

ポカラ・フェワ湖環境保全計画調査(在外開発調査)についての評価

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ポカラ・フェワ湖環境保全計画調査(在外開発調査)についての評価

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ポカラ・フェワ湖環境保全計画調査(在外開発調査)と役員との係わりは、田島(湖水保全/施設計画)は、業務指示書の作成段階から、青木(住民参加/社会配慮)はプロポーザルの評価段階から始まった。なお、本在外開発調査のスケジュールは図-1の通りである。

1. 経過及びドキュメント

本調査が開始されるまでの経緯と現地調査が開始され、取りまとめられるまでの経緯は次のとおりである。

1.1 M/M の交換(添付資料 No.1)	2001年 7月 13日
1.2 業務指示書の作成(添付資料 No.2)	2001年 9月 11日
1.3 コンサルタントへの現場説明:	2001年 9月 13日
1.4 プロポーザルのプレゼンテーション	2001年 9月 25日
1.5 審査結果(添付資料 No.3)	2001年 9月 26日
1.6 IC/R の受理:	2001年 10月 9日
1.7 IT/R の受理(Post IT/R を含む):	2001年 12月 10日
1.8 DF/R の受理(Post DF/R を含む):	2002年 2月 8日
1.9 F/R の受理	2002年 3月 10日
1.10 無償資金協力の TOR の受理(添付資料 No.4)	2000年 6月

図-1 調査スケジュール

	2001/8	9	10	11	12	2002/1	2	3	4
業務指示書の作成・コンサル選定									
現地調査 (ローカルコンサルタント)		35.5M/M							
報告書			▲ IC/R		▲ IT/R			▲ DF/R	▲ F/R
役務団員 (田島正廣: 湖水保全/施 設計画) 2.83M/M	5	45			15			15	5
役務団員 (青木祐二: 住民参加/社 会配慮) 1.67M/M	5	15			15			15	

凡例:

現地アサイン45 (days)	国内アサイン
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2. 調査実施上の問題点とその対応

2.1 業務指示書作成から入札まで

(1) 業務指示書の作成

業務指示書の作成は、田島が現地視察後に実施した。業務指示書を作成した。業務指示書の作成に当たっては事前現地調査期間が短かったが、既存の調査項目との重複がないように配慮した。

(2) ローカルコンサルタントの能力把握

ローカルコンサルタントの能力を把握するためにショートリストされたコンサルタントを訪問し、代表者と面談した。

(3) プロポーザルの作成期間

プロポーザルの作成期間は今回1週間と短かったため各コンサルタントがプロポーザル作成に十分な能力が発揮できたか疑問が残った。今後は少なくとも10日間は必要と思われた。

(4) プロポーザルの審査

プロポーザルの審査は、第一次評価(査読)で上位に位置する2社を呼出し、プレゼンテーションさせ、最終的に決定した。プレゼンテーションは、団長及び団員の能力、内容を評価するのに役立った。ただし、在外開発調査のプロポーザル評価が定式化されておらず、今後、早期に在外開発調査のプロポーザル評価ガイドラインが策定されることが望まれる。

2.2 IC/R、IT/R 及び DF/F の作成

(1) ローカルコンサルタントの監理

現地調査実施後、約2月でIT/Rの作成というスケジュールになっていた。日本で得たローカルコンサルタントからの情報では、作業も順調に進捗しているとのことであったが、送付されてきたIT/Rの内容は不十分な内容であった。

その原因は、団長がローカルコンサルタントスタッフを、また日本側がローカルコンサルタントを十分に監理できなかったことによる。

実態として、あるスタッフはかなりの成果を上げているに関わらず、あるスタッフは現地にも行かず、資料すら収集していない状況が見られた。これは、ネパール人の特有な気質、言われたら最低限の努力をするという受けの気質を役務団員が把握できていなかったことによる。

その対応策として、第2回現地調査終了時に提出されたIT/Rの折にはローカルコンサルタントスタッフと直接に面談・指導し、再度Post Interim Reportを作成させた。また、スタッフ全員に作業日誌を作成させ、毎週在JICAネパール事務所及び役務団員に提出することを義務付けた。それ以降ローカルコンサルタントスタッ

フの監理は改善されたように思われる。

今後は、いきなり IT/R の作成段階に行かず、まず 1 ヶ月経過したところで P/R を作成させ、早めに進捗状況をチェックすると同時に、団長、各スタッフの能力、ネパール人の気質を理解するように努める必要がある。また、DF/R については作成が遅れ、現地に出発の前日に受取り、現地で見直し作業を行い、再度 Post DF/R を提出させることになった。

(2) 業務の技術的支援

例をあげれば、フェワ湖の現状の水質分布及び対策後の水質を予測するための湖流及び水質のシミュレーションはローカルコンサルタントだけでは実施するのは難しいと思われたので田島が技術的支援することになった。

(3) 公聴会について

JICA 本部のコメントを受け、現地においての 2 回の公聴会を開催し、住民、NGO 等の意見を聴取し計画策定に反映した。なお、治安及び高官の都合でステアリングコミッティはカトマンズのみで開催され、現地ポカラで開催されなかったことは残念であった。

2.3 DF/R 及び F/R の作成

(1) 取りまとめのスケジュール調整

Post DF/R を 2002 年 3 月 1 日までに提出するようにローカルコンサルタントに依頼したが、日本で受理したのが 2002 年 3 月 11 日であったため、役務団員の都合もあり、DF/R のコメント送付に遅れが生じた。

2.4 調査過程全体を通じての問題点及び課題

(1) ローカルコンサルタントのスタッフの監理

最大の課題は、役務団員が現地不在の場合、どのように労務監理するかである。

(2) 技術的支援の範囲

調査過程を通じ生じる技術的疑問に対してのタイムリーな応答も今後の課題である。今回の場合、役務団員は国内アサイン 5 日間のみ(F/R 要約の和訳のアサインのみ)であるにも関わらず、国内からの技術支援も強いられた。

(3) 責任の範囲

成果について役務団員の責任の範囲が今ひとつ不明確であった。

3. ローカルコンサルタントの評価

3.1 全体の印象

- (1) はじめに、当初この在外開発調査で求めていた成果(M/Pの策定、F/Sの実施)がほぼ完全な形でまとめられたことに対し、この調査を実施したローカルコンサルタント「SILT Consultants (P) Ltd」の能力を大いに評価したい。
- (2) また、その中で、調査を取りまとめた Mr.D.P.Singh の能力と精力的献身的な活動に対し大いに評価して有り余るものがある。彼の力があつたからこそ、まとめられたと思う。
- (3) しかし、全調査過程を通じ、コンサルタントスタッフの中にまじめに取り組む者とまじめさに欠けている者が混在しており、IT/R作成段階では技術アドバイザー役務団員を大いに悩ませた。ほとんどのスタッフはその能力はあるものの取り組む姿勢の違いから成果の出来、不出来の差異が見られたことは残念であった。
- (4) ともかく、ローカルコンサルタントがこのような総合的な調査を取りまとめた経験と能力は大いに評価されてよい。
- (5) 環境教育を担当した Mrs.Puspa 女史は、経験豊富で精力的で、日本の専門家も遥かに及ばない貴重な成果(Community Empowerment Program)を策定した。下水システム計画を担当した Mr.Karki 及び社会経済を担当した Dr.Timilsima らについてはこれらの分野の仕事に対して合格点を挙げられよう。
- (6) 調査スタッフの16名中、11名が英国、米国及びインドの留学経験者、5名が博士であるが実務経験は少なく、開発調査のある分野の手伝いの経験はあるもののこのような開発調査をとりまとめた経験者は少なかった。

3.2 評価

本在外開発調査について、PDM(表-1)を策定し、評価5項目(効率性、目標達成度、効果、妥当性、自立発展性)を設定し評価すると次のようになった。なお、評価5項目とPDMとの間には図-2のような関連性があると設定した。

(1) 効率性

- この調査には、ローカルコンサルタントの35.5M/M(約JPY1,000万円)、JICA技術アドバイザー2人の4.5M/Mが投入されたがその質・量ともほぼ適正であった。しかし、表面に現れない数字として技術アドバイザーの国内の無償労働提供があつた。
- 成果はほぼ計画された期間に達成された。
- 投入の時期は、よいと思われたがただ調査期間(IC/R~DF/R:実質5ヶ月)を後1~2ヶ月延長した方がベターと思われた。

- プロジェクトの外部条件で成果の達成に影響を与えたものは、マオイストの活動により治安が悪化し、調査エリアへの立入り制限を受けた。

(2) 目標達成度

- 本調査で求めていたものは、9つの計画の計画からなる M/P 及び、下水システム及び Community Empowerment Program の F/S の策定である。この内容はほぼ技術アドバイザーの要望を満たすものであった。とくに既存の無償資金協力計画が見直され、維持管理が容易な下水システムが提案された意義は大きい。
- 成果からもたらされたプロジェクト目標の達成度合いは妥当であった。
- ターゲット・グループ(ポカラ市民、流域住民)が抱える問題の解決または改善の道筋(ハッピーサイクル)が明らかになった。

(3) 効果

- プロジェクト目標の達成により、上位目標の達成の道筋が明らかになった。
- プロジェクト目標の達成により、フェワ湖の環境保全意識が各層の住民に広がった。
- 公聴会では住民・NGO から多くの意見が発表され、計画の立案に反映された。
- カトマンズでは F/R の内容が関係機関、他国ドナー及び NGO に発表された。
- 環境保全税のドラフトが出来上がり、具体的施策の内容が明らかになった。
- ジェンダー、環境などの開発課題について、Community Empowerment Program が策定され、解決糸口が明らかになった。
- プロジェクトの策定を通して全ての関係者が幸せになる現実的案(ハッピーサイクル)が存在することが明らかになった。

(4) 妥当性

- 設定された目標(上位目標、プロジェクト目標)は被援助国の開発政策(観光開発を行ないながら天然資源の持続的維持を行なう)に合致している。
- 提案された環境保全税は実施可能でネパール国人口環境省の開発と環境の共生活動方針に合致している。
- 設定された目標(上位目標、プロジェクト目標、成果)は最終受益者のニーズ(住民、ホテルオーナー等)に応えるものである。

(5) 自立発展性

- プロジェクトにおいて投入・訓練された人材は今後、下水システム無償資金協力案件及び Community Empowerment Program に生かされるであろう。
- もし、下水システム無償資金協力案件が実施されたとしても維持管理費を捻出

する手立てが提起されている。

- 環境保全税の創設によりネパール国地域開発省、人口環境省、Kaski 郡、ホカラ市に運営維持管理能力が補完される道筋が提案された。
- この調査を通じて、最大の成果はローカルコンサルタントに実務を通して、技術移転がなされたことである。田島は常々、開発調査の目的のひとつは、開発調査を通じて、M/P の策定及び F/S の実施、ふたつめに、カウンターパートへの技術移転を行なうこととなっているが、通例、開発調査ではセミナー等を通じて技術移転を行なっている。しかし、これでは、本当の意味での技術移転を行なったのか疑問が残る。本調査は、ローカルコンサルタントスタッフ自らが手足を動かし、頭を使い計画をまとめたもので、役務団員が関与し彼らを手足とり指導した。このようなことが本当の意味での技術移転になるのではないかと思われる。田島は、技術移転はローカルコンサルタントの能力を高めることが効果的でその国の技術力を高める第一ステップになるのではないかと考える。

表-1 プロジェクト・デザイン・マトリックス (PDM)

プロジェクトの要約	指標	指標データの入手手段	外部条件
<p>上位目標</p> <p>フェワ湖の天然資源を持続的に保持し流域の住民の生活を向上させる。</p>	<p>フェワ湖の水質</p> <p>住民の所得</p> <p>観光客数</p>	<p>水質モニタリングデータ</p> <p>Kaski 社会経済統計</p> <p>ネパール国センサス</p>	
<p>プロジェクト目標</p> <p>フェワ湖環境保全計画の M/P を策定する。</p> <p>下水システム及び Community Empowerment Program の F/S を実施する。</p> <p>ローカルコンサルタントに技術指導を行なう。</p>	<p>M/P の策定</p> <p>F/S の実施</p> <p>Final Report の作成</p>	<p>本調査報告書(M/P 及び F/S を含む)</p>	<p>業務実施計画書に基づき調査が実施される。</p> <p>調査活動がマオイストの活動によって影響されない。</p>
<p>成果</p> <p>9つの計画(M/P)が策定される。</p> <p>二つの F/S が実施される。</p> <p>下水システム計画では持続可能な下水システムが提案される。</p> <p>実現可能な Community Empowerment Program が策定される。</p> <p>流域保全委員会の必要性と組織が提案される。</p> <p>環境保全税の原案が提案される。</p>	<p>水質管理計画、流域保全計画、エコシステム保全計画、モニタリング計画、観光開発計画、環境教育計画、組織制度計画、廃棄物管理計画、下水システム計画、Community Empowerment Program、流域管理委員会の組織・実施計画</p> <p>環境保全税のドラフト</p>	<p>既存資料(アジア開発銀行、IUCN の報告書)、水質モニタリングデータ、バクタプールの観光税、既存の TOR</p>	
<p>活動</p> <p>現地調査が実施され解析が行われ、報告書を取りまとめる。</p> <p>技術アドバイザーは技術的なアドバイスを行なう。</p> <p>在 JICA ネパール事務所はローカルコンサルタントを指導・監理する。</p>		<p>投入</p> <p>日本政府</p> <p>専門家 2名 合計 5M/M</p> <p>ローカルコンサルタント</p> <p>フィー:JPY 1,000 万円 (35.5M/M)</p>	<p>前提条件</p> <p>調査の実施に必要な予算が確保される。</p> <p>有能なアドバイザーが確保される。</p> <p>在ネパール事務所に担当者が配置される。</p>

