

**SURVEY ON BASIC DATA /
INFORMATION COLLECTION AND
CONFIRMATION
ON
WATER RESOURCE MANAGEMENT
IN
NORTHEAST REGION OF THAILAND**

FINAL REPORT

(Annex-I)

SEPTEMBER 2010

**JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)**

SANYU CONSULTANTS INC.

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Appendix 1 General and Socio-Economic Statistics

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特記仕様書

第1条 総則

この仕様書は、独立行政法人国際協力機構（以下「発注者」又は「機構」という）が株式会社三祐コンサルティング（以下「受注者」という）との業務実施契約により実施する「タイ国タイ東北地方の水資源管理に係る基礎情報収集・確認調査」に係る業務の仕様を示すものである。

第2条 業務の背景・目的

(1) 調査の背景

タイ国は2008年に一人当たりのGDPが\$4081となり、経済発展が続いてきたものの、バンコクを中心とする都市部と地方部の経済格差が課題となっている。とりわけ、タイ東北地方は総人口の33%を占めているが、一人当たりのGDPは\$1,040程度と全国平均の4分の1程度であり、貧しい地域と言われている。また、同地域は農業を主とした生活が営まれているものの、痩せた土地、乾期の水不足、灌漑の未整備（雨期：未整備率14%、乾期2～4%）等から効率的な農業が困難な地域もあり、水資源管理の改善が課題となっている。そのためタイ国政府の天然資源環境省水資源局や農業協同組合省灌漑局等の機関は同地域における水資源の開発やその利用について様々な開発計画を作成し、実施してきたものの、課題克服には至っていない状況である。また、農業の生産性を高めるため、水資源開発や、大規模な農業インフラ等を開発するにあたっては、環境や自然保護、国際河川等への影響について配慮する必要があると同時に住民参加のプロセスも重要な課題となっている。そのような中、前述のとおりタイ国政府機関でも様々な水資源にかかる計画が検討されている。

(2) 調査の目的

本業務は、タイ国における格差または貧困及びタイ東北地方における水資源、農業に関する最新情報を入手すると共に、その課題、タイ国政府の政策や取り組み、過去の教訓、他の支援機関の動向を踏まえた課題整理を行うことで、この分野における我が国の長期的な支援枠組みの検討にかかる情報が整理されることを目的とする。

上記目的に沿った本調査におけるアウトプット（成果）は以下のとおりである。

- (1) タイ国における貧困や格差に関する最新情勢が把握され、タイ東北地方の位置づけが確認される。
- (2) タイ東北地方における、水資源、農業に関する現状、政府の取り組み（政策、制度、体制等）や各関係機関の動向、社会環境や自然環境の状況が確認され、課題について整理される。
- (3) 我が国及び他ドナー等の過去の類似の支援に関する教訓・事例が整理される。
- (4) 上記を踏まえて、我が国のタイ東北地方の水資源管理についての長期的な支援枠組みにかかる方向性の提示がされる。

第3条 業務対象地域

水資源、農業分野のテーマについてはタイ東北地方（19県）を対象、貧困プロフィールについてはタイ国全土を対象

第4条 相手国実施機関

本調査では、水資源及び農業分野のテーマについてはタイ国天然資源環境省水資源局及び農業協同組合省灌漑局等を主な調査対象機関と想定している。貧困統計については、国家社会経済開発委員会(NESDB)、内務省、国家統計局等の機関を主な調査対象と想定している。

第5条 業務の範囲

国内準備作業において、「第2条 調査の背景・目的(2) 調査の目的」を達成するために必要な調査活動、調査方法、投入内容等を「第7条. 調査の内容」に沿って検討し、既存報告書や関連資料等の分析を踏まえて、調査計画を策定する。

現地調査では、「第7条. 調査の内容」に基づき相手国政府関係者やその他の機関、団体との協議、必要なサイト調査を実施する。調査を通じて当該分野における最新情報を収集し、その現状と課題、また、諸機関における取組み状況を確認する。

帰国後作業期間は収集した資料に基づき、タイ東北地方の水資源管理に対する我が国の長期的な支援枠組みに係る優先課題、優先地域、リソース等を検討した上で、最終調査報告書を作成する。報告書は「第8条. 成果品等」に基づき進捗状況に応じて作成し、機構に対し説明・協議の上、提出する。

第6条 業務の留意事項

- (1) 本調査はあくまでも今後の支援を検討するための基礎資料の作成を目的とし、相手国政府機関に過度な期待を持たせないよう留意する。
- (2) 【総括】については、総括業務として、調査のスケジュールや進捗管理、各種報告書の取りまとめ、調整等を行う他に、水資源、農村開発の分野に詳しい者を想定している。第2次現地調査において【水資源】、【農村インフラ】、【農村インフラ維持管理】によって、本格的に実施される調査の事前準備として、第1次調査にて関連情報を収集することを想定している。

