年には第２次オイルショックの影響による世界経済の低迷により，一次産品に対する需要は低下した結果，貿易収支は初めて赤字を計上し，貿易外収支も赤字幅を増大させたため，経常収支の赤字が1980 年の 6.2 億Ｍドルから 563 億Ｍドルへ急増した。この赤字は公的及び民間外資の流入による資本収支で補塡された。

1982 年においても，前年の苦しい状況は続き，1983 年では貿易収支は黒字へ戻ったものの，貿易外収支の赤字幅はさらに拡大したため，経常収支の赤字を資本の借入れで埋めるという構造を脱するに至っていない。

３－４　開発計画の変遷

(1)　第１次開発計画

1966 ～ 70 年を計画期間とする第１次５カ年計画は，計画期間内に目標の５％を上回る年平均 6.6 ％のＧＮＰの伸びを達成し，輸出も目標を上回る成績を挙げ，製造業の伸びも年平均 10.1％を達成するなど，産業構造の多様化も順調に進められた。特に 1960 年代前半に植替えがなされたゴムが，年平均８％を上回る好成績を残し，またオイルパーム，米ともに好調で，農業セクター全体として年平均 8.1％の伸びを達成したことが，外資導入による工業化の進展とともに計画全体としての成長目標の達成に大きく寄与した。

しかし，公共投資については，投資プログラムの策定及び実施を担当するＥＰＵ，あるいは公共事業省等の実施官庁での人材不足により，目標をおよそ 15 ％ほど下回る達成率となった。また，人種間格差の是正，就業機会の増大等についても目標を下回る実績しか挙げることができなかった。

(2)　新経済政策（ＮＥＰ）

マレイシアの経済社会開発にとって，最大の問題点であり，潜在的な火種ともいうべきものは，マレイ系と非マレイ系との間の人種問題である。この人種間対立が極限に達して爆発したものが1969 年５月の暴動であった。

新経済政策 (The New Economic Policy, ；ＮＥＰ）は，従来，経済的に低い地位に甘んじていたマレイ系の人々の所得水準の上昇および雇用機会の増大を図るなかで，人種間の対立を解消し，真の複合人種社会を形成しようとするものである。1970 年以降，すなわち第２次開発計画以降 1990 年までの計画は，すべてＮＥＰのフレームワークの下に計画策定がなされている。

(3)　第２次開発計画

第２次計画は，ＮＥＰのフレームの下で最初に策定された計画で，遅れた農村社会の近代

化を図るとともに，マレイ系の商工業部門への参入を推進し，人種間の経済格差を縮小することがねらいとされていた。

第2次計画期間は，第1次石油危機に遭遇した時期で，マレイシア経済も大きな変動の波にさらされ，とくに輸出入産品の価格の乱高下は，輸出がGDPのおよそ半分に相当するという経済体質のマレイシアに大きな影響を与えた。しかしながら，第2次計画期間を通じてのGDP成長率は，計画目標の 6.8% を上回る 6.9% を達成することができ，とくに米の増産とオイルパームの伸びが大きかった農業は 6.1 %，自由貿易地区での電気製品，衣料・繊維が大きく伸展した製造業は 9.8 %の年平均成長を達成した。

(4) 第3次開発計画

第3次計画では，前期の石油危機のような大きな経済変動は無く，マレイシア経済は順調な発展を遂げた。特に成長が著しかったのは，鉱業と製造業であった。鉱業セクターでの伸びは，主要輸出産品である錫の価格が大幅に上昇したこと，さらに石油の開発が順調に進展し，1980 年には輸出品目の第1位を占めるに至ったことに依存している。

製造業の伸びも顕著で，計画期間内にセクター全体で年平均 13 %の高い成長を達成したが，特に寄与率の高かったのは電気製品であった。

(5) 第4次開発計画

現在，マレイシアでは1981－85年を計画期間とする第4次開発計画に入っている。1984年3月には，1981－83年の実績に基づいて，同計画の「中間レビュー」がEPUより発表されている。計画前期は世界経済の景気後退の影響を受けて，マレイシア経済は極めて困難な局面を迎え，GDPの年平均成長率も，当初の計画で想定していた 7.6 %に及ばず，1981－83年の平均は 6.2 %に止っている。

セクター別に見ると，農業および鉱業部門は，パームオイル，木材，石油，LNGの生産の伸びに支えられて，当初計画の想定を上回る成長率を達成している。しかし2次産業部門では，製造業が当初計画の 11 %をはるかに下回る 4.9 %の伸びしか達成することができなかった。しかし，建設は公共投資の増に支えられて，年平均13.1%の伸びを記録したが，今後については政府投資支出を従来の水準で伸ばしていくことは，経済全体のパフォーマンスが回復しない限り不可能といえる。

総じて，第4次計画の前半は，世界的な不況の中で，成長の主導部門と目されていた製造業が計画目標を達成することが出来なかったが，今後については外部環境がどこまで改善されるか，民間投資がどこまで回復するかにかかっているが，「中間レビュー」では1984－85年についても厳しい状況は続くものとみており，第4次計画全体の目標GDP成長率を，当初の 7.6 %から 6.4 %に下方修正している。

3－5　外国援助の動向

(1)　国際援助機関・先進諸国の援助

マレイシアの所得水準は，すでに中進国の域に達しているため，マレイシアに対する先進諸国の資金の流れをみると，民間資金の流入が公的資金の流入に比べて圧倒的に高い比重を占めている。すなわち，政府ベースでの経済協力は，日本を除いてほとんど全ての国が技術協力を主体とする援助に移っており，有償資金協力を続けているのは，日本以外では国際援助機関の世界銀行とアジア開発銀行に限られている。

マレイシアに対し最大の援助を行っているのは世界銀行で，1981 年末現在で 39 プロジェクト，合計 21 億 7,500 万Mドルをコミットしている。マレイシアの所得水準はすでにＩＤＡ適格のレベルを上回っているため，全てＩＢＲＤのプロジェクトローンとなっている。近年の融資対象分野としては，世銀の政策を反映して，貧困層への重点的援助の一環である農村・農業開発計画への援助が特徴となっている。

世界銀行に次いで，マレイシアに対する第２の援助機関となっているアジア開発銀行では，従来，漁業開発，上水道整備，港湾施設建設，空港整備等インフラ主体の援助が行われてきたが，近年では農業関係プロジェクトに対する融資が増えつつある。

日本以外の先進諸国では，旧宗主国のイギリスが援助額は漸減傾向にあるものの，政府ベースでの技術協力，資金協力を継続している。その他では，西ドイツとオーストラリアが技術協力を中心とするグランドベースの援助を続けている。

(2)　日本の対マレイシア援助

日本のマレイシアに対する援助は，マレイシアの所得水準が無償資金協力の対象レベルを越えているため，有償資金協力を主体として進められてきた。

円借款による対象分野は，ラジオ・テレビ放送網整備，火力・水力発電所建設，橋梁・道路建設，港湾建設などのインフラ整備が主体である。日本の協力が最も集中しているのは電力セクターで，第２次円借款以降第８次円借款までの間に合計 1,143 億円の供与がなされており，円借款の既契約分のおよそ半分に相当している。

技術協力では，交通開発（鉄道，道路，港湾），水資源開発，放送網整備等に関する開発調査のほか，職業訓練指導員・上級技術者養成センター，金属工業技術センター，国立計量研究所に対するセンター協力が，マレイシアの志向する工業化へのニーズに即した技術協力として注目されている。

Ⅳ　相手国関係機関に対する質問状と回答

Ⅳ　相手国関係機関に対する質問状と回答

1. 調査スコープ

SCOPE OF THE POST-EVALUATION STUDY

ON

THE JAPANESE TECHNICAL AND FINANCIAL COOPERATION PROJECTS

I. Objectives of the Study

The aims of the survey are to analyse and evaluate the efficiency and effectiveness of the Japanese technical and financial cooperation projects so as to learn from the experiences and reflect them on the design and implementation of future projects.

II. Projects to be Studied

Philippines

P-1: Technical Cooperation on the Establishment of the Ceramic Research and Development Center.

P-2: Construction Project of Freshwater Aquaculture Training and Laboratory Complex at the Freshwater Aquaculture Center, Central Luzon State University.

P-3: The Urban Transportation Study of Metro Manila and the Construction Projects of Grade Separation at South Diversion Road and Others.

Malaysia

M-1: Technical cooperation on the MARA Johor Bahru Vocational Training Institute.

M-2: Feasibility Study on the Sewerage and Drainage System Project, Butterworth/Bukit Mertajam Metropolitan Area.

III. Method of the Study

Each project is to be analysed and evaluated its effectiveness and efficiency for the whole cycle of cooperation from its planning stage to the completion. An emphasis is placed on the following items:

(1) Attainment of targets

(2) Direct and indirect impacts of the project (positive as well as negative)

(3) Efficiency of implementation

(4) Adequacy of the original plan

IV. Organizations to be Visited

Philippines

1. National Economic and Development Authority (Projects P-1,2,3)
2. National Science and Technology Authority (P-1)
3. Ceramics Research and Development Center (P-1)
4. Ministry of Natural Resources (P-2)
5. Central Luzon State University (P-2)
6. Ministry of Public Works and Highways (P-3)
7. Ministry of Transport and Communication (P-3)
8. Metro Manila Commission (P-3)

Malaysia

1. Economic Planning Unit (Projects M-1, 2)
2. MARA Headquarter (M-1)
3. MARA Johor Bahru Vocational Training Institute (M-1)
4. Ministry of Health (M-2)
5. Ministry of Public Works (M-2)
6. Penang State Government (M-2)
7. Municipal Council, Province Wellesley (M-2)

V. Schedule of the Study

Dec. 6, 1984 - Dec. 16, 1984 in the Philippines

Dec. 16, 1984 - Dec. 22, 1984 in Malaysia

VI. Members of the Study Team

Leader	Yukio Harada	Senior Coordinator, Dept. of Planning, JICA
Economic Cooperation Policy	Satoshi Nakajima	Ministry of Foreign Affairs
Project Evaluation	Atsuyoshi Toda	Development Planning Specialist, JICA
Project Evaluation	Noriyoshi Nagamatsu	Senior Economist, International Development Center of Japan

J I C A
Japan International Cooperation Agency
2-1, Nishi-Shinjuku, Shinjuku-ku
Tokyo 160, Japan

2. フィリピン関係

To: National Economic and Development Authority

QUESTIONNAIRE

1. Has the current National Development Plan been successfully implemented? Have the macro-economic and sectoral targets been attained? If not, what were the causes which have brought the result? Were there any changes in the development policy, targets and/or priority areas of development in the course of implementing the plan?

2. What are the priorities of such sub-sectors as (1) Ceramics Industry, (2) Aquaculture, and (3) Urban Transport in the National Development Plan?

3. What is your assessment on the development projects implemented by the Japanese cooperation including three projects to be evaluated by the present team, especially on the following:
   (1) Efficiency of the procedure from the project selection to the implementation;
   (2) Direct and indirect impacts of project (positive as well as negative); and
   (3) Needs for the follow-up cooperation.

4. What do you think are the major differences between Japanese development cooperation and development cooperation with other countries on the following points:
   (1) Decision-making process;
   (2) Sector of cooperation;
   (3) Types and methods of cooperation; and
   (4) Way of following-up cooperation.

5. How and where could we improve our cooperation efforts in the coming years?

6. Could you describe the evaluation activities of NEDA on the following points:
   (1) Organization
   (2) Number of staffs
   (3) Method and procedure of evaluation
   (4) Examples of past and present evaluation activities

To: National Science & Technology Authority
Project to be evaluated: Technical cooperation on the Establishment of the Ceramic Research and Development Center

QUESTIONNAIRE

1. The technical cooperation of Japan for the establishment of the Ceramic Research and Development Center (CRDC) was ended on March, 1983. What do you think about the technical cooperation of Japan for this project? Was it satisfactory or not?

2. Please comment on the Japanese technical cooperation for this project from the following points of view:
   1) The attainment of target set at the initial stage of the project
   2) The efficiency of the implementation process of the project (proper scheduling, selection of experts and equipment, training in Japan, etc.)
   3) The effect (impact) or influence on the social and economic development of the Republic of the Philippines including negative ones.

3. How do you define the strength and weakness of the cooperative efforts with the government of Japan?

4. We have learnt that one of the important roles of CRDC is to promote the local and indigenous ceramic industry through their technical services. What would you say have been your achievements on this point? Do you think that CRDC has now sufficient staffs and budget in order to fulfil thier responsibilities? If not, what would be the main problems?

5. Do you have any other policies and measures to promote the local and indigenous ceramic industry of the philippines, fiscally and/or by tax laws and regulations?

6. What are the main differences between joint-ventured ceramic producers with foreign investors and small-scale local ceramic producers? Can you expect that the technological gap between them will be narrowed in a foreseeable future?

7. Have you ever received any technical cooperation from other foreign countries in the field of material science? If any, please answer the following.
   1) Name of the project
   2) Donor country or organization
   3) Cooperation period
   4) Contents of the cooperation
   5) Total cost of the project and the proportion of doner's contributions

To: The Ceramic Research and Development Center
Project to be evaluated: Technical cooperation on the Establishment of the Ceramic Research and Development Center

QUESTIONNAIRE

I. General questions

1. What are the main roles and activities of the Ceramic Research and Development Center (CRDC) as one of national research institutes?

2. Please provide us with the following information about CRDC:
   1) A present organizational chart
   2) Number of staffs and workers
   3) Annual expenditures in 1982-1984 (salaries and wages, operational cost,etc.)
   4) Annual revenues in 1982-1984 (sales of experimental products and income by technical services)

3. Do you think that CRDC has now sufficient staffs and budget in order to pursue its responsibilities of promoting the local and indigenous ceramic industry? If not, what would be the main problems?

4. Please provide us with some other related information as follows; If available.
   1) Number of local and indigenous ceramic producers and their approximate number of workers
   2) Number of joint-ventured ceramic producers with foreign partners and their workers.
   3) Annual production of ceramics (1980-1983)
   4) Import and export of ceramics (1980-1983)

II. Questions about the technical cooperation of Japan

1. Was the technical cooperation of Japan for the establishment of CRDC satisfactory as expected initially? If you find something unsatisfactory, please indicate them.

2. Please comment on the following points concerning with the technical cooperation for CRDC.
   1) The attainment of target set at the initial stage of the project
   2) The efficiency of the implementation process of the project (proper scheduling, selection of experts and equipment, training in Japan, etc.)
   3) The effect (impact) on the social and economic development of the Republic of the Philippines including negative ones.

3. How do you define the strengrh and weakness of the cooperative efforts with the government of Japan?

4. What was the main reason of the 2-year delay of the completion of buildings and facilities of CRDC at the initial stage of cooperation? Did it prevent the smooth implementation of technical cooperation?

5. What do you think about the technology transfer through the Japanese experts? Was it satisfactory or not? Was the technological level of CRDC staffs improved remarkably through the technical cooperation of Japan? Can they fully carry out their responsibilities without any assistance of Japanese experts?

6. Did any problems exist in the recruitment of the CRDC technical staffs? And what about the problem of their "job-hopping"?

7. Do you find anything difficult in managing the activities of CRDC after the retreat of Japanese experts?

To: Freshwater Aquaculture Center, Central Luzon State University

Project to be evaluated: Construction Project of Freshwater Aquaculture Training and Laboratory Complex

QUESTIONNAIRE

1. Our understanding is that Freshwater Aquaculture Center performs two vital functions: to serve as a national center for promoting research and to train extension workers. What would you say have been your achievements on these points?

2. What are, in your opinion, the most important contribution(s) made by the Training and Laboratory Complex to the programs and activities of the Center?

3. What is your assessment of the suitability, functionality and practicability of the buildings, facilities, machines and equipments provided by JICA to the research and training programs of the Center?

4. How do you evaluate the buildings, facilities, machines and equipments in terms of operation and maintenance?

5. During the construction period, did you come across any difficulties, technical, managerial or cultural, in working with the Japanese teams?

To: Ministry of Natural Resources

Project to be evaluated: Construction Project of Freshwater Aquaculture Training and Laboratory Complex

QUESTIONNAIRE

1. How do you assess the importance of freshwater aquaculture in the context of rural development?

2. What is your evaluation of the Freshwater Aquaculture Center at the Central Luzon State University in relation to the development of the freshwater aquaculture sub-sector in the Philippines?

3. Where do you see a need for co-operative efforts with foreign governments or international agencies in this sub-sector? What are the co-operative efforts of the past as well as of the present?

4. How do you define the strength and weakness of the co-operative efforts with the government of Japan?

To: Ministry of Transport and Communications
Projects to be evaluated: The Urban Transportation Study of Metro Manila (UTSMMA) and the Construction Projects of Grade Separation

QUESTIONNAIRE

1. What are the major urban transport problems in Metro Manila area? How are you going to improve the situation?

2. What are the short-, medium- and long-term policies and priority areas of urban transport improvement?

3. How do you assess the Japanese technical and financial cooperation in the urban transport sector since UTSMMA had been formulated in 1973, particularly on the following:
   (1) Efficiency of the procedure of cooperation from the project selection to the implementation;
   (2) Effects of project implementation;
   (3) Consistency and complementarity between various projects; and
   (4) Needs for the follow-up cooperation.

4. What were the major multilateral and bilateral assistance to the urban transport improvement for the last ten years? If available, please attach a list of them.

5. What do you think are the major differences between Japanese cooperation and those by other multilateral and bilateral aid agencies? Please comment the difference on the following:
   (1) Decision-making process;
   (2) Areas and methods of cooperation;
   (3) Terms of finance; and
   (4) Way of following-up cooperation.

To: Ministry of Public Works and Highways

Project to be evaluated: Construction Projects of Grade Separation at South Diversion Road and Others

QUESTIONNAIRE

1. What are the major urban transport problems in Metro Manila area? How are you going to improve the situation and what are you going to implement in the coming years? What are the major policies and priority areas of urban transport improvement?

2. Has the urban highway improvement program been implemented as planned? If not, what were the causes which have broght the result?

3. How do you assess the Japanese technical and financial cooperation in the urban transportation sector since UTSMMA had been formulated in 1973, particularly on the following:
   (1) Efficiency of the procedure of cooperation from the project selection to the implementation
   (2) Effects of project implementation
   (3) Consistency and complementarity between various projects

4. How do you evaluate the impacts of constructing the grade separation at the South Diversion Road and other road through the Japanese financial cooperation?

5. What were the major multilateral and bilateral assistance to the development of highway sector, especially to the urban highways in Metro Manila, for the last ten years? If available, please attach a list of them.

6. What do you think are the major differences between Japanese cooperation and those by other multilateral and bilateral aid agencies? Please comment the difference on the following:
   (1) Decision-making process
   (2) Areas and methods of cooperation
   (3) Terms of finance
   (4) Way of following-up cooperaton

7. Relevant materials and data related to the above questions are highly appreciated.

To: Metro Manila Commission

Projects to be evaluated: The Urban Transportation Study of Metro Manila (UTSMMA) and the Construction Projects of Grade Separation

QUESTIONNAIRE

1. What are the major urban transport problems in Metro Manila area? How are you going to improve the situation?

2. What are the short-, medium- and long-term policies and priority areas of urban transport improvement?

3. How do you assess the Japanese technical and financial cooperation in the urban transport sector since UTSMMA had been formulated in 1973, particularly on the following:
   (1) Efficiency of the procedure of cooperation from the project selection to the implementation;
   (2) Effects of project implementation;
   (3) Consistency and complementarity between various projects; and

4. What were the major multilateral and bilateral assistance to the urban transport improvement for the last ten years? If available, please attach a list of them.

5. What do you think are the major differences between Japanese cooperation and those by other multilateral and bilateral aid agencies? Please comment the difference on the following:
   (1) Decision-making process;
   (2) Areas and methods of cooperation;
   (3) Terms of finance; and
   (4) Way of following-up cooperation.

「フィリピンへの経済開発・援助全般」に関する質問への，NEDAの回答

I. Has the Current National Development Plan been successfully implemented?

The Updated Philippine Development Plan for 1984-1987 was just released last September 1984 and at this time, it is to early to say whether or not the Plan has been successfully implemented.

Have the macro-economics and sectoral targets been attained? If not, what are the causes which have brought the result?

With the economic recovery program well on its way, majority of the macro-economic and sectoral targets are gradually being attained. The Gross Domestic Product (GDP) for the first semester of 1984 which registered at -3.7 percent, is said to be slightly lower than the projected level of -4.5 percent for the year.

In line with the policy of fiscal restraint, the government managed to cut down its real consumption in the first semester by 11.8 percent, while still raising employee compensation. Total real investments deterred by tight credit, austere public spending, weak business prospects, and import cutbacks fall by 34.5 percent.

Austerity measures are continued to be implemented thus improving further the BOP position. Merchandise exports value increased, while total import payments declined. The income in exports was primarily due to sustained growth momentum of non-traditional manufactures and higher export revenues from coconut products (except copra meal/cake), molasses, logs, abaca fibers, and bananas. In the case of importes, the biggest reduction came from consumer and capital goods.

However, despite government efforts to boost employment, the national employment rate declined from 94.1 percent during the first quarter of 1983 to 93.7 percent during the first quarter of 1984. As of 23 October 1984, 77,764 workers have been terminated since the start of the year as a result of the shutting down of a number of distressed industries.

The consumer prices continued to spiral as a result of the foreign exchange scarcity due to the delays in the restructuring negotiations and speculations on the peso-dollar exchange rate. In addition, price developments were influenced by reduced supply of imported inputs, slowdown in production activities and speculative pressures. As a result, inflation rate for the first semester averaged 40.2 percent thus raising the projection for the year to about 50 percent.

Were there any changes in the development policy, targets and/or priority areas of development in the course of implementing the plan?

The Philippine government laid down a number of measures intended to implement more disciplined and integrated fiscal and monetary programs. This included the changes in the budget program which was subjected to a 15 percent reserve at the start of the year and

an additional 5 percent in June 1984. At the same time, a ₱1.5 billion reduction was imposed on the maintenance and operating expenditures as well as in capital expenditures and net lending to public corporations.

Policy measures to raise agricultural production and productivity were implemented. For palay, the support price has been raised twice during the first semester of 1984 from ₱2.10 to ₱2.35 in May and further to ₱2.65 in June to help farmers cover the recent increases in costs of fuel, fertilizers, transport and other production factors. Similarly, the support price for corn was also increased twice - from ₱1.65 to ₱2.00 in May and further to ₱2.30 in June. Meanwhile, sugar trading was deregulated for the domestic market, and sugar crop loans amounting to ₱2.1 billion were made available to planters, producers and other sectors of the industry. Moreover, the minimum legislated pay was raised giving workers in sugar central and independent refineries a ₱6.50 increase in daily pay. Likewise, the ceiling prices on chickens, eggs and hogs were deregulated.

To minimize the adverse effects of recent economic difficulties, a package of adjustment measures were prepared for workers and their families affected by the financial crunch. Moreover, a study is being conducted to identify short-term skills training programs for laid-off workers tailored to the needs of potential growth sectors such as agri-based and export industries to ensure their re-entry to the labor market.

The medicare benefit allowances increased by 33 percent in May to make the program more responsive to the needs of the people. Pag-IBIG interest rates were likewise restructured to accommodate more low-income borrower and allow the construction of more low-cost housing units. (Figures as of First Semester, 1984)

II. What are the priorities of such sub-sectors as (1) Ceramics Industry, (2) Aquaculture, and (3) Urban Transport in the National Development Plan?

In line with the thrust of the Updated Development Plan and in pursance of a balanced agro-industrial development strategy, the government has placed a high priority on aquaculture development and that of the ceramics industry. As for the improvement of urban transportation, the government has re-directed its strategies to the improvement of less-developed and depressed areas.

III. What is your assessment on the development projects implemented by the Japanese cooperation including three (3) projects to be evaluated by the present team, especially on the following:

(1) Efficiency of the procedure from the project selection to the implementation.

Proposals submitted for Japanese assistance normally takes less than a year before it gets implemented. It undergoes several rounds of evaluation from both the Philippine and Japanese sides before it is finally considered at the annual consultations, which takes place in the middle of the year. It takes also quite some time for JICA to organize the dispatch of survey missions to conduct site visits and draw up the plans for project implementation. If these time lags could be shortened, then the projects can be undertaken and completed at a much shorter period.

(2) Direct and indirect impacts of project (positive, as well as negative).

Japanese assistance has always centered its efforts in bringing about infrastructure and agricultural development to its recipient nation. The former is aimed at improving the country's existing transport system and in carrying out the program of rural electrification. The latter is aimed at making the country self-sufficient in food and raw materials production.

In recent years, the power and energy sectors have been given emphasis as a result of the worldwide oil crisis which has left many oil-dependent nations like the Philippines in shambles. The search for new sources of energy especially non-conventional sources pose a challenge to the nation. This, then, brought about exploratory works in geothermal energy, mini-hydro and dendro-thermal energy sources.

The Japanese have, likewise, shown emphasis in educational development which is aimed at bringing up personnel in developing countries who are technically capable of taking a positive part in the national task of economic and social development.

(3) Needs for the follow up cooperation.

With the country's current economic situation, the need for more follow up cooperation is likely to be sought to procure the necessary spare parts for the worn-down equipment and in re-directing the assistance to the changing needs of the economy.

IV. What do you think are the major differences between Japanese development cooperation and development cooperation with other countries in the following:

(1) decision-making process

From all the bilateral and multilateral sources, USAID is the only donor agency which extends assistance to projects consistent with its own developmental assistance program's regional and sectoral thrust and not according to the needs of the recipient country. In addition, the planning of projects for USAID assistance, particularly the identification, design and arrangements for implementation, are largely determined by the donor agency.

(2) Sector of Cooperation

All multilateral and bilateral donors tend to cater to a different sector. In the case of Australian assistance, majority of its projects are those of the integrated area development types, while for New Zealand, its energy projects. IBRD, on the other hand, caters to industrial projects, ADB on infrastructure projects and the Germans on agriculture and industry.

(3) Types and Methods of Cooperation

The United States provides grant assistance in the preparation and implementation of various projects in and around the vicinity of the US military bases.

With the exception of the Japanese, other donor agencies provide funds for the undertaking of feasibility studies for projects that could later be financed for capital or grant assistance.

(4) Ways of Following-Up Cooperation

It is only the Japanese Government which provides follow-up assistance on completed projects to assess their results and to determine further areas of strengthening and improving the assistance already provided for.

V. How and where could we improve our cooperation efforts in the coming years?

Priority should be given to projects that are directly supportive of the agro-industrial development strategy as well as those that will spread the benefits to a great majority of the populace. Assistance should be directed to the development of human resources and appropriate technologies with the aim of increasing productivity and enhancing industrial and agricultural linkage.

Assistance should be geared more to the real development needs of the recipient country and the donor country should allow them more flexibility and autonomy in meeting development priorities.

VI. Could you describe the evaluation activities of NEDA on the following points:

(1) Organization

NEDA is responsible for deciding on the implementation of a project to be proposed for foreign assistance, determining firstly a project's conformance with a set of national/sectoral/regional development plans and programs, and secondly, the propriety of endorsing the proposal for assistance to a foreign source in view of a set of thrusts/targets of the sources of assistance programs. In the process, NEDA reviews all relevant aspects of the projects which includes technical, financial and economic aspects. Post project evaluation is conducted for major capital-assisted projects only.

(2) Number of Staffs

The External Assistance Staff (EAS), with technical support from the four (4) sectoral staffs, namely: the Infrastructure Staff (IS), Industry and Utilities Staff (IUS), Agriculture Staff (AS), and the Social Services Staff (SSS), evaluates all project proposals for foreign assistance except for projects proposed for ADB and WB which are handled by the Projects Economic Staff (PES). Projects proposed for OECF funding, on the other hand, are directly handled by the OECF Secretariat which is based at IS.

Post evaluation for capital assistance projects are done by PES.

(3) Methods and Procedure for Evaluation

In line with the thrust of the updated development plan, NEDA has recently undertaken a review of the programs and projects that will be financed for the next five (5) years, 1985-1989. Emphasis of the evaluation was given to the supportiveness of the programs and projects to the balanced agro-industrial development strategy (BAIDS) and the economic stabilization program.

「フィリピン窯業研究開発センター」に関する質問への，NSTAの回答

TECHNICAL COOPERATION ON CERAMICS RESEARCH AND DEVELOPMENT CENTER

ANSWERS TO QUESTIONNAIRE

1. Yes, the technical cooperation of Japan was very satisfactory.

2. Comments on the technical cooperation

   a) Most of the targets set at the initial stage of the project were carried out. Implementation of others, however, were not accomplished due to budgetary constraints.
   For example, the delay in the completion of the buildings and facilities at the initial stage was due to budgetary constraints with respect to capital outlay on the Philippine government's side. It disrupted the smooth implementation of the project in the sense that some of the equipment could not be installed resulting in the delay in the transfer of operational know-how to the staff.

   b) The overall process for the implementation of the project was efficient.

   c) The project resulted in the upliftment of the ceramic industry in the Philippines, especially in the field of brick and tile making. Acquired technology was effectively transferred to local ceramic producers.

3. - Joint decision making was one of the strong points in the technical cooperative efforts on the project between Japan and the Philippines. This resulted in the proper selection of equipment for donation, effective identification of training needs and a well-balanced dispatch of experts.

- A weakness of the cooperative effort that could be mentioned was that the training of personnel did not include training on maintenance and repair of the donated eq uipment. Hence, problems arose when the equipment breaks down, since the staff were not taught trouble-shooting.

- Some of the donated equipment were out-moded.

4. Although CRDC was not formally created as a center, rather it is known as a joint project of JICA and the National Institute of Science and Technology, it has been very effective in the promotion of the local ceramic industry. Among its notable accomplishments are in the design of ceramic equipment, establishment of pilot plant and demonstration centers (brick and tile pilot plant, pottery pilot plant) and ceramic training centers particularly in the rural areas to harness the latent skills of the local potters.

Now, that CRDC was made part of the Materials Science Research Institute it has sufficient staff and budget in order to pursue its responsibility of promoting the local ceramic industry.

5. The National Science and Technology Authority under its new orientation emphasized the importance of promoting the application and utilization of R & D results. This thrust is manifested in the mandated functions of the NSTA under Executive Order No. 784 which include among others, to wit:

"Develop and implement a national delivery system for the effective and efficient utilization of the results of scientific add technological research and development". To implement this function a Technology Utilization Division under the Special Projects Staff was created within NSTA and a focal

point unit in each S & T Councils and NSTA agencies which shall be responsible for the functions of technology utilization were identified.

In line with this, the NSTA is undertaking a Technology Action Program which is aimed at promoting the application and utilization of indigenous technologies in all levels of productive activity. Ceramics technology is one of the areas covered by this program and a number of activities and projects were developed for technology transfer in this area. Aside from the NSTA other government agencies like the National Cottage Industry Authority (NACIDA) and the Ministry of Trade and Industry assist local ceramic manufactures through financial, technical and other assistances.

6. The big difference in joint-venture ceramic producers and local manufacturers are in the equipment and facilities of the former. This gap can be narrowed in the future through the assistance of the government in promoting the local ceramic manufacturers. NSTA is doing its share in narrowing down this gap by pursuing a vigorous R & D program on ceramics and encourage the utilization of significant R & D results on this area to ceramic manufacturers particularly the small and medium scale industry.

7. The Materials Science Research Institute has preliminary discussions for technical cooperation in Materials Science with the Korean Advance Institute of Science and Technology (KAIST).

Proposals to other countries e.g. Germany were also submitted for possible assitance. Areas of cooperation being requested include

R & D, experts, equipment, manpower training and exchange of information. These proposals are still in the negotiation stage.

「フィリピン窯業開発研究センター」に関する質問への，CRDCの回答

REPLY TO THE QUERIES IN THE JICA EVALUATION QUESTIONNAIRE

I. General Questions:

1. The Materials Science Research Institute (MSRI) was formally created by Executive Order No. 784 on March 17, 1982. The Institute assumed the research functions of the Metals Industry Research and Development Center (MIRDC) of the Ministry of Trade and Industry and absorbed the ceramics research unit of the National Institute of Science and Technology (NIST).

With the appointment of its first Director, Dr. Manolito G. Natera, the MSRI became operational in early 1983 through the interim financial support provided by the National Science and Technology Authority (NSTA). The initial activities of the Institute were a continuation of the ceramics research and development activities initiated by the joint NIST-JICA project for the establishment of the Ceramics Research and Development Center (CRDC) which started in 1977 and terminated in March 1983.

In consonance with the existing organizational structure of other R & D Institutes of the NSTA, an internal restructuring of the MSRI was effected in August 1983 providing for the formation of support units, to wit:

a. Planning, Programming, Coordinating Unit
b. Budget Unit
c. Finance and Administrative Division

And eight (8) research and technical groups each under the supervision of a Program Coordinator and working on specific studies and activities programmed for implementation.

R & T Groups are:

1. Ceramics Research and Development Group
2. Engineering Research and Services Group
3. Metals Research and Development Group
4. Materials Test Production Group
5. Regional Field Projects and Technical Assistance Coordination Group
6. Manpower Development and Information Services Group
7. Materials Testing and Evaluation Group
8. Special Research Pool

The aforesaid research and technical groups have continuously executed and performed the research functions of the former CRDC. Present activities include:

a. Test/analysis and evaluation of ceramic raw material deposits and products
b. R & D on ceramics both laboratory and pilot plant scale
c. Information dissemination, training, technical services pertaining to ceramics

d. Establishment of ceramic centers for demonstration and and production

e. Geologic survey, characterization and identification of ceramic raw material deposits

f. Design, fabrication, installation, operation, maintenance and repair of kilns, simple equipment, tools and gadgets for the ceramic industry

(For more information please refer to the attached MSRI brochure) see Annex A

2.1 See Annex B

2.2 Number of Staff and Workers

Classification	Permanent	Contractual
a. Technical	79	10
b. Non-technical	21	16

2.3 Annual Expenditures:

a. 1982 not available
b. 1983 ₱2,933,637.12
c. 1984 ₱7,508,901.00

2.4 Annual revenues:

a. 1982/not available
b. 1983 ₱23,596.85
c. 1984 ₱70,129.43 (up to October 1984)

3. The MSRI has sufficient staff and budget in order to pursue its responsibilities of promoting the local ceramic industry.

4.1 data not available

4.2 data not available

4.3. data not available

4.4 Please refer to Annex C

II. Japanese Technical Cooperation:

1. Yes, the technical copperation of Japan was very satisfactory

2. Comments on the technical cooperation

2.1 Most of the targets set at the initial stage of the project were carried out Implementation of others, however, were not accomplished due to budgetary constraints.

2.2 The over all process for the implementation of the project was efficient.

Problems encountered:

1. Communication between the experts and local technical personnel proved difficult due to the language barrier.

2. Inadequate training of Filipino counterparts with respect to maintenance and repair of sophisticated equipment.

3. Some donated equipment were out-moded.

2.3 The project resulted in the upliftment of the ceramic industry in the Philippines, especially in the field of brick and tile making. Acquired technology was effectively transferred to local ceramic producers.

3. Joint decision making was one of the strong points in the technical cooperative efforts on the Project between Japan and the Philippines. This resulted in the proper selection of equipment for donation, effective identification of training needs and a well-balanced dispatched of experts.

4. The delay of the completion of the buildings and facilities at the initial stage was due to budgetary constraints with respect to capital outlay on the Philippine Governments' side.

It disrupted the smooth implementation of the project in the sense that some of the equipment could not be installed resulting in the delay in the transfer of operational know-how to the staff.

5. Technology transfer through the Japanese experts was satisfactory, the technical expertise of the staff was improved remarkably through training with the guidance of Japanese experts. However, further training and facilities are necessary for the conduct of high technology research on ceramics and other materials.

6. There is no problem on the matter under present MSRI policies.

7. There was no difficulty in the managing of activities of the former CRDC and the present ceramic activities under the MSRI.

The only difficulty encountered as a result of the retreat of the Japanese experts is the lack of both local qualified technicians and spare parts for the proper repair and maintenance of sophisticated testing equipment.

ANNEX C-1

Philippine Imports of Ceramic Products
By Commodity, 1979 - 1983
(In Number, FOB US$)

Commodity	1983		1982		1981		1980		1979		Total Imports, 1979-83	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Articles of tableware of porcelain or china, for hotel & restaurant with their names, marked or etched or engraved	51,629	139,721	49,919	134,674	105,567	242,298	187,287	478,797	118,657	252,864	513,059	1,248,354
Plain, white undecorated plates, cups, saucers and bowls, of porcelain (all sizes)	47,105	18,065	14,332	34,926	2,919	1,407	2,784	2,976	12,158	33,174	79,298	90,548
Tableware and other articles of a kind, commonly used for domestic or toilet purposes, of porcelain or china, n.e.s.	1,686,995	672,994	1,483,459	432,583	123,935	77,962	52,718	82,188	113,747	193,069	3,460,854	1,458,796
Plain and white cups, saucers, bowls, of fine earthenware (all sizes)	-	-	432	602	-	-	81	36	2,784	1,931	3,297	2,569
Ash trays, of ceramics	2,940	1,359	384	130	1,506	349	6,208	2,468	5,371	4,620	16,411	9,526
Statuettes and other personal adornments/ornaments, or articles of furnitures, of porcelain, china or other ceramic materials, n.e.s.	51,432	35,874	75,319	36,404	43,657	37,036	35,723	46,794	26,715	14,808	232,846	170,916

Commodity	1983		1982		1981		1980		1979		Total Imports, 1979-83	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Tableware and other articles of a kind commonly used for domestic or toilet purposes, of other kinds of pottery, n.e.s.	338,704	73,080	408,978	85,542	14,325	11,540	5,295	4,387	16,534	20,220	783,836	194,769
Unglazed ceramic setts, flags, and paving hearth and wall tiles, n.e.s.	115,710	27,342	62,521	27,736	8,662	58,576	-	-	303,989	96,777	490,882	210,431
Glazed ceramic setts, flags, and paving hearth and wall tiles n.e.s.	4,089,276	599,544	1,347,594	320,208	3,684,687	453,187	2,039,223	279,693	2,903,944	3,271,176	14,064,724	4,923,808
Total for the Year	6,383,791	1,567,979	3,442,938	1,072,805	3,985,260	882,955	2,329,319	897,339	3,503,899	3,888,639	19,645,207	8,309,717

Source: Foreign Trade Statistics, HCSO.

ANNEX C-2

Philippine Exports of Ceramic Products
By Commodity, 1979 - 1983
(In Number, FOB US$)

Commodity	1983		1982		1981		1980		1979		Total Exports, 1979-83	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Unglazed ceramic setts, flags and paving hearth, and wall tiles, n.e.s.	1,266,825	180,817	1,058,990	316,281	683,220	300,350	1,390,549	569,226	1,588,425	556,075	5,988,009	1,922,749
Glazed ceramic setts, flags, and paving hearth, and wall tiles, n.e.s.	101,626,803	5,918,760	25,435,970	2,183,063	59,177,969	5,965,308	64,608,892	7,833,754	71,951,788	4,147,683	322,801,422	26,048,568
Plain, white undecorated plates, cups, saucers and bowls, of porcelain, of all sizes	-	-	-	-	30,985	76,574	-	-	1,680	14,784	32,665	91,358
Tableware and other articles of a kind commonly used for domestic or toilet purposes, of porcelain or china, n.e.s.	4,678,772	3,911,321	2,808,809	5,081,499	4,747,052	7,377,068	3,720,011	4,368,750	3,783,613	3,768,096	19,738,257	24,506,734
Plain and white cups, saucers and bowls, of fine earthen ware, all sizes	-	-	-	-	-	-	1,200	1,668	2,374	2,490	3,574	4,158

Commodity	1983 Quantity	1983 Value	1982 Quantity	1982 Value	1981 Quantity	1981 Valu	1980 Quantity	1980 Value	1979 Quantity	1979 Value	Total Exports, 1979-83 Quantity	Total Exports, 1979-83 Value
...h trays, of ceramics	85,547	22,783	44,291	5,859	6,065	11,512	34,395	17,978	19,650	22,085	189,948	80,517
Tableware and other articles of a kind commonly used for domestic or toilet purposes, of other kinds of pottery, n.e.s.	146,919	99,064	252,509	157,967	3,476,973	1,878,098	5,197,560	2,548,689	4,951,004	2,229,649	14,024,965	6,913,467
Statuettes and other ornaments and/or articles of furnitures, of porcelain, china or other ceramic materials, n.e.s.	792,583	684,129	1,024,892	849,495	1,573,004	1,133,697	1,583,306	1,222,650	1,165,929	819,474	6,139,714	4,709,445
Yearly Total Exports	108,597,449	10,816,874	30,625,461	8,594,164	69,695,268	16,742,907	76,535,913	16,562,715	83,464,463	11,560,336	368,918,554	64,276,996

SOURCE: Foreign Trade Statistics, NCSO.

「中部ルソン大学淡水養殖センター」に関する質問への，
中部ルソン大学の回答

SUBJECT : POST-EVALUATION SURVEY ON JAPANESE TECHNICAL AND FINANCIAL COOPERATION PROJECTS

PROJECT : CONSTRUCTION OF THE FRESHWATER AQUACULTURE TRAINING AND LABORATORY COMPLEX AT THE FRESHWATER AQUACULTURE CENTER, CENTRAL LUZON STATE UNIVERSITY

1. Significant Achievements of FAC

The Freshwater Aquaculture Center performs two vital functions: research and training. It is identified as the lead national agency on freshwater aquaculture research under the Philippine Council for Agriculture and Resources Research and Development (PCARRD) research network.

The FAC is also identified as the lead national agency in freshwater aquaculture training. It caters to the training needs of a variety of clientele who are directly or indirectly involved in aquaculture activities, both from the private and public sectors, either local or foreign participants. Among those who have undergone short and long-term training at the complex were fish farmers, government extension workers, fisheries officers, fisheries teachers and students.

a. Research

The notable achievements of FAC with respect to research activities are its pioneering work on the development of technologies for the culture of tilapia, broodstock development of tilapia species, integrated livestock-fish farming systems, rice-fish-animal culture and freshwater prawn hatchery and culture techniques. The Center is also involved in researches on fertilizer use in freshwater fishponds, invertebrate culture, fish parasites and diseases, fish nutrition and feed development.

Tables 1a and 1b show the various on-going research projects including the programmed researches for 1986.

Table 1a. Research Projects in Operation (1980-84)

	Title of Projects	Sponsoring Agency
1.	Fish Genetics (Physiology)	PCARRD-ICLARM
2.	Fish Hatchery	FAC-PCARRD
3.	Giant Prawn Rearing (Development of Techniques)	BNR
4.	Agri-aquaculture Farming Systems	PCARRD
5.	Rotational Fish-Crop System	PCARRD
6.	Integrated Livestock-Fish Farming	PCARRD
7.	Partial Harvest with Stock Manipulation	PCARRD
8.	Pesticide Analysis in Central Luzon	BFAR-FAC
9.	Invertebrate Culture	FAC
10.	Inorganic Fertilization	PPI

Table 1b. Research Projects Programmed for 1986

Title of Projects	Sponsoring Agency
1. Fish Genetics (Culture Aspect)	ICLARM-PCARRD
2. Induced breeding techniques for Chinese and Indian Carps	PCARRD
3. Marketability of Processed Tilapia	PCARRD
4. Small scale hatchery for tilapia	PCARRD
5. Production and Marketing of Carps	PCARRD
6. Technology development for *Trichogaster pectoralis*	PCARRD
7. Mass breeding, culture of golden snail	PCARRD

b. Training

Since the inauguration of the complex on March 3, 1983, a total of ten (10) training programs have been carried out. This was participated in by 46 foreigners and 35 Filipino trainees. The details are presented in Table 2. In addition to training activities, the complex have been the venue of several university sponsored seminars and workshops.

2. Important contributions of the complex to the programs and activities of the Center

The research capability of the Freshwater Aquaculture Center since the inauguration of the complex had been strengthened with the utilization of the equipment and

facilities granted by the Japanese Government through the JICA. Research agreement have expanded with government, private and international agencies.

Soil and water chemistry analysis have been taken care of with modern laboratory equipment. Before, analysis have always been through the National Institute of Science and Technology based at Manila, posing difficulties of immediate receipt results within the time frame. To date the problem is solved.

In general, research in the center had gained stability and momentum. Nothing could be said of the equipment/facilities but maximum use for better research.

With the construction of the complex, the support facilities for training have likewise been greatly strengthened. The conference room doubled as a lecture hall for big training groups. The audio-visual equipment provided were very helpful in the instruction compenent and the laboratories were excellent for practical and demonstration purposes.

The complex has likewise boosted the programs and activities of the College of Inland Fisheries, both in the graduate and undergraduate curricular programs.

Table 2. Details of Training Program Conducted at the FAC (March, 1983 to December 1984).

	Title of Training	No. of Participants	Nationality/Country of origin	Profile of participants	Date/Duration	Sponsoring Agency
1.	Freshwater Aquaculture	1	Bhutan	Gov't. Fishery Officer	April-Sept. 1983	UNDP/FAO
2.	Integrated Livestock-Fish Farming System	18	Filipinos	Gov't. extension workers and teachers	May 16-June 26, 1983	BFAR/RFTC/ EDPITAF
3.	Basic Aquaculture	6	2 Indonesians 1 Malaysian 2 Thailand 1 Filipino	Graduate Students/ Scholars	June 15-23,	ADC/ICLARM/ IDRC
4.	Freshwater Aquaculture Production and Marketing	4	Thailand	Offices of Ministry of Agriculture and Cooperatives	October 4 to November 10, 1983	Gov't. of Thailand
5.	Freshwater Aquaculture Production and Marketing	4	Pakistan	Offices of Department of Wildlife, Forestry and Fisheries	January 14 to July 14 1984	ADB
6.	Induced Spawning of Carps	6	Filipinos	Fishery extension workers and biologist	January 23 to 27, 1984	LLDA
7.	Freshwater Tilapia Production	7	Filipinos	Fishfarmers	March 5-10, 1984	Private/personal
8.	Basic Aquaculture	2	Filipinos	Scholar/Students	March 6-7, 1984	BAEXT/Planters Products
9.	Animal-Fish Crop Production	19	15 Malaysian 4 Filipinos	Farmers, Managers, Fisheries Specialists	October 8 to November 5, 1984	Tech Trade International
10.	Educational/Study Tour of Philippine Aquacultural Project	17	Indonesian	Gov't. fisheries officials and farmers	December 2-19, 1984	USAID/Indonesia

3. The suitability and functionality of the complex in general has made FAC highly flexible in research and training programs. Support/augmentation of previous equipment had made possible the speedy monitoring of test data for research and easy access to reproduction of training brochures/ materials/manuscripts. Researchers need not transfer from one laboratory room to another as each room is provided with equipment to suit the objectives for which the experiment is so designed. Furthermore, the building has provision for the Central Laboratory where data analysis is being worked-out.

4. The complex (e.g. buildings, facilities, machines, equipment) is in top condition for operation and maintenance though there may be some exceptions. The submersible pump after a year of operation is no longer functional. Attempts have been made to have it repaired but the parts have not been made available as this would have to be imported from Japan.

One major constraint besetting the research/ training programs is the availability of transport vehicles. JICA has donated three vehicles for research and training purposes but apparently the use of these vehicles were not controlled by FAC since they were taken into the custody of the CLSU administration. With all intents, FAC feels that the use of the three vehicles under FAC administration

will further boost the capability of the Center for research, training and extension.

5.0 During the construction period, the Japanese teams have demonstrated their qualities for hard work, organization and cooperativeness. They always emphasized high quality in the construction aspect of the Complex. Except for a minor problem in communication, no problems during this period were encountered.

「マニラ都市交通」に関する質問への，MOTCの回答

SCOPE OF THE POST-EVALUATION SURVEY ON THE JAPANESE TECHNICAL AND FINANCIAL COOPERATION PROJECTS

Q. 1. What are the major urban transport problems in Metro Manila area? How are you going to improve the situation?

A. a) The major urban transport problems in Metro Manila are:

- Traffic congestion due to inadequate road capacity and/or inefficient utilization of road space;
- Poor maintenance of roads;
- Undisciplined traffic users (drivers, passengers and pedestrians)
- Proliferation of colorum (illegally-operated) public utility vehicles (PUVs)
- Irrational route structure.

b) To remedy the situation, the government has undertaken the rehabilitation of major thoroughfares; (notably EDSA) and has revised the formulation of equivalent-maintenance-kilometer (EMK) to put emphasis on maintenance of roads. Needed improvements on various primary and secondary roads in Metro Manila as well as development/completion of major roads were identified in the conduct of MMUTSTRAP B1 Project and to be implemented by MMUTSTRAP B2 Project.

The government is also undertaking a comprehensive MManila Transportation Improvement Program which seeks to significantly reduced the colorum operation and to rationalize the present route structure. This will call for an extensive and intensive legalization drive and dispersal of these legalized PUV units into the newly-identified routes.

The installation of synchronized traffic lights systems in major roads has also greatly enhanced smooth traffic flow.

Q. 2. What are the short, medium and long-term policies and priority areas of urban transport improvement?

A. a) Short-Term

- Rehabilitation of major thoroughfares and improvement of geometric alignments and installation of traffic lights on high-volume intersections.

b) Medium-Term

- Rationalization of public transport route network structure
- Legalization of colorum operations and revisions for a more dynamic and responsive franchising system.
- Construction of PUV terminals/Modal Interchange Areas.
- Development of adequate data base for urban transport.

c) Long-Term

- Development of an urban rapid mass transit network to complement the existing LRT system.
- Development of peripheral and arterial roads, e.g. c5, c6, R10.

Q. 3. How do you assess the Japanese technical and financial cooperation in the urban transport sector since UTSMMA had been formulated in 1973, particularly on the following:

1) Efficiency of the procedure of cooperation from the project selection to the implementation;

2) Effects of project implementation;

3) Consistency and complementarity between various projects; and

4) Needs for the follow-up cooperation.

A. Japan has been actively giving technical and financial support in urban transport section since UTSMMA in 1973. There are, however, some shortcomings/flaws which must be addressed to, namely:

1. Selection of project and project scope does not adequately consider local needs.
2. Too much emphasis has been placed on data gathering.
3. Highly individualistic work-style of expatriate consultants hinders transfer of technology to local counterparts. Local consulting capabilities are rarely tapped.
4. Consultants are weak on mangement side.
5. Lacks strong tie-up in implementation/institutionalization of proposals and recommendations.

Q. 4. What were the major multilateral and bilateral assistance to the urban transport improvement for the last ten years? If available, please attach a list of them.

A. (see attached list)

Q. 5. What do you think are the major differences between Japanese cooperation and those by other multilateral and bilateral aid agencies? Please comment the difference on the following:

1) Decision-making process;

2) Areas and methods of cooperation;

3) Terms of finance; and

4) Way of following-up cooperation.

A. 5. In terms of financial conditions, most technical assistance programs are given either in grants or very soft loan packages. In other areas, however, Japanese cooperation suffer some disadvantages as stated in Item 3.

Major Multilateral and Bilateral Assistance to the Urban Transport Improvement During the last Ten Years

1.	UTSMA	-	Urban Transport Study in Metropolitan Manila Area JICA/DPWTC - 1973
2.	METROPLAN	-	IBRD/MPWTC - 1976
3.	TEAM I	-	Traffic Engineering And Management IBRD/MPWH - 1976
4.	MMUTIP	-	Metro Manila Urban Transport Improvement Project ~~JICA~~ OECF/MOTC - 1980
5.	TEAM II	-	Traffic Engineering And Management OECF/MPWH - 1983
6.	MMUTSTRAP A	-	Metro Manila Urban Transportation Strategy Planning Project IBRD/MOTC - 1983
7.	JUMSUT I	-	The Metro Manila Transportation Planning Study JICA/MOTC - 1984
8.	MMUTSTRAP B1	-	Metro Manila Urban Transportation Strategy Planning Project ADAB/MOTC - 1984
9.	JUMSUT II	-	Ongoing JICA/MOTC
10.	MMUTSTRAP B2	-	Ongoing IBRD/MPWH
11.	MMUTSTRAP B1 Extension	-	Ongoing ADAB/MOTC

December 11, 1984

「マニラ都市交通」に関する質問への，MPWHの回答

ANSWERS TO QUESTIONNAIRE

1.1 What are the major urban transport problems in Metro Manila Area?

Answers: Virtually all transport in Metro Manila Area depends on the roads, and the majority of journeys suffer from the high operating costs and time losses associated with congestion particularly on the primary road network. Traffic management measures, including the installation of computerized signals at intersections which have proven to be effective, cover only part of the city core and its approach routes. Traffic enforcement is insufficient and fragmented among several agencies. The unabated use of low occupancy vehicles (private cars) has added to the congestion. Such measures as bus and jeepney lanes have been introduced but these are inefficiently enforced. The widths, pavements and drainage of some primary roads are deficient in relation to the traffic they carry. The capacity of certain intersections, even with traffic management, has been reached. The inadequacy of primary roads in the fast urbanizing area outside of Circumferential Road C-4 (EDSA) has resulted in uncontrolled urban development which in turn contributes to the further congestion of the existing road system. Furthermore, the lack of well planned and developed secondary arterial and distributor road system has undermined the effectiveness of the road system.

1.2 How are you going to improve the situation and what are you going to implement in the coming years? What are the major policies and priority areas of urban transport improvement?

Answers: The Government since early 1970 has been conducting studies for the improvement of the transportation system for Metro Manila (Please see Figure 1 the various transport and related studies).

Answers: The policy objectives for the improvement of the urban transportation system of Metro Manila are to:

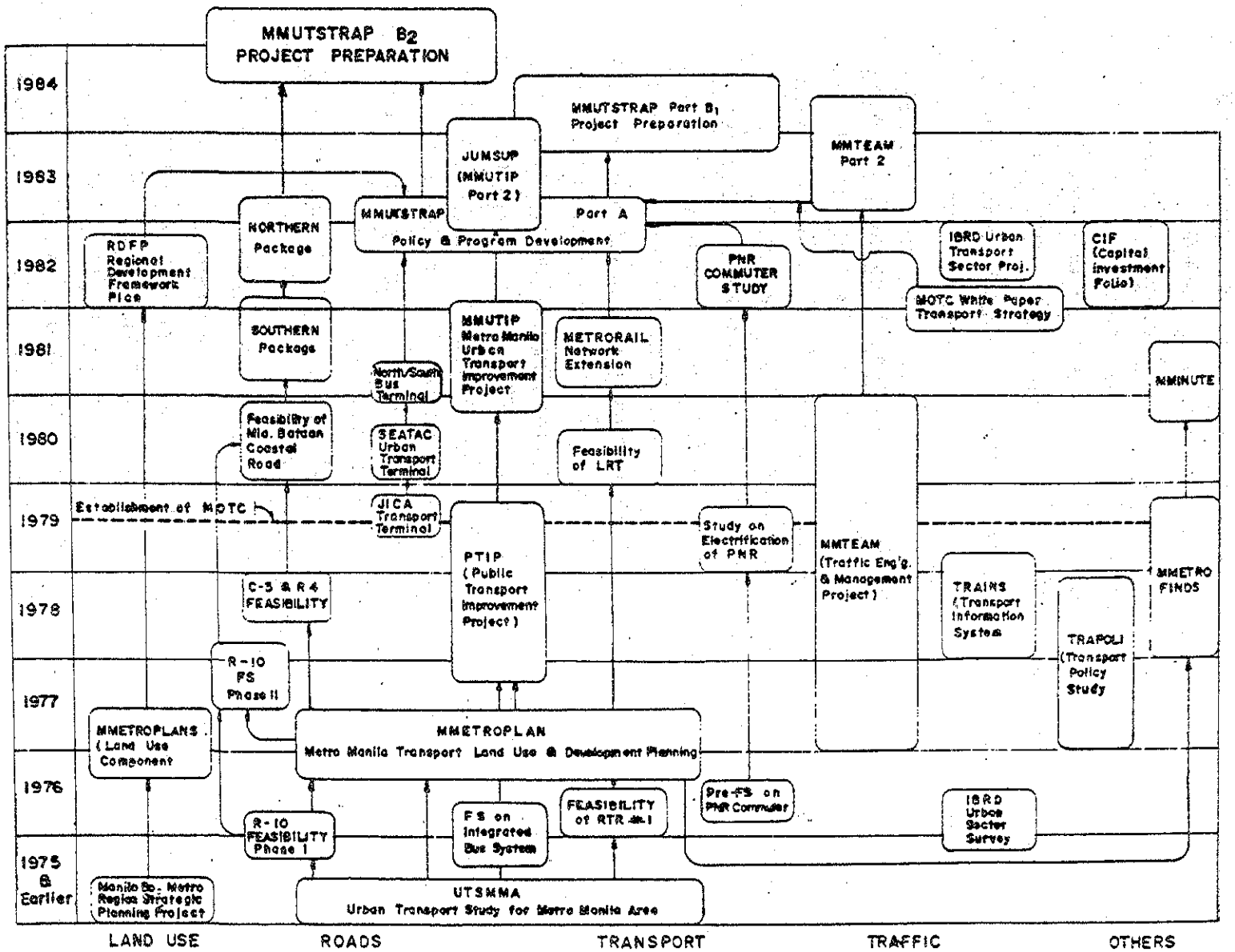

FIGURE 1 : TRANSPORT & RELATED STUDIES

a) provide for the economic, convenient, safe, reliable efficient movement of goods and passengers;
b) provide an adequate public transport service that is accessible and affordable; and
c) promote a more desirable urban environment which enhances social, economic and physical activities.

Pursuant to the policies, the following priority measures have been or will be adopted to improve the situation.

a. Increase the traffic carrying capacity of the existing road system thru expanded and improved traffic management and enforcement. These are low-cost but effective measures to maximize the use of the present facilities. The Traffic Engineering and Management (TEAM) Project Office of the Ministry of Public Works and Highways has completed, with IBRD assistance, the installation of computer-controlled traffic signal lights, channelization, provision of pedestrian lanes and traffic signs, mainly within the urban core bounded by Circumferential Road C-2. Implementation of Phase II of the traffic management scheme covering 170 more intersections is underway with OECF assistance. Phase III covering 120 intersections is being designed for possible IBRD financing. Moves to integrate and strengthen traffic enforcement have been initiated.

b. Influence travel demand by favoring efficient users of road space and discouraging inefficient users. To discourage the use of private cars, higher taxes and fees for their purchase and registration have been applied. Parking restrictions and charges in the downtown area have been imposed and will be expanded. On the other hand, the use of public buses and jeepneys is being and will rather be fostered thru the provision of terminals, exclusive public utility lanes, loading/unloading areas, and related facilities.

c) Intensify road maintenance and selectively undertake road improvement and construction beyond the capacities of the foregoing measures. Maintenance is receiving greater emphasis. Some arterial roads carrying heavy traffic which could not be adequately handled by traffic management have been or will be upgraded, which involves widening, paving, junction improvement, including, where warranted, grade separation, and other measures. The secondary road network will further be improved and its use by public utility vehicles increased to relieve congestion on the major routes and provide better service. Missing links in the primary road network (e.g. Circumferential road C-3) near the core will be constructed. In the suburbs, new roads will be built to help direct urban growth. OECF and IBRD assistance for these purposes have been or will be obtained by the MPWH and the Metro Manila Commission.

Aside from this, the Light Rail Transit Line 1 (Taft and Rizal Avenues) is almost complete with Taft Avenue Line started operation December 1, 1984. The Ministry of Transportation and Communications (MOTC) in 1982 initiated the Metro Manila Urban Transportation Strategy Planning Project (MMUTSTRAP Part A) aimed at establishing clearer priorities for transportation projects. At present, the MMUTSRAP Part B is under project preparation with B1 of MOTC involving institutional and transportation planning system plus feasibility study of bus and jeepney terminals. Part B2, under the MPWH, involves preparation of an implementation program for the construction and improvement of identified priority primary and secondary roads. The result of these studies will be the basis of projects and programs of the Government to be implemented up to early 1990. These projects will be implemented with assistance from foreign sources such as OECF and IBRD.

2.1 Has the urban highway improvmeent program heen implemented as planned? If not, what are the cause: which brought the result?

Answers: On the basis of the findings and recommendations of

UTSMMA which established the conceptual transportation system for Metro Manila and MMETROPLAN which prepared a short and medium range transport program, identified high priority primary roads had been subjected to feasibility studies, preliminary engineering and detailed engineering work undertaken mostly with technical and financial assistance from JICA, OECF and IBRD. Due to the magnitude of the cost involved on these road projects, there is a need for financial assistance from international financing institutions. Of these projects, only two ere undertaken with foreign financing up to the present, namely, the three interchanges financed by OECF under its 3rd and 5th Package Loans, and the R-10, Phase I by IBRD, and Phase II by OECF under its 11th Package Loan. The low investment level for road construction Metro Manila is mainly due to the limited overall national budget for infrastructure and to the current emphasis on countryside development.

3. How do you assess the Japanese technical and financial cooperation in the urban transportation sector since UTSMMA has been formulated in 1973 particularly on
   - Efficiency of the procedure of cooperation from the project selection to the implementation;
   - Effects of project implementation; and
   - Consistency and complementarity between various projects.

3.1 Efficiency of the procedures of cooperation from the project selection to the implementation

Answers: The procedure of cooperation from project selection to project execution is generally efficient with regards to the technical assistance from JICA for the UTSMMA Study in 1971 to the recently concluded Metro Manila Outer Major Roads Project, Northern Package in 1982 and the loans from 3rd OECF Package Loan for the three (3) interchanges to the 11th OECF Package Loan for the R-10, Phase II. Most of the projects included in the

JICA technical assistance were subjected to detailed engineering with financial assistance from OECF. The only cooperation for road improvement that took longer in the finalization of the agreement is the 11th OECF Package Loan to take into consideration the effects of the present economic recession being expeienced by the country in the actual implementation of the R-10, Phase II Project.

During the implementation of these projects, the personnel involved in the project, most especially the local counterpart staff of the Government including the local private contractors, improved their technical capability in conducting feasibility studies, supervision of construction and the latest technology in construction.

3.2 Effects of project implementation

Answers : Improvements and construction of a road project in urban area will greatly improve the traffic condition resulting to a significant savings in the country's dollar reserve through the reduction of the vehicle operating cost, a purely imported material. These completed projects will also strengthen existing urban structure as well as a catalyst in the redevelopment of depressed areas within its zone of influence. After the construction of the three (3) interchanges, which significantly improved the traffic condition at the intersections, the areas around them were converted into an intensive residential, commercial and institutional establishments. This could not only be observed around the interchanges and along EDSA but also the area being served by the intersecting road such as the proliferation of private subdivision around the Marikina and Antipolo Area for Cubao Interchange, Pasig for Shaw Interchange and the areas along the Manila South Expressway for MSDR Interchange.

3.3 Consistency and complementarity between various projects

Answers : The projects executed with Japanese technical and financial cooperation were mainly based on the findings and recommendations of UTSMMA in 1973 and MMETROPLAN in 1975. Before the launching of these projects, it was ensured their importance that they were consistent with the strategic development plan of Metro Manila and their anticipated contribution to the national and regional economy as well as its role to support various development projects within its influence area maximized.

4 How do you evaluate the impacts of the grade separations implemented through the Japanese financial cooperation?

4.1 Attainment of Targets

Answers : Although the three (3) interchange projects (Cubao, Shaw, and MSDR) have been completed and fuly opened to public aside from the existing interchanges of EDSA - A. Bonifacio Avenue and the southern approach of Guadalupe Bridge along EDSA, it is still imperative to improve the geometric designs of other remaining major intersections along EDSA, to complete the missing service roads, to remove the outer median to conform with its normal section and to install a synchronized signal system in order to attain the objectives of making EDSA a free-flowing facility throughout its length. Aside from these proposed improvements, some of its old concrete pavement especially on its northern segment are in bad condition. In view of this, the effectiveness of these three (3) interchanges could not be fully appreciated. From the above situation, the Government in 1980 through its own resources prepared the detailed design for the grade separations at EDSA-Ortigas Avenue intersection, EDSA-Buendia Avenue intersection and EDSA-Imelda Avenue intersection. For further improvement of the level of service of EDSA,

the Government in 1981 requested the Government of Japan financial assistance for the preparation of the construction plans of the major intersections along EDSA, namely, Roosevelt Avenue, East and South Avenues, Kamias Road, Ayala Avenue and Pasay Road. In 1983, the EDSA-Roosevelt, EDSA-Ortigas and EDSA-South, East and Kamias Road Interchanges were included in the 12th OECF Package Loan, but due to the present economic situation, the said Package Loan did not materialize. Construction of these proposed projects would attain the objective of making EDSA as a free-flowing facility, hence, its inclusion for financing under future foreign loan package is endorsed.

4.2 Direct and Indirect Impacts

Answers : The completion of the three (3) interchanges did not only greatly improve the travel time for the major flows at these intersections but also strengthen the effectiveness of the most important and most heavily travelled road in the major road network of Metro Manila. For the traffic from the intersecting radial roads, such as Aurora Boulevard (R-6) and Shaw Boulevard (R-5), the traffic experienced faster time to cross these intersections than without although they are still on a stop and go condition. For the South Expressway (R-3), most of the traffic conflicts were eliminated including the EDSA crossing over the South line of the Philippine National Railways. Though adjacent intersections to the interchanges experience higher delays due to the faster arrival of vehicles from the completed interchanges, this effect is minimal compared to the overall effect of the grade separations. On top of this, these grade separations had contributed to the development not only around it but also these within its zone of influence.

4.3 Efficiency of Implementation

Answers : The three (3) interchanges on the most heavily travelled roads in Metro Manila located at the densely populated area along EDSA require a wide range of engineering services considering the complexity of the structures proposed and the construction method to be adopted in order to minimize its adverse impact on the flow of traffic during construction. The assignment of Japanese consultants during the design phase and during the construction phase has maximized transfer of technology most especially to MPWH staffs. Though the project encountered some problems such as change orders and delayed acquisition of right-of-way, the experience gained has enabled the MPWH to minimize these problems.

In order to appreciate the effectiveness of these projects, the Government has:

a. properly maintained the drainage system so as not to affect the flow of traffic;

b. from time to time adjusted the signal phasing of the traffic lights in accordance with the actual flow at the at-grade intersection.;

c. properly maintained the pavement markings and street lightings for an orderly flow of traffic and for safety reasons;

d. constructed pedestrian overpasses to minimize vehicular and pedestrian conflicts;

e. provided stricter enforcement to maintain smooth flow of traffic; and

f. periodically painted the structure for aesthetics.

5. What were the major multi-lateral and bilateral assistance to the development of highway sector, especially to the urban highways in Metro Manila, for the last ten years?

Answers : Shown in Figure 1 are the various transport and related studies in Metro Manila from 1973 to 1984. Table 1 presents the tefhnical and financial assistance undertaken

for the development of the road network of Metro Manila.

6. What do you think are the major differences between Japanese cooperation and those by other multi-lateral and bilateral aid agencies? Please comment the difference on the following:

- ° Decision-making process;
- ° Areas and methods of cooperation;
- ° Terms of Finance; and
- ° Way of following-up cooperation.

Answers : Based on out experiences in the implementation of JICA, OECF and IBRD assisted projects, no marked differences on the above four items have been noted except on the Terms of Finance.

TABLE 1: TECHNICAL AND FINANCIAL ASSISTANCE IN METRO MANILA

Name of Project	Source of Assistance	Type of Project	Project Components	REMARKS
1. UTSMMA (1973)	JICA	Planning	Transportation System of Metro Manila	The findings and recommendations are the basis of the present road development in Metro Manila
2. Three Interchanges (1973)	OECF	Design and Construction	MBDS, Shaw and Cubao Interchanges	Completed
3. R-10 and Related Roads (1974)	JICA	Feasibility Study	R-10, C-1, C-2 C-3 and C-4 Roads	Recommended the ultimate plan for R-10 and its related roads
4. R-10, Phase I (1975)	DPWTC (local)	Feasibility Study	R-10, C-2 and C-3	Stage Construction of the project based on the road requirement of the Tondo and Dagat-dagatan Projects
5. R-10, Phase I (1976)	IBRD	Design and Construction	R-10, C-2 and C-3	On-going
6. MMETROPLAN (1977)	IBRD	Planning	Transport and Land use Planning.	Recommended a short and medium range transport program
7. C-3 and Related Road (1977)	JICA	Feasibility Study	C-3, R-4 and C-5	Evaluates the technical and economic feasibility of the project.
8. Manila Bataan Coastal Road (1980)	JICA	Feasibility Study	R-10, C-5 and C-6	Though this project is economically feasible, its adverse environmental impacts is not encouraging.
9. C-3 (1980)	OECF	Design	C-3	Completed (San Juan Bridge and Makati Mandaluyong bridge are under construction with local funds)
10. R-10, Phase II (1980)	OECF	Design	R-10, C-2, C-3 and C-4	Completed(Construction will start 1985 with OECF Assistance)
11. Southern Package (1982)	JICA	Feasibility Study	C-5, C-6A and Bicutan loop Road	Completed
12. Northern Package (1983)	JICA	Feasibility Study	C-5, C-6 Visayas and Mindanao Ave. Ext	Completed
13. MMUTSTRAP Part A (1983)	ADAB & IBRD	Planning	Transportation System of Metro Manila	Completed
14. MMUTSTRAP Part B1 (1984)	ADAB & IBRD	Project Preparation	Traffic Management and bus & jeepney Terminals Study.	On-going
15. MMUTSTRAP Part B2 (1984)	IBRD	Project Preparation	Implementation Program of primary and secondary Roads.	On-going

「マニラ都市交通」に関する質問への，ＭＭＣの回答

ANSWERS TO THE QUESTIONNAIRE

1.0 MAJOR URBAN TRANSPORT PROBLEMS IN METRO MANILA AND REMEDIAL MEASURES TO IMPROVE THE SITUATION

The main need for government involvement in the Metropolitan Manila Transport Sector are:

- to save foreign exchange costs incurred by severe traffic congestion and by poor road maintenance, and

- to keep public transport costs - and hence fares, low for the majority of Metro Manila's people, at a time when they are likely to face severe financial pressures.

The relief of traffic congestion within the main urban area underlies both of these objectives. The strategy for highways and transportation is therefore based on determining how this can best be achieved.

2.0 SHORT-, MEDIUM-, AND LONG TERM POLICIES AND PRIORITY AREAS OF URBAN TRANSPORT IMPROVEMENT

Traffic Congestion: Short-term Prospects and Appropriate Remedial Measures

Traffic congestion results from the interaction of vehicular demand and road network capacity - if demand reduces or capacity increases then congestion is reduced and vice versa.

Recent analysis of traffic count data by the MMUTIP (1980) and JUMSUT 2 (1984) studies has shown that in the main urban area vehicular demand has reduced over the 4 year period by 5-10% over the whole day. At the same time investment in area based traffic engineering/control (via TEAM I) has been shown to increase network capacity substantially.

The main techniques for reducing traffic congestion in major urban areas are:

o demand management directed to the use of larger vehicles which are more efficient in the use of roadspace. In Metro Manila pricing restraint applied to private car users has not been seriously considered, but the replacement of jeepneys by buses has been suggested, and

- area based traffic engineering and control such as the TEAM Project, supplemented by improved traffic enforcement to maximize the capacity of the existing road network.

  In Metro Manila, the second of these options appears clearly preferred.

  Investment in local and secondary roads is, in Metro Manila, likely to be a useful supplement to traffic engineering and control in maximizing the capacity of the existing road network.

Long Term Prospects

As the effects of the economic recession are overtaken by sustained economic growth, more locational decisions will be made and the suburbanization process will again speed up. There will then be urgency for new major road construction to the north and south of Metro Manila to stimulate and structure development in these areas and to reduce the public sector cost of future urban expansion.

Meanwhile within the main urban area as vehicular demand increases and further large capacity gains from the existing network require investments at bottleneck junctions and to provide missing links, then an urban program of highway investment will become justified and necessary.

4.0 MAJOR MULTILATERAL AND BILATERAL ASSISTANCE TO THE URBAN TRANSPORT IMPROVEMENT FOR THE LAST TEN YEARS

1. Urban Transportation Study of Metro Manila (UTSMMA), Japan International Cooperation Agency (JICA), Department of Public Works, Transportation and Communications, DPWTC, 1973.

2. Metro Manila Transport, Land Use and Development Planning Project (MMETROPLAN), International Bank for Reconstruction and Development (IBRD), DPWTC, 1976

3. Traffic Engineering and Management Project I (TEAM I), IBRD, Ministry of Public Works and Highways, 1976.

4. Metro Manila Urban Transport Improvement Project (MMUTIP), JICA, Ministry of Transportation and Communications (MOTC), 1980.

5. TEAM II, OECF, MPWH, 1983.

6. Metro Manila Urban Transportation Strategy Planning Project (MMUTSTRAP A), IBRD, MOTC, 1983.

7. JICA Update of Manila Studies on Urban LTransportation, (JUMSUT 1), JICA, MOTC, 1983-1984.

8. MMUTSTRAP B- 1, Australian Development Assistance Bureau, (ADAB), MOTC, 1984.

9. MMUTSTRAP B-2, IBRD, MPWH, on-going.

10. JUMSUT 2, JICA, MOTC (on-going).

11. MMUTSTRAP B-1 Extension, ADAB, MOTC, (ON-going).

3. マレイシア関係

To: Economic Planning Unit

QUESTIONNAIRE

1. Has the current National Development Plan been successfully implemented? Have the macro-economic and sectoral targets been attained? If not, what were the causes which have brought the result? Were there any changes in the development policy, targets and/or priority areas of development in the course of implementing the plan?

2. What are the priorities of such sectors as (1) Vocational Training, and (2) Sewerage and Drainage in the National Development Plan?

3. What is your assessment on the development projects implemented by the Japanese cooperation including two projects to be evaluated by the present team, especially on the following:
   (1) Efficiency of the procedure from the project selection to the implementation;
   (2) Direct and indirect impacts of project (positive as well as negative).

4. What do you think are the major differences between Japanese development cooperation and development cooperation with other countries concerning the following:
   (1) Decision-making process;
   (2) Sector of cooperation;
   (3) Types and methods of cooperation; and
   (4) Way of following-up cooperation.

5. What type of cooperation between Malaysia and Japan and in which sector do you think would be most fruitful in the coming years?

6. Does there exist any project evaluation function in EPU? If it is the case, could you describe the activities of it on the following points:
   (1) Organization
   (2) Number of staffs
   (3) Method and procedure of evaluation
   (4) Examples of past and present evaluation activities

To: (1) MARA Headquarter
(2) MARA Johor Bahru Vocational Training Institute

Project to be evaluated: Technical Cooperation to the Mara Johor Bahru Vocational Training Institute

QUESTIONNAIRE

1. What is the basic skill development policy of the MARA (Majlis Amanah Raayat)? Where do you place emphasis on?

2. Are there any plans to widen the scope of activities at the MARA Johor Bahru Vocational Training Institute in the coming years?

3. We learnt that both ship-mechanics and welding (ship-building) divisions have successfully achieved the originally targeted objectives of training; however, the electroplating division has considerably been delayed in training activities. What are the main causes behind this delay in that division?

4. To what extent do you suppose the training and skill development programs of the Institute have contributed to the industrial promotion of the country in general and specifically that in the Johor Bahru area?

5. What are the employment opportunities for those who have successfully completed the training courses at the Institute? Does the Institute look for the employment opportunities for the graduates?

6. How do you compare the technical assistance extended by the Japanese government with that by other countries with special reference to the field of technical training and skill development?

7. Please give figures on the number of staff for each course and on the scale of the annual budget needed for the operation of the Institute?

8. Are the equipments installed in the Institute fully maintained and utilized? Is the supply of parts sufficient? Are there any financial arrangement for the renewal of obsolete equipments?

9. Are there regular contacts with the former trainees of the Institute? If available, the present team would like to interview with some former trainees of the Institute in Kuala Lumpur or Johor Bahru in order to assess the effect of training in the Institute.

To: Ministry of Health

Projects to be evaluated: The Master Plan and the Feasibility Study on the Sewerage and Drainage System for the Butterworth and Bukit Mertajam Metropolitan Area

QUESTIONNAIRE

1. How do you place the sewerage and drainage sub-sector in the priorities of the government's programs? What is a present as well as a future trend?

2. What are the major constraints in the development of the sub-sector?

3. How do you envisage a practical mechanism for financing the construction projects in this sub-sector?

4. What would be the merits as well as the disbenefits of formulating a master plan or conducting a feasibility study through co-operative efforts with foreign governments?

5. How would you assess the master plan and the feasibility study, both of which were undertaken in co-operation with JICA, for the Butterworth and Bukit Mertajam Metropolitan Area?

To: Ministry of Public Works

Projects to be evaluated: The Master Plan and the Feasibility Study on the Sewerage and Drainage System for the Butterworth and Bukit Mertajam Metropolitan Area

QUESTIONNAIRE

1. How do you place the sewerage and drainage sub-sector in the priorities of the government's programs? What is a present as well as a future trend?

2. What are the major constraints in the development of the sub-sector?

3. How do you envisage a practical mechanism for financing the construction projects in this sub-sector?

4. What would be the merits as well as the disbenefits of formulating a master plan or conducting a feasibility study through co-operative efforts with foreign governments?

5. How would you assess the master plan and the feasibility study, both of which were undertaken in co-operation with JICA, for the Butterworth and Bukit Mertajam Metropolitan Area?

To: (1) Penang State Government
(2) Municipal Council, Province Wellesley

Projects to be evaluated: The Master Plan and the Feasibility Study on the Sewerage and Drainage System for the Butterworth and Bukit Mertajam Metropolitan Area

QUESTIONNAIRE

1. The government of Japan dispatched missions to Malaysia for the projects stated above during 1976-1978 and came up with two reports: a master plan report (May, 1978) and a feasibility study report (Feb., 1979). Has either report subsequently led to any other studies or construction projects?

2. If that is the case, could you please describe them?
(If that is not the case, why so?)

3. What is your assessment of both reports, taking into considerations various factors: such as technologies, human resources, financing, organizational set-up, coordination mechanism, consistency with national or regional policies, priorities and plans, etc.?

4. How do you find the validity of the scope and objectives of both reports?

5. In your opinion, where would one find both strength and weakness in the way JICA conducted these surveys?

「MARAジョホールバル職業訓練校」に関する質問への，MARA本部の回答

1. The main objective of the MARA Vocational Training Education is to provide employable skill to the indigineous youth. The second objective is to create these skilled workers into entrepreneurs. To achieve these objective the training places emphasis on heavy machinery and manufacturing trades.

2. At present the MARA Johor Bahru Vocational Institute carries out the training in 14 different trades such as:

Marine Engineering.
Commercial Heavy Machinery Mechanics.
Mechanical Drafting.
Electronics Radio & Television.
Electronics Instrumentation.
Electrical.
Refrigeration and Airconditioning.
Electroplating.
Marine Welding.
Heavy Machinery Mechanics.
General Mechanics.
Welding.
Machining & Turning.
Metal Fabrication.

During the period 1981 - 1985 about 1,575 students will be trained. This number will be increased to 2,132 in the period 1986 - 1990. To obtain this number two new trades, Advanced Metal Fabrication and Foundry will be introduced in 1986. The student intake for various trades will also be increased.

3. The delay in the construction of the building block for this trade causes the delay in the training activities.

4. MARA has produced about 13,000 skilled workers since 1968. During this time the country has gone through various development such as economic, social, cultural and specially industrial. The need for skilled workers increases as the country experiences

these development. MARA through its Vocational Training Division could only provide 1/8 of the country's demand for these skill workers.

In relation to that the Johor Bahru Vocational Institute emphasised its training on heavy mechanical trades so as to cater the rapid industrial progress of the state and the neighbouring area.

5. The survey conducted in 1982 revealed that graduates from MARA Vocational Training are abled to find employment within 6 months after graduation. The institute provides briefing on job apportunities and the various channels that the students could go to find employment.

6. The assistance extended by the Japanese Government comprises of Technical Aids, Attachment of Expertise and counterpart Training. In addition to that a number of follow-up visits by the Japanese team are conducted regularly. However the technical assistance extended by the other countries are only in term of technical aids.

7.

Courses	Staff
Marine Engineering	6
Commercial Heavy Machinery Mechanics	6
Mechanical Drafting	4
Electronics/RTV	6
Electronic Instrumentation	6
Electrical	5
Refrigeration & Airconditioning	5
Electroplating	4
Marine Welding	5
Heavy Machinery Mechanics	6
General Mechanics	3
Welding	6
Machining & Turning	6
Metal Fabrication	3

Note: The figures given are from the 1984 statistics.

The annual budget needed for the operation of the MARA Johor Bahru Vocational Institute are as follows:-

Year : 1984	M$
Student Allowance	$1,755,600
Equipment	650,000
Development of the Institute	650,000
Administration	2,324,400
Total =	$5,380,000

8. Most of the equipment at Johor Bahru Vocational Institute including the equipment under the Japanese Aid are generally well maintained.

The maintenance work carried out by our personnel are the normal daily, weekly or monthly maintenance. Major maintenance work which includes breakdown maintenance are done by others (i.e. contracted out).

9. The contacts, if any, are carried out by the State MARA officer.

Cawangan Kemahiran MARA.

20/12/1984.