表-2 評価5項目とPDMの関連性

	効率性	目標達成度	効果	妥当性	自立発展性
上位目標			プロジェクトを実施した結果、どのような正負の影響が直接的・間接的に現れたのか	プロジェクトの目標は、評価時においても有効である	協力終了後もプロジェクト実施による便益が持続されるかどうか。プロジェクトはどの程度自立しているか
プロジェクト目標		「プロジェクト目標」がどれだけ達成されたか			
成果	「投入」がどれだけ効果的に「成果」に				
投入	転換されたか				

4. 在外開発調査の実施上の留意点

今回の在外開発調査に役務団員として係わり、業務実施上で留意すべき点として感じたことは以下の通りである。

- (1) 業務指示書を作成する前には必ず事前に現地を視察し、現地の状況及び既存の情報を確認し、業務指示書を作成する。
- (2) 入札リストに入れたコンサルタントを訪問し、代表者と面談し、その能力を見極める。
- (3) プロポーザルの審査に当たって、査読した後、上位2社を招致しプレゼンテーションを行なわせて、選定の判断材料とする。
- (4) IC/R では基本計画及び計画の基本方針を明らかにさせる。
- (5) ローカルコンサルタントスタッフの労務監理は難しいので、業務日誌をつけさせ指導する。
- (6) ローカルスタッフの個々の能力及び気質を早めに見極めるために IC/R から1ヶ月の段階で P/R を作成させ、その間の成果から個々のスタッフを指導する。
- (7) 個々のローカルコンサルタントスタッフときめ細かく面談し、個々に指導を行なう。
- (8) 短い調査期間で効率的効果的な成果をまとめるために、DF/R の目次を IT/R 時以前に提示し、IT/R をまとめさせる。
- (9) IT/R に当たっては Post IT/R、DF/R に当たっては Post DF/R というようにその段

階で整理できるものはその段階で整理させる。

- (10) 調査期間の設定に至っては十分余裕を持って設定する。
- (11) 役務団員は、調査期間中、国内から調査の技術支援を行なわなければならないこともあり、場合によっては国内アサインも検討する必要がある。

5. 今後の在外開発調査実施に向けた JICA への提言

(1) 在外開発調査の可能性

今回の調査は湖沼の総合的環境保全計画調査(M/P,F/S)である。役務団員が判断する限り、当初の目的はほぼ完全に達成することができた。従って、今後はこの種の総合的な調査も在外開発調査で実施できる可能性を示したと言える(既存の在外開発調査は道路の交通量調査と言うような単項目の調査内容であった)。

対費用効果の面からも今後、在外開発調査が多く実施されることが望まれる。

また、本邦の本格調査でも、ローカルコンサルタントスタッフの参加枠を拡大しては如何であろうか、対費用効果及び技術移転について大きな成果が期待できる。

(2) 技術移転の効果

開発調査の目的は、通常ふたつあり、調査成果として報告書を作成すること及び調査を通じて技術移転を行なうことである。しかし、往々にして技術移転は、通常カウンターパート機関の職員等に対してセミナー及びワークショップ等を通して実施されており、田島の経験では技術移転の成果について疑問が多い。しかし、今回は、ローカルコンサルタントのスタッフに実際、調査レポートをまとめさせ、また、実際の資料収集、解析、執筆作業を通して本当の意味での技術移転が行なわれたと判断している。

したがって、在外開発調査は、技術移転について大きな成果があり、実施の可能性のある途上国では大いにこの種の調査が増加することが期待される。

(3) 在外開発調査の質的向上

今後は、在外開発調査を大いに実施すべきであろうと思われる。その場合、役務団員の能力及びアサイン期間が大いに影響すると思われ、技術アドバイザー(総括)団員のアサインは調査実施期間を満たすように設定されれば、調査の質的向上も図れると考える。

(4) 役務団員の責任範囲

役務団員の成果に対しての責任の範囲を明確にすべきである。

添付資料

- | | |
|---------------------------------|-----------------|
| 1. M/M の交換 (添付資料 No. 1) | 2001 年 7 月 13 日 |
| 2. 業務指示書の作成 (添付資料 No. 2) | 2001 年 9 月 11 日 |
| 3. 審査結果 (添付資料 No. 3) | 2001 年 9 月 26 日 |
| 4. 無償資金協力の TOR の受理 (添付資料 No. 4) | 2000 年 6 月 |

1. M/M の交換 (添付資料 No. 1)

Implementing Arrangement
for the Development Study

on

**the Environmental Preservation of Phewa Lake in Pokhara
in Nepal**

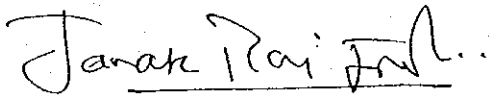
Agreed upon between

Ministry of Population & Environment

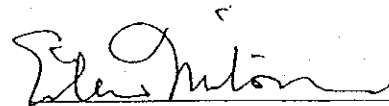
and

**Japan International Cooperation Agency
in Nepal**

July 13, 2001
Kathmandu



Janak Raj JOSHI
Joint Secretary
Ministry of Population & Environment



Eitaro MITOMA
Resident Representative
JICA Nepal Office



Background:

Phewa lake is one of the beautiful lake in Nepal. It is one of the favorite tourist destination from abroad and within the country. However, the lake is threatened by pollution and is also decreasing day by day due to sedimentation. Out of a total income of Pokhara, 11% is covered by tourism. Therefore, there is a need to conserve it from human made pollution and natural encroachment not only for the sake of environment conservation but, also to uplift the income of the local community and the country as a whole.

I. Objective of the Study:

The main objective of the Study is to formulate a plan for the environment preservation of Phewa lake.

II. The Study Area:

The Study area is Phewa lake and its surrounding areas including the catchment areas of the rivers that drains Phewa lake. Phewa lake lies in the Kaski district of Gandaki Zone in the Western Development Region of Nepal. Map is attached in Annex-I.

III. Scope of the Study:

In order to achieve the objectives mentioned above, the Study shall cover the following items:

1. Preparatory Study

1.1 Collection, examination, review and analysis of existing relevant information

- Environmental information of Phewa lake
- Water quality information
- Meteorological and disaster information
- Socio-economic information
- information on watershed condition and settlements
- Development project information around Phewa lake

1.2 Evaluation and identification of existing problems and issues

1.3 Discussion with relevant authorities

1.4 Formulation of study plan

- Analysis of problem
- Formulation of site survey planning

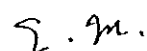
2. Site Survey:

2.1 Discussion with relevant authorities at the site

2.2 Collection of existing relevant information

2.3 Site reconnaissance

- Water quality survey of the lake and river
- Topographic, geographical and geological survey
- Study on the solid waste management
- Sewage study
- Survey of present and future development project around the lake
- Study on the watershed condition of the catchment area of the rivers/streams feeding Phewa lake
- Study on the land usage pattern



- Study on the major sources of pollution
- Biological survey
- Socio-economic survey
- Study on the existing town development plan
- Study on the status of tourism industry

3. Analysis of the site survey:

- Analysis on water quality standard for Phewa lake
- Identification of the cause of pollution
- Analysis on the policy of reducing pollution
- Analysis on the countermeasure of preventing pollution
- Analysis on the watershed management measures
- Identification of development compliance plan for relevant sectors

4. Formulation of project planning

- 4.1. Identification of projects
- 4.2. Preliminary design of the projects
- 4.3. Schedule of the projects
- 4.4. Identification of necessary external assistance
- 4.5. Design and cost estimate of the projects
- 4.6. Evaluation of the project
 - Economic and financial analysis evaluating the benefit to National economy and local residents
 - Examination on the involvement of both public & private sector and NGOs for project implementation. Consideration on the participation of local authorities and stakeholders including local residents.
 - Target of the project & measurement of achievement
 - Recommendation

IV. Study Schedule:

The schedule of the study will be Six (6) Months starting from September 2001. The schedule is attached in Annex-II.

V. Report:

The JICA Study Team shall prepare and submit the following reports written in English to the designated Counterpart Authorities of HMG/N.

1. Inception Report (20 Copies)

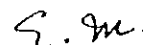
The Inception Report should be submitted within two (2) weeks after the commencement of the study. The Inception Report shall contain the Study Team member, schedule, methodology of the Study and preparatory study.

2. Interim Report (20 Copies)

The Report shall be submitted within three (3) months after the commencement of the Study. The Interim Report shall contain site survey, the analysis of the site survey and the preliminary design of the projects.

3. Draft Final Report (20 Copies)

The Report shall be submitted within five (5) months after the commencement of the Study. HMG/N shall provide the Study Team its comments on the report within two (2) weeks after receipt of the Draft Final Report.

4. Final Report (30 Copies)

The report will be submitted within six (6) months after the commencement of the Study.

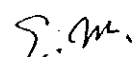
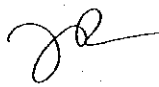
VI. Undertakings of His Majesty's Government of Nepal:

To facilitate the smooth conduct of the study, HMG/N shall take the following necessary measures:

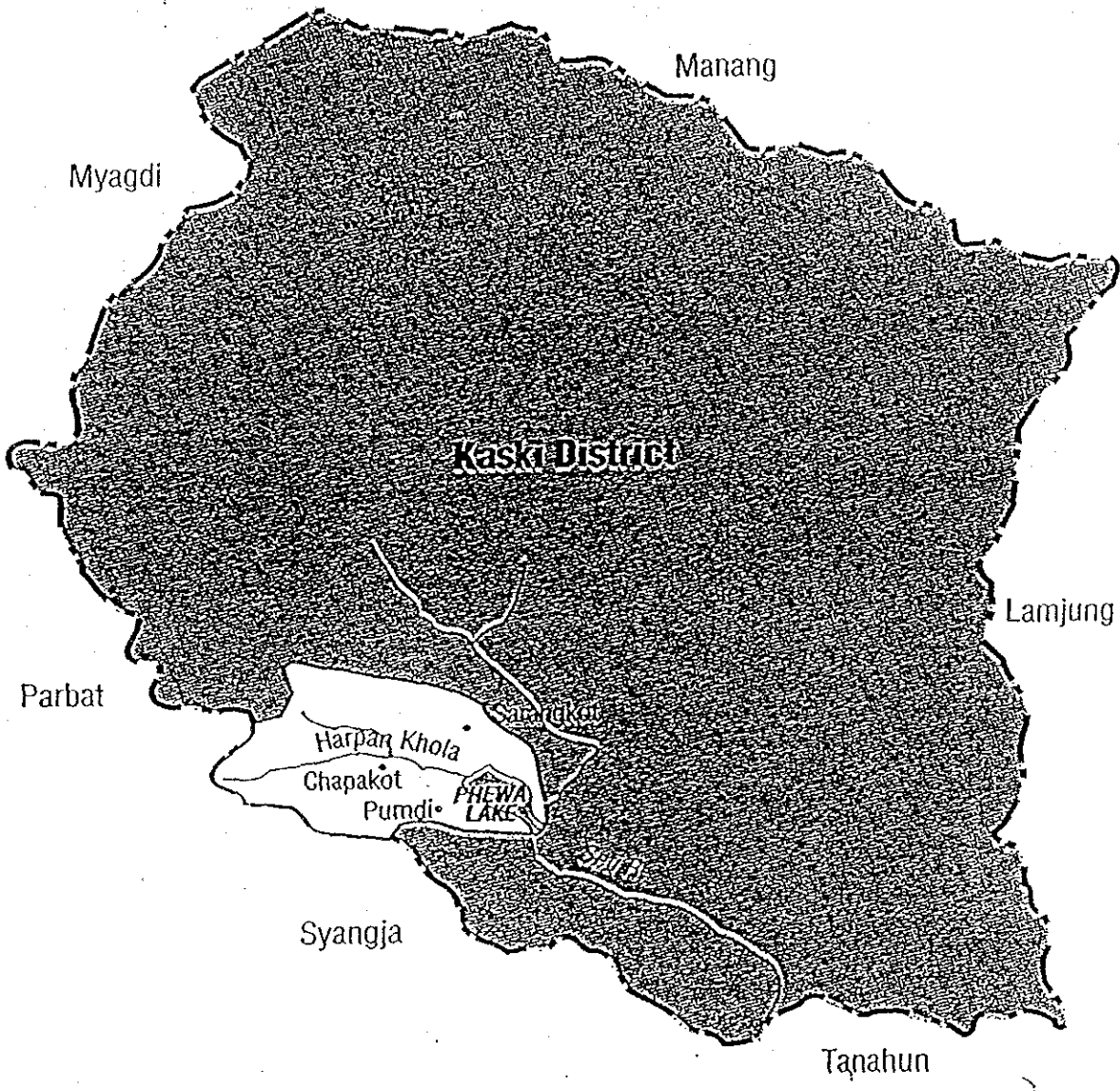
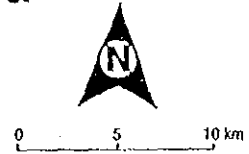
- (1) To provide the Study Team with available data, maps and information necessary for the execution of the Study.
- (2) To assign counterpart personnel to the Study Team during the Study.
- (3) To organize Steering Committee with the involvement of related line agencies and organize Steering Committee Meetings which shall be held after the completion of Inception, Interim and Draft Final Reports respectively. The members of the Steering Committee will be decided later on.
- (4) To secure the safety of the Study Team.
- (5) To permit the Japanese consultant(s) {Supervisor (s) of the Study Team} to enter, leave and sojourn in the country in connection with his/her assignment therein and exempt him/her from alien registration requirement & consular fees.
- (6) To secure permission or entry into private properties or restricted areas for the conduct of the Study.
- (7) To secure permission for the Study to take all data, documents and necessary materials related to the Study out of the country to Japan.
- (8) The executing agency shall act as counterpart agency to the Study Team and also as coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the Study.
- (9) HMG/N will assist in the collection of information for some areas where the consultants will not be allowed to enter due to security reasons and while doing so, the cost involved will be borne by HMG/N.