第7条 業務の内容

本業務において受注者が実施する内容は、以下のとおりである。

(1) 国内準備作業

ア. 既存資料の収集

本調査に必要な資料を収集・分析し、タイ国の貧困及びタイ東北地方の水資源・農業に係る全体像、関係先、実施体制の概要を把握する。

我が国のタイ国における過去の水資源管理・灌漑・導水分野での支援をレビューし、取り組み・成果・教訓を集約する。

イ. 調査方法、調査方針及び作業計画の検討

上記既存資料の分析を踏まえ、タイ国の貧困及びタイ東北地方の水資源・農業調査についての方法、全体方針、訪問先及び作業計画を検討する。

ウ. 調査計画の策定

現地調査項目を整理し、詳細な調査計画を策定する。

エ. インセプションレポート、質問票の作成

上記作業を踏まえて、インセプションレポート、質問票を作成する。インセプションレポート及び質問票について記載される内容はプロポーザルに記載された内容に止まらず、

契約交渉の内容も踏まえた内容とする。

オ.事前打合せ

上記エ.について機構と打合せを行い、必要に応じてインセプションレポート及び質問票の加筆・修正を行う。

(2) 第1次現地調査

ア.概況整理・最新情報のアップデート

(ア) インセプションレポートの説明を行うと共に、タイ国の貧困や地域格差全般及びタイ東北地方における水資源・農業に関する全般的な動向、法令、政府機関での体制等を確認し、タイ国における該当分野の関連機関を把握する。

(イ) 該当分野における最新統計や指標、計画等を入手し、タイ国における同分野の現状と課題の把握・整理を行う。

(ウ) 上記に関する上位政策・開発計画を分析し、タイ国における同分野の位置付けと政府の取組み状況に関するレビューを行う。

イ.現状調査

【総括】

(ア) 必要に応じ、訪問先に対し、調査内容、方針等の説明を行う。

(イ) 全体の基礎情報収集の活動が円滑に進むよう、全体スケジュール及び調査進捗の管理、後方支援、助言、課題解決への支援を行う。

(ウ) 第2次調査で派遣される団員の調査活動が円滑に進められるよう関係機関への説明等、事前準備を行う。

(エ) 水資源、農村開発の関連情報を収集し、全体の調査の整合性を管理する。

(オ) タイ国における他ドナーや大学等の研究機関における過去の水資源管理・灌漑・導水分野での支援に関する情報を収集・レビューする。

【貧困統計】

(ア) タイ国の地域における貧困状況についての情報の収集・整理を行う。

(イ) 統計や指標等、タイ国における貧困プロファイルの作成に必要な情報を収集、整理する。
(貧困プロファイルには貧困の測定基準、貧困人口と不平等度の推移、貧困層の地理的分布、貧困の特徴、政府の取り組み、世界金融経済危機の影響等を含む。)

(ウ) 収集した統計をもとにタイ東北地方(県、地区)の貧困レベルの位置づけを整理する。

【マクロ・農業統計】

(ア) 統計や指標を使い、タイ東北地方における全体の産業構造(推移を含め)における農業の位置づけについて整理する。

(イ) 統計や指標等を使い、タイ東北地方における農業に関する情報(作物の多様化、土地利用、流通、気象等)を収集し、特性や課題について整理する。

【農業(流通・加工)】

(ア) 【マクロ・農業統計】と協力し、タイ東北地方における農業の特性・課題について検討し、分析する。

(イ) 【総括】と協力し、タイ国における他ドナーや大学等の研究機関における過去の該当分野での支援をレビューし、取り組み・成果・教訓を集約する。

(ウ) 第2次現地調査で【農業インフラ整備】、【農業インフラ維持管理】により実施される調査の

基礎となるべく、タイ東北地方の農業全般に関する状況について調査し概要を整理する。

【水資源管理】

(ア) 水資源関連情報を収集する。

(オ) タイ国における他ドナーや大学等の研究機関における過去の水資源管理・灌漑・導水分野での支援に関する情報を収集・レビューする。

(3) 国内作業

ア. 収集資料の整理及び分析

(ア) 第1次現地調査で収集した資料を整理する。

(イ) 第2次現地調査のための準備を行う。

(ウ) 第2次現地調査から参画するコンサルタントについては、担当分野の既存資料の収集、分析し、関係先、実施体制の概要を把握し、調査方法、調査方針及び作業計画、訪問先を固める。

(エ) 調査計画の策定

現地調査項目を整理し、詳細な調査計画を策定する。

(オ) プロGRESSレポートの作成

各団員による担当部分を取りまとめ、これまでの調査内容について、PROGRESSレポートを作成する。

(4) 第2次現地調査

ア.【総括】

(ア) 必要に応じ、訪問先に対し、調査内容、方針等の説明を行う。

(イ) 全体の基礎情報収集の活動が円滑に進むよう、後方支援、助言、課題解決への支援を行う。

(ウ) 我が国及び他ドナー等(参考にすべき案件があれば、大学等の研究機関も含む)のタイ国における過去の水資源管理・灌漑・導水分野での取り組み・成果・教訓の集約の結果を受け、タイ東北地方での水資源管理・灌漑分野での課題・成功例・留意点を整理、分析する。

(エ) タイ国における他ドナーの現在及び、今後の支援予定に関する情報収集を行う。

(オ) PROGRESSレポートの説明

これまでの調査内容について作成したPROGRESSレポートをもとに、機構に報告、説明を行う。

イ.【貧困統計】

(ア) 第1次調査を継続させ、不足している統計や指標を入手し、整理、分析を行う。

(イ) 整理・分析の結果をもとに、貧困プロファイルを作成する。

ウ.【マクロ・農業統計】

(ア) 第1次調査を継続させ、不足している統計や指標を入手し、整理、分析を行う。

(イ) 整理・分析の結果をもとに、タイ東北地方におけるマクロ・農業状況を取りまとめる。

エ.【農業(生産)】/【農業(流通・加工)】

(ア) **【農業統計】****【農業インフラ】****【農業インフラ維持管理】**と協力し、タイ東北地方における農業

に関連した特性・課題について検討し、分析する。

オ.【水資源管理】

- (ア) タイ東北地方における水資源(河川を含む)についての情報収集・整理を行う。
- (イ) タイ東北地方の農業における水資源の重要性を確認する。
- (ウ) 水資源、灌漑等に関連するタイ国政府の開発状況及び計画の集約・整理を行う。(達成状況やスケジュール、実施を阻害する要因の分析、タイ国政府における優先順位)
- (エ) 水需要予測(灌漑、生活、工業用水等)と現在及び今後の水供給の状況から、不足している水量、地域の整理を行う。
- (オ) 小規模灌漑プロジェクトの普及に関する情報の収集・整理を行う。
- (カ) 水資源、灌漑開発に影響を与える法令・制度・運用状況の情報収集・整理を行う。(自然環境に関する法令や同地域での国際河川の扱いを含めた国際ルールや事例、関連する中央省庁と地方機関の役割分担の状況)

カ.【農村インフラ整備】/【農村インフラ維持管理】

- (ア) 農地の開発・整備状況に関する情報の収集・整理を行う。
- (イ) 灌漑・排水施設の整備状況に関する情報を集約・整理し、課題を明らかにする。(灌漑方法、水収支、用水利用、既存の灌漑施設、灌漑事業、水利組合の活動状況)
- (ウ) 農村インフラや維持管理に関する課題の整理を行う。
- (エ) タイ国政府機関による農業普及体制の情報の収集・整理、また上記(ウ)で示された課題に対する各機関の関与状況を整理する。

キ.【住民参加・社会環境配慮】

- (ア) タイ東北地方における開発事業に対する環境保護、住民参加(NGO等も含む)の活動状況について情報収集・整理を行う。
- (イ) 環境保護、住民参加活動の状況を把握する。
- (ウ) 公的開発事業における住民参加活動に対するタイ国政府の取り組みについての情報収集を行う。

ク.【自然環境配慮】

- (ア) タイ東北地方における自然環境に関する情報収集・整理を行う。
- (イ) 統計や指標を活用しながら、気候変動の影響等も含めた対象地域での自然環境(動植物、災害等)の状況についての情報収集・整理を行う。
- (ウ) 自然保護に対するタイ国政府の取り組みについて情報収集・整理を行う。
- (エ) 上記で収集した個々の情報を取りまとめ、全体として課題を整理する。

ケ.【GIS】

- (ア) タイ東北地方における最新の地理データ(行政界、州・県・市・町・村名およびコード、道路、鉄道、河川、水圏、標高データなど)を収集し、GISデータに整理する。
- (イ) タイ東北地方における水資源、農業、自然環境、社会環境などに関する既存GISデータを政府機関、他ドナーおよび大学等研究機関などより収集し、属性および座標系などを整理し、上記GISデータに整理する。
- (ウ) 他分野の活動で得られた諸情報および収集データを整理し、データベースに整理する。
- (エ) 上記情報(地理データ、既存GISデータ、データベース:他分野収集資料)を取りまとめ、統計分析を行うとともに、各分野の主題図(貧困統計図、農業統計図、水需要図、水源概況図、水源施設図、植生図、土地利用図、土壌図、農村インフラ図、環境評価図、気候図、

水文概況図など)を作成する。

ケ.(ア)ドラフト版最終調査報告書の作成

- (イ)全体を通して得られた情報を整理、分析し、その結果に基づいたタイ東北地方における格差是正事業についての我が国の中・長期的な支援枠組みにかかる方向性の提示を行う。
- (ウ)現地調査の結果を踏まえ、その概要を各実施機関等に説明すると共に、指摘に応じて修正する。

(5) 帰国後国内作業

ドラフト版最終調査報告書の概要を機構に説明し、指摘事項を踏まえ、最終調査報告書を作成し、期限内に機構に提出する。

第8条 成果品等

- (1)受注者は本業務の成果品として以下の報告書、成果品等を発注者に提出する。成果品使用権は発注者に帰属し、受注者は発注者の許可なく他に引用又は転用してはならない。また、成果品の記載事項及び提出期限等は以下のとおりとする。

ア. インセプションレポート

記載事項:調査の背景、調査の目的、調査の実施方針、調査の内容と実施方法、作業計画、調査団の構成と各団員の担当作業及び作業期間、最終報告書目次案

部数 :和文 10部

英文 20部

提出時期:2010年3月上旬

イ. プロGRESSレポート

記載事項:第一次現地調査における詳細項目の調査結果、分析等

部数 :和文 10部

提出時期:2010年4月下旬

ウ. ドラフト版最終調査報告書

記載事項:上記調査の詳細項目の調査結果、分析等

部数 :和文 10部

英文 10部

提出時期:2010年7月下旬

エ. 最終調査報告書

記載事項:ドラフト版最終調査報告書への追記及び機構関係部署等からのコメントを付したものの

部数 :和文 10部

英文 10部

電子データ(CD-R) 5部

提出時期:2010年9月30日

オ. 収集資料

記載事項:収集した資料、データ及びリスト一式(JICA図書館の定型フォーム)

部数 :2部

提出時期:調査終了時

- * データについては、貧困統計、農業統計、水需要、農村インフラ調査に関する収集データと、コンサルタントにより分析した結果のデータをエクセル形式にし、電子データとしてCD-Rに保存して、提出する。

カ.会議記録

記載事項:契約期間中に実施された会議、現地協議等の記録(重要なものに限る)

部数 :1部

提出時期:協議の都度ある程度とりまとめの上

キ. デジタル画像集(CD-R)

記載事項:契約期間中に記録したデジタル画像

部数 :CD-R 1枚

提出時期:調査終了時

- (2) コンサルタントは、上記ア.~キ.に掲げる報告書、成果品を「第7条. 調査の内容」に示す事項及び発注者の指示に従い、遅滞なく提出するものとする。また、これら報告書は、作成後、発注者の指示に従い関係者に配布するものとする。

(3) 報告書作成にあたっての留意事項

ア 各報告書はその内容を的確かつ簡潔に記述すること

イ 報告書(インセプションレポートを除く)は、本論の要点を簡潔且つ明瞭に記載した要約を含むこと。

ウ 報告書が主報告書と資料編の分冊形式になる場合は、主報告書と資料編の項目の照合が容易に行われるよう工夫を施すこと。

エ 報告書本文中で使用するデータ及び情報については、その出典を明記すること。

オ 可能な限り表や図を用いること。

カ レポートの作成にあたっては、装丁等が華美に流れ過ぎないよう常識の範囲内で極力コストダウンを図ること。

キ 報告書で用いられる通貨換算率とその適用年月日及び略語表を目次の次の頁に記載すること。

ク 報告書全体を通じて、固有名詞、用語、単位、記号等の統一性と整合性を確保すること。

ケ 最終調査報告書以外の報告書の作成仕様は、A4版、タイ国プ打、両面コピー、章毎改頁の編集及び簡易製本とする。

コ 国内にて作成する成果品の紙は以下の要件を満たすものとする。

(ア) 古紙配合率 70%以上

(イ) 非塗工印刷用紙については、白色度 70%以下であること

(ウ) 塗工印刷用紙については、塗工量が両面で 30g/m² 以下であること

(エ) 再生利用しにくい加工が施されていないこと

(6) 業務従事月報

受注者は、国内・海外における業務従事期間中の業務に関し、業務従事月報を作成し、監督職員又は分任監督職員に提出する。

第9条 業務の工程

2010年3月上旬より国内事前準備を開始し、2010年3月中・下旬から現地調査を実施する。また、4月中旬はタイ正月のため、公的機関を含め長期休暇に入ることから、調査には適さないため、4月上旬で現地調査を区切ることとする。第2次現地調査を終え、帰国後、2010年9月下旬までに調査内容をとりまとめ、調査最終報告書を作成・提出する。

	200年度	2010年度					
	3月	4月	5月	6月	7月	8月	9月
国内準備作業	<input type="checkbox"/>						
第一次現地調査	■						
国内作業		<input type="checkbox"/>					
第二次現地調査			■				
帰国後作業							<input type="checkbox"/>
IC/R提出	▲						
P/R 提出		▲					
DFR 提出						▲	
FR提出							▲

第10条 その他特記すべき事項

(1) 相手国の便宜供与

本調査は機構の責任において実施するものであることから、タイ国から特別な便宜供与を得られるものではない。ただし本調査実施にあたり、機構タイ事務所から主な調査対象期間へ調査内容・実施スケジュールを通知し、調査協力を依頼するとともに、現地機構事務所が関係諸機関との初回のアポイントメントの取付けを行い、円滑な調査実施のための協力を行うものとする。

(2) 航空券の選定

航空券については、本件業務を適正かつ経済的に実施するために、経路の変更、予約の変更等を含む緊急時の対応の必要を考慮し、航空会社が設定する正規割引運賃による航空券又はこれに類する航空券の利用を推奨する。外国に居住する業務従事者の航空券については、本邦以外での発券として差し支えない。

以上

Appendix 1.2.1 Per Capita GDP Growth and Real Growth Rate in Thailand, 1961 – 2007

GROSS DOMESTIC PRODUCT : WHOLE KINGDOM, 1960–2008

Country Name	Country Code	Indicator Name	Indicator Code	1960	1961	1962
Thailand	THA	GDP (current US\$)	NY.GDP.MKTP.CD	2,760,764,672	3,034,053,632	3,308,913,152
Thailand	THA	GDP growth (annual %)	NY.GDP.MKTP.KD.ZG		5.36	7.55
Thailand	THA	GDP per capita (current US\$)	NY.GDP.PCAP.CD	99.88	106.46	112.60
Thailand	THA	GDP per capita growth (annual %)	NY.GDP.PCAP.KD.ZG		2	4

Indicator Name	1963	1964	1965	1966	1967	1968
GDP (current US\$)	3,540,403,456	3,889,130,240	4,388,937,645	5,279,230,813	5,638,461,435	6,081,009,422
GDP growth (annual %)	8.00	6.83	8.18	11.12	8.62	8.12
GDP per capita (current US\$)	116.84	124.50	136.32	159.16	165.05	172.93
GDP per capita growth (annual %)	5	4	5	8	5	5

Indicator Name	1969	1970	1971	1972	1973	1974
GDP (current US\$)	6,695,336,560	7,086,538,430	7,375,000,025	8,177,872,959	10,838,593,716	13,702,998,650
GDP growth (annual %)	6.55	11.41	4.90	4.28	10.24	4.47
GDP per capita (current US\$)	185.08	190.57	193.07	208.56	269.47	332.35
GDP per capita growth (annual %)	4	8	2	2	7	2

Indicator Name	1975	1976	1977	1978	1979	1980
GDP (current US\$)	14,882,770,240	16,985,208,712	19,779,312,337	24,006,567,107	27,371,650,355	32,353,514,503
GDP growth (annual %)	4.97	9.33	9.84	10.30	5.37	5.17
GDP per capita (current US\$)	352.37	392.87	447.25	530.91	592.10	684.53
GDP per capita growth (annual %)	2	7	7	8	3	3

Indicator Name	1981	1982	1983	1984	1985	1986
GDP (current US\$)	34,846,038,519	36,589,772,335	40,042,798,314	41,797,647,302	38,900,711,298	43,096,774,496
GDP growth (annual %)	5.91	5.35	5.58	5.75	4.65	5.53
GDP per capita (current US\$)	721.00	740.41	792.88	810.76	740.34	806.06
GDP per capita growth (annual %)	4	3	3	4	3	4

Indicator Name	1987	1988	1989	1990	1991	1992
GDP (current US\$)	50,535,445,681	61,667,254,411	72,250,747,142	85,343,189,320	98,234,713,407	111,452,745,857
GDP growth (annual %)	9.52	13.29	12.19	11.17	8.56	8.08
GDP per capita (current US\$)	930.27	1,118.58	1,292.31	1,505.89	1,710.38	1,915.45
GDP per capita growth (annual %)	8	12	11	10	7	7

Indicator Name	1993	1994	1995	1996	1997	1998
GDP (current US\$)	125,010,690,989	144,308,067,332	168,018,557,308	181,947,631,900	150,891,449,495	111,859,654,864
GDP growth (annual %)	8.25	8.99	9.24	5.90	-1.37	-10.51
GDP per capita (current US\$)	2,122.21	2,422.76	2,793.79	3,001.41	2,472.71	1,821.84
GDP per capita growth (annual %)	7	8	8	5	-2	-11

Indicator Name	1999	2000	2001	2002	2003	2004
GDP (current US\$)	122,629,741,698	122,725,247,706	115,536,405,150	126,876,918,690	142,640,079,033	161,339,790,595
GDP growth (annual %)	4.45	4.75	2.17	5.32	7.14	6.34
GDP per capita (current US\$)	1,983.53	1,968.43	1,834.17	1,990.71	2,210.69	2,471.56
GDP per capita growth (annual %)	4	4	1	4	6	5

Indicator Name	2005	2006	2007	2008
GDP (current US\$)	176,351,815,950	207,227,614,090	247,111,401,985	272,428,536,445
GDP growth (annual %)	4.60	5.15	4.93	2.46
GDP per capita (current US\$)	2,674.20	3,115.90	3,689.37	4,042.78
GDP per capita growth (annual %)	4	4	4	2

Source: World Bank

Exchange Rate (Thai Bhat/ US\$)

Unit	1971	1972	1973	1974	1975	1976
Baht/US\$	20.800	20.800	20.620	20.375	20.379	20.400

	1977	1978	1979	1980	1981	1982
	20.400	20.336	20.419	20.476	21.820	23.000

(Source) IMF International Financial Statistics, Tokyo Mitsubishi Bank, MOF

Appendix 1.2.2 Regional Per Capita GDP Growth, 1981-2008

GROSS REGIONAL PRODUCT AT CONSTANT 1988 PRICES

(Millions of Baht)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
NORTHEASTERN	6,142	6,911	7,658	7,813	8,194	8,343	8,927	10,164	12,178	13,606	15,109
NORTHERN	10,039	10,671	11,487	12,266	12,724	12,842	14,272	16,930	18,659	20,350	22,918
SOUTHERN	12,401	13,094	13,822	14,240	14,804	15,593	17,441	20,304	22,736	26,058	29,345
EASTERN	20,254	23,231	26,286	26,207	28,409	32,827	35,136	41,681	46,459	50,425	61,469
WESTERN	15,981	17,880	17,664	18,018	18,958	19,400	21,725	24,194	28,661	29,948	34,390
CENTRAL	14,409	15,170	15,879	17,190	17,606	17,525	19,463	23,126	28,358	31,455	37,672
BANGKOK AND VICINITIES	48,764	51,900	55,073	58,755	61,228	64,880	74,969	89,220	106,057	127,275	141,296

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
NORTHEASTERN	17,019	17,626	20,568	23,940	26,228	26,952	26,474	24,153	24,186	24,604	26,531
NORTHERN	25,857	26,795	30,350	35,054	39,331	39,994	40,588	37,287	37,501	37,676	41,292
SOUTHERN	32,589	35,345	41,186	54,587	58,138	58,720	60,593	54,984	56,193	55,578	60,667
EASTERN	68,310	79,142	93,763	128,170	144,660	154,236	149,826	137,697	151,437	162,750	180,378
WESTERN	38,215	40,870	45,941	53,847	58,973	58,830	57,846	57,206	58,202	61,009	66,149
CENTRAL	43,080	46,264	55,159	81,781	95,356	98,820	101,474	100,303	114,193	116,274	126,310
BANGKOK AND VICINITIES	155,214	174,054	190,982	200,874	213,775	213,556	197,990	212,364	225,171	233,811	234,918

	2003	2004	2005	2006	2007	2008
NORTHEASTERN	28,927	30,897	32,162	36,160	40,165	42,968
NORTHERN	44,921	47,742	51,745	58,171	62,921	69,773
SOUTHERN	66,643	74,889	80,445	89,968	92,700	98,743
EASTERN	202,360	223,510	257,614	295,725	328,863	332,798
WESTERN	70,721	76,287	82,601	91,589	97,239	105,851
CENTRAL	144,367	157,619	168,517	186,782	205,711	241,297
BANGKOK AND VICINITIES	243,764	262,438	279,804	296,657	316,138	327,321

Source: NESDB

Appendix 1.2.3 Regional GDP Growth of the Northeast by Sector, 1995-2008

GROSS REGIONAL PRODUCT AT CONSTANT 1988 PRICES

NORTHEASTERN

(Millions of Baht)

	1995	1996	1997	1998	1999	2000	2001	2002
1 Agriculture, Hunting and Forestry	62964.721	62837.5	62332	60450.7	61782.3	67616.7	70594.7	68107
2 Fishing	1530.738	1913.3	1722.4	1741.8	2095.1	2063.3	2118	2157.3
3 Mining and Quarrying	2847.6357	3394.5	3428.9	2710.3	3384.1	3098.8	2747.5	3246
4 Manufacturing	34575.111	36645.4	43934.4	37763.7	45205.5	39796.6	39103.2	47829.2
5 Electricity, Gas and Water Supply	6187.765	6561.9	7055.9	7324.8	7361.6	8052.8	8454.7	8865.3
6 Construction	31529.03	35498.6	22778.3	12370.9	13905.9	13714.2	11464.1	13004.9
7 Wholesale and Retail Trade; Repair of Motor Vehicles, Motorcycles and Personal and Household Goods	95673.999	97741.864	94802.4	82661.7	67615.7	69225	69202.5	73626.3
8 Hotels and Restaurants	5371.647	5987.887	5438.8	4580.8	5116.5	4929.9	4495.1	4778.2
9 Transport, Storage and Communications	17874.94	20529.9	22567	20712.3	21107.9	22663.9	25419	27410.4
10 Financial Intermediation	14515.367	16668.172	16701.3	18503.4	10535.1	9110.9	8877.3	9587.2
11 Real Estate, Renting and Business Activities	16320.964	17113.813	17525.3	17822.9	18669.1	19023.4	19190.6	19891.1
12 Public Administration and Defence; Compulsory Social Security	11705	12566	13019	13926	15090	16402	16573	18276.7
13 Education	21608.91	22668.971	24782.2	25443.9	23649.4	24252.1	24526.2	25163.2
14 Health and Social Work	6149.6658	6062.8019	6888.8	7576.4	8087.9	8406.1	8962	8790.4
15 Other Community, Social and Personal Services Activities	2129.7497	2342.7028	2418.3	2184.4	2292.2	2346.1	2424.7	2220.7
16 Private Households with Employed Persons	168.446	163.268	422	431	428	430	438	440

	2003	2004	2005	2006	2007	2008
1 Agriculture, Hunting and Forestry	77810.8	74047.8	70477.8	74294	77518.1	80171.6
2 Fishing	2488	2581.9	2546.8	2481.3	2405.1	2470.9
3 Mining and Quarrying	3313.9	3484.1	3047.7	3476	5335.7	4803.5
4 Manufacturing	55738.4	59892.6	58550.2	70357	73541.2	75895.8
5 Electricity, Gas and Water Supply	9325.6	9635.6	10207.8	10987.4	11755.8	12298.8
6 Construction	13944.3	15101.3	12935	14375.9	15240.8	14073.9
7 Wholesale and Retail Trade; Repair of Motor Vehicles, Motorcycles and Personal and Household Goods	76626.9	77408.9	80500	85440.3	90005.6	90517.7
8 Hotels and Restaurants	4825.3	5271.7	5720.4	6420	6698.1	6819.9
9 Transport, Storage and Communications	26919.4	28485.5	31581.9	31715.8	34107.4	35789.5
10 Financial Intermediation	10138.6	11720.6	12537.6	15948	17235.5	16604.8
11 Real Estate, Renting and Business Activities	20472.1	21256.9	22237.6	23395.7	24029	24578.8
12 Public Administration and Defence; Compulsory Social Security	18279.6	18954.8	19096.9	19159.5	19874.5	20580.8
13 Education	26574.1	27144.4	29164.1	30027.5	33119.5	34946.8
14 Health and Social Work	8052.5	8125.5	9233.6	9717	10469	10498.5
15 Other Community, Social and Personal Services Activities	2387.3	2684.2	2914.8	2829.3	2737.3	2646.7
16 Private Households with Employed Persons	454	471	474	464	479	488

Source: NESDB

[Same data sets for other regions are included in Data CD for reference]

Appendix 1.2.4 Regional GDP by Composition, 2007

Gross Domestic Product at Current Market Prices: by Industrial Origin and Region, 2007

Unit: million Baht

	Bangkok	Vicinity of Bangkok	Central	Eastern	Western	Northeastern	Northern	Southern	Whole Kingdom
Agriculture	3,524	20,434	38,044	70,232	69,222	180,335	176,326	249,781	807,898
Fishing	310	14,541	848	13,845	4,568	3,643	2,914	65,360	106,029
Mining and Quarrying	-	1,503	8,729	193,960	8,871	11,833	31,332	20,442	276,670
Manufacturing	477,895	914,887	392,715	766,696	74,439	145,822	135,574	115,427	3,023,455
Electricity, Gas and Water Supply	40,972	35,991	18,326	75,773	28,727	14,512	14,029	19,788	248,118
Construction	75,036	33,611	8,828	24,429	9,686	37,516	32,884	24,631	246,621
Wholesale and Retail Trade	535,796	71,737	44,344	102,081	52,599	181,856	110,966	93,308	1,192,687
Hotels and Restaurants	258,643	25,556	4,726	34,151	11,707	17,744	19,139	44,926	416,592
Transport and Communication	277,845	135,591	19,466	62,415	17,889	36,627	30,233	42,013	622,079
Financial Intermediation	164,238	26,906	8,461	16,242	9,667	36,134	27,381	22,460	311,489
Real Estate, Renting	78,062	20,110	14,529	15,335	8,872	29,908	25,049	23,532	215,397
Public Administration, Compulsory Social Security	135,478	14,107	20,889	28,708	19,871	62,304	51,035	40,819	373,211
Education	54,702	18,497	17,944	21,778	19,174	107,392	66,454	54,211	360,152
Health and Social Work	37,133	14,525	9,250	11,790	10,141	32,025	28,598	20,389	163,851
Other Community, Social and Personal Services Activities	72,165	11,114	4,114	6,792	4,703	5,282	6,550	9,134	119,854
Private Household with Employed Persons	5,197	691	200	372	237	1,188	936	391	9,212
Gross Domestic Product (GDP)	2,216,997	1,359,801	611,413	1,444,598	350,372	904,119	759,400	846,611	8,493,311
Population	6,842,000	4,535,000	3,008,000	4,450,000	3,623,000	22,522,000	12,037,000	9,024,000	66,041,000
GDP per Capita (Baht)	324,039	299,846	203,245	324,609	96,714	40,144	63,088	93,821	128,606

Source: Gross Regional and Provincial Products 2007 series. Office of the National Economic and Social Development Board. Office of the Prime Minister.

Gross Domestic Product at Constant 1988 Prices: by Industrial Origin and Region, 2007

Unit: million Baht

	Bangkok	Vicinity of Bangkok	Central	Eastern	Western	Northeastern	Northern	Southern	Whole Kingdom
Agriculture	932	7,946	17,908	26,873	24,742	76,934	61,894	87,786	305,015
Fishing	221	9,139	607	8,503	2,893	2,519	1,820	39,823	65,525
Mining and Quarrying	-	2,001	4,814	53,573	5,731	5,326	15,578	7,953	94,976
Manufacturing	243,512	542,997	273,791	389,576	40,706	73,565	75,953	47,261	1,687,361
Electricity, Gas and Water Supply	24,720	25,266	13,466	35,006	10,415	11,501	9,807	11,792	141,973
Construction	30,087	13,596	3,566	9,875	3,904	15,241	13,258	9,889	99,416
Wholesale and Retail Trade	264,727	35,761	22,105	50,914	26,225	90,690	55,237	46,486	592,145
Hotels and Restaurants	96,026	8,530	1,725	13,503	4,841	6,689	7,330	18,985	157,629
Transport and Communication	153,183	110,264	13,958	52,035	13,261	34,132	25,286	29,773	431,892
Financial Intermediation	78,993	12,941	4,069	7,812	4,649	17,379	13,169	10,802	149,814
Real Estate, Renting	51,752	16,393	12,479	13,807	8,435	24,032	22,233	15,700	164,831
Public Administration, Compulsory Social Security	43,098	4,488	6,646	9,132	6,322	19,822	16,234	12,987	118,729
Education	16,033	5,449	5,482	6,534	5,860	33,159	20,304	16,363	109,184
Health and Social Work	12,529	4,876	3,032	3,886	3,331	10,448	9,382	6,667	54,151
Other Community, Social and Personal Services Activities	59,006	5,403	2,041	3,577	2,589	2,747	3,374	4,565	83,302
Private Household with Employed Persons	2,081	277	81	149	95	479	376	157	3,695
Gross Domestic Product (GDP)	1,076,898	805,328	385,769	684,755	163,998	424,663	351,235	366,989	4,259,633

Appendix 1.3.1 Average Monthly Income, Expenditure and Debt by Region

(Baht)

Source of Income	Whole Kingdom	Region					Area	
		Greater Bangkok ^{1/}	Central	North	Northeast	South	Municipal	Non - Municipal
Total Monthly Income	18,660	35,007	18,932	13,568	12,995	19,716	28,005	14,307
Total Current Income	18,296	34,514	18,647	13,219	12,622	19,394	27,593	13,966
Money Income	15,584	30,473	16,032	11,017	10,086	16,971	24,298	11,525
From Work	13,366	26,919	14,315	9,045	7,796	15,445	21,088	9,769
From Current Transfer	1,852	2,361	1,468	1,751	2,144	1,244	2,387	1,604
From Property Income	366	1,193	249	222	146	282	823	152
Non - money Income	2,712	4,041	2,615	2,202	2,536	2,423	3,295	2,440
Non - current Money Income	364	493	285	349	374	321	412	341
Total Monthly Expenditures	14,500	23,996	15,168	10,990	10,920	15,875	20,179	11,854
Consumption Expenditures	12,735	21,009	13,273	9,623	9,702	13,868	17,541	10,496
Food and Beverages (excludes alcoholic)	4,492	6,457	4,683	3,427	3,882	4,877	5,599	3,975
Alcoholic Beverages	197	281	263	158	133	211	258	169
Tobacco Products	96	151	115	55	65	139	131	80
Household Operation, Furnitures and Equipment	2,918	5,626	3,039	2,036	2,059	2,838	4,353	2,249
Apparel and Footwear	388	537	410	320	287	520	522	325
Personal Care	418	756	450	308	299	409	620	323
Medical and Health Care	284	484	256	271	186	340	401	229
Transport and Communication	3,131	5,321	3,233	2,342	2,172	3,823	4,516	2,486
Education	302	750	266	228	165	254	539	191
Recreation Reading and Religious Activity	300	583	356	246	173	265	482	216
Special Ceremony Expenses	210	63	204	233	282	193	120	252
Non-Consumption Expenditures	1,765	2,987	1,895	1,367	1,218	2,006	2,638	1,358
Total Number of Indebted Households	11,506,100	1,278,900	2,090,600	2,351,400	4,397,200	1,388,000	2,950,600	8,555,500
Average Debt per Household (Baht)	116,681	151,168	112,342	110,702	105,006	118,525	161,468	95,819

Appendix 1.3.2 Changes of Household Income by Region, 1981-2007

Average Household Income

Year	Whole Kingdom	Bangkok and Vicinity	Central	North	Northeast	Southern	Municipal Areas ①	Non - