

まず、ポーランドの歴史的・文化的側面についての予備知識を身につけることが、直接的・間接的に調査をスムーズに進めることにつながる。

日本が「太平記」にも記載ある戦乱の14世紀、ポーランドでは既にヨーロッパで2番目のヤギェウオ大学(クラクフ・アカデミー1364年)が創設され、当時、世界の知的レベルのトップに立っていた。ポーランド・リシアニア王国(1386~1572年)の国威最盛期への郷愁がポーランド人の心になお残っている。三国分割(1772、1793及び1795年)による亡国123年間(1795~1918年)、20年間(1918~1939年)の国体の春、その後(1939年9月1日)のドイツ(ヒトラー)による、そしてソ連が代わっての支配(社会主義体制)、この間1,000人につき220人死亡(沖縄戦と同率)等、日本人の想像を越える歴史の変動があった。ショパン、コペルニクス、キューリ夫人、シェンキエヴィッチ、ザメンホフ等、世界周知の歴史的人物がポーランド人であることも知っておくべきである。

以下に事前調査を通じて感じ得たことを参考に記す。

知的水準は西欧並みであるが、社会及び法規体制未整備な過渡期的現状のためか、求めた問いに対し明確な回答がないことが間々ある。また、調査の途中で調査自体を左右する要因ともなりかねない新事実が現われることもあった。故意に隠していたとも思われぬが困惑した。ことに、関連プロジェクト動向について小出しに情報を出すため、全貌が明らかになるまでに努力を要する。合意のうえの既定条件下で調査進行中、他の関連プロジェクトが明らかになると有利なように双方のプロジェクト内容を互いに組み込ませようとする節があり、調査進捗の隘路ともなりかねない。

一例ではあるが、ポズナニ市の既存処分場(Biedrusko)改善のためデンマークのコンサルタントによるプロポーザルが提出されていること、現在ポズナニ市唯一の公営公社(Sanitech)がドイツの企業(Rethman)と合併を考えている事実(Poznanska新聞1991年9月2日付掲載)等その全貌が明らかでないもの、ないしはポーランド側から何ら情報提供のないものもある。

したがって、本格調査着手に際しては徹底的にこれら他の援助活動を調べるのが肝要である。

4-3 実施作業の詳細

本格調査は国内準備期間及び調査開始当初の実施体制準備期間(ローカルコンサルの編成含む)含めて全体で、およそ16カ月であり、これを2フェーズに大別して実施する。各フェーズの実施作業は次のとおりである。

4-3-1 フェーズI

フェーズIの期間は6.5カ月であり、国内準備作業の後、第1次現地調査に4カ月、以後、

国内での基本計画（M/P）策定及びM/Pマニュアル（案）の作成に2カ月の構成である。調査着手時に本件調査全体の調査計画を明確にしたインセプションレポートをポーランド側に提示し、協議するとともに、第1次現地調査終了時にプログレスレポート(I)を提出する。上記国内作業の間にフェーズⅡの冒頭で提出するインテリムレポートの作成を行う。

(1) 国内事前準備

入手済み資料（プロジェクト形成調査団及び事前調査団収集資料を含む）の整理及び調査実施方針の検討結果をインセプションレポートにとりまとめる。

(2) 現地事前準備

基礎調査着手前、2名程度の団員を先発派遣し、ローカルコンサルタント・チーム編成のための選定及び、ごみ、水質、地質、大気等分析機関／企業との折衝にあたる。

1) ローカルコンサルタントの選定

L/C選定を前提とすると（これはあくまでも一案であり、L/C使用形態は本格調査団自ら判断する事項であるが）、フェーズⅠ用にL/Cを雇用し、その結果の評価も踏まえてフェーズⅡで再度契約を行うという方法も考えられる。複数競争選定の可能性をみるためにもローカルコンサルタントのリスト（個人または企業／機関等）を参考として附属資料6に掲げる。

2) ローカルコンサルタントの契約

L/C契約形態は幾つかのケースが考えられる。この度の事前調査ではL/C雇い上げに係る経費情報入手の必要から、一括契約を想定した契約書（案）を作成し、L/C企業から概算見積の数字を得た。（附属資料6参照）

3) 分析関係

ごみ分析、水質分析、大気分析については環境省環境管理部ポズナニ県環境調査管理センター Jacek Grzybek 所長より情報を入手し、またポーリングについてはポズナニ県環境保全部次長 Aleksander Grzeszczak 氏より情報を入手した。（附属資料8参照）

(3) 基礎調査

1) インセプションレポートの協議／ステアリングコミティーとの第1回協議

2) 既存データ・資料の収集

(a) 気候、地形、地質等ポズナニ市のみならず市外所在の既存処分場（Biedrusko）及びポズナニ市が将来の候補地として考えている市郊外約50 km東にある Nekla ほか1カ所及び Gmina 町が使用中の Nekla 処分場（現在6 ha 使用中、10 ha 延長可能）も対象とする。

(b) 都市廃棄物関連国家政策及び開発計画

建設省は地方自治体の公共インフラ整備の開発・建設関係を指導・監督する担当省

で地方自治体が所轄する廃棄物処理対策もその実施面において当省の管轄下に入るため、本格調査の手続き上の窓口は建設省の Department of Housing Policy and Urban Economy となっているが、環境衛生上からの指導は環境省が、保健衛生上からは健康保健省がそれぞれ担当していることから、これら本件調査関連省庁の政策及び計画を調査する。

(c) 社会・経済条件及び統計

中央統制計画経済から自由市場経済へと移行中であることを念頭におき、社会・経済全般にわたる調査を行う。

(d) 都市計画及び土地利用

ポズナニ市はこれまで行制区域的に拡大を続けており、市外にあったかつての最終処分場 Umultowo (Recultivation 済み) も市境界内に入った。これらの動きは現在の最終処分場 (Biedrusko) の所在する Suchy Las 町 (Gmina) にも及ぼうとしていることから、都市計画及び土地利用について詳細に調査を行う。

(e) 道路計画

ポズナニ市だけでなく Biedrusko、Nekla 等方向にも力点を置き道路計画システムの調査を行う。ポズナニ市副市長 (オルシェフスキー氏) は Nekla を将来利用すると、ワルシャワ市への幹線をごみ運搬車が走ることになるので好ましくないとの見解を持っており、将来の処分場との絡みのなかで本システムを明解にする。

(f) 都市廃棄物に係る法・規制

1990年に制定された "The Local Government Act 1990" に地方自治体の果たすべき責務を規定しており、そのなかに道路清掃、ごみ収集及び処分、下水等が明記されている。また、産業廃棄物は国の出先機関として県が、都市廃棄物は市当局が管轄する区分けになっているが、現実には混然としている。

廃棄物に係る法制度で、これまで定かでなかった産業廃棄物、有害廃棄物の適正処理を含む全般的な法体系の見直しがされているとの報告もある。

このほか、ポズナニ市当局の廃棄物に係る規定が明確でなく、市公社である収集・運搬企業 Sanitech に任せきりと見受けられ、同社の規定が清掃事業そのものになっている観もあり、これらを含め調査を行う。

(g) 市の財政状況

ポズナニ市財政状況全般の調査に始まり、廃棄物関連への割り振り状況の動向を調査する。ポズナニ市営鉄道公社 (路面電車) が市予算の過半を要しているとの報告もあり道路清掃及び除雪予算として 60 億 ZL/年を割き、現在 4 億 ZL で既存処分場 (Biedrusko) の Recultivation (整備緑化) が行われている。予算の有効利用を目的

とした収支の解明を行う。

(h) 廃棄物処理事業の現状

－排出

分別収集実現と収集改善策を念頭に置き排出の実情を把握し、現状と将来推計値を出す。

－収集

収集頻度は個人住宅、コーポラティブ等で異なり、徴収料金値上げによって頻度を少なくしてほしいという要望があったりして明確でなく、加えて市公社Sanitechは19社を下請けに使っており、不法投棄を行っているもぐりの収集車もあって定かでない。更に、LOWERという運送・建設会社がSanitechと競合関係に入ろうとしている現状がある。この錯綜した現況を調査し明解にする。

－中継／積み替え

現在中継基地はなく、また積み替えが行われているか明確でない。将来の最終処分場とも絡め、その必要性につき調査する。

－運搬／輸送

記述のとおり、下請け会社もあり、車種は様々である。効率的輸送を目的として現状を把握する。

－処理

現在処理は行われていない。将来の適正処理の可能性を推計するうえから、ごみの物理組成、化学組成の分析を行う。

－処分

Biedrusko処分場では現在ライナー敷設も一部で行われようとしており、衛生埋立てのためのRecultivationが進行中である。衛生埋立てとして適正かどうか、また拡張の可能性等を念頭に置き現況調査を行う。

－街路清掃

街路清掃が行われているためか、住民の公德心が高いためか、道路は日本と比べてもきれいである。そのメカニズムの調査を行う。

－コンポスト

ポーランド全域にわたりコンポストが中間処理とごみの有効利用として現実に即した有効な処理方法と考えられているが、現状ではワルシャワ市とカトヴィツエ市の両市で稼働しているだけである。ポズナニ市でもコンポスト化が提唱されており、この可能性を調査する。

－資源回収

ポズナニ市にある既存有価物回収企業2社とリサイクルの現状を把握する。このほかスカベンジャーの実態も併せ調査する。

一 行政

ポズナニ市当局には清掃局はなく、住民部のインフラ担当課がSanitechに任せきりの清掃事業行政を行っているが、市当局の今後の取り組み方を考慮し、かつ社会・経済状況を勘案しながら現状調査を行う。

一 制度・法規

行政と同様のアプローチで調査を行う。関連法規・ガイドライン等は全般にわたることをとする。法規のなかで、ことに市営公社Sanitechの民営化について市当局で検討され、同社のDirector及び労働組合が評議会を作り、更に検討され、最終的に市の評議会で決定するとの報告があるが、その進捗状況及び1990年7月13日付で制定をみた国営企業民営化法の内容についても調査も行う。

一 財政

清掃事業に係るポズナニ市の予算、Sanitechの財務及びごみ料金制度等に力点を置き全般にわたって調査を行う。

(i) 産業廃棄物の現状

全国レベルの法規制、県と市の役割、環境省環境保全監視局の出先機関である監視官事務所の工場への立入検査及び同省環境管理部の県への出先機関である環境調査管理センターによる産業廃棄物発生元への監督とごみ分析(分析基準を含む)、ごみ質及び発生量、処理・処分等の現状を調査する。特に処分についてODPAD(産業廃棄物処分場運営会社)が産業廃棄物処分場を確保しようとしているので、その実情も併せて調査を行う。なお、ポズナニ市北東約50kmにあるGniezno市郊外に本件調査のC/Pとして予定されているMr.Lemanski設計による産業廃棄物最終処分場が建設中であり、比較検討のため現地踏査する。

(j) 関連プロジェクト(都市廃棄物)の動向調査

全国及びポズナニ市レベルで本件調査に参考となるプロジェクトのチェックを行う。また、Biedrusko処分場に対するデンマークの援助並びにSanitechのドイツとの合弁計画等今後の計画ではあるが、実態を把握し、必要に応じてそのレビューを行う。

(k) 現状の解析、清掃事業サービス、その他廃棄物問題の社会環境影響調査

(l) 現地調査

上記既存データ・資料の収集と併せて下記を目的とした現地調査を行う。

一 ごみ量とその組成

一 既存及び新規処分場の土質、水質、及び土地利用状況

- 一 廃棄物に対する住民意識
- 一 環境調査
- (m) 収集データの分析
 - 一 都市廃棄物処理事業の現状
 - 一 産業廃棄物処理事業の現状
- (n) 問題点の抽出及び分析
- (o) ごみ量・ごみ質の将来予測
- (p) M/P策定（都市廃棄物）
 - (i) M/P計画フレームワークの設定（目標年次、計画区域、サービス水準、システム構成要素）
 - (ii) 処理システム代替案の設定
 - (iii) 代替案の評価（公衆衛生、技術、経済、社会、組織、環境、財政）
 - (iv) 最適案の選定
 - (v) M/Pの実施計画
 - (vi) 優先プロジェクトの選定

優先プロジェクトの選定にあたっては欧州共同体（EC）環境基準ないしはガイドラインを考慮する。
- (q) 産業廃棄物処理に関する提言のための検討

ポーランドにおけるフェーズⅠ現地調査結果を基に、国内作業でのM/P策定時に本項に対する提言を盛り込む。

(4) 国内作業

(a) M/Pの策定及びM/P策定・実施マニュアル作成

上記現地調査で確認した目標年次、計画区域、サービス水準、システム構成要素等M/P策定計画フレームワークを基本的条件として、収集データ及びその分析、収集情報及び協議結果、現地踏査等現地調査の全ての結果を踏まえて、各システム構成要素の内容を決定し、財政面、組織・制度面、社会影響面の検討を加え実施スケジュール及び優先プロジェクトを確定させ、M/Pを策定する。

また、ポズナニ市廃棄物処理事業のM/Pをベースに他の類似都市での活用を目的とした汎用性のあるM/P策定・実施マニュアルのドラフトを準備する。

(b) インテリムレポートの作成

4-3-2 フェーズⅡ

(1) 優先プロジェクトのF/S調査

(a) 計画フレームワークの設定（目標年次、計画区域、サービス水準、構成システム）

(b) 補足基礎調査

(c) 事業内容の技術的検討

(d) 施設概略設計

現地作業において、当該施設建設用地の地形図・地質図等資料を入手する（無い場合は測量、ボーリング等を実施する）

(e) 必要資機材の検討

資機材そのものの検討のほか、当該資機材がポーランドで生産されているか、または入手の可能性も併せ検討する。

(f) 運営・管理計画

(g) 組織・制度

他の調査項目との関連において、ことに廃棄物処理に係るポズナニ市当局及び Sanitech 社民営化の絡みで、それらの制度、組織開発について検討する。

(h) 事業費積算

(i) プロジェクト評価

社会、経済、財政、環境面からの評価を行う。

(j) 事業実施計画

(2) M/P 策定・実施マニュアル作成

フェーズⅡ冒頭より約2カ月間、類似都市の一つであるルブリン市（ワルシャワ市の南東約180km）においてフェーズⅠで準備したマニュアルドラフトの検証作業を行う。作業要領としては、マニュアルドラフトを試験台としてルブリン市の現状になじむM/P策定要領を同市と共同作業により移転させ、その過程で得た意見、情報、資料等を加味し、地域事情の異なった他の中小規模都市でも活用し得るような汎用性のあるマニュアルに修正する。併せて、副産物として同市に対し上記作業の結果を基に概括的提言も行う。