VII. Undertakings of JICA:





- (1) To contract with, at its own expense, the local consultancy firm in Nepal; and
- (2) Dispatch Japanese Consultant(s) for the supervision of the Study.

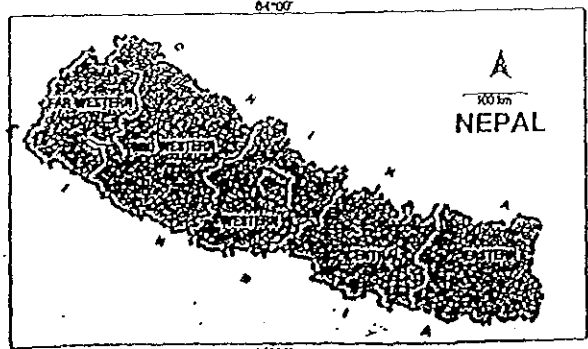


Map 1 Location of Phewa Lake Area



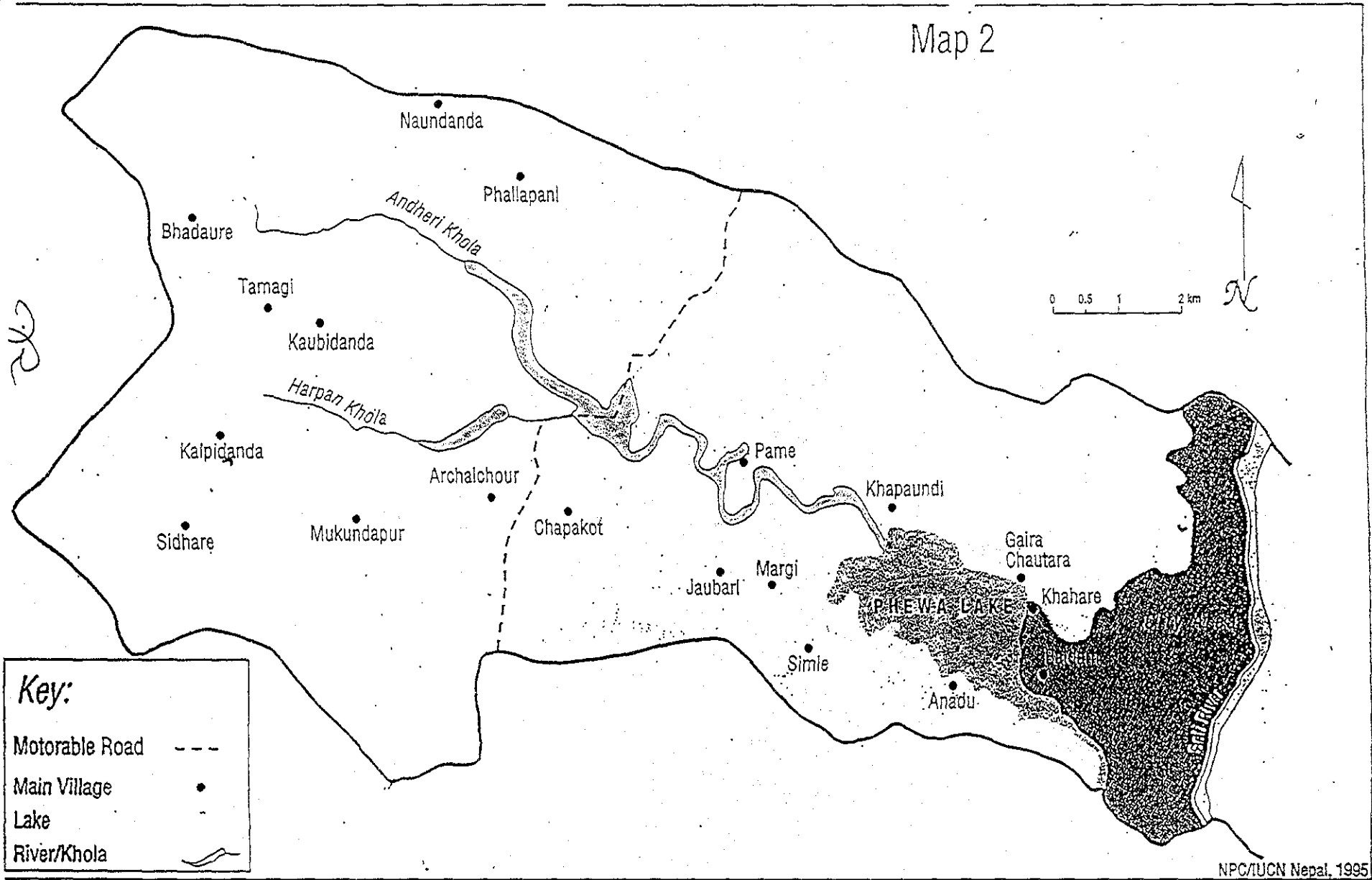
Key:

- Watershed Area 
- River 
- Main Village 
- Lake 



S.M.
[Signature]

Map 2



Key:

- Motorable Road ---
- Main Village ●
- Lake [shaded area]
- River/Khola [wavy line]

CR

S.M.

Annex-II

Study Schedule

Schedule of the Study:

		2001					2002		
		8	9	10	11	12	1	2	3
Local Consultant									
Report			△ ICR			△ ITR		△ DFR	△ F/R

Schedule of the Japanese Supervisors:

		2001					2002		
		8	9	10	11	12	1	2	3
Lake Conservation/ Facility Planning	Japan (0.33M/M)	□							□
	Nepal (2.5M/M)								
Social Aspect/ Community Mobilization	Japan (0.17M/M)	□							
	Nepal (1.5M/M)								

□ Work in Japan ■ Work in Nepal

S.M.

2. 業務指示書の作成 (添付資料 No. 2)

Appendix-1

**Request for Consultancy Proposal
for
the Development Study on the Environmental
Preservation of Phewa Lake in Pokhara in Nepal**

September 2001

**Japan International Cooperation Agency
Nepal Office**



Request for Consultancy Proposal for The Development Study on The Environmental Preservation of Phewa Lake in Pokhara in Nepal

1.0 Background

In response to the request of the Government of Nepal, the Government of Japan has decided to conduct the Development Study on the Environmental Preservation of Phewa Lake in Pokhara in Nepal (hereinafter referred to as "the Study") as the development study contracted with a local consulting firm (hereinafter referred to as "the Principal Consultant Firm").

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

JICA is pleased to invite you hereby as the Principal Consultants to participate in this consultancy services to submit both the technical and cost proposal.

2.0 Contents of the Study

Refer to Appendix a.

3.0 Condition on the Study Team Formulation

- (1) The Study Team Leader and more than half (1/2) of the total number of consultants assigned to the Study should come from the Principal Consultants firm.
- (2) Based on the objective of this technical cooperation program from the Government of Japan, foreign consultants are not entitled to participate in the Study, except for case in which justification are required on the needs and effectiveness of foreign expert input, and the foreign consultants are entitled to quote their consultants fees based on the local consultant rate only. Maximum input of foreign consultants shall not exceed half of the total number of consultants or half of the total number of man-month. However, the minimum will be appreciated.

4.0 Technical Proposal

Technical Proposal should consist of the following items summarizing the essential points for the implementation of the Study. The main text of the technical Proposal excluding Curriculum vitae should be preferably less than 70 pages.

1. Experience and Capability of the Principal Consultant Firm

- (1) Company Profile including Company Registration and Certification of the firm (Paid-up capital, main activities, etc.)
- (2) List of the studies connected by the firm (Client, Value, year etc.)
- (3) List of the similar studies (Environmental conservation, Sewerage system and watershed Management Planning)
- (4) Profile of the similar studies

2. Study approach and work plan

- (1) Overall Study framework and guideline
- (2) Methodologies

- (3) Work Plan
- (4) Professional responsibility and Manning Schedule

3. Experience and Capability of Consultants assigned

- (1) Name list of the study team
- (2) Curriculum Vitae of each consultant which includes experiences in the related field

5.0 Cost Proposal.

The cost of the Study shall be divided in to the following items. The cost must include Government Service Tax for necessary items.

- (1) Professional fees (man-month)
- (2) Sub professional fees (man-month)
- (3) Direct expenses such as report printing, purchase of paper, maps, communication, transportation etc.
- (3) Field survey (refer to contents of the Study)
- (4) Management of steering committees fee (refer to contents of the Study)
- (5) Public hearing (just after IT/R) and seminar (just after DF/R) (refer to contents of the Study)

6.0 Submission of the proposal

- (1) The time of submission: September 20,2001(before 17:00)
- (2) Number of copies: Technical proposal 6 copies (One marked "ORIGINAL" and others marked "DUPLICATE")
Cost Proposal 2 copies shall be submitted sealed package (one marked "ORIGINAL" other marked "DUPLICATE")
- (3) Place of submission: JICA Nepal Office, Tripureshwar, Kathmandu, Nepal. (Attn: Mr.Sourab Bickram Rana)

The submission of the proposal should be on the consultant's cover letter together with copies of latest statement of account for original submission only.

If you wish not submit the proposal, please inform us in written form with reasons to JICA NEPAL Office (Attn: Mr.Sourab Bickram Rana).

7.0 Enquiry

Further enquiries related to the Study can be referred to the following officer in charge in JICA Nepal Office: Tel No 260236

- Mr. Sourab Bickram Rana (Programme Officer)
- Mr. Masahiro TAJIMA (Technical Adviser)
- Ms. Haruko KAMEI (Assistant Resident Representative)

Appendix a.

THE DEVELOPMENT STUDY
ON
THE ENVIRONMENTAL PRESERAVTION OF PHEWA LAKE
IN POKHARA IN NEPAL
(LOCAL DEVELOPMENT STUDY)

1.0 BACKGROUND

The Phewa lake is one of the beautiful lakes in Nepal. It is one of the favorite tourist destination from abroad and within the country. However, the lake is threatened by water pollution and the reservoir area is also decreasing day by day due to sedimentation. Out of a total income of Pokhara, 11% is covered by tourism. Therefore, there is a need to conserve it from human made pollution and natural encroachment not only for the sake of environment conservation, but also to uplift the income of the local community and the country as a whole.

2.0 OBJECTIVE OF THE STUDY

The main objectives of the Study is to formulate integrated plan for the environment conservation of Phewa lake. The plan will focus on;

- (a) To formulate water quality management plan (including sewerage system planning).
 - (b) To formulate environmental education programme for better awareness of the communities.
- And also will include;
- (c) To formulate watersheds management plan.
 - (d) To formulate ecosystem conservation plan
 - (e) To formulate monitoring system plan (including water quality, soil erosion and ecosystem)
 - (f) To formulate organizational and institutional plan.

3.0 STUDY AREA

The Study area is Phewa Lake (4.3km²) and its surrounding areas including the catchment areas (110km²) of the rivers that flow into Phewa lake. The map is attached in Annex-I.

4.0 SCOPE OF THE STUDY

In order to achieve the objectives mentioned above, the Study shall cover the following items;

4.1. Preparatory Study

4.1.1 Collection, examination, review and analysis of existing relevant information on the following items

- (a) Environmental status of Phewa lake (including Legislation).
- (b) Water quality management
 - Water quality
 - Monitoring system

- Meteorological and disaster
- Pollution sources (point and nonpoint sources)
- Waste water management system
- Solid waste management
- NGOs and resident people's activities for water quality management
- (c) Environmental education
 - NGOs, resident people's and government authorities' activities (including planned projects)
 - Existing facilities
- (d) Watershed management
 - Soil erosion
 - Reforest
 - Land use
 - Land owner
 - Road and water supply systems
 - NGOs and resident people's activities for watershed management
- (e) Ecosystem
 - Flora and fauna
 - Endangered species
- (f) Organization and institution
 - NGOs, resident people's and government authorities' activities (including planned projects)
 - Identification of stakeholders
 - Identification of Interested parties
- (g) Others
 - Socio-economic information
 - Development project information around Phewa Lake

4.1.2 Evaluation and identification of existing problems and issues

4.1.3 Discussion with relevant authorities

4.1.4 Formulation of study plan

- Analysis of problem
- Formulation of site survey planning

4.2. Site Survey:

4.2.1 Discussion with relevant authorities at the site

4.2.2 Collection of existing relevant information

4.2.3 Site reconnaissance

(a) Water quality management

- Water quality survey of the lake and river (including river discharge)
- Topographic, geographical and geological survey (new sewerage system routes of diversion canal)
- Study on the waste water management
- Study on the solid waste management
- Study on water use condition (irrigation, power station and residences)
- Study on water balance in Phewa lake

(b) Environmental education and awareness of the communities

- Resident awareness and custom survey
- Survey on current condition of education
- Examination of existing facilities
- Study the possibility of the cooperation with schools and communities

(c) Watershed management

- Study on the land use condition
- Survey of present and future development project around the lake
- Study on the watershed condition of the rivers/streams basins flowing into Phewa lake

(d) Ecosystem

- Biological survey

(e) Monitoring system

- Study on water quality, hydrological and sedimentation monitoring condition

(f) Organization and institution

- Socio-economic survey
- Study on the status of tourism industry
- Study on the interested parties
- Study on methodology and possibility of the establishment for environmental conservation

The Study shall include the followings;

- Study of other similar fund
- People's willingness to pay to the fund
- Collection system of environment tax
- Management arrangement of the fund

(g) Others

- Study on the existing town development plan (including Tourism Development Project by ADB)
- Study on Internet Homepages introducing environmental preservation contents in Nepal

4.3. Analysis of the site survey:

- Analysis on water quality standard for Phewa lake
- Analysis of runoff load from the Phewa lake basin
- Identification of the cause of pollution
- Analysis on the policy of reducing pollution
- Analysis on the countermeasure of preventing pollution
- Analysis of soil erosion
- Analysis of water balance
- Analysis of stakeholders
- Analysis of the interested parties
- Simulation analysis of water quality in Phewa lake
- Examination of sewerage system
- Analysis on the watershed management measures
- Analysis on establishing Environmental Preservation Fund
- Examination of residences participation against watershed management program
- Identification of development compliance plan for relevant sectors
- Analysis on the possibility of the launch and usage of Phewa lake Homepage

4.4. Formulation of project planning

4.4.1. Identification of projects

- (a) Integrated plan for the environment preservation of Phewa lake
- (b) Water quality management plan (including sewerage system planning)

- Water purification system
- Sewerage plan (including diversion canal)

(c) Environmental education plan

- Information sharing plan
- Environmental consciousness enlightening plan

For examples

- Construction and management of Phewa Lake Nature Conservation Center
- Workshops for communities
- Programme with resident participation
- Solid waste management programme

(d) Watershed management plan

- Soil conservation plan
- Reforestation (including Riparian Management System (buffer strip))

(e) Ecosystem conservation plan

- Land use plan in the lake side

(f) Monitoring system plan

- Monitoring system plan (including water quality, soil erosion and ecosystem)

(g) Organizational and institutional plan

- Environmental conservation organization plan (including establishment and operation of Phewa Lake conservation committee)
- Plan of management and collection system of Environment Preservation Fund (The Fund shall be for O&M fee of proposed projects)

4.4.2. Preliminary design of the projects

- Examination of Initial Environmental Examination

4.4.3. Schedule of the projects

4.4.4. Identification of necessary external assistance

4.4.5. Design and cost estimation of the projects

4.4.6. Evaluation of the project

- Economic and financial analysis evaluating the benefit to national economy and local residents
- Environmental and Social Impacts (Enforcement of environmental impact assessment)
- Examination on the involvement of both public & private sector and NGOs for project implementation. Consideration on the participation of local authorities and stakeholders including local residents.
- Target of the project & measurement of achievement
- Simulation analysis of the plans
- Feasibility of the plans
- Recommendation

4.4.7 Preparation of Phewa lake Homepage

- Making structure of contents of Homepage
- Contents shall include broad range of information such as basic lake information, tourism information, and natural conservation activity etc. so that internet web users can frequently visit the website and be easily aware of importance of environmental preservation of the Lake.

5. STUDY PERIOD AND SCHEDULE

The schedule of the study will be Six (6) Months starting from September 2001. The schedule is attached in Annex-II.

6. REPORTS

Local Consultant shall prepare and submit the following reports written in English to JICA.

6.1. Inception Report (25 Copies)

The Inception Report should be submitted within two (2) weeks after the commencement of the study. The Inception Report shall contain the Study Team member, schedule, methodology of the Study and preparatory study.

6.2. Interim Report (25 Copies)

The Report shall be submitted within three (3) months after the commencement of the Study. The Interim Report shall contain site survey, the analysis of the site survey and the preliminary design of the projects.

6.3 Draft Final Report (25 Copies)

The Report shall be submitted within five (5) months after the commencement of the Study. HMG/N shall provide the Study Team its comments on the report within two (2) weeks after receipt of the Draft Final Report.

6.4. Final Report (35 Copies)

The report will be submitted within six (6) months after the commencement of the Study.

7. CONFIDENTIALITY

Except as expressly permitted by JICA in writing all matters pertaining to the data, information, findings and recommendations of the study should be confidential and not disclosed to third parties.

8. OVERALL GUIDELINES

8. 1. General matters:

Local Consultant shall carry out the study under the supervision of the Japanese Consultant(s). Both parties shall keep close communication and cooperation. The Study shall be carried out with close association with the Ministry of Population and Environment with significant support –with other relevant authorities of HMG/N.

8. 2. Steering Committee Meeting and Seminar:

8.2.1 Steering Committee Meeting:

Ministry of Population and Environment will organize Steering Committee Meeting with the involvement of related line agencies which shall be held after the completion of Inception, interim and Draft Final Reports respectively.

- Steering Committee will be held in Kathmandu or in Pokhara.
- Local Consultant shall make necessary arrangements for holding Steering Committee Meeting.
- Local Consultant shall explain the reports in the Steering Committee, and shall respond to the question or suggestion.
- Local Consultant shall revise the report based on the discussion of Steering Committee.

8.2.2 Public hearing (just after IT/R) and Seminar (just after DF/R)

- Local consultant shall hold a Phewa Lake environmental conservation seminar and public hearing in Pokhara city as the result of this Study.
- Audience for the Seminar will be expected from residents, related government agencies, NGOs, and international organizations etc.
- Number of expected audience will be around 100.

8.3. Expertise of Local Consultant;

The Study Team of the local consultant shall be composed of the following experts,

1. Team Leader
2. Rural Planner
3. Urban Planner/ Sewerage System Engineer
4. Environmental / Sanitation Engineer
5. Waste Management Expert
6. Soil Conservation / Watershed Management Expert
7. Community Development /Social Forestry Expert
8. Facility Designer
9. Chemist
10. Biologist
11. Sociologist
12. Economist
13. Geologist
14. Internet Web Designer
15. Technical Assistants - Two (2)

8.4. Man-Months:

Total man-months of the Study Team of local consultant shall be assumed within 35.5 MM.

8.5 Others :

8.5.1 For the water quality analysis, following items shall be analyzed with sampling water at 10 places on the Phewa Lake for 4 times.

- Water Temperature
- pH
- Electric Conductivity
- Turbidity
- Transparency
- Color
- SS
- Cl^-
- BOD
- COD (Mn)
- DO
- NH_4-N
- NO_2-N
- NO_3-N
- TN
- PO_4-

- TP
- Number of Total Coliforms Group
- Number of Fecal Coliforms Group
- Discharge (Rivers/streams except for three (3) lake water sampling places)

8.5.2 For the topographic route survey: Length 6.0km and width 10m.

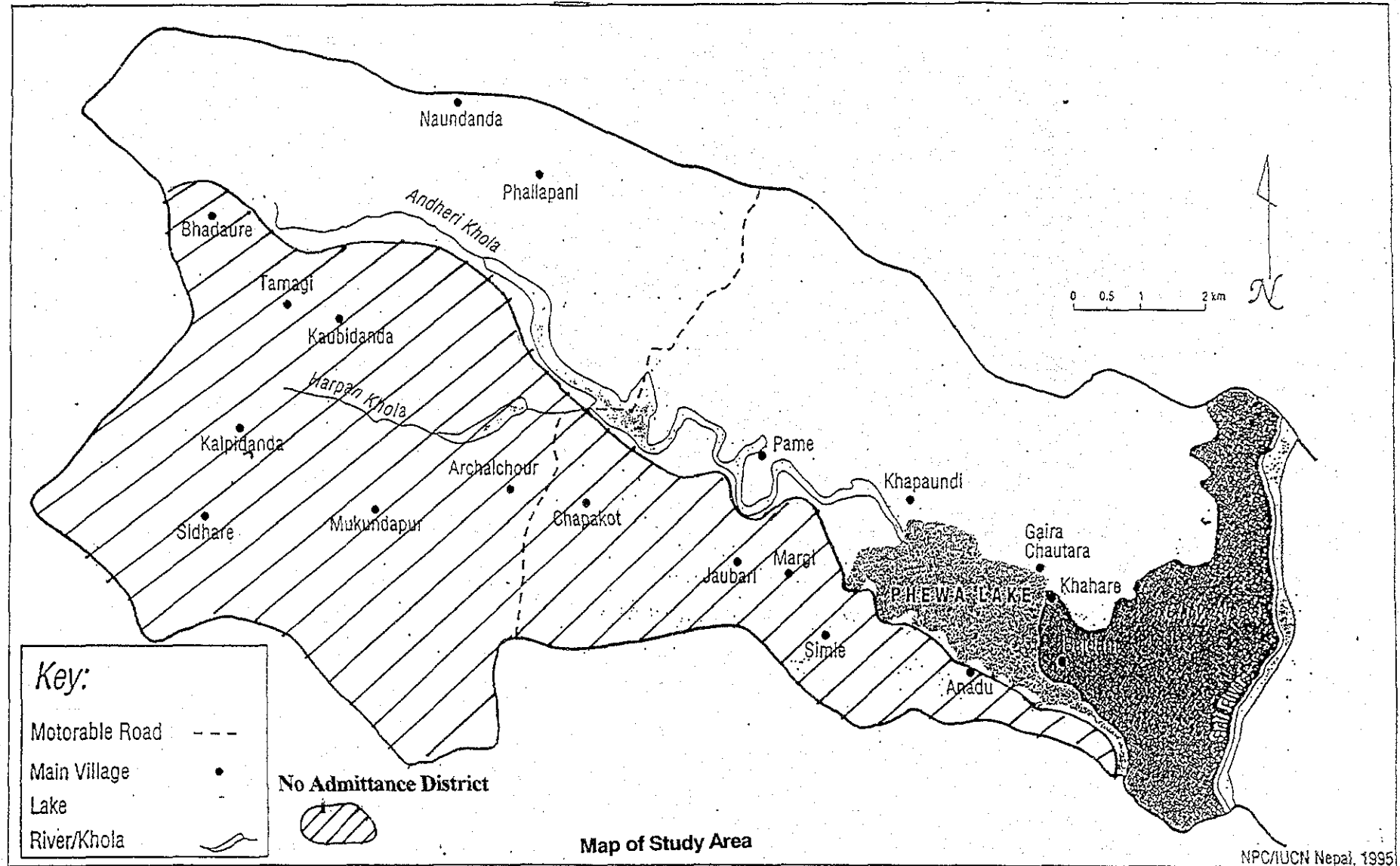
- Scale of the route survey map along diversion canal is 1:5,000

8.5.3 For the geological and soil survey (Boring survey), following items shall be surveyed at three (3) sites, 5m in depth for each.

- Compaction test

8.5.4 Restrictions to enter areas prohibited by JICA.

There are some areas where JICA will not allow the consultants to enter due to security reasons. Local Consultants shall work closely with JICA on this matter. In case information should be collected from concerned areas, HMG/N will assist. For the areas concerned, See Annex I.



- TP
- Number of Total Coliforms Group
- Number of Fecal Coliforms Group
- Discharge (Rivers/streams except for three (3) lake water sampling places)

8.5.2 For the topographic route survey: Length 6.0km and width 10m.

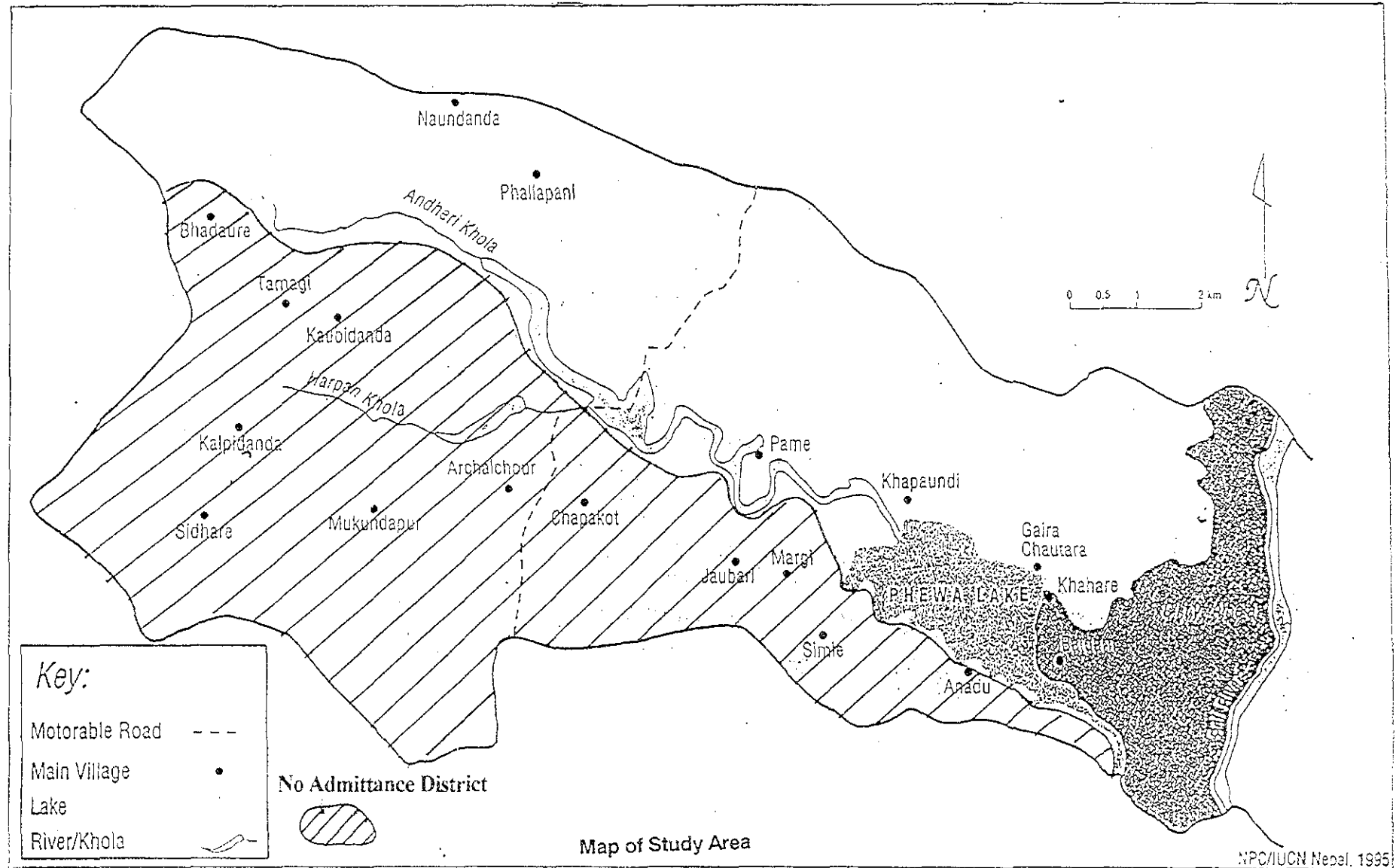
- Scale of the route survey map along diversion canal is 1:5,000

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Study Schedule

Schedule of the Study:

		2001					2002		
		8	9	10	11	12	1	2	3
Local Consultant									
Report			△ IC/R			△ IT/R		△ DF/R	△ F/R

△
Public hearing

△
Seminar

3. 審查結果 (添付資料 No. 3)

表-1 技術プロポーザルの評価表

1. コンサルタント名:

	基準 (%)	配点	評価項目
1. コンサルタントの経験能力	10	10	
a. 類似プロジェクトの調査業務経験		4	案件(類似 10 件) 当該調査内容及び対象地域に関連するもの 実施機関(JICA)での調査対象経験
b. 当該プロジェクトの関連情報量		4	
c. 実施機関(JICA)での調査業務経験		2	
2. 本件調査業務の実施方針	30	30	
a. 業務指示書の理解度		3	調査の目的を理解しているか 調査方針(全体フローから業務の流れを評価する) 各調査項目についての記述の妥当性 作業の流れと期間 要員計画の妥当性
b. 調査方針の的確性		3	
c. 調査方法の整合性と現実性		12	
d. 作業計画の妥当性		3	
e. 要員計画の妥当性		9	
3. 調査団員の経験能力	60	60	
(1)リーダー	(20)	20	
a. 類似プロジェクトの調査業務経験		10	類似経験年数(10年以上)、案件数(5件以上) リーダー或いは準ずる経験と担当プロジェクト規模 コンサルタントとしての経験年数、学位、資格 C/P 機関での調査業務経験
b. リーダーとしての経験及び評価		5	
c. コンサルタントとしての経験		4	
d. 実施機関での調査業務経験		1	
(2)主要分野団員の経験能力	(20)	20	
(2)-1		10	
a. 類似プロジェクトの調査業務経験		6	類似経験年数(10年以上)、案件数(5件以上) コンサルタントとしての経験年数、学位、資格 C/P 機関での調査業務経験
b. コンサルタントとしての経験		3	
c. 実施機関での調査業務経験		1	
(2)-2		10	
a. 類似プロジェクトの調査業務経験		6	類似経験年数(10年以上)、案件数(5件以上) コンサルタントとしての経験年数、学位、資格 C/P 機関での調査業務経験
b. コンサルタントとしての経験		3	
c. 実施機関での調査業務経験		1	
(3)その他団員の経験能力	(20)	20	
(3)-1		5	
a. 類似プロジェクトの調査業務経験		3.0	類似経験年数(10年以上)、案件数(5件以上) コンサルタントとしての経験年数、学位、資格
b. コンサルタントとしての経験		2.0	
(3)-2		5	
a. 類似プロジェクトの調査業務経験		3.0	類似経験年数(10年以上)、案件数(5件以上) コンサルタントとしての経験年数、学位、資格
b. コンサルタントとしての経験		2.0	
(3)-3		5	
a. 類似プロジェクトの調査業務経験		3.0	類似経験年数(10年以上)、案件数(5件以上) コンサルタントとしての経験年数、学位、資格
b. コンサルタントとしての経験		2.0	
(3)-4		5	
a. 類似プロジェクトの調査業務経験		3.0	類似経験年数(10年以上)、案件数(5件以上) コンサルタントとしての経験年数、学位、資格
b. コンサルタントとしての経験		2.0	
計	100	100	

Remarks:

技術プロポーザルの評価方法

1. 技術プロポーザルの評価

技術プロポーザルの評価は、本邦でのコンサルタントプロポーザルの評価手法に順じ、コンサルタントの経験能力、当該調査業務の調査団員の経験能力について以下の配点を標準に行なうものとする。

	基準(%)	配点	評価項目
1. コンサルタントの経験能力	10	10	
a. 類似プロジェクトの調査業務経験		4	案件(類似 10 件)
b. 当該プロジェクトの関連情報量		4	当該調査内容及び対象地域に関連するもの
c. 実施機関での調査業務経験		2	カウンターパート(C/P)機関での調査対象経験
2. 本件調査業務の実施方針	30		
a. 業務指示書の理解度		3	調査の目的を理解しているか
b. 調査方針の的確性		3	調査方針(全体フローから業務の流れを評価する)
c. 調査方法の整合性と現実性		12(10)	各調査項目についての記述の妥当性
d. 作業計画の妥当性		3	作業の流れと期間
e. 要員計画の妥当性		9	要員計画の妥当性
f. その他		(2)	本件経験の目的から特に考慮すべき事項
3. 調査団員の経験能力	60	60	
(1)リーダー	(20)	20	
a. 類似プロジェクトの調査業務経験		10	類似経験年数(10年以上)、案件数(5件以上)
b. リーダーとしての経験及び評価		5	リーダー或いは準ずる経験と担当プロジェクト規模
c. コンサルタントとしての経験		4	コンサルタントとしての経験年数、学位、資格
d. 実施機関での調査業務経験		1	C/P 機関での調査業務経験
(2)主要分野団員の経験能力	(20)	20	
(2)-1		10	
a. 類似プロジェクトの調査業務経験		6	類似経験年数(10年以上)、案件数(5件以上)
b. コンサルタントとしての経験		3	コンサルタントとしての経験年数、学位、資格
c. 実施機関での調査業務経験		1	C/P 機関での調査業務経験
(2)-2		10	
a. 類似プロジェクトの調査業務経験		6	類似経験年数(10年以上)、案件数(5件以上)
b. コンサルタントとしての経験		3	コンサルタントとしての経験年数、学位、資格
c. 実施機関での調査業務経験		1	C/P 機関での調査業務経験
(3)その他団員の経験能力	(20)	20	
(3)-1		5	
a. 類似プロジェクトの調査業務経験		3.0	類似経験年数(10年以上)、案件数(5件以上)
b. コンサルタントとしての経験		2.0	コンサルタントとしての経験年数、学位、資格
(3)-2		5	
a. 類似プロジェクトの調査業務経験		3.0	類似経験年数(10年以上)、案件数(5件以上)
b. コンサルタントとしての経験		2.0	コンサルタントとしての経験年数、学位、資格
(3)-3		5	
a. 類似プロジェクトの調査業務経験		3.0	類似経験年数(10年以上)、案件数(5件以上)
b. コンサルタントとしての経験		2.0	コンサルタントとしての経験年数、学位、資格
(3)-4		5	
a. 類似プロジェクトの調査業務経験		3.0	類似経験年数(10年以上)、案件数(5件以上)
b. コンサルタントとしての経験		2.0	コンサルタントとしての経験年数、学位、資格
計	100	100	

2. 評価調査団員の専門性の評価

評価調査団員の評価は下記の事項に留意して行なうものとする。

- ・ チームリーダーは PM 及び環境計画調査の経験が豊富であることが望ましい。
- ・ この計画調査の検討項目は 6つの計画から成るのでその分野の専門性を評価する。その中で主な計画調査項目は、下水処理計画と Community Development 計画であることからこの分野の専門性に重点を置き評価する。
- ・ 専門性の経験は、学者の専門的経験ではなくコンサルタントとしての経験である。

3. 調査団員の経験能力	60	60	
(1) リーダー	(20)	20	PM・Environment Engineer (Analyst)
(2) 主要分野団員の経験能力	(20)	20	
(2)-1 (Water Quality Management)		10	Sewerage System Engineer/Urban Planner
(2)-2 (Community Development and Environmental Education)		10	Community Development Expert or Rural Planner
(3) その他団員の経験能力	(20)	20	
(3)-1 (Watershed Management)		5	Soil Conservation/Watershed Management Expert.
(3)-2 (Ecosystem Management)		5	Biologist
(3)-3 (Monitoring System)		5	Environmental/Sanitation Engineer, Waste Water Management
(3)-4 (Organization and Institution)		5	Sociologist or Rural Planner

表-3 プロポーザル評価の結果

01.10.10

Evaluation Items for Proposals

The Development Study on the Environmental Preservation of Phewa Lake in Pokhara in Nepal

(by Tajima)

Items	Remarks (Things to be considered)	Portion (%)	Points	SILT	MULTI	GEO CE	ITC O	Team Nepal	DEC
1. Experience and Capacity of Consultant Firm		10	10	8.5	8.0	3.5	5.0	3.5	3.0
a. Experience in similar studies	Number of studies (10)		4	3.0	4.0	2.0	2.0	1.0	1.5
b. Quantity of related information to the Study	For contents of the Study and targeted areas		4	4.0	2.0	1.0	2.5	2.0	1.0
c. Experience of studies with JICA			2	1.5	2.0	0.5	0.5	0.5	0.5
2. Study approach and work plan.		30		27.0	20.5	17.0	18.5	16.0	11.0
a. Understanding of TOR	Understanding of objectives of the study		3	3.0	2.0	2.0	2.0	2.0	1.0
b. Accuracy of study policy	Overall study framework and guideline		3	3.0	1.5	1.5	2.0	1.5	1.0
c. Methodology of study	Propriety and originality		12	10.0	6.0	6.0	8.0	6.0	4.0
d. Propriety of study schedule	Flow and schedule		3	3.0	3.0	1.5	1.5	1.5	1.0
e. Propriety of manning plan			9	8.0	8.0	6.0	5.0	5.0	4.0
3. Experience and Ability of each consultant*		60		51.0	49.5	44.0	39.5	41.5	28.0
(1) Leader	PM - Environment Engineer (Analyst)	(20)	20	17.0	15.0	18.0	10.0	9.0	7.0
a. Experience in similar studies	Years of experiences (more than 10), number of studies (more than 5)		10	10.0	7.5	9.0	5.0	5.0	4.0
b. Experience and evaluation as a study team leader	Experience as a leader or similar position, scale of the project		5	2.0	3.5	5.0	2.0	2.0	1.0
c. General experience as a consultant	Years of experiences, degrees, qualifications		4	4.0	3.0	3.0	3.0	1.0	1.0
d. Experience in coordination with C/P			1	1.0	1.0	1.0	0	1.0	1.0
(2) Main Members		(20)	20	15.0	17.0	10.5	10.5	14.5	8.0
(2)-1 Water Quality Management	Sewerage System Engineer/Urban Planner		10	6	8.0	3.5	6.0	8.5	2.0
a. Experience in similar studies	Years of experiences (more than 10), number of studies (more than 5)		6	4.0	5.0	2.5	4.0	5.0	1.0
b. General experience as a consultant	Years of experiences, degrees, qualifications		3	2.0	3.0	1.0	2.0	2.5	1.0
c. Experience in coordination with C/P			1	0	0	0	0	1.0	0

4

Items	Remarks (Things to be considered)	Portion (%)	Points	SILT	MUL TI	GEO CE	ITC O	Team Nepal	DEC
(2)-2 Community Development and Environmental Education	Community Development Expert or Rural Planner		10	9.0	9.0	7.0	4.5	6.0	6.0
a. Experience in similar studies	Years of experiences (more than 10), number of studies (more than 5)		6	6.0	5.0	3.5	3.0	4.0	4.0
b. General experience as a consultant	Years of experiences, degrees, qualifications		3	3.0	3.0	2.5	1.5	2.0	2.0
c. Experience in coordination with C/P			1	0	1.0	1.0	0	0	0
(3)Other Members		(20)	20	19.0	17.5	15.5	19.0	18.0	13.0
(3)-1 Watershed Management	Soil Conservation/Watershed Management Expert.		5	5.0	4.0	5.0	5.0	5.0	2.5
a. Experience in similar studies	Years of experiences (more than 10), number of studies (more than 5)		3.0	3.0	3.0	3.0	3.0	3.0	1.5
b. General experience as a consultant	Years of experiences, degrees, qualifications		2.0	2.0	1.0	2.0	2.0	2.0	1.0
(3)-2 Ecosystem Management	Biologist		5	5.0	4.0	4.5	5.0	5.0	2.0
a. Experience in similar studies	Years of experiences (more than 10), number of studies (more than 5)		3.0	3.0	3.0	3.0	3.0	3.0	1.0
b. General experience as a consultant	Years of experiences, degrees, qualifications		2.0	2.0	1.0	1.5	2.0	2.0	1.0
(3)-3 Monitoring System	Environmental/Sanitation Engineer, Waste Water Management		5	4.0	4.5	2.0	4.0	3.0	5.0
a. Experience in similar studies	Years of experiences (more than 10), number of studies (more than 5)		3.0	3.0	3.0	1.0	2.5	2.0	3.0
b. General experience as a consultant	Years of experiences, degrees, qualifications		2.0	1.0	1.5	1.0	1.5	1.0	2.0
(3)-4 Organization and Institution	Sociologist or Rural Planner		5	5.0	5.0	4.0	5.0	5.0	3.5
a. Experience in similar studies	Years of experiences (more than 10), number of studies (more than 5)		3.0	3.0	3.0	2.0	3.0	3.0	2.0
b. General experience as a consultant	Years of experiences, degrees, qualifications		2.0	2.0	2.0	2.0	2.0	2.0	1.5
Total		100	100	86.5	78.0	64.5	63.0	61.0	42.0

OR

*Notes for Evaluation of each consultant

1. For a team leader, it is preferable to be experienced in project management and in the studies of environmental planning.
2. Corresponding to the objectives of the study, evaluation will focus on water quality management aspect and community development aspect.
3. "Experience" does not mean academic one but the one as a consultant.

4. 無償資金協力の TOR の受理 (添付資料 No. 4)

APPLICATION FORM FOR JAPAN'S GRANT AID GENERAL AND FISHERIES

1. Date of entry : June 2000
2. Applicant : The Government of Kingdom of Nepal
3. Project title : Water Environmental Improvement Project of Phewa Lake,
Pokhara
4. Sector : Environmental Preservation
5. Project type : 1. Equipment supply
2. Facilities construction
6. Target site : (province/country name) : Kingdom of Nepal
(city/town/village name) : Pokhara Sub-Metropolitan City
(from the metropolis) : 1-hour flight

(Attach a map indicating the site location to reach from the metropolis and a site map covering the intended project site area.)

Please refer ANNEX-1, for location map of Phewa Lake

7. Requested Amount: JPY 880,000,000. -
8. Desired fiscal year(FY) of implementation:
Survey : FY 2001
Implementation : FY 2002
9. Implementing agency:
Ministry : Ministry of Local Development
Implementing Agency : DDC, Kaski
Person in charge : P.P.Poudel, Chairman
Address : Pokhara, Nepal
Telephone No. : 977-61-20346, 21562

10.

1) Outlines of the implementing agency.

(Describe in detail the position in the government, authorities, data on principal projects, annual budget, staff members, etc., and attach its organizational chart in a separate sheet.)

i) Organisation chart of the Agency (in general)

Please refer the attached ANNEX for organisation chart.

ii) Authorities and duties of the agency.

District Development committee (DDC) is responsible for planning, implementation, operation and maintenance of the various project carried in Kaski District. It is also responsible for planning and implementation of "Water Environmental improvement project of Phewa Lake". For detail, please refer ANNEX for function, duties and power of the District Development Committee.

iii) Personnel (please mention the number of staff, workers, and employees of the agency and the responsible department, division and section in charge of the project).

Please refer the attached ANNEX.

iv) Budget (Revenue and Expenditure)

(If mentioned in local currency, please mention the latest foreign exchange rate of the currency to the US Dollar or the Japanese Yen)

DDC's Budget for fiscal year 1999/2000 is as under :

- From Internal resources	= NRs. 1,21,69,000.00
- From Govt. Grant	= <u>NRs. 9,36,49,000.00</u>
Total	= NRs.10,58,18,000.00

DDC's Budget for Fiscal year 2000/2001 is as under:

- From Internal resources	= NRs. 1,92,03,000.00
- From Govt. Grant	= <u>NRs. 8,61,37,000.00</u>
Total	= NRs.10,53,40,000.00

Current Exchange Rate : US\$ 1 = NRs.70.40

2) Outline of the supervising Ministry (Please describe in detail)

The supervising Ministry is the Ministry of Local Development (MOLD), under which District Development Committee (DDC) has been functioning.

i) Organisation Chart of the Ministry (in general)

(please mark the responsible department and division in charge of the project and implementing agency)

Please refer the attached ANNEX for organisation chart.

ii) Authorities and Duties of the Ministry

Ministry of Local Development (MOLD) is responsible for planning, implementation and management for the District Development of the Country.

iii) Personnel (Please mention the number of staff, workers and employees of the Ministry and responsible department, division and section)

Please refer the attached ANNEX.

iv) Budget (Revenue and Expenditure)

(If mentioned in local currency, please mention the latest foreign exchange rate of the currency to the US Dollar or the Japanese Yen)

Budget for MOLD in Fiscal Year 1999/2000	= NRs. 4,92,10,86,000.00
Budget for MOLD in Fiscal Year 2000/2001	= NRs. 6,33,81,92,000.00

Current Exchange Rate : US\$ 1 = 70.40

11. Background of the request.

(Provide detailed information on the importance, necessity, and urgency of the requested project in terms of the current situations of and problems found in the target sector, the current situations of and problems found in intended sites of the requested project, etc. by referring to related statistics and data.)

(1) Current situation

The future of the Nepalese people, which is so much dependent upon the environment, has bearings on the commitment and interest of the people themselves. So what Nepalese people is getting or expecting to get from the utilization of environmental resources is important. Despite various efforts, the state of environment has degraded due to higher dependency on natural resources and high population growth.

In the background of the natural resources of Nepal, agriculture and forest resources are the main basis of the Nepalese economy, which contribute to raising living standard of the majority of the people.

Sustainable development of economy and environment is not possible without proper co-ordination of economic, social, natural and human resources, particularly in view of their inter relationship in environment protection. There will be no fraction in opinion that environment should be protected in order to achieve Nepal's sustained economic development and to ensure quality of human life.

Unlimited potentials of tourism development exist in Nepal on account of her natural beauty, geographical diversity, and cultural and artistic heritage. Phewa lake situated in Pokhara city, the western development region of Nepal, which is second largest city of Nepal and famous for tourist as well as business point of view. This lake is laid an altitude of 793m from the sea level. It is in the southwest direction of the main city and far about 1km from the Pokhara sub-metropolis office.

At present the area of lake is about 4.3sq.km, which were 5.8sq.km in previously. Decreasing of 1.5sq.km is due to deposition of eroded soil into the lake from catchment area. The length of the lake is 4km whereas 2km maximum width and 100m width in narrow point. An average depth of the lake is about 8.6m, whereas highest depth is 19m. Dam of the lake is located in southern direction, which contain 46million m³ water capacity. Harvested

water in rainy season will supply in winter for the electricity generation. Hydropower generation of Phewa Lake is 1000kW with 320 hectares of land irrigation in rainy season.

Few wards of Pokhara sub-metropolitan city and six administrative VDCs of Kaski district falls under Phewa Lake watershed area namely Bhadeure Tamangi, Chapakot, Dhikurpokharai, Kaskikot, Pundibhumdi(some wards) and Sarangkot, which cover 123sq km area. Total length of watershed area is 17km length and 7km width. Ranging of the rainfall of watershed area is from 3700 - 5400mm. The highest peak of the watershed area is Panchaelekh with 2589m height. Topography of the watershed area is from steep slope to slightly plain field having a loamy to clay loam soil with acidic in nature. Source of the Phewa Lake is Harpankhola and Andlierikhola including Phirkekhola and other small rivers. About 67 hectares of land of Phewa Lake consisted of marshy land.

Most of the tourists who visit Nepal use to visit Pokhara to look its beauty of Annapurna range, Phewa Lake and others. Most of the tourists stay surrounding the Phewa Lake, which is called Lake Side. Lake Side has different identity and value in respect to engross the lake side people to serve tourists all the time. Out of Pokhara's total income, about 11% income contributes by tourism sector. There is mere scope of increasing its size in future if intensively developed its multi sector of field in well in manner.

(2) Problems

On the other hand, unmanaged urbanization, environmental degradation and pollution have challenged tourism development and its expansion. Possible worsening of the living environment in wide area, including the lower reaches, due to the erosion of farmland and drying up of water sources caused by the declining soil and water conservation function of degrading forests.

A lack of understanding about the transmission mechanisms of waterborne diseases means that people often pollute water sources indiscriminately in various ways and manners without understanding the consequences.

Free-grazing livestock also pollute water with their wastes. Deforestation in watersheds has facilitated the contamination process by providing easier access to water resources. In Pokhara City, sewage is collected to septic tank of each residence and is processed and penetrates into the ground. Pokhara is

high rainfall area of the country with more than 3700mm of annual rainfall. During monsoon season, effluent from septic tanks flows freely to drains, streams and ultimately to Phewa Lake.

Area of the Phewa Lake has been encroaching by the people by mean of cultivating the land and constructing building both individually and officially. Continuation of such activities will invite critical situation for the existence of the Phewa Lake and people of Pokhara. Many hotel and shops are constructing without fulfilling necessary requirement as indicated by the urban development committee, so it has aggravated natural beauty and spread up disturbances, ultimately, there phenomenon being affected in tourism sector.

Further more, the lake has seriously threatened by the increasing rate of sedimentation from its main source river, Harpan khola, Firke Khola and from the surrounding hill slopes triggered by soil erosion at the catchment area. It is estimated that Harpan khara deposits 142,000 ton of soil into the Phewa Lake each year. It is forecasted that if the degradation of the watershed area being continued in same momentum for 100- 175 years, the lake may collapse.

On one hand environment deterioration itself detrimental for the flora and fauna, on the other hand it being destroyed natural and panoramic scenery, thirdly, it affects adversely who are living in the catchment areas by means of erosion, landslide, side bank cutting by the rivers, decreasing productivity etc. So, the livelihood of the people of catchment area is being more difficult and challenging.

Conservation is the first priority of the Phewa Lake watershed area in order to improve and acquisition its beauty, mitigate degradation and restoration the lake in original shape. Since Phewa Lake is main center of Nepal, modality of the watershed conservation can be replicated in many of the lake areas of Nepal.

Please refer ANNEX for water quality monitoring of Phewa Lake (1996)

Problem to be solved urgently or in short terms

- a) Water pollution caused by inflow of sewage and other wastes.
- b) Bad smell and sanitation problem caused by inflow of sewage and other wastes.
- c) Elevation of the bottom of a lake caused by sedimentation from main source of river.
- d) Propagation of algae caused by eutrophication of Lake Water.

Problem to be solved in long terms

- e) The erosion of farmland and drying up of water sources caused by the declining soil and water conservation function of degrading forests.
- f) The pollution of water sources with free-grazing livestock and with people living watershed area.

12. Relation with the government's development plan and other factors.

(1) Relation with the government's national development plan.

Name of the plan : 9th Five Year Plan.....

The position occupied by the requested project / sector in the above-mentioned plan.

The process of expanding activities favorable to environment and the practice of environmental impact assessment (EIA) have been started. But still, adverse effects are seen on public health and tourism development due to degradation of environmental quality.

Environment Protection Act, 1997 and Environment Protection Regulations, 1998 have been effective. Environmental Impact Assessment Guidelines as a tool to minimize environmental impact has been enforced in formulation and implementation of projects.

The Ninth Plan has the following objectives:

- To consolidate working system and planning and/or environment sections of various ministries in order to maintain environmental balance and all-round economic development of the country.
- To develop capability of manpower in the field of environment.
- To co-ordinate the agencies involved in environment protection.
- To adopt a unified approach to environment and development.

- To formulate regulations and maintain co-ordination in regard to national resource protection.
- To widen the concept and area of bio-diversity.
- To adopt scientific techniques in forest management.
- To enforce mandatory and voluntary measures of pollution control by fixing emission and effluent standards.
- To make legal provisions for mobilization of non-governmental and private sector effectively in the field of environmental public health and garbage management.
- To adjust economic and financial policies in tune with environmental policy.
- To protect developmental infrastructure and national heritage and provide security to life and property of the public by minimizing effects of natural calamities.
- To promote national capacity in disaster control and management by developing necessary institutional infrastructure for the management of natural calamities.

(2) Relation with the sector comprehensive / overall program.

Name of the program : Phewa Lake Watershed Conservation Project.

Period : from 1974 to 1998.

Phewa Lake Watershed Conservation Project had been worked from 1974 to 1998.

It achieved some progresses in greenery promotion, mitigation of soil erosion from the catchment areas, awareness to the people about conservation of catchment area, protection of infrastructure, promote land productivity etc. which, ultimately reduced the sedimentation into the Phewa Lake. However, the efforts were not sufficient to conserve the Phewa Lake.

Conservation of Phewa Lake is nationally important issue of Nepal because it plays significant role in the national economy due to its panoramic attraction for the tourist and junction of trade. In this regard, Operational guideline and Action Plan for Phewa Lake conservation have been prepared by the national Planning Commission (NPC) and The World Conservation Union (IUCN) jointly in 1996 and 1997 respectively. However, implementation has not yet been started giving more priority by any agencies.

13. Objectives (Itemize as concretely as possible.)

(1) Objectives / purpose of the Project.

Project to improve environment of water resources of Phewa Lake by providing several kinds of necessary facilities of water quality improving systems.

- a) To improve water quality of Phewa Lake by protecting eutrophication of lake water.
- b) To conserve water resources for habitants, who lives down stream of Phewa Lake.
- c) To supply sanitary water for irrigation, managing at downstream of Phewa Lake.
- d) To stop water quality deterioration by protecting inflow of polluted water.
- e) To remove the sediments deposited in the Phewa Lake and keep enough water quantities irrigation.

(2) Overall goal / medium and long-term objectives.

- a) To conserve the Phewa Lake watershed area
- b) To restrict pollution in Phewa Lake from the urban as well as rural areas
- c) To develop and conserve the Phewa Lake as attractive scenic spot
- d) To enhance the livelihood of local community people of Phewa Lake watershed area
- e) To acquire foreign currencies through tourism promotion.
- f) To assist overall rural development program as a utilization of environmental resources.

14. Outline of the Project and request (Itemize as concretely as possible.)

(1) a. List of requested equipment (such as the name and address of the site to install the equipment, equipment-selecting criteria, name, specifications, quantity, unit price, total amount, etc. of the equipment.)

i) Scope of the Project

1) Prefab Typed Small Sewerage Plant

Equipment is composed of several stages of treatment systems. Each stage is arranged in prefab typed package and easy to install. Equipment will install at the end of rivers or streams, which is a

tributary to the Phewa Lake. Tributary is dammed up and the water will be pumped up to the treatment plant. The polluted water is treated by contact aeration process and treated water is discharged to Phewa Lake.

Please refer ANNEX for the specification and drawing of treatment plant.

2). Floating Typed Lake Water Purification System

Equipment is arranged in package of purification system, floats and solar panel. The system is floated on the Phewa Lake at intervals of 20 m. Also equipment can move freely according to necessity of water improvement. Operation and maintenance for the system is so easy that the electric power for the system is provide by solar generation system and sludge that collected by purification system are cleaned by automatic back wash system.

Please refer ANNEX for specification, drawing and operating data (for reference) of Float Typed Lake Water Purification System.

3) Pump Dredger

Pump Dredger to remove deposited sediments is install on Phewa Lake. Sediments are collected from the bottom of the lake and removed. Further more, collected sediments can reuse as a fertilizer for agriculture purpose and it could itself serve as a resource for revenue generation.

Please refer ANNEX for specification and drawing of Dredger.

ii) Others required for the Project

- 1) Design and study for implementation of the Project
- 2) Transportation from Japan to Nepal
- 3) Spare parts
- 4) Supervisory service for installation and commissioning
- 5) Training for the engineers for installation, operation and maintenance of the equipment

- b. Methods to operate, manage, and maintain the facilities or equipment,
(Expected number of persons to be secured, together with their technical levels,
and prospect to secure necessary budget.)

Kaski District Development Committee (DDC) has responsibility for operation and maintenance. DDC has engineers who has sufficient basic knowledge to involve construction of the facilities and the installation of the equipment.

- c. Financial sources for management and maintenance after completion of the requested project.

Fully borne by government

- (2) Breakdown of total amount of the facilities and equipment and supporting data.

No. Item	Amount (T)
1. Supply of equipment	
1) Lake water purification system	250,000,000.-
2) Small sewerage treatment plant	250,000,000.-
3) Dredger	300,000,000.-
Sub Total	800,000,000.-
2. Design and study	80,000,000.-
Total Project Cost.	880,000,000.-

- (3) Additional information

a) Existing facilities: No

b) List of existing equipment covering the name, quantity, year purchased, country of origin of the equipment, together with the manufacturer's name and operating conditions (A= operable, B= partially operable, and C= not operable and the reason(s) for such in-operability. Also attach photographs of the equipment so that the current conditions can be grasped.

Not applicable

c) Project site preparation (including expropriation)

Land: Already secured

Name of the landowner: The government of Nepal

Area : Around the Pokhara Lake area

- Current situations of the Project site, such as leveling, drainage, availability of power, water supply, telephone, etc.

All facilities are available around project site.

- Data on natural conditions.

(Concretely specify the names, years prepared, and agencies published of such data.)

- Security situation

(Give concrete information related to each project site, if more than one site is involved.)

Project site is located in Sub-Metropolis and is safe from any undue activities.

d) Related grant aid cooperation in past:

Not related grant aid project at the moment.

15. Benefit and effects of the Project.

(1) Area that will benefit from the Project (specify the total area, if possible):

All the house hold of watershed area of Bhadaure Tamangi, Chapakit, Dhikurpokhari, Kaskikot, Pumdibhumdi and Sarankot VDCs and two wards of Pokhara sub-metropolitan city, which are related with Phewa Lake conservation.

(2) Population that will benefit (directly and indirectly):

a) Direct

List of the population of Phewa Lake Watershed Area

	Population	Household
1) Bhadaure Tamangi	4,900	754
2) Chapakot	3,409	584
3) Dhikurpokhari	8,025	1,631
4) Kaskikot	6,759	1,034
5) Pumdubhumdi	9,230	1,361
6) Sarankot	5,405	903
7) Pokhara 17	2,556	421
8) Pokhara 6	5,409	1,013
Total	45,693	7,691

b) Indirect

The Project can contribute to the social and economic development for all Kaski District Development Committee, where 336,483 beneficiaries.

(3) Expected social and economic effects (Itemize concretely):

a) Social and Economic Development

Conservation of Phewa Lake is nationally important issue of Nepal because it plays significant role in the national economy due to its panoramic attraction for the tourist and junction of trade.

If the tourist promotion can take place through conservation of Phewa Lake, it will contribute to employment generation, income generation and improvement of the balance of payment in a meaningful way.

Phewa Lake is very important not only for keeping the graceful scenery but also for keeping sanitary condition for habitants in the project area, and the agriculture of Pokhara area is highly depending upon the water resources of the Phewa lake at the same time.

b) Environmental preservation

Though natural resources are limited fortune for human being, destruction of natural resources has been occurs over the world. When social and economic development is promoted, together with environmental preservation, one of the desirable directions of coexistence between nature and human will be shown by the Project.

16. Relation with technical cooperation, etc.

(1) Feasibility study: Not yet effected

(2) Technical cooperation

Which of the following forms of assistance do you require?

- 1) project-type technical cooperation : No
- 2) long-term experts : persons
- 3) short-term experts : 1 person
(Supervisor for operation and maintenance of equipment)
- 4) JOCV : persons
- 5) acceptance of trainees : 3 persons
- 6) not needed

When the technical cooperation is underway,

Title: No

Period: from month year to month year

- 1) project-type technical cooperation
- 2) long-term experts : persons
- 3) short-term experts : persons
- 4) JOCV : persons
- 5) acceptance of trainees : persons

17. Request to other donors for same project: No

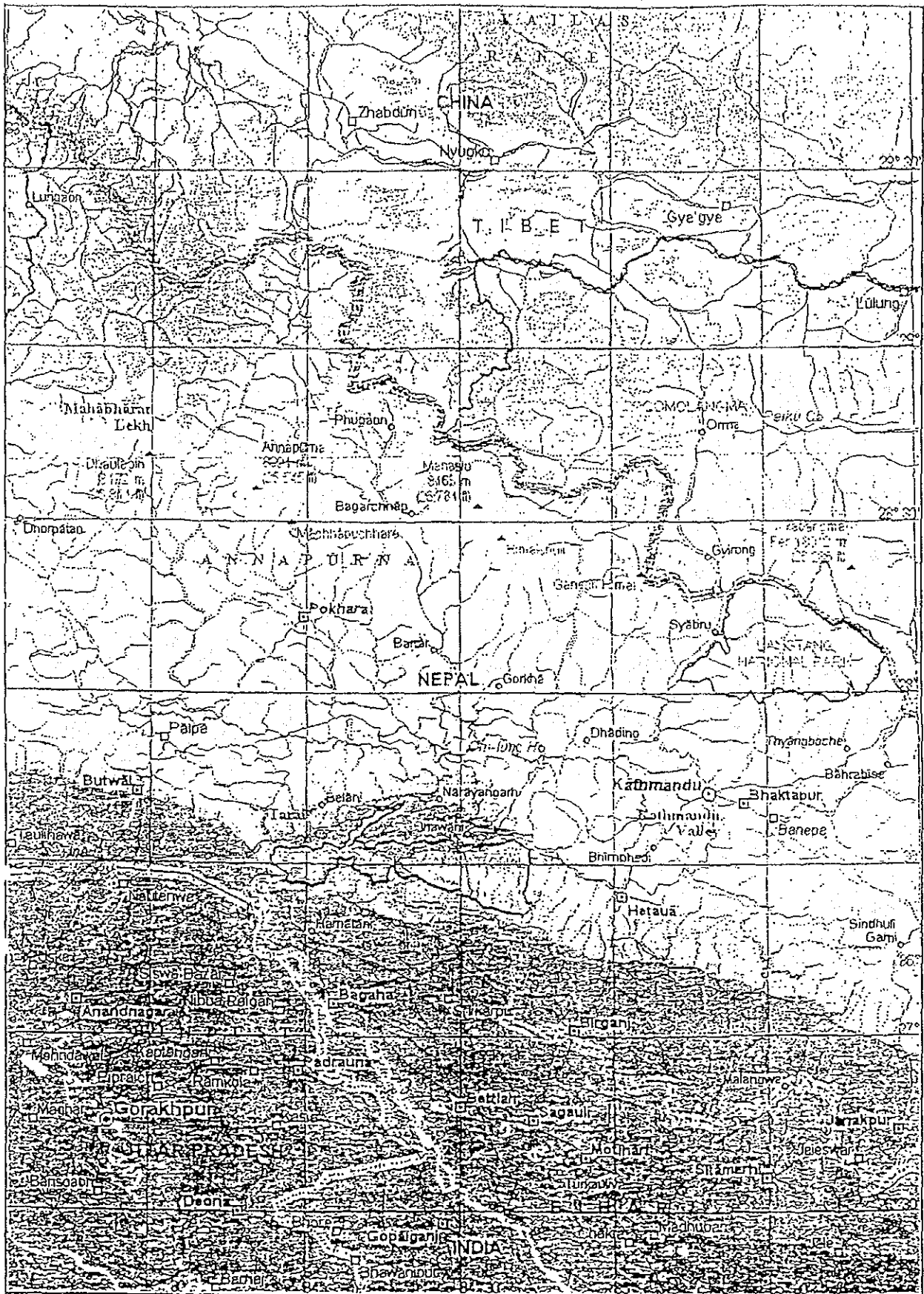
18. Aid by third countries or international organizations in the same or related fields.

Name of donor	Period	Type	Amount	Outline (concretely)	Relationship with the present request
ADB	1996-2001	Loan	6.554US million	Pokhara Environmental Improvement Project	No direct relationship but related field.

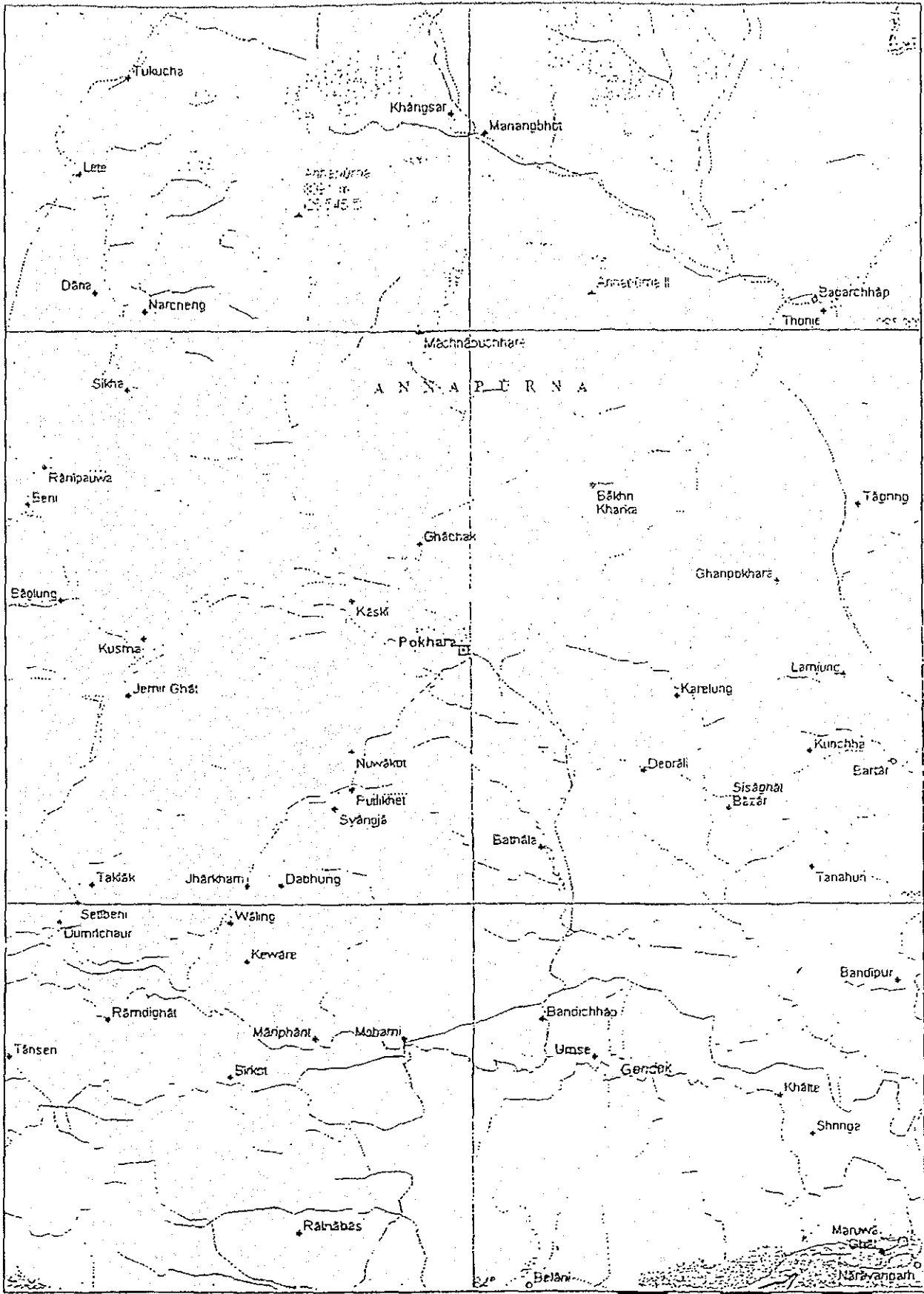
19. Other information with special remark (whether or not privatization policy is effected. If yes, indicate the relationship with the requested project.)

APPENDIX

- ANNEX-1 Location Map and Photographs.
- ANNEX-2a Organisation Chart of Kaski District Development Committee (DDC).
- ANNEX-2b Organisation Chart of Ministry of Local Development (MOLD).
- ANNEX-2c Organisation Chart for responsible Department, Division and Section in the Ministry of Local Development (MOLD).
- ANNEX-3 Authorities, Duties and Function of District Development Committee (DDC).
- ANNEX-4 Water Quality Monitoring of Phewa Lake by Soil and Water Laboratory Section (1996).
- ANNEX-5a Specification of Prefab Typed Small Sewerage Plant.
- ANNEX-5b Specification of Floating Typed Lake Water Purification System.
- ANNEX-5c Specification of Pump Dredger.

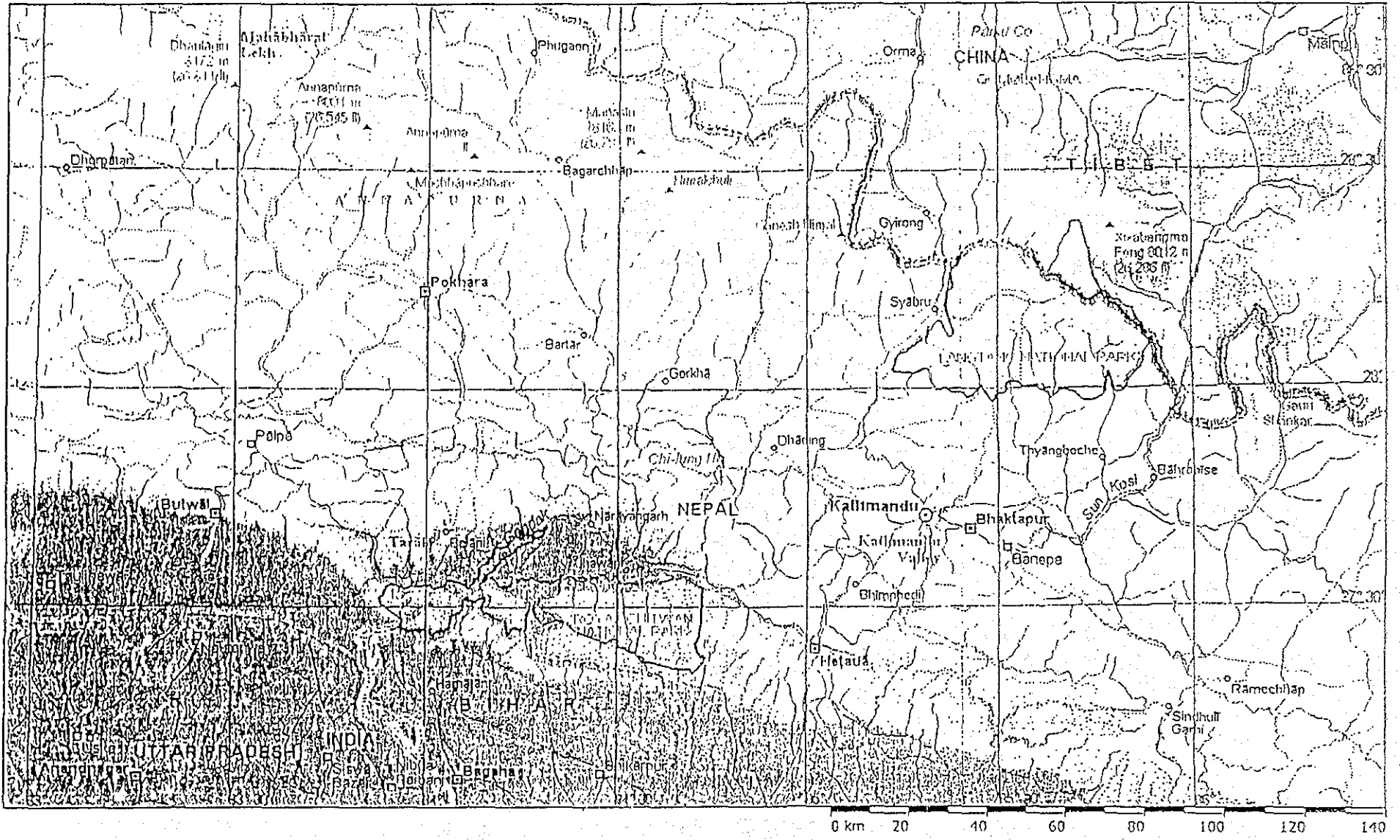


Nepal



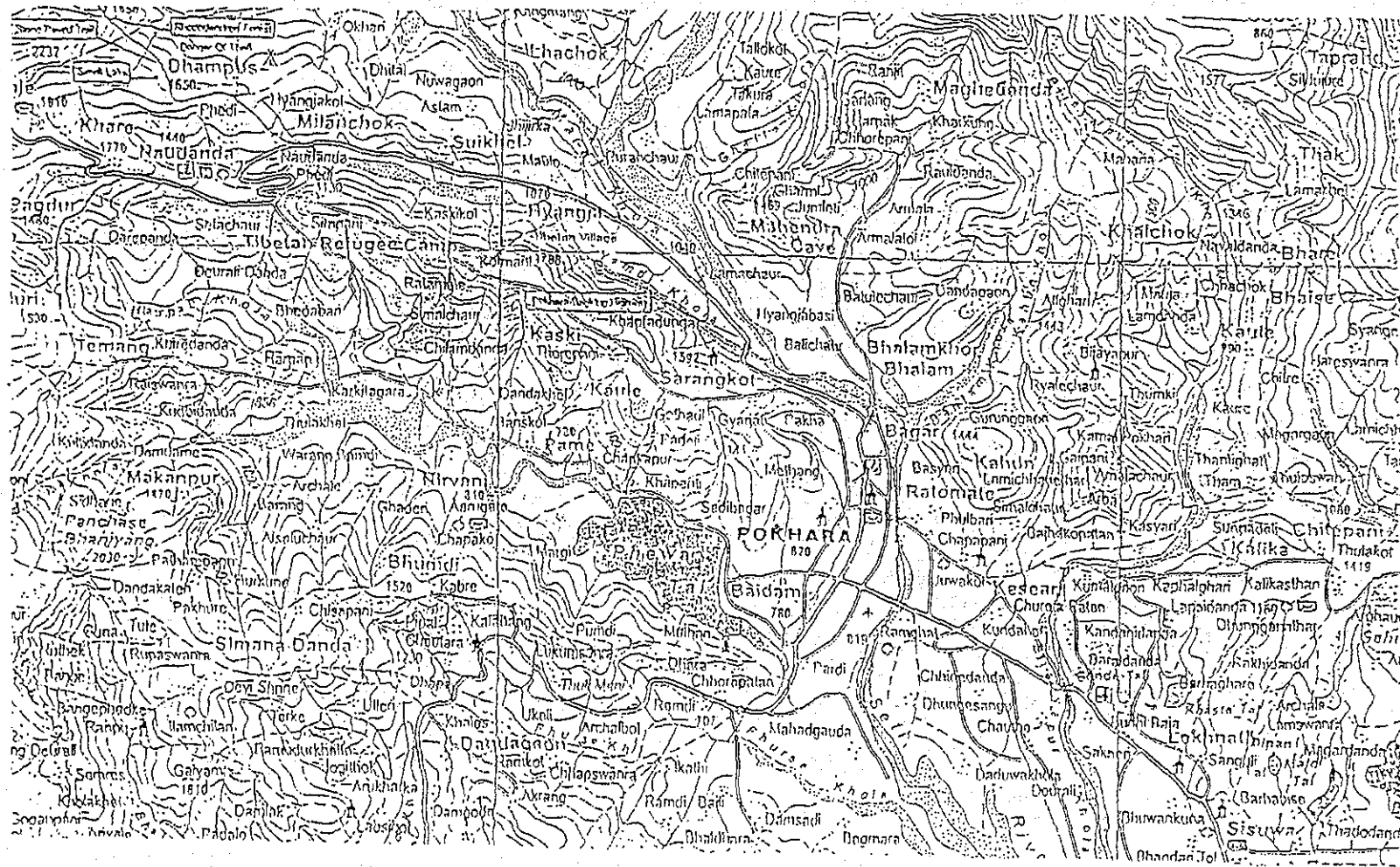
Pokhara
Nepal

228



Nepal

229



POKHARA

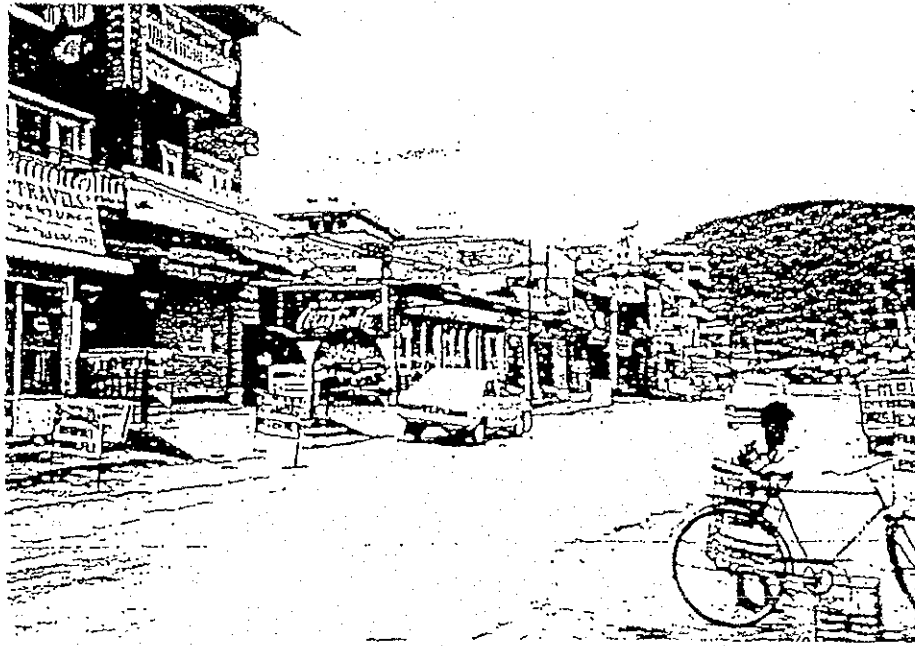
ANNEX-I



Drainage ditch flow into Phewa Lake



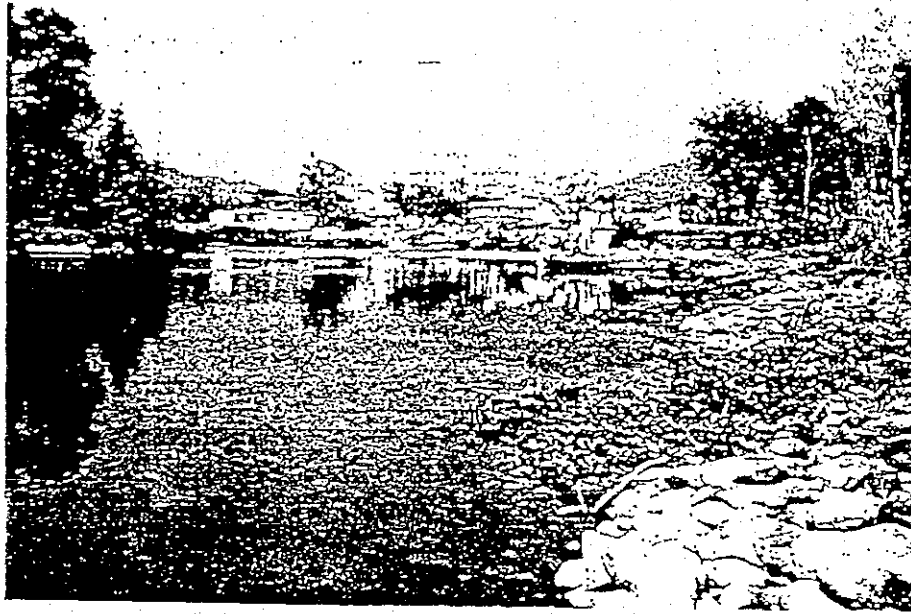
Andheri River



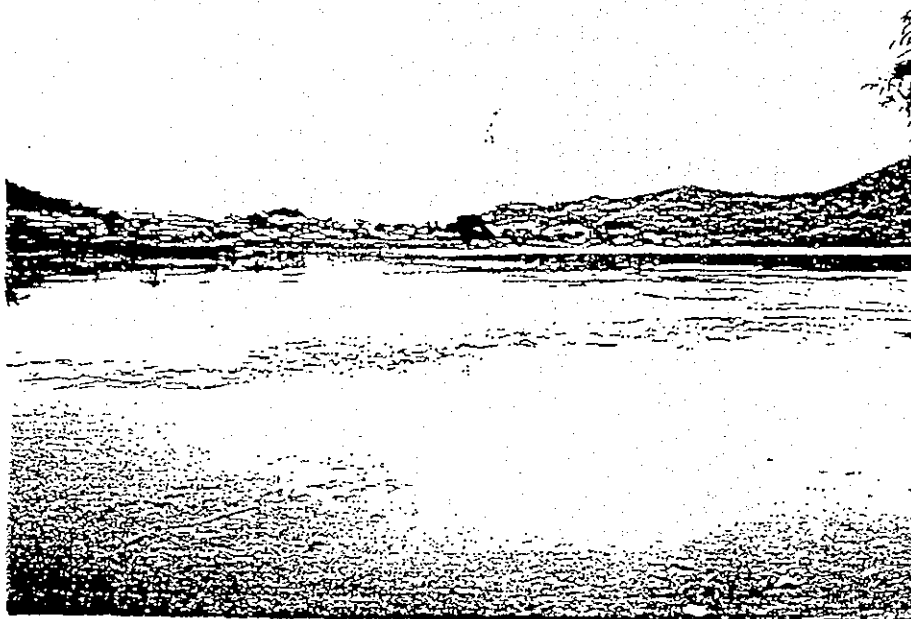
Lake Side Area of Pokhara City



Sewerage System in Pokhara City



The View of Phewa Lake



Algae and Weed in Phewa Lake