ちなみに、ルブリン市の清掃事業概要は次のとおりである。

ルブリン市副市長 Dr. Leszek Bobrzyk が担当責任者であり、清掃事業の改善に熱心である。ポズナニ市同様公社形式で事業が進められているが、処分場確保は着実に進められており、現行処分場（市から15kmに所在し15年前に開設された。石灰採掘場跡で、当初9～10mと深かったが、満杯に近づいている）が、まだ使用可能な間に新しい処分場（既に、市より約20kmの地点に準備着手地26haの砂採取場、深さ20m～22mと、その拡張36ha計62ha）を用意している。この処分場へ既に50億ズロチ（1991年度市の予算3.360億ズロチ）を当てている。

またEC/PHAREの調査“A Comprehensive Study on Municipal Waste”が進行中で、ルブリン市はそのなかでモデルとしての一つとして取り上げられている。その他、同市は

コンポストプラント(120t/日コスト約200万ドル)を1条列設置する予定を持っている。

4-4 調査期間及び工程

本格調査の工程はS/Wのスケジュールに沿って以下のとおりとする。

(1) 調査準備期間

調査開始後0.5カ月間で、調査全体の実施方針を示すインセプションレポートを作成する。

(2) 第1次現地調査(4カ月)

基本計画策定のための基礎調査(資料/情報の収集・分析、現地踏査、実測等)を行い、プログレスレポート(1)にとりまとめる。

(3) 第1次国内作業(2カ月)

第1次現地調査の結果に基づき分析作業を行う。問題点の抽出、基本計画の骨子までをインテリムレポートにとりまとめる。

(4) 第2次現地調査(2カ月)

先方政府にインテリムレポートを説明するとともに、優先プロジェクト、用地選定等の確認をして、F/Sに必要な現地調査、実測等を行う。結果は、プログレスレポート(2)にとりまとめる。

(5) 第2次国内作業(2.5カ月)

第2次現地調査の結果に基づき優先プロジェクトのフィージビリティ分析を行う。また、基本計画とともに、結果を最終報告書(案)にとりまとめる。

(6) 最終報告書

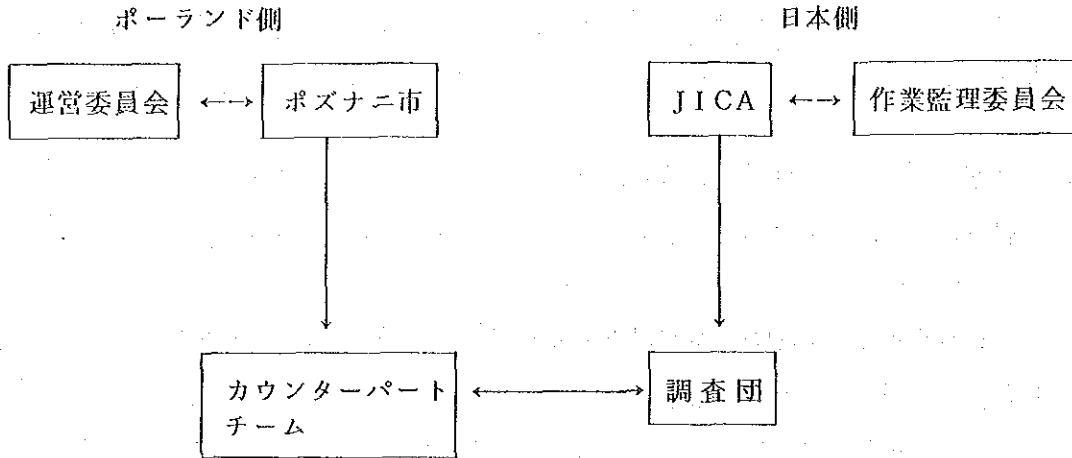
上記最終報告書(案)の現地説明・協議を経て、ポーランド側のコメントも加味し最終報告書を作成する。

4-5 調査の実施体制

本件調査に係るポーランド側のカウンターパート機関は建設省及びポズナニ市であるが、実際の調査にあたってはポズナニ市が実施機関となる。

また、本件調査実施にあたり、JICAは必要であれば技術的諮問を行う作業監理委員会を設置し、ポーランド側は建設省、環境省、ポズナニ県及びポズナニ市の各代表者から成る運営委員会を設置する。

調査の実施体制は次頁の図のとおりとなる。



4-6 要員構成

本件調査の実施にあたっては概ね以下の専門分野をカバーする調査団の構成が必要である。

- ① 総括
- ② 収集・運搬
- ③ 中間処理
- ④ 最終処分
- ⑤ 都市計画
- ⑥ 経済・財務
- ⑦ 組織・制度
- ⑧ ごみ分析
- ⑨ 環境評価
- ⑩ 施設設計・積算
- ⑪ 産業廃棄物

4-7 調査用資機材

現地調査に必要な資機材は次のものが考えられる。

(1) トラックスケール(定置型)

現在ポズナニ市はトラックスケールを所有していないが、ごみ量と作業効率の把握のためには、既存処分場(Biedrusko)にトラックスケールを設置して、ごみ重量の計測を行うことが基本となる。現在処分地の近傍に有料利用できるトラックスケールが見当たらないため、日本より1機購送することが考えられるが、同処分場へ出入りしている収集車両に大型車が多いため(覆土用土砂運搬車も含め)定置型トラックスケールが望まれる。

(2) ごみ乾燥機

今回の事前調査で、ごみ乾燥に適した乾燥機の有無及びその利用可能性につき調査したが、適切な物がなかったことから、購送の必要がある。

(3) その他購送の必要がある物

ーワイレー式粉碎機（現場用）

4-8 報告書の作成

（種類）	（提出時期）	（部数）
(1) Inception Report	第1次現地調査開始時	30
(2) Progress Report (1)	第1次現地調査終了時	30
(3) Interim Report	第2次現地調査開始時	30
(4) Progress Report (2)	第2次現地調査終了時	30
(5) Draft Final Report	第2次現地調査終了後 3カ月以内	30
(6) Final Report	コメント受領後2カ月以内	60

報告書はいずれも英語で作成し、(3)、(5)、(6)については Executive Summary を、また、(5)については Executive Summary のポーランド語訳版も併せ作成する。

附属資料 1. 表敬・訪問先・面談者リスト

表敬・訪問先・面談者リスト

(ポーランド国)

建設省 (Ministry of Construction)

Mr. Lech Jerczynski, Eng.	Director, Department of Housing and Urban Economy
Mr. Zbigniew Rydzicki	Department Head
Mr. Zdzislawa Krzeminska	Chief Specialist

環境省 (Ministry of Environmental Protection, Natural Resources and Forestry)

Mr. Jan Klopotoski	Vice Director, Department of Air and Land Surface Protection
Mr. Jan Korytkowski	Chief Specialist, Department of Air and Land Surface Protection

ポズナニ県 (Poznan Provincial Government)

Mr. Arkadiusz Blochowiak	Director, Department of Environment Protection
Mr. Aleksandar Grzeszczak	Senior Inspector, Department of Environment Protection

ポズナニ市 (Poznan Municipality)

Mr. Ryszard Olszewski, M. Sc. Eng	Vice Mayor
Mr. Jan Lemanski, M. Sc, Eng	President, the Association of Sanitary Engineers & Technicians, Poznan Branch
Mr. Boleslaw Stawicki	Director, Investment Department
Mr. Tadeusz Galecki	Director, Town Planning Office

ルブリン市 (Lublin Municipality)

Mr. Leszek Bobrzyk	Mayor
Mr. Andzej Grykatowski	Director, Board of Construction

ポズナニ県環境調査管理センター (Center for Inspection of Environmental Protection in Poznan)

Mr. Jacek J. Grzybek M. Sc.	Director
-----------------------------	----------

ポズナニ市清掃公社 (Sanitech)

Mr. Henryk Stawny Director General
Mr. Ryszard Siluski Operation Director

リサイクル用廃棄物回収会社 (S & W)

Mr. Andrzej Biedrowski Director

廃棄物処理会社 (Bud Eko, Sanitary Landfill Construction)

Mr. Wardemar Majtczak President

産業廃棄物処理会社 (Odpad, Industrial Waste Management)

Ms. Janina Ceglowska President

世銀事務所 (World Bank Office)

Mr. Chritian Duvigneau Principal Operations Officer

日本大使館

小林 秀明 公使
原 晃 一等書記官
高橋 了 二等書記官

ポーランド国総合交通計画調査団 (JICA)

小山 伸広 調査団副総括

(ベルギー国)

欧州共同体 (European Communities)

Mr. Klaus Rudischhauser Deputy Director,
Waste Management Section,
Directorate General of Environment,
Nuclear Security and Civil Protection

Mr. Hans Christian Stausboll Expert, C.E.C. Operational Service
PHARE, Directorate General of
External Relations

欧州共同体日本政府代表部

高橋	牧人	一等書記官
山本	弘史	二等書記官
津川	貴久	三等書記官
小林	成信	三等書記官

附屬資料 2. 要請書 (TOR)

COUNCIL OF MINISTERS
Undersecretary of State for European
Integration and Foreign Assistance
Office for Foreign Assistance

Warsaw 31. 07. 91

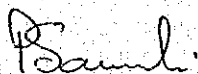
Sekr.Min.JSW510/w/91/40/12

Your Excellency,

The environment protection programme in Poland is gaining pace and institutions dedicated to it are more and more numerous. Among other ecological problems in our country one of the most harassing is solid waste management in large industrial cities. Through the Embassy of Japan in Warsaw the Ministry of Construction got in contact with JICA and asked it to conduct a study on solid waste management in Poznań. This proposal was accepted by the Japanese party and already a mission of JICA experts prepared a preliminary plan of this undertaking. At the same time the municipality of Lublin applied to JICA for a similar master plan and again the request was accepted.

Both such studies could, when performed, serve as an example in elaborating solid waste disposal instructions for other Polish cities of similar size. I therefore estimate these projects very highly and think that they should be strongly supported. To the best of my knowledge both these cities deserve a fair chance of better environment management.

Yours sincerely,



*Pawel Samecki
Director General*

*His Excellency
Shintaro Yamashita
Ambassador of Japan
Warsaw*

TERMS OF REFERENCE
FOR
SOLID WASTE MANAGEMENT STUDY
FOR
THE CITY OF POZNAN
IN
THE REPUBLIC OF POLAND

MAY 1991

MINISTRY OF CONSTRUCTION
GOVERNMENT OF POLAND

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1. INTRODUCTION

2. BACKGROUND INFORMATION

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1. INTRODUCTION

1.1 General Background

The Republic of Poland has devoted itself to transforming the economy and the social-political systems into a democratic free market economy since 1989. With the reform of the Constitution, and the establishment of laws of autonomous local self-governments and a local administration and organization of the Government newly set up in March, 1990, democratization and privatization are going on in Poland.

Under the abovementioned trend, the more democratized and privatized the economy is, the more necessitated the environmental protection is and likewise the more required self sustainable efforts are for local and municipal governments.

In addition, the improvement of municipal services directly linked to the welfare of local people can be and should be carried out under the initiative of local governments. The role of the Central Government in this case is to assist the local governments promoting the inter-municipal cooperation.

1.2 Priority Projects

At the meeting of an environmental sub-sector of the G24 held on December 8, 1989 in Brussels, Poland made a request to the G24 for their assistance in the environmental sphere. Thus, a site survey was carried out in Poland from January 14 through 18, 1990 by the experts; each of them dispatched from each of those G24 countries.

Following the said survey, the Government of Poland tried to identify priority environmental projects to be assisted by G24 countries and one such project identified by the Ministry of Construction is the formulation of a Solid Waste Management (SWM) master plan for the City of Poznan as a model for other medium sized cities.

1.3 Necessity of an SWM master plan (M/P)

The Ministry of Construction, as the institution responsible for the development of SWM systems at the Central Government level, has prepared recently the Synthesis of The Draft Programme of Municipal Waste Utilization by 2000 with the aim to assist systematically the local governments in their efforts of SWM improvement.

The Ministry is of opinion that SWM master plans should be formulated and implemented in all major cities in order to facilitate the cost-effective system development. The first step required in the systematic approach is the formulation and implementation of a model M/P by a motivated local government assisted by the Ministry.

Although the formulation work of a master plan for Warsaw has been initiated getting foreign assistance, Warsaw may not be convenient as a model for other medium sized cities. As such the Ministry has selected the City of Poznan as a model based on the manifested interests of the Authority of the said city.

The Ministry has decided to request the Japanese Government to assist the Poznan Municipality in the development of comprehensive strategies to improve municipal and industrial SWM in its jurisdiction. Because of the abovementioned background, the Study should be carried out in the following manner:

1) Development of comprehensive strategies

Local governments have to work as service suppliers in the case of municipal solid wastes while they have to work as the caretakers of local environment in the case of industrial solid wastes getting the industries to handle their wastes properly.

As such the formulation of a master plan followed by a feasibility study (F/S) on its first phase is requested for municipal solid wastes while preparation of recommendations on how to get proper waste handling done by industries is requested for industrial solid wastes.

2) Maximum use of local consultants

The use of local consultants will also facilitate the transfer of planning know-how developing local human resources required in the second stage of the application of the developed model in other cities.

3) Preparation of a manual

As the result of the Study, on the formulation and implementation of SWM master plans, a manual will be prepared taking into account the local conditions which differ from city to city.

4) Organization of a workshop

Towards the end of the Study period, a workshop will be organized inviting the representatives of other cities with the aim of encouraging M/P formulation and implementation by them.

1.4 Study report

In addition, the Study is requested to be carried out in such a manner that the Study report would satisfy the IBRD requirements because the IBRD is considered to be the most probable financing source.

As such, the Study should be conducted by consultants who are familiar with IBRD loan procedures.

2: BACKGROUND INFORMATION

2.1 National Level

1) Area and Location

Poland is located in the north part of the middle Europe between 49 and 55 in the north latitude and between 14 and 24 in the east longitude with the generally flat land of about 313 thousand Km².

2) Population

The population of Poland was about 37,769 thousand according to the census of December 6, 1988.

3) Economic Activity

In Poland, the economic reforms were initiated in 1989. Since then, the economy has been drastically shifted from a centrally planned economy to a free market economy.

a) GDP per Capita

It was approximately US\$1,650 in 1988 if official data (practically exchange rates) are taken at face value.

b) Exchange Rate

The Zloty is not freely convertible. It is therefore a "soft" rather than "hard" currency. The Zl/US\$ rate was pushed from 1,100 (September 4, 1989) to 2,100 (October 16, 1989 by the commitment of the Government to achieving a "realistic" exchange rate).

Since March, 1989 when the banking system began buying and (occasionally) selling dollars alongside legalized private foreign exchange bureau. The most recent exchange rate is Zl. 9,310/US\$ on April 11, 1991.

c) Inflation Rate

In 1989 the Polish economy entered a period of "stagflation"-falling output but sky rocketing inflation. In late 1989 it was viewed that the annual inflation rate could easily reach 1000 %. In 1990 it was about 300 %.

d) Structure of the Polish economy

Shares of Industry, Agriculture, Construction and Others are 49 %, 13 %, 12 % and 26 % respectively pursuant to the press report of 1987.

4) Solid Waste Management (SWM)

The following laws are in force at present as a finding law for the SWM.

- "Environmental Protection against Waste and Other Pollution and keeping Cities and Villages Clean and in Order" (D.Z. No. 24/1980)
- "Temporary Guideline on Waste Classification" (March, 1980)
- "Division of Waste into Hazardous Categories related with Changes" (D.Z. No. 88/1980)
- "Principles for Programming and Designing Landfill Sites" The Ministry of Administration, Spacial Economy and Environmental Protection

a) Ministry of Construction

The Ministry of Construction has the authority of a supervising and controlling function on the nationwide SWM, practically to prepare institutional set-ups, development of technology and so forth for supporting autonomous local governments like municipalities, to adjust inter-local governments directly or through provincial governments in case that a huge area is involved in a problem specially about SWM and to consult with the Ministry of Environmental Protection, Natural Resources and Forestry which is the supreme body of the state administration in the field of environmental protection.

b) Municipal solid wastes

Municipal solid wastes of about 45 million M³ were subject to disposal onto 1,500 legal waste disposal sites within the country, while statistics do not include the quantity of wastes discharged onto illegal waste sites.

c) Compost-making plants and incineration plants

Only 2 composting plants for municipal wastes operate in the country and experimental works are conducted on gasification of the municipal wastes.

It is reported that 10 incineration plants for waste products are under consideration, representing some 20 % of the current needs.

d) The "National Programme for Environmental Protection"

The Government accepted the National Programme postulating for the necessity of implementing comprehensive investment plans by specific industrial plants and municipalities in the period from 1989 up to 2010.

Regarding waste management, the following investments should be realized up to 2010.

- Construction of 110 plants for chemical treatment and incineration of toxic and hazardous deposits and wastes,
- Construction of optimum type waste disposal sites for low and medium radioactive wastes,
- Utilization of wastes and deposit refuses from excavation of mineral deposits, with application of related materials,
- Construction of about 100 installations for production of construction materials with utilization of wastes,
- Construction of plants for comprehensive waste utilization and treatment in 60 major cities,
- Improvement of refuse disposal and management, construction of municipal and rural waste disposal sites,
- Improvement of the system for liquid manure utilization.

5) Industrial Waste

Generation of industrial wastes in Poland surpasses the ratio of their disposal. In 1987 some 180 million tons of industrial wastes were generated, including only 0.3% processed by treatment plants, 54.4% utilized for economic purposes and 45% subject to storage in their premises.

Wastes accumulated in industrial plants at the end of 1987 amounted to 1.5 billion tons approximately.

2.2 Poznan Municipality

1) Geography and population

- Location : 52 - 154 m above sea level
- Area : 261.3 sq.m
- Waters (including the river and 4 lakes) occupy 3 per cent of the total area
- Population : about 590,000, which is 2.6 % of all the city residents in Poland

2) Housing conditions

- 182,000 relatively well furnished flats (water installation in 98.6 % flats, sewage system in 90 % flats, central heating in 75.6 % flats, gas installation in 90.8 % flats) An average flat has 3 - 4 rooms
- 1.16 households per 1 flat
- Residential area per one person : 17.9 sq. m
- Density : 0.93 per person
- At present, preference given to one-family houses, although cooperative flats continue to dominate

3) Education and culture

a) Education

- 8 institutions of higher learning
- A military academy and a theological college
- Many research centers and a branch of the Polish Academy of Science

b) Culture

- Symphony orchestras (conductors: A. Duczmal and Z. Gorny)
- 6 song and dance ensembles
- Philharmonic hall, 6 theatres, 68 libraries
- The H. Wieniawski violin competition
- The Poznan Music Spring Festival
- An all-Poland Center of Art for Children and Adolescents
- The Biennial of Children's Art
- Interart : an annual International Fair of Contemporary Art

4) Economic activity

- The International Poznan Fair and the duty-free zone are situated in the center of the City.

- Every year since 1928, Poznan has received a great number of businessmen from all continents during the traditional Poznan International Fair. The exhibition area of 18 ha is often used for the organization of many international saloons, exhibitions and domestic fairs. It was scheduled in 1991 to open 13 kinds of fairs and exhibitions there including "TOLEKO-International Ecological Fair" from November 19 to 22, 1991 which would be highlighted in the environmental sphere.
- Poznan is an important cultural center and propagator of music.
- The third most important educational center after Warsaw and Cracow
- There are good conditions for recreation and sport here: lakes, forests, recreation centers.
- Inhabitants of Poznan are relatively well off. There are 211 cars per each 1,000 residents, which is one of the highest ratios in Poland.
- A leader of the privatization process:
28,000 private work establishments, 1,300 limited liability companies and 71 companies with the participation of foreign capital

a) Transportation

- Poznan is at the intersection of 10 railway routes and 10 road routes.
- Distance between Poznan and Berlin - 332 km (about a 4 hour ride), Poznan - Warsaw - 306 km
- Airport and sea port
- Transportation services rendered by many firms, including international dispatching firms
- Fast tramway line under construction (like S-Ban)
- Hotels, accommodations and stores:
Total number of beds about 23,000 (4,500 beds in hotels etc.)
- About 10,000 shops: 40 per cent of private retail trade, 70 per cent of private stores (companies)
- At least two supermarkets needed
- 23,000 seats in restaurants, which is 40 per every 1,000 inhabitants

c) Recreation and sport

- 8 stadiums, 71 sports halls, 6 covered swimming pools
- An exhibition and sport hall
- 4 lakes
- Thermal waters (42 degree Celsius from the depth of 1,302 meters) will be used in balneology.
- 44 parks (19.5 sq. m of green area per 1 inhabitant)
- A greenhouse

d) Industry

- Poznan is one of the largest industrial centers, though it is surrounded by the agricultural land where agriculture advances most in Poland.
- The 130 state-run factories and plants employ 70,000 people and contribute 1.6 per cent to the overall volume of industrial production in Poland.
- 28,300 private firms
- 1,300 limited liability companies
- 71 companies with the participation of foreign capital
- Such products are manufactured in Poznan as ship and railway engines, rolling stock and machine tools, and among others, harvesters, rolling bearings, batteries, tyres, cars for farmers, cosmetics, concentrated food, confectionary and clothes.
- Activity financed by private and foreign capital is developing.
- Gradual privatization, the role of the state sector diminishes.

e) Construction

- Labour force of about 30,000
- 56 state-run and cooperative plants
- Poznan construction firms contribute 4.7 % to the overall volume of the Polish construction industry
- At present, the order book is not closed because of limited investment by housing cooperatives

5) Major utility consumption and needs

- Annual consumption per 1 inhabitant
 - ... electrical energy : 676 kWh
 - ... gas : 340 cubic meters
 - ... water : 67 cubic meters
- Needs
 - ... expansion of water treatment stations
 - ... expansion of mechanical and biological water treatment plants
 - ... waste utilization

6) Solid Waste Management (SWM)

a) Collection and transportation

To the existing SWM of the Poznan Municipality, neither source separation of wastes nor any intermediate treatment of wastes is introduced but mixed waste collection is employed at present.

The municipal SWM including street sweeping is unitarily operated by the municipal enterprise; "Sanitary Technic" (Sanitech) under the control of the Communal Affairs of the Poznan Municipality.

The number of the existing vehicles totals 60 units in operation comprising 18 units of Container Type and 42 units of Compactor Type including Drum Type. Those vehicles are substantially old and their averaged age reaches around 18 years.

The large containers of the three types; 7 M³, 8M³ and 10M³ or the small-sized 1.1 M³ communal containers are used for the collection of the wastes discharged from the complex/apartments while the 110 liter waste containers for the wastes from the independent houses.

A majority of the dust chutes which the high-rise buildings like a complex were furnished with are not always utilized but suspended in use because of the inner blocking and odor generation etc., caused by their structural defects.

b) Final disposal site

The municipal wastes are finally disposed of at the final disposal site named Biedrusko around Morasko in the County of Suchy Las which is located about 15 km north from Poznan City. The site even including the extension of 3 ha is scheduled to terminate at the end of 1993 in compliance with the contract between the Municipality and the County.

The total volume of the wastes dumped into the disposal site amounts to about 1.2 million M³ per annum, out of which about 0.9 million M³ is brought into by Sanitech and the remaining 0.3 million M³ approximately by the other own transporters.

One compactor and 4 bulldozers are in operation, compacting and covering the soil on the disposal site, though the soil covering is not conducted daily. As a countermeasure to leachate in the site, an artificial liner has been introduced to the first extension of 2.5 ha since 1989 in order to prevent the leachate from penetrating into the ground water and, in addition to the liner laying, a leachate circulation system is going to be adopted for the second extension of the site so as to protect the environs against the surface/ground water contamination.

With the aim of opening a new disposal site at the beginning of 1994, the Poznan Municipality has entered into negotiations with both the inhabitants around the site and the authorities concerned on the land acquisition of about 32 ha which is situated around 25 km west from Poznan City.

c) Particular experience in the past

The first and sole incineration plant in Poland was installed in Poznan in 1928 and operated for 26 years until 1954. The price was Sterling £43,500 as in 1925 and the capacity was about 20,000 M³ per year which covered around 12% of all the generated waste amount at that time.

d) Waste analysis

At the request of Environmental Sanitation of Provincial Government, the Faculty of Environmental Technology of Warsaw University of Technology carried out the analysis of the Poznan municipal waste in 1984 to 1985. Moreover, the waste composition changes in the last 30 years are available because of the existence of analyses in 1955-57 and 1970-71.

Pursuant to the recent SWM of the Sanitech, the volume collected and disposed throughout Poznan amounts to 1.2 million M³ per year approximately, about 65 % of which is considered to be household wastes.

e) Budget for the SWM

An annual budget of the Poznan Municipality has amounted to Zl.800.9 billion on the real term for the 1990 fiscal year and its source of the funds was a local tax. Out of the budget, about 0.7%, that is, Zl.6.0 billion was allocated to the SWM.

The institutional set-up of the SWM in the Poznan Municipality is shown Appendix 1.

7) Recycling

The recycling activity in Poznan is carried out by the two enterprises; for the inner areas of the City as a major field of the activity Spoldzielnia Parcy "Surmet" which was founded in 1949 and for the outer areas of the City as a main sphere of the business Surowcow Wtornych (S & W) which was established in 1946.

The amounts of the recycling wastes bought for the collection by the two enterprises were 31,000 t/y of used paper, plastic, textile and carpet, 30,000 t/y of metal and 2,500,000 bottles as in 1990. The collection ratio of used paper is predominant showing 65% approximately.

Although the turnover of Surmet and S & W amounted to Zl. 32 billion and Zl. 22 billion respectively in 1990, both the enterprises could not follow the radical changes of economy in the recent few years and their financial positions have shown a downward tendency since 1988.

8) Industrial wastes

A central waste treatment public factory of the Municipality has made efforts to exploit treatment technology for industrial wastes. However it is the current situation of industrial wastes in the City of Poznan that those waste generators are instructed to keep their wastes inside the premises of the respective factories without moving the wastes out of the factory sites. Thus, industrial wastes are only heaped up in the factory sites.

With the keen intention to accelerate the reutilization and appropriate disposal of industrial wastes in order to break the ice under the circumstances, 12 state-owned factories established in January, 1990, one limited liability state-owned enterprise "Odpad", which is not a profit but a site operation oriented company, mapping out to open a final disposal site in a year at an area located south of Poznan though its scale is small.

3. OBJECTIVE OF STUDY

3.1 Amelioration of Waste Management System

With a view to promoting improvement/development of public sanitation, environmental protection, recycling and reutilization of wastes, it is required to establish an integrated waste management system from collection to final disposal of municipal wastes and industrial wastes.

3.2 Organizational and Institutional Set-Up and Personnel Training

In order to smoothly facilitate the implementation of the above mentioned technical system, it is also required to well arrange and align the organizational and institutional set-ups and to formulate a personnel training programme.

3.3 Staged Plans for Investment and Operation, and a Fund-Raising Plan

It is necessary to set up staged plans for the proposed SWM system including the cost estimates of the projects and their operation.

It is also required to prepare a fund-raising plan for the necessary funds as estimated above.

3.4 Materialization of the Projects

It is indispensable to evaluate the viability of the projects from economic, financial, environmental and socio-cultural viewpoints.

3.5 Transfer of Planning Know-how to Other Cities

A manual on M/P formulation and implementation shall be prepared as a result of the Study and it shall be publicised to other cities in a workshop to be organized towards the end of the Study to create a multiplying effect.

4. APPROACH AND SCOPE OF STUDY

Based on an Inception Report (I/R) to be agreed upon by and between an executing agency of the Polish side and the JICA in consultation with each other, the Study shall be conducted at the undermentioned stages.

- (1) Master Plan (M/P) stage
- (2) Feasibility Study (F/S) stage

4.1 M/P Stage

1) Study Area

The Study area shall cover the whole area within the boundaries of the Poznan Municipality as shown in Appendix 2.

2) Study Wastes

Municipal solid wastes including wastes generated from street, parks, and other public facilities, and industrial wastes shall be covered.

3) General Survey

Information and data collection shall be carried out at national, provincial and municipal levels concerning general technology, socio-economy, administrative and financial policies, organizational, institutional and legal aspects, and various standards related to the SWM and then those information and data collected shall properly be arranged for the M/P.

4) Comprehension of the Existing System

It is required to analyze and grasp the existing system in detail from waste generation to final waste disposal including collection, transport, treatment and recycling.

5) Extraction of the Issues and Problems

It is essential to clarify the issues and problems related with the present situation by conducting a site survey on the aspects such as socio-economy, organization, economy and finance, laws and regulations, arrangement of necessary personnel, citizen's participation, maintenance of facilities and land use in connection with municipal and industrial SWM in the Poznan Municipality.

6) Forecast of Waste Generation Amount and Waste Composition

The Study shall be made on the forecast of waste amount to be generated in the future and its composition according to a long-term development plan of the Municipality, population forecast, land-use plans and various development plans related to the Study.

7) Establishment of an M/P with the Target Year of 2010

a) Alternative plans

In order to formulate the M/P, alternatives shall be mapped out regarding a technical system to be combined with waste discharge, collection, transportation, intermediate treatment, final disposal and resource recycling.

Institutional and managerial arrangements to support the above mentioned technical system shall be also examined with due consideration of possible private operation.

b) Evaluation

From the following viewpoints, then, a comprehensive evaluation shall be proceeded on the alternatives, out of which a most suitable one shall be chosen and compiled in the M/P.

- Technical appropriateness
- Economic and financial feasibilities
- Upgrading of public sanitation and environmental conservation
- Socio-cultural acceptability

In case of "Without the materialization of the M/P", a foreseeable situation shall be examined, too.

c) Important items to be attended to

On the premise that the scheme of establishing two enterprises for the municipal waste collection and disposal in addition to the Sanitech will be realized with the aim to upgrade a waste collection efficiency and level up the quality of services to the citizen by making the three enterprises freely compete with each other, it is the must to check in detail whether an actual situation including the managerial aspect of the three enterprises goes on or not towards the direction intended in the said scheme.

As respects the intermediate treatment, particularly the introduction of a compost plant and incineration plant, compost marketability and a waste-heat recovery method shall be studied in detail, and at the same time, quantitative evaluation shall be made as much as possible on a variety of advantageous and disadvantageous points derived from making the waste harmless, stable and reduced in volume by those treatments.

Due to the fact that a future disposal site is presumed to get remote (about 35 Km) from the City, the introduction of a transfer station has to also circumstantially be examined in correlation with between the said introduction and the introduction of intermediate facilities.

8) Standards of the European Communities(EC)

Regarding sanitary and environmental protection, and municipal and industrial solid wastes management, the EC standards shall be taken into account in the Study in light of the Polish intention to be a nation to the EC.

9) Relationship between the SWM M/P and a Municipal Development Plan

The SWM M/P shall be in harmony with the Long-Term Development Plan of the Poznan Municipality.

10) Personnel Training Plan

A training plan for counterparts and local consultants entailing the formulation of the M/P shall be recommended after being divided into two; an on-site training and an indoor training, describing curricula for middle managerial personnel and supervisors as well as their schedules. Programmes of transfer technology to the counterparts and the local consultants shall concretely be clarified.

11) Citizen's Participation in the SWM

In consideration of the current situations in Poland, recommendations shall be made on various countermeasures necessary to ensure the effects of citizen's involvement/participation in the SWM which is indispensably required for a smooth/effective operation of the SWM.

12) Recommendations on Industrial Waste Management

In the development of comprehensive strategies, the fact that local governments have different kinds of responsibilities for municipal solid wastes and industrial ones, shall be duly taken into account.

Namely, the municipality is entirely responsible for municipal wastes but, as to industrial wastes, merely in a position to supervise whether or not they are properly treated and disposed of from the viewpoint of environmental protection in the jurisdiction of the municipality and to control/guide for ensuring an appropriate treatment/disposal those who are treating and disposing of the industrial wastes improperly.

From such viewpoint, the existing situation of the industrial waste treatment and disposal shall be comprehended with the existing obtainable data and information on the industrial wastes.

Then recommendations shall be made on institutional relationship between the Central Government, regional and municipal governments.

Following the recommendations to be prepared in the Study, the Poznan Municipality shall consult with the Central Government and the relevant authorities about a policy to cope with the industrial wastes and determine whether a further study should be conducted or not on the industrial wastes under an overseas technical assistance.

4.2 F/S Stage

With the view to realizing the projects to be included in the first phase of the proposed M/P implementation schedule, the F/S shall be carried out.

1) Detailed Site Survey

A site survey shall be made in detail enough to materialize the projects. Especially it is vitally important to upgrade the precision of the data and information obtained in the M/P stage and to collect further detailed data and information unobtainable yet, if any, in the stage.

Soil investigation and topographical survey shall also be carried out at the site(s) where facilities are planned to construct. With those data and information, analyses shall be made on procurement costs of equipment and materials, construction cost and other necessary costs, if any, to be need as conditions for a basic design.

2) Comparative study

Based on the detailed data and information obtained above, a comparative study shall be carried out on the machineries, equipment, building and foundations including the materials proposed in the projects, with emphasis on the economic and environmental aspects.

3) Estimate of project costs and an implementation schedule

With respects of the aforementioned investigation and analyses, project costs and implementation schedule shall be set out in the manner of an applicable format for an IBRD loan.

4) Contents applicable to an IBRD loan

Since an IBRD is regarded as one of the possible financial sources, the F/S shall be conducted enough to satisfy the IBRD loan requirements.

Following the evaluation on the projects from technical, economic/financial, environmental aspects and social acceptability, the projects shall also be appraised as a whole from a comprehensive viewpoint so as to examine the viability of the projects.

5) Set-Up of Conditions

Conditions/recommendations on the implementation of the projects finalized in the F/S stage shall be prepared from the viewpoints of technical, environmental, financial, institutional and socio-cultural aspects with the aim at a smooth and effective execution of the projects.

4.3 Manual for Formulation of the SWM M/P and Arrangement of Workshop

1) Manual for Formulation of the SWM M/P

In order that SWM may be ameliorated in other medium-sized municipalities, an SWM M/P formulation manual shall be prepared for the other municipalities by considering as much as possible the present local conditions with the Study experience in Poznan and the information on SWM of other municipalities to be obtained during the study period.

2) Workshop

By means of the Draft Final Report and the M/P formulation manual, the workshop shall be held for the duration of one week at the time of submission of the Draft Final Report.

Responsible personnel for SWM shall be invited to the workshop from other 20 to 30 municipalities, with the view to expanding the fruits of the Study to SWM improvement in other municipalities.

5. STUDY SCHEDULE

5.1 Study Period and Commencement of the Study

Ten Months to be expected for the Study Period and Commencement in an early month of 1992

5.2 Study Schedule

The Study Schedule is shown in Appendix 3.

6. REPORTS

6.1 Inception Report (IC/R)

Prior to the commencement of the Study, the Study Team shall prepare the IC/R on a detailed implementation policy of the Study and submit it to the Polish side for the approval of the Steering Committee and the Technical Committee.

6.2 Progress Report I (P/R I)

At the completion of the homework in Japan after the first phase site survey, issues and problems on the existing SWM and conceptual alternatives of the M/P shall be summarized into the P/R I.

6.3 Interim Report (I/R)

When the homework of the Study is finished in Japan after the second site survey, a framework of the M/P and alternative projects for the F/S shall be described in the I/R.

6.4 Progress Report II (P/R II)

Fruits of the site survey for the F/S and a main framework of a Draft Final Report shall be compiled in the P/R II after the third site survey is completed.

6.5 Draft Final Report (D/F)

The D/F shall be composed of the M/P as a whole and the F/S for the selected projects. A draft of an M/P formulation manual shall be prepared separately for the use of other medium sized cities in Poland and submitted to the Polish side together with the D/F.

Both the D/F and the manual will be used for the workshop at this stage.

6.6 Final Report (F/R)

Taking into account the comments on the D/F and the manual, which should be given in writing by the Polish side to the JICA through the Embassy of Japan within 2 weeks after both the D/F and the manual are submitted to the Polish side, the F/R and the M/P formulation manual shall be culminated within 3 weeks after the arrival of the said comments to the JICA.

7. CONSULTANTS' QUALIFICATION AND EXPERIENCE

7.1 Professionals specialized in Specific Fields

The Study of this nature requires experts from disciplines ranging over Sanitary Engineers, Environmental Scientists, Mechanical Engineers, Electrical Engineers, System Engineers, Economists, Sociologists, Architects, etc. Particularly, it is natural that an expert versed in the industrial waste generation process should be assigned as one of the Study Team members because of the Study not only comprising municipal wastes but also extending to industrial wastes.

7.2 Qualification and Experience to match the Work

The consultants to be proposed for the Study should have relevant qualification and experience to coincide with the work to be assigned.

It is emphasized that the Study Team Leader and leading professionals for each major component of the Study should have proven record of their technical and leadership capability in carrying out the Study of this nature.

7.3 Utilization of International Consultants

Following the Study, an IBRD loan will be considered by the Poznan Municipality as one of the possible financial resources for the materialization of the projects. It is, therefore, essential that the Study should satisfy the minimum conditions to be evaluated by the IBRD. As such a couple of IBRD-study experienced international consultants shall be incorporated into the Study Team.

In addition to the condition described above, it is greatly expected that the international consultants will be capable of the Polish language so as to accelerate the Study work.

7.4 Utilization of Local Consultants

In light of the currently radical revision and establishment of law/decree regulations etc., subsequent to the reform of the Constitution, almost all the referential materials for the Study such as books, data, papers and documents written and printed in the Polish language, deference of social systems and so forth, it is requested to recruit promising local consultants with the experience in the specialized fields needed for the Study and English knowledge to communicate with Japanese and International consultant members of the Study Team in order that the Study may smoothly proceed.

8. RELATED STUDIES

- 1) "A Conception of the Programme for Removing and neutralizing Poznan municipal waste" - Institute for Engineering of Environment of the Warsaw Polytechnic
- 2) Reutilization Plan of the Completed Part of the Biedrusko Landfill Site

9. STUDY COORDINATION AND MONITORING

9.1 Formation of a Steering Committee and a Technical Committee

1) The Steering Committee

The Committee shall be chaired by the Vice President of the Poznan Municipality, and composed of managers at the top level of respective departments / authorities concerned, the chairman of the Technical Committee and responsible staff members from the Ministry of Construction and the Ministry of Environmental Protection, Natural Resources and Forestry.

In the course of the Study, the Steering Committee Meeting shall be held at the time of submission of the following reports prepared by the Study Team on which it is considered vital to make a decision in terms of political, financial and social issues.

- Inception Report (Basic Policy of the Study)
- Interim Report (Framework of Master Plan)
- Draft Final Report (Feasibility Study)

2) The Technical Committee

The Committee shall be headed by a chairman to be appointed by the chairman of the Steering Committee, and composed of the staff members to be selected from the authorities concerned.

Main roles of the Committee are to exchange opinions with the Study Team on the matters of technical and environmental aspects and to make clear the issues to be discussed in the Steering Committee.

9.2 Assignment of Polish Counterparts

In order to cooperate with the Study Team in realizing a smooth implementation of the Study, the Polish side shall choose Polish counterparts to make them actively take part in the Study and receive technology transfer by on-the-job training(OJT).

The counterparts shall be selected in consideration of and assigned to the following specialized fields.

- 1) Collection and transportation
- 2) Facility plan
 - Transfer station
 - Intermediate treatment
 - Final disposal
- 3) Maintenance
- 4) Environment
- 5) Urban planning
- 6) Organizational and institutional set-up
- 7) Financial analysis
- 8) Staff training and social education

9.3 Items to be Decided by the Polish Side

In order to make the Study smoothly going on, the Polish side shall give the Study Team proper instructions about the decisions on the following items after examining the materials to be prepared by the Study Team.

- 1) Lands for the construction of facilities

In the site selection for constructing various facilities, the evaluation shall be made on the candidate sites from the technical, economic, environmental and social viewpoints.

The Polish side will make a final decision on the sites by the time set in the Study schedule on site selection taking into account other issues, if any, in addition to the evaluation results given by the Study Team.

2) Privatization of the public enterprise "Sanitech"

In light of privatization of the public enterprise, it is necessitated to clarify in the Study an inventory of the items to be transferred from the public enterprise to a private company together with the delivery conditions and value.

3) Financial Plan

Regarding both the amount to be borne by the citizen for the SWM service and the scale of subsidies to be included in the municipal budget for the SWM, evaluation results of some alternatives shall be presented by the Study Team to the Polish side.

Based on the evaluation results, the Polish side will make a final decision on the plan taking into account administrative and socio-economic conditions towards the target year of the M/P.

9.4 Selection of Local Consultants

Right after the commencement of the Study, the JICA Study Team shall select local consultants in cooperation with the Polish side and thereafter incorporate them into an implementation organization of the Study Team.

Prior to the selection, therefore the Polish side shall list up names of organizations /enterprises/institutes of promising local consultants with their C/Vs written in English and submit their list(s) to the JICA through the Embassy of Japan when a JICA-S/W(Scope of Works) mission comes up to Poland.

9.5 Study Organization Chart

Reference is made to Appendix 4

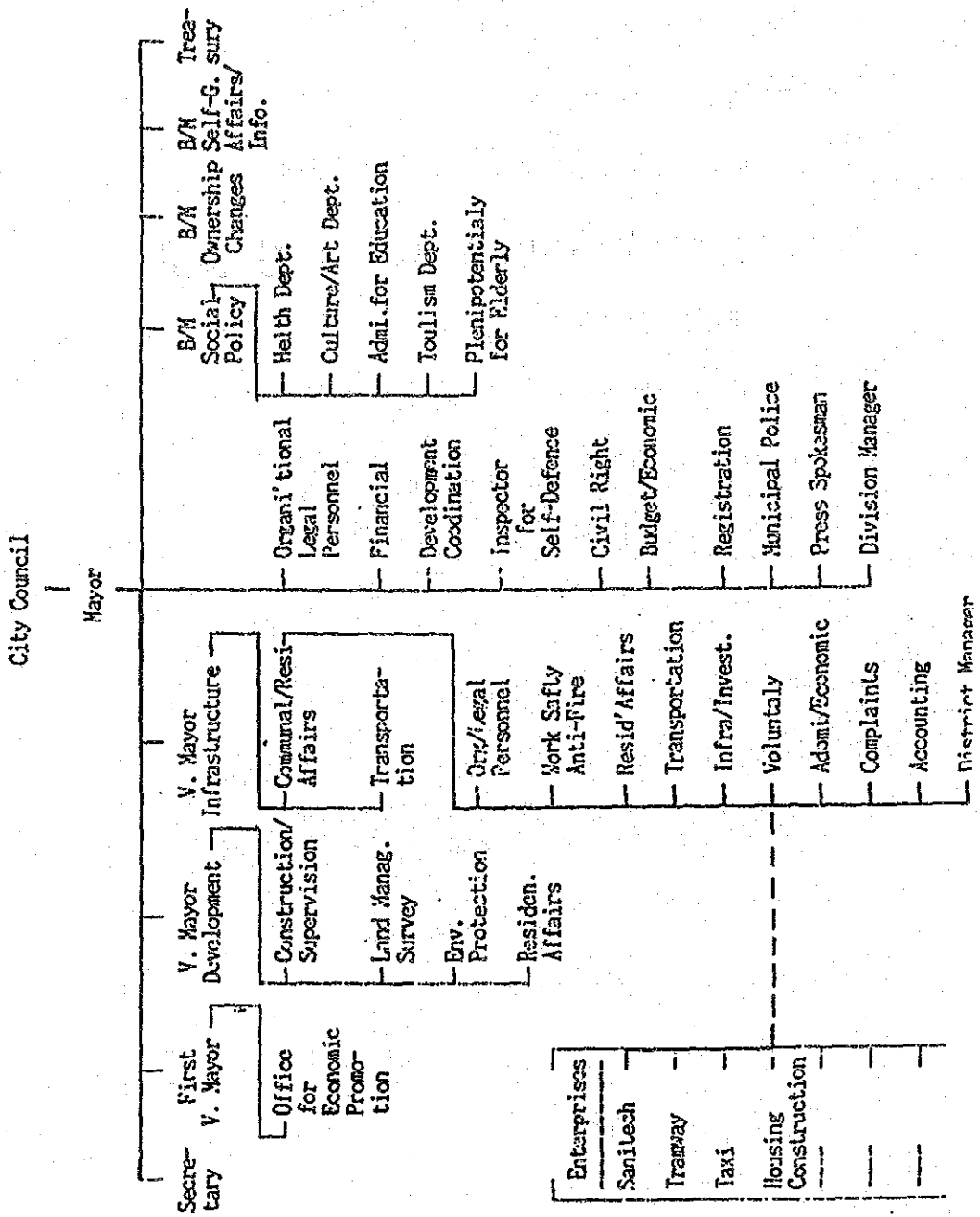
10. UNDERTAKINGS

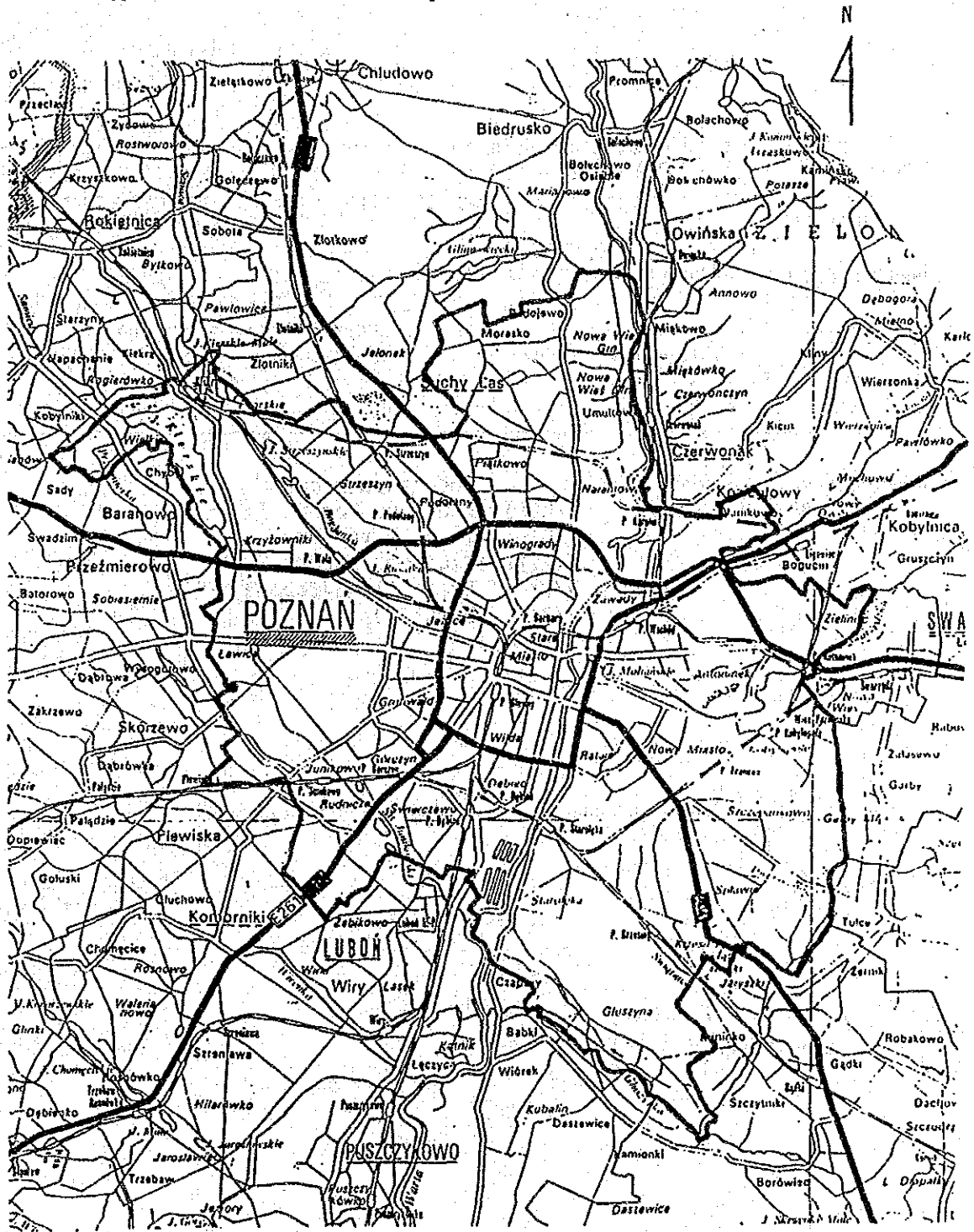
10.1 Undertakings of the Government of Poland

In order to facilitate a smooth and efficient conduct of the Study, the undermentioned Authorities of Poland shall take necessary measures:

- 1) Ministry of Construction
 - a) To secure the safety of the Study team
 - b) To permit the members of the Study Team to enter, leave and sojourn Poland in connection with their resignation therein, and exempt them from alien registration requirement and consular fees.
 - c) To exempt the Study Team from taxes, duties and any other charges on equipment, machinery and other materials including personal effects brought into and out of Poland for the conduct of the Study.
 - d) To exempt the Study Team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Study Team for their services in connection with the implementation of the Study.
 - e) To provide necessary facilities to the Study Team for remittance as well as utilization of the funds introduced in Poland from Japan in connection with the implementation of the Study.
 - f) To secure permission for the Study to take all data, documents, maps and other necessary materials related to the Study out of Poland to Japan.
 - g) To supply the Study Team with information, data, documents and materials owned by the Ministry of Construction.
 - h) To cooperate with the Study Team in collecting necessary materials from the other Ministries and Authorities concerned.
 - i) To cooperate with the Study Team in contacting an IIRD office in Poland.
 - j) To cooperate with the Study Team in collecting data and information on other cities' SWM as required.

A P P E N D I C E S



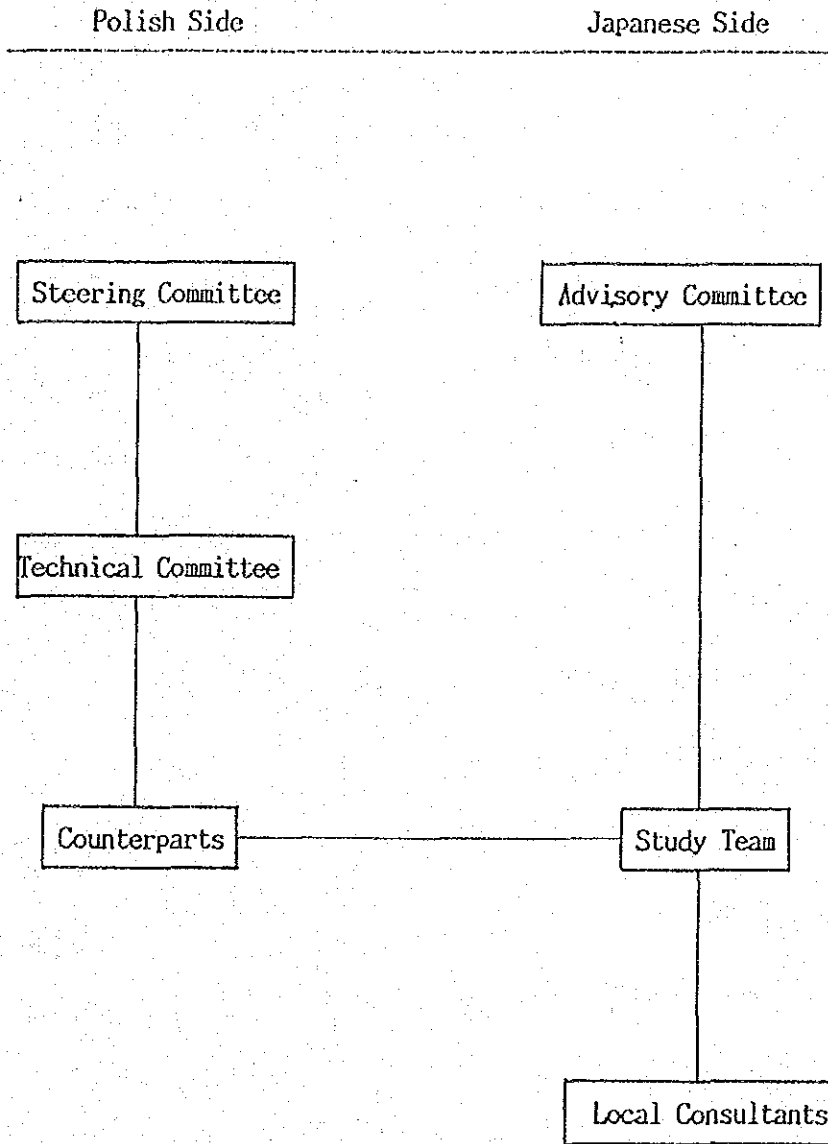


Scale 1 : 150,000

Month	1	2	3	4	5	6	7	8	9	10
Preparation	IC/R		P/R(I)							
Master Plan	*****=====*****=====									
F/Study						I/R	P/R(II)		F/R	
						*****=====			==	
Seminar/ Workshop								D/F		

Remarks: == Homework
 *** Field work

IC/R: Inception report
 P/R(I): Progress report I
 I/R: Interim report
 P/R(II): Progress report II
 D/F: Draft final report
 F/R: Final report



附属資料 3. Questionnaire

(1) プロジェクト形成調査 Questionnaire

(2) 事前調査 Questionnaire

プロジェクト形成調査 Questionnaire

QUESTIONNAIRE
ON
SOLID WASTE MANAGEMENT
IN
THE POLISH REPUBLIC

FEBRUARY 1991

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

PART I QUESTIONS FOR THE MINISTRY OF CONSTRUCTION AND/OR
THE MINISTRY OF ENVIRONMENTAL PROTECTION

1. Please make clear the national plan and policy on solid waste management (SWM*) including the following information:

- (1) Institutions concerned with SWM at national level, their mandates, organizations, staff, budget and activities;
- (2) SWM plans, policies, programs and projects;
- (3) Laws, regulations, standards and guidelines related to SWM;
- (4) Environmental Impact Assessment (EIA) regulations and guidelines, especially those for SWM related projects;
- (5) Inspection and monitoring system of pollution caused by improper management of solid wastes;
- (6) Investment plan for the SWM sub-sector and its planning criteria;
- (7) Human resource development programme for the sub-sector; and
- (8) R&D of appropriate technologies for SWM.

* In this questionnaire, SWM covers the management of municipal, medical, industrial and hazardous solid wastes.

2. Please make clear the the framework of ongoing administrative reform for the establishment of well functioning and autonomous local governments including the following information:

- (1) Democratization of local government system;
- (2) Powers and obligations of local governments on SWM;
- (3) Relationship between the Central Government and local governments in terms of SWM;
- (4) Role of provincial governments in SWM especially in industrial solid waste management;
- (5) Strengthening of financial basis of local governments; and
- (6) Privatization policy of public services including municipal SWM.

3. In connection with 2.(3) supra and PART II 1.(2) infra, please make it clear how the Central Government will get the Master Plans implemented by corresponding local governments, once they are prepared by JICA, involving the other organizations concerned and acquiring the necessary funds. Please describe the details of IBRD loan programme, if it is supposed to be the potential financial source.

4. Please make clear, if any, the contents of ongoing or completed projects in the field of SWM realized with assistance of the G-24 Countries, especially those for the City of Warsaw.
5. Please give us the following information concerning the existing composting plants of municipal solid wastes in Poland:
 - (1) Type, capacity, location and the construction cost of the plants;
 - (2) Operators of the plants;
 - (3) Yearly change of processed waste amount and compost production;
 - (4) Yearly change of operation and maintenance cost and revenue of the plants;
 - (5) Market for the compost; and
 - (6) Major problems encountered.
6. Please give us the following information, if there are any projects of incineration plants of municipal solid wastes in Poland:
 - (1) Type, capacity, location and estimated construction cost of the plants;
 - (2) Expected operators of the plants;
 - (3) Estimated operation and maintenance cost of the plants; and
 - (4) Problems to be overcome in the effective use of incineration technology.
7. Please give us the following information, if there are any specialized facilities in Poland for the treatment/final disposal of hazardous solid wastes:
 - (1) Type, capacity, location and the construction cost of the facilities;
 - (2) Owners and/or operators of the facilities;
 - (3) Type and amount of treated/disposed hazardous solid wastes;
 - (4) Operation and maintenance cost and revenue of the facilities; and
 - (5) Major problems encountered in the use of the facilities.
8. Please give us informations on Polish industries which produce or are going to produce collection vehicles and other SWM related equipment and facilities.

9. Please let us know the Polish side organizational structure for the conduct of the JICA Studies including the following:

- (1) What agencies will work as the counterpart agencies for the JICA study teams; and
- (2) Whether a steering committee of the Studies will be organized or not. If yes, names and positions of its expected members.

PART II QUESTIONS FOR THE CITY OF POZNAN AND/OR
THE CITY OF LUBLIN

1. Please make clear the background of the exploration of foreign technical assistance including the following information:

- (1) Deficiencies of the existing SWM system in the city which show the urgent need of its improvement (operational, administrative, financial and planning); and
- (2) Willingness of concerned organizations, especially that of the city government, to prepare and implement its SWM System Improvement Master Plan.

2. Please make clear the Scope of the Study about the following basic points:

- (1) Target year of the Master Plan;
- (2) Study area ;
- (3) Solid wastes to be covered by the Study and their definitions;
- (4) Minimum service level to be achieved by the target year; and
- (5) Priority service and priority geographical area if phased improvement is required.

3. Please give us the following basic information for the Study:

- (1) Historical development of the city's population and its estimation for the future;
- (2) City's development plans to be used as the basis of the Study;
- (3) Actual land use and future land use plans of the city;
- (4) Inventory of industrial solid waste generators and/or inventory of industrial air/water pollution control facilities; and
- (5) List of all previous and ongoing plans and studies on SWM in the city including the offers made by foreign private companies.

4. Please give us the following information about the existing SWM system in the city:

- (1) Institutional set-up of the city's SWM system and corresponding organization charts;
- (2) Rules and regulations for the city's SWM;

- (3) Conditions and problems of actual SWM system;
 - a. Generation of solid wastes (type of generators: domestic, commercial, institutional, industrial, etc.)
 - b. Amount and composition of solid wastes
 - c. Storage, recycling and processing at sources
 - d. Collection of solid wastes (method, equipment type, frequency, etc.)
 - e. Transfer and transportation of solid wastes
 - f. Processing of solid wastes
 - g. Disposal of solid wastes
 - h. Inventory of equipment (e.g. type, capacity, number, year of fabrication, condition, etc.) and its maintenance system
 - i. Inventory of landfills (e.g. name, location, size, land owner, operator, daily landfilling volume, year of beginning, remaining life, condition, etc.)
 - j. Personnel
 - k. Financial condition and user charge system.
 - (4) Inventory of candidate sites for future landfilling purpose; and
 - (5) Privatization policy of SWM services.
5. Please give us maps which show, among others, the following:
- (1) City area and its environs showing boundaries of the city, its districts and the Study area;
 - (2) Actual and planned land use of the city;
 - (3) Actual and planned road and railway network system;
 - (4) Location of major sources of industrial solid wastes;
 - (5) Locations of strategic facilities such as the central office, district offices, garages and landfills; and
 - (6) Proposed sites for future landfilling purpose.
6. Please let us know the names, positions and specialities of the expected counterpart personnel for the JICA Study.
7. Please specify the economic, social and other special conditions to be considered in the Study, if any.
8. Other comments on the Study, if any.

(Thank you for the cooperation.)

事前調査 Questionnaire

INSTITUTE FOR INTERNATIONAL COOPERATION, JICA

International Cooperation Centre Bldg.
10-5, Ichigaya Honmura-cho, Shinjuku-ku, Tokyo
162 Japan

Telephone:03-269-3201
Facsimile:03-269-2054
Telex:22271 JICAHDQ

Date : 1 October 1991

To : Eng. Lech JERCZYNSKI, Deputy Director,
Department of Housing Policy and Urban Economy,
Ministry of Construction, the Government of the
Polish Republic

From : Kunitoshi SAKURAI, Dr.Eng.
Leader, JICA Preliminary Survey Team

Subject: Informations Requested by JICA for the Planning
of the Solid Waste Management Study for the City
of Poznan

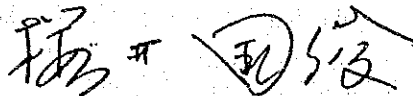
Dear Sir;

In response to the request of the Government of the Polish Republic, the Government of Japan is planning to carry out the Solid Waste Management Study for the City of Poznan through the Japan International Cooperation Agency (JICA), the official agency responsible for the implementation of the technical cooperation programmes of the Government of Japan. With the objective of preparing and signing of the basic agreement called "Scope of Work" for the said Study, JICA is going to dispatch a Preliminary Survey Team called "S/W Mission" to Poland in coming November.

In this connection, the Ministry of Construction of the Government of the Polish Republic is kindly requested to supply the following informations to the S/W Mission when the Mission visits the Ministry in November 1991. These informations will facilitate JICA's planning of the said Study:

1. List (name, address, phone number, facsimile number, specialized field, etc.) of competent local consultants which the Ministry recommends JICA to consider as the possible sub-contractors in the conduct of the Study. The JICA Mission headed by the undersigned was dispatched to Poland in April-May 1991 and requested the Ministry to supply the above-mentioned list to the S/W mission when it visits Poland.
2. Any other informations and/or suggestions which the Ministry considers useful for the planning of the said Study.

Thank you very much for your kind attention.



Kunitoshi SAKURAI, Dr.Eng.
Leader, JICA Preliminary Survey Team

INSTITUTE FOR INTERNATIONAL COOPERATION, JICA

International Cooperation Centre Bldg.
10-5, Ichigaya Honmura-cho, Shinjuku-ku, Tokyo
162 Japan

Telephone:03-269-3201
Facsimile:03-269-2054
Telex:22271 JICAHDQ

Date : 1 October 1991

To : Dr. Stanislaw SITNICKI, Director, Environmental
Co-ordination and Management Unit, Ministry of
Environmental Protection, Natural Resources and
Forestry, the Government of the Polish Republic

From : Kunitoshi SAKURAI, Dr.Eng.
Leader, JICA Preliminary Survey Team

Subject: Informations Requested by JICA for the Planning
of the Solid Waste Management Study for the City
of Poznan

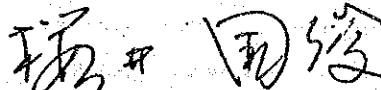
Dear Sir;

In response to the request of the Government of the Polish Republic, the Government of Japan is planning to carry out the Solid Waste Management Study for the City of Poznan through the Japan International Cooperation Agency (JICA), the official agency responsible for the implementation of the technical cooperation programmes of the Government of Japan. With the objective of preparing and signing of the basic agreement called "Scope of Work" for the said Study, JICA is going to dispatch a Preliminary Survey Team called "S/W Mission" to Poland in coming November.

In this connection, the Ministry of Environmental Protection, Natural Resources and Forestry of the Government of the Polish Republic is kindly requested to supply the following informations to the S/W Mission when the Mission visits the Ministry in November 1991. These informations will facilitate JICA's planning of the said Study:

1. List (name, address, phone number, facsimile number, specialized field, etc.) of competent local consultants which the Ministry recommends JICA to consider as the possible sub-contractors in the conduct of the Study. The JICA Mission headed by the undersigned was dispatched to Poland in April-May 1991 and requested the Ministry to supply the above-mentioned list to the S/W mission when it visits Poland.
2. Environmental regulations and standards of European Community (EC) to be used in the Study.
3. Recently promulgated environmental legislations in Poland to be taken into account in the Study.
4. Any other informations and/or suggestions which the Ministry considers useful for the planning of the said Study.

Thank you very much for your kind attention.



Kunitoshi SAKURAI, Dr.Eng.

Leader, JICA Preliminary Survey Team.

INSTITUTE FOR INTERNATIONAL COOPERATION, JICA

International Cooperation Centre Bldg.
10-5, Ichigaya Honmura-cho, Shinjuku-ku, Tokyo
162 Japan

Telephone: 03-269-3201
Facsimile: 03-269-2054
Telex: 22271 JICAHDQ

Date : 1 October 1991

To : Mr. Ryszard OLSZEWSKI,
Deputy Mayor, Poznan Municipality

From : Kunitoshi SAKURAI, Dr. Eng.
Leader, JICA Preliminary Survey Team

Subject: Informations Requested by JICA for the Planning
of the Solid Waste Management Study for the City
of Poznan

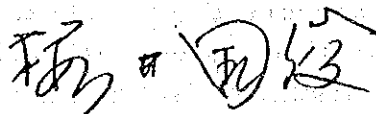
Dear Sir;

In response to the request of the Government of the Polish Republic, the Government of Japan is planning to carry out the Solid Waste Management Study for the City of Poznan through the Japan International Cooperation Agency (JICA), the official agency responsible for the implementation of the technical cooperation programmes of the Government of Japan. With the objective of preparing and signing of the basic agreement called "Scope of Work" for the said Study, JICA is going to dispatch a Preliminary Survey Team called "S/W Mission" to Poland in coming November.

In this connection, Poznan Municipality is kindly requested to supply the following informations to the S/W Mission when the Mission visits the Municipality in November 1991. These informations will facilitate JICA's planning of the said Study:

1. Chief and other members of the Polish Counterpart Team mentioned in the item 9.2 of the Terms of Reference of the Study (name, post, assigned field, etc.).
2. List (name, address, phone number, facsimile number, specialized field, etc.) of competent local consultants which the Municipality recommends JICA to consider as the possible sub-contractors in the conduct of the Study. The JICA Mission headed by the undersigned was dispatched to Poland in April-May 1991 and requested the Municipality to supply the above-mentioned list to the S/W mission when it visits Poland.
3. Situation of the existing landfill in Biedrusko and perspective of the acquisition of a new landfill site.
4. Situation of Sanitech and perspective of the participation of other companies in solid waste management service in Poznan.
5. Any other informations and/or suggestions which the Municipality considers useful for the planning of the said Study.

Thank you very much for your kind attention.



Kunitoshi SAKURAI, Dr.Eng.
Leader, JICA Preliminary Survey Team

INSTITUTE FOR INTERNATIONAL COOPERATION, JICA

International Cooperation Centre Bldg.
10-5, Ichigaya Honmura-cho, Shinjuku-ku, Tokyo
162 Japan

Telephone: 03-269-3201
Facsimile: 03-269-2054
Telex: 22271 JICAHDQ

Date : 1 October 1991

To : Mr. Christian DUVIGNEAU, Principal Operations
Officer, The World Bank, Poland

From : Kunitoshi SAKURAI, Dr. Eng.
Leader, JICA Preliminary Survey Team

Subject: Informations Requested by JICA for the Planning
of the Solid Waste Management Study for the City
of Poznan

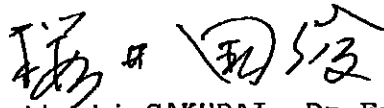
Dear Sir;

In response to the request of the Government of the Polish Republic, the Government of Japan is planning to carry out the Solid Waste Management Study for the City of Poznan through the Japan International Cooperation Agency (JICA), the official agency responsible for the implementation of the technical cooperation programmes of the Government of Japan. With the objective of preparing and signing of the basic agreement called "Scope of Work" for the said Study, JICA is going to dispatch a Preliminary Survey Team called "S/W Mission" to Poland in coming November.

In this connection, The World Bank, Poland is kindly requested to supply the following informations to the S/W Mission when the Mission visits the Bank in November 1991. These informations will facilitate JICA's planning of the said Study:

1. List (name, address, phone number, facsimile number, specialized field, etc.) of competent international and/or local consultants which the Bank recommends JICA to consider as the possible sub-contractors in the conduct of the Study. The Study is requested to prepare a solid waste management improvement project for the City of Poznan considering the Bank as the most probable financing source.
2. Progress and outcome of the study on Municipal Solid and Hazardous Waste Strategy financed by the Bank through its Environment Management Project (1990-1993).
3. Any other informations and/or suggestions which the Bank considers useful for the planning of the said Study.

Thank you very much for your kind attention.



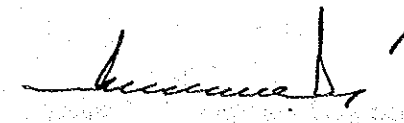
Kunitoshi SAKURAI, Dr.Eng.
Leader, JICA Preliminary Survey Team

附属資料 4. 締結済み Scope of Work

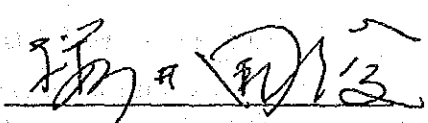
SCOPE OF WORK
FOR
THE STUDY
ON
THE SOLID WASTE MANAGEMENT
FOR
POZNAN CITY
IN
THE REPUBLIC OF POLAND

AGREED UPON BETWEEN
MINISTRY OF CONSTRUCTION AND MUNICIPALITY OF POZNAN CITY
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

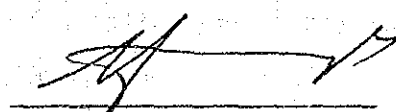
NOVEMBER 25, 1991
WARSAW, POLAND



MR. RYSZARD OLSZEWSKI, M. Sc. Eng.
VICE MAYOR,
POZNAN CITY



MR. KUNIZOSHI SAKURAI, Dr. Eng.
LEADER,
PREPARATORY STUDY TEAM,
JAPAN INTERNATIONAL
COOPERATION AGENCY



MR. LECH JERCZYNSKI, Eng.
DIRECTOR,
DEPARTMENT OF HOUSING POLICY
AND URBAN ECONOMY,
MINISTRY OF CONSTRUCTION

I. INTRODUCTION

In response to the request of the Government of the Republic of Poland (hereinafter referred to as "Poland"), the Government of Japan has decided to conduct the Study on the Solid Waste Management for Poznan City in the Republic of Poland (hereinafter referred to as "the Study"), in accordance with the laws and regulations in force in Japan.

Accordingly, the Japan International Cooperation Agency (hereinafter referred to as " JICA "), the official agency responsible for the implementation of the technical cooperation programmes of the Government of Japan, will undertake the Study, in close cooperation with the authorities concerned of the Government of Poland.

For the smooth conduct of the Study, the Ministry of Construction shall act as the coordinating body in relation with other relevant organizations, and the Municipality of Poznan City shall act as the counterpart agency to the Japanese study team (hereinafter referred to as "the Team").

The present document sets forth the Scope of Work for the Study.

II. OBJECTIVES OF THE STUDY

The objectives of the Study are:

1. to formulate a master plan for the improvement of the Municipal Solid Waste Management (hereinafter referred to as "MSWM") of Poznan City in the target year of 2010,
2. to make a recommendation for the future strategy on the Industrial Solid Waste Management (hereinafter referred to as "ISWM") of Poznan City,
3. to conduct a feasibility study for the priority project to be identified in the said master plan.

III. STUDY AREA

The study area covers whole area within the boundaries of Poznan City.

IV. SCOPE OF THE STUDY

In order to achieve the above objectives, the Study will cover the followings:

1. Basic Study:

(1) Collection and review of existing data and informations on:

- a. Physical condition such as climate, topography, geology, etc.
- b. National policy and development plan related to MSWM
- c. Social and economic conditions and statistics
- d. Urban development plan and land use
- e. Road traffic system
- f. Legislation and institutional aspects on MSWM
- g. Financial condition of the City

h. Present condition of MSWM

- Discharge
- Collection
- Transfer
- Transportation
- Treatment
- Disposal
- Street sweeping
- Composting
- Resource recovery
- Administration
- Institution
- Legal aspects
- Finance

i. Present condition of ISWM

j. Review of on-going projects related to MSWM

k. Social and environmental impact of the Solid Waste problem

- (2) Field survey
 - a. Amount of Municipal Solid Waste and its composition
 - b. Geology, water quality and land use in existing dumping area and future landfill site
 - c. Public consciousness on MSWM
 - d. Environmental survey
2. Analysis of collected data
 - (1) Present condition of MSWM
 - (2) Present condition of ISWM
3. Identification and analysis of the problems
4. Forecast of future quantity and quality of Municipal Solid Waste
5. Formulation of the master plan (M/P) on MSWM
 - (1) Confirmation of planning framework for the formulation of the master plan
 - a. Target year
 - b. Planning area
 - c. Service level
 - d. System components
 - (2) Preparation of alternatives for future system components
 - (3) Evaluation of alternatives from the viewpoint of public health, technology, economy, society, institution, environment and finance
 - (4) Selection of the best alternative and formulation of the master plan
 - (5) Implementation schedule of the master plan
 - (6) Identification of the priority project
6. Preparation of general recommendation on ISWM
7. Preparation of a manual for the formulation and implementation of a MSWM master plan

8. Feasibility study (F/S) on the priority project

(1) Confirmation of the planning framework

a. Target year

b. Planning area

c. Service level

d. System components

(2) Supplemental basic study

(3) Technical examination of system components

(4) Preliminary design of facilities

(5) Investigation of necessary equipment

(6) Planning of operation and maintenance

(7) Consideration of institutional and organizational development

(8) Cost estimation

(9) Project evaluation

a. Socio-economic

b. Financial

c. Environmental

(10) Project implementation plan

V. STUDY SCHEDULE

The Study will be carried out in accordance with the tentative schedule attached in Annex 1.

VI. STUDY ORGANIZATION

For overall management of the Study, the Government of Poland will organize a Steering Committee consisting of authorities and organizations concerned, and JICA will organize an Advisory Committee.

The study organization is shown in Annex 2.

VII. REPORTS

JICA will prepare and submit the following reports in English to the Government of Poland.

1. Inception Report:

Thirty (30) copies at the beginning of the first work in Poland.

2. Progress Report (1):

Thirty (30) copies at the end of the first work in Poland.

3. Interim Report:

Thirty (30) copies at the beginning of the second work in Poland.

4. Progress Report (2):

Thirty (30) copies at the end of the second work in Poland.

5. Draft Final Report:

Thirty (30) copies within three (3) months after completion of the second work in Poland.

The Government of Poland will present their comments to JICA within thirty (30) days after the receipt of the Draft Final Report.

6. Final Report:

Sixty (60) copies within two (2) months after JICA's receipt of the said comments on the Draft Final Report.

VII. UNDERTAKING OF THE GOVERNMENT OF POLAND

In order to facilitate smooth and efficient conduct of the Study, the Government of Poland, through the Ministry of Construction and the Municipality of Poznan City, shall take necessary measures as follows:

1. The Ministry of Construction shall take the following necessary measures;

(1) to inform the members of the Team any existing risk and to take any measures deemed necessary to secure the safety of the Team,

(2) to permit the members of the Team to enter, leave and sojourn in Poland for the duration of their assignment therein, and exempt them from foreign registration requirements and consular fees,

(3) to exempt the members of the Team from taxes, duties, and any other charges on equipment, machinery and other materials brought into Poland for the conduct of the Study,

(4) to exempt the members of the Team from income taxes and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Team for their services in connection with the conduct of the Study,

(5) to provide necessary facilities to the Team for the remittances as well as utilization of funds introduced into Poland from Japan in connection with the conduct of the Study,

(6) to secure permission for the Team to take all data, documents and maps (including photographs) related to the Study out of Poland to Japan,

(7) to bear claims, if any arises, against the members of the Team resulting from, occurring in the course of, or otherwise connected with discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the members of the Team, and,

(8) to provide the Team with necessary information, data, documents and materials owned by the Ministry of Construction related to the Study.

2. The Municipality of Poznan City shall take the following necessary measures;

(1) to inform the members of the Team any existing risk in the study area and to take any measures deemed necessary to secure the safety of the Team,

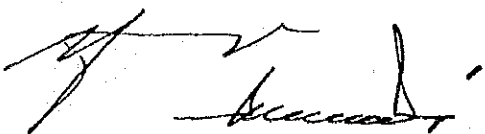
(2) to secure permission for entry into private properties or restricted area for the conduct of the Study,

(3) to provide the Team with necessary information, data, documents and materials owned by the Municipality of Poznan City related to the Study,

(4) to install equipment to be supplied by the Team at the expense of the Municipality of Poznan City and provide necessary utilities for the equipment, and,

(5) to provide medical services as needed. Its expenses will be chargeable on members of the Team.

3. The Municipality of Poznan City shall, at its own expense, provide the Team with the followings in relation with other related organizations;



(1) counterpart personnel,

(2) suitable office with furniture, telephone and other necessary materials for the Study in Poznan,

(3) credential or identification cards to the members of the Team and,

(4) appropriate number of vehicles with drivers.

IX. UNDERTAKING OF JICA

For the implementation of the Study, JICA shall take the following necessary measures;

1. to dispatch, at its own expenses, the Team to Poland,
2. to pursue technology transfer to the Polish counterpart personnel in the course of the Study.

X. CONSULTATION

JICA and the Ministry of Construction, the Municipality of Poznan City shall consult each other in respect of any matter that may arise from or in connection with the Study.

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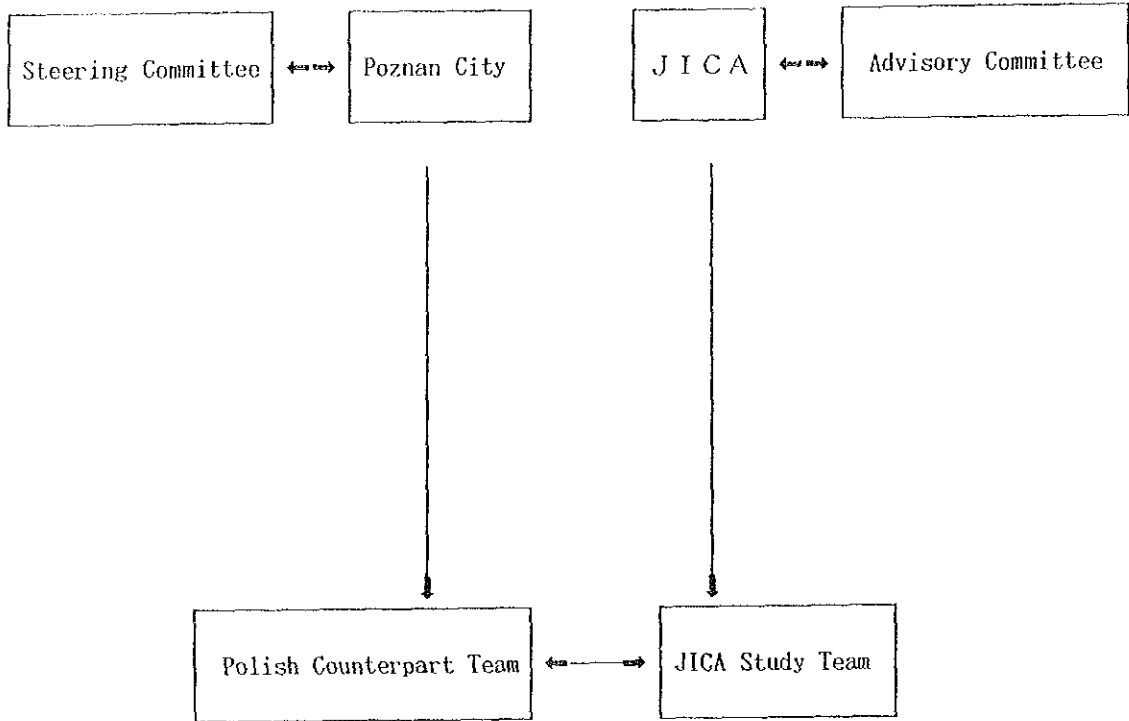
Annex 1

TENTATIVE STUDY SCHEDULE

MONTH DESCRIPTION	PHASE-I (M/P)							PHASE-II (F/S)									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
W O R K I N P O L A N D																	
W O R K I N J A P A N																	
R E P O R T P R E S E N T A T I O N																	

IC/R : Inception Report
P/R : Progress Report
IT/R : Interim Report
DF/R : Draft Final Report
F/R : Final Report

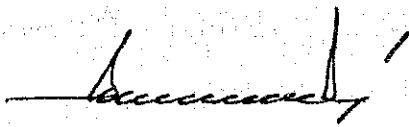
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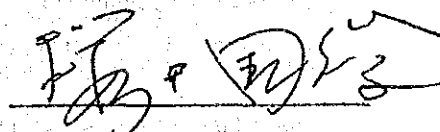
附属資料 5. 締結済み Minutes of Meetings

MINUTES OF MEETING
FOR
THE STUDY
ON
THE SOLID WASTE MANAGEMENT
FOR
POZNAN CITY
IN
THE REPUBLIC OF POLAND

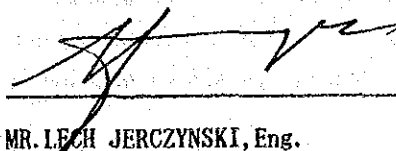
NOVEMBER 25, 1991
WARSAW, POLAND



MR. RYSZARD OLSZEWSKI, M. Sc. Eng.
VICE MAYOR,
POZNAN CITY



MR. KUNITOSHI SAKURAI, Dr. Eng.
LEADER,
PREPARATORY STUDY TEAM,
JAPAN INTERNATIONAL
COOPERATION AGENCY



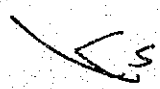
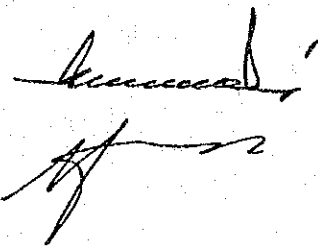
MR. LECH JERCZYNSKI, Eng.
DIRECTOR,
DEPARTMENT OF HOUSING POLICY
AND URBAN ECONOMY,
MINISTRY OF CONSTRUCTION

In response to the request of the Government of the Republic of Poland, the Preparatory Study Mission (hereinafter referred to as "the Mission") sent by Japan International Cooperation Agency (hereinafter referred to as "JICA"), to discuss, with the authorities concerned of the Republic of Poland, the Scope of Work for the Study on the Solid Waste Management for Poznan City (hereinafter referred to as "the Study").

The members of the Mission headed by Dr. Kunitoshi SAKURAI stayed in Poland from November 16 to 26, 1991. During their stay in Poland, the Mission carried out field reconnaissance in the study area, received available information and held a series of interviews with officials and local technicians.

The Meeting was held on November 18 and 22, 1991 in Warsaw to have discussions on the Scope of Work and those who attended that meeting is shown in the Appendix. The Draft Scope of Work proposed by the Mission was discussed in detail between the Mission and the Polish side. Both sides agreed upon the Scope of Work after relevant modifications with the following understandings:

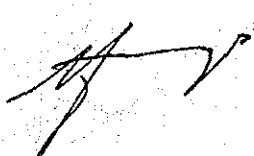
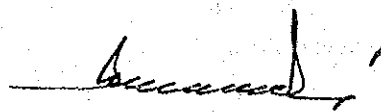
1. The municipal solid wastes mentioned in the Scope of Work include household wastes, market wastes, commercial wastes, street sweeping wastes and institutional wastes. They do not include, however, medical wastes. As for the industrial solid wastes, a rapid diagnosis study on them will be carried out based on the existing informations and data followed by the preparation of general recommendations for the improvement of industrial solid waste management in Poznan City.
2. The identification of the priority project will be done through a series of meetings between Japanese and Polish sides, and it will be finalized at the time of submission of Interim Report. As for the identification of the facility site(s) for the priority project, it will be completed by the Polish side with the same deadline.
3. The study area consists of the whole area within the boundaries of Poznan City. The future landfill site and its environs, however, will be included in the study area even in the case of its siting outside Poznan City.



4. In Poland, there are several cities with more than half million population where the improvement of Municipal Solid Waste Management is an urgent task. As such the Ministry of Construction hopes to use Poznan City as a model for such cities. Therefore, a manual should be prepared in English, as the result of the Study, on formulation and implementation of the municipal solid waste management master plans taking into account the local conditions which differ from city to city. The draft manual must be ready by the time of submission of Interim Report. When it is ready, its applicability to other Polish cities will be checked using the City of Lublin as a test case during the second work in Poland. Then necessary modifications will be made to the manual. As the result of this testing, recommendations for the improvement of municipal solid waste management in the City of Lublin will be prepared and presented to the Municipality of Lublin.

5. With the aim of exchanging opinions on the existing problems in Solid Waste Management in Poland as well as the future direction of Solid Waste Management to overcome such problems, a meeting will be held at the time of submission of the Progress Report (1) inviting the people and the institutions concerned. In addition, a one-day seminar will be organized in Poznan (or Warsaw), at the time of submission of Draft Final Report, inviting agencies related with the implementation of the municipal solid waste management master plan for Poznan City as well as the representatives of other cities with the aim of publishing the said master plan and encouraging the formulation and implementation of similar master plans in other cities. As for the necessary cost for the seminar, the Polish side will bear the trip and accommodation cost of the Polish participants, and the Japanese side will bear other necessary cost.

6. The Polish side requested that the Japanese side prepare, using the local consultants, the Polish version of the summary of Draft Final Report and the above-mentioned manual so that they could be distributed and utilized in the seminar. The Japanese side stated that this request would be conveyed to JICA Headquarters.



7. Environmental evaluation of the priority project mentioned in IV.8. (9).c of the Scope of Work will be carried out taking into account the existing EC (European Communities) environmental legislations and /or guidelines. This evaluation will include in its scope (1) air pollution (including odour problem), (2) surface and /or ground water pollution and (3) noise problem to be caused by the priority project. As for other environmental aspects, they will also be included in the scope of evaluation if both the Japanese and the Polish sides so agree in the course of the Study.

8. Although the Polish side originally requested through the Terms of Reference for the Study that JICA would finish the Study within ten (10) months counting from its commencement, sixteen (16) months will be adopted as the study period in order to facilitate the establishment of reliable study organization including the deployment of local consultants and achieve the required quality of the Study.

9. The Polish side will organize a steering committee for the Study with the following members:

- Representative of Poznan Municipality
(Chairman of the Steering Committee)
- Representative of Poznan Provincial Government
- Representative of the Ministry of Construction
- Representative of the Ministry of Environment

The Steering Committee will convene a meeting together with the JICA Advisory Committee at the time of submission of Inception Report, Interim Report and Draft Final Report mentioned in XII. of the Scope of Work in order to make strategic decisions related with the Study and reach a consensus on the future municipal solid waste management system for Poznan City among Polish agencies concerned.

10. Since the IBRD (the World Bank) is regarded as one of the possible financial sources of the priority project, the study report will be prepared in such a manner that it will satisfy the IBRD loan requirements.

11. Concerning the item VIII.1. (3) of the Scope of Work, the Japanese study team to be dispatched to Poland according to the item IX.1 of the Scope of Work (hereinafter referred to as the "Team") will apply to the Polish Custom Authority through the Polish side for the duty exemption of the equipment brought into Poland filling the relevant forms with all the informations requested including the dates of shipping in and out of Poland. In case that the Team has the necessity to keep the equipment in Poland beyond the initial shipping out date, the Team will inform the Polish Side of that necessity and ask the Polish Side to make necessary transactions on behalf of the Team.

12. The item VIII.1. (4) of the Scope of Work, namely the tax exemption, is not applied for the nationals of Poland.

13. Concerning the item VIII.1. (5) of the Scope of Work, the Ministry of Construction and the Municipality of Poznan City will arrange the opening of bank accounts for the Team in Warsaw and Poznan Cities respectively.

14. Concerning the item VIII.1. (7) of the Scope of Work, JICA will get the members of the Team to insure against the damages that they may cause in the course of the Study.

15. Concerning the item VIII.2. (4) of the Scope of Work, the Municipality of Poznan City will cover, in addition to the installation cost, the taxes and charges of any kind imposed on or in connection with the purchase and installation of a weighbridge mentioned in the item 18 infra of these Minutes of Meeting.

16. To guarantee the smooth conduct of the Study and promote technology transfer through on-the-job training, the Polish side has designated tentatively the following counterpart team:

- Mr. Jan Lemanski, Solid Waste Management Specialist, Department
(full-time) for Investment Affairs, Poznan Municipality
(Leader of the counterpart team)
- Mr. Boleslaw Stawicki, Director of the Department for Investment
(part-time) Affairs, Poznan Municipality
- Mr. Arkadiusz Blochowiak, Department Director,
(part-time) Poznan Provincial Government
- Mr. Aleksander Grzeszczak, Senior Inspector for Solid Waste Management,
(part-time) Poznan Provincial Government

17. Both sides have recognized that the utilization of local consultants is indispensable for successful conduct of the Study within a limited study period and for making the master plan compatible with local conditions. As such, the Japanese side requested that the Municipality of Poznan City employ at its own expense a team of Polish local consultants. The Polish side, however, explained its financial difficulty to employ them and requested that JICA would cover the necessary cost for it. The Japanese side stated that this request from the Municipality of Poznan would be conveyed to JICA Headquarters. Utilization of local consultants will facilitate the transfer of planning know-how and the development of human resources required in the application of experiences to be acquired in Poznan to other Polish cities.

18. The Japanese side requested the Municipality of Poznan City to procure and install, at its own expense, an electronic-type weighbridge at the entrance of Biedrusko landfill, and also provide the team with two vehicles and drivers. The Municipality of Poznan City, however, explained its financial difficulties to respond to the first request except for installation of the weighbridge and asked JICA to cover other necessary cost for the procurement of the weighbridge. The Japanese side stated that this request would also be conveyed to JICA Headquarters. As far as the second request is concerned, the Municipality of Poznan City said that they would provide two vehicles and drivers as long as they are used for the conduct of the Study.

19. The Polish side requested the counterpart training in Japan. The Japanese side stated that this request would also be conveyed to JICA Headquarters.

20. The Japanese side requested the Polish side to inform the former of the plan and the progress of all the international cooperation activities for Poland in the field of Solid Waste Management in order to avoid the possible duplication of efforts.

Appendix

LIST OF THE ATTENDANTS

MINISTRY OF CONSTRUCTION:

Mr. Lech Jerczynski, Eng.	Director, Department of Housing and Urban Economy, Ministry of Construction
Mr. Zbigniew Rydzicki	Department Head Ministry of Construction
Ms. Zdzislawa Krzeminska	Chief Specialist Ministry of Construction

MINISTRY OF ENVIRONMENTAL PROTECTION:

Mr. Jan Klopotoski	Vice Director, Department of Air and Land S.P. Ministry of Environmental Protection, Natural Resources and Forestry
Mr. Jan Korytkowski	Chief Specialist, Department of Air and Land Surface Protection, Ministry of Environmental Protection, Natural Resources and Forestry

MUNICIPALITY OF POZNAN CITY:

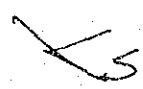
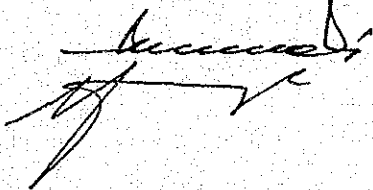
Mr. Ryszard Olszewski, M. Sc. Eng.	Vice Mayor, Municipality of Poznan City
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JICA PREPARATORY STUDY TEAM:

Dr. Kunitoshi Sakurai	Development Specialist Institute for International Cooperation, Japan International Cooperation Agency
Mr. Hajime Kanai	Official Economic Cooperation Bureau, Ministry of Foreign Affairs
Mr. Yoshio Yagi	Deputy Director Water Supply & Environmental Sanitation Department, Ministry of Health & Welfare
Mr. Osamu Kawashima	Technical Advisor Water Supply & Environmental Sanitation Department, Ministry of Health & Welfare
Mr. Satoru Hagiwara	Staff Social Development Study Department, Japan International Cooperation Agency
Mr. Hirochika Manabe	Manager International Department, Yachiyo Engineering Co;Ltd.
Ms. Michi Tsukada	Interpreter Japan International Cooperation Service Center

EMBASSY OF JAPAN:

Mr. Satoru Takahashi	Second Secretary, Embassy of Japan
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附属資料 6. 外国人コンサルタント・ローカルコンサルタント一覧

- (1) 外国人コンサルタント
- (2) ローカルコンサルタント一覧

(1) 外国人コンサルタント

1) 世界銀行からの紹介

経済・財務、組織、法制度等の調査分野については、調査団員として外国人コンサルタントの起用が考えられるが、世界銀行（本部）から本調査団に現時点までに紹介のあった外国人コンサルタントは下記の3名である。

(a) Mr. Henry B. Kulias

- 国籍：オーストラリア人
- 母国語：ポーランド語
- 年齢：61歳
- 住所：12 de Quancy Road, Bullaburra NSW2784 Australia
- 電話：（自宅）047-592273（事務所）047-820777
- 学歴：1957年 グダニスク大学（構造工学）
1963年 ニュー・サウス・ウェールズ大学（道路舗装管理）
- 職歴：都市廃棄物収集・処理調査団員、ほか
- 言語：英語…………… Fluent
ポーランド語…… Conventional
ドイツ語…………… Conventional

(b) Mr. S. Frank Waronkawicz

- 国籍：カナダ人
- 母国語：ポーランド語
- 年齢：44歳
- 住所：99 Strada bld ; st. Catharines, Ontario, Canada
- 電話：（自宅）4166846002（事務所）4166878333
- 学歴：1972年 グダニスク大学（海洋工学）
- 職歴：都市廃棄物収集・処理調査団員、ほか
- 言語：英語…………… Fluent
ポーランド語…… Conventional
ドイツ語…………… Conventional

(c) Mr. Joseph F. Malina

- 国籍：アメリカ人
- 勤務先：The University of Texas at Austin
- 電話：（事務所）（512）471-4614 Fax.（512）471-0592

- 学 歴：1957年 マンハッタン専門学校（衛生工学）
1959年 ウィスコンシン大学（衛生工学）M. S.
1961年 ウィスコンシン大学（衛生工学）PhD.
- 職 歴：—The University of Texas at Austin 教授、ほか
—廃棄物関係論文多数
- 言 語：英 語…………… Fluent
ポーランド語……“Prof. Malina speaks Polish and has done some work there”の記載あり。

2) Crown Agents からの紹介

英国政府機関クラウン・エージェントから下記1名 Weber 氏の紹介があった。

(a) Mr. Richard Weber

- 国 籍：英国人
- 母国語：英語
- 学 歴：セント・ジョセフ専門学校（物理、数学、化学、ポーランド語）ロンドン
ロンドン市立工業大学（冶金工学）ロンドン
- 職 歴：廃棄物事業ほか
シレジア工大共同計画に参画（通訳兼務）
- 言 語：英 語…………… Excellent
ポーランド語…… Excellent
フランス語…………… Good
- コンタクト先：Crown Agents Japan Office ☎ 651 神戸市中央区磯辺通 4-2-26
新芙蓉ビル
(電話) 078-232-3081 Mr. Luke Gandar
(Fax) 078-232-3078 (駐日代表者)

3) なお、その他の外国人コンサルタント情報を得る有力な手段として下記が考えられる。

- シカゴ市で新聞広告による募集を行う。
- アメリカのEPAにコンタクトする。

4) 以上においては、英語とポーランド語に堪能で世銀プロジェクトの経験もある外国人コンサルタントを起用するという観点から述べてきたが、これに固執すると（特にポーランド語に固執すると）適切な人材が確保できないおそれもある。

そこでポズナニのようにポーランドの西部の都市ではドイツ語の通用度が高いことに鑑み、ドイツ、オーストリアの英・独語に通じた廃棄物コンサルタントを起用することも可能性の一つとして考慮しておく必要がある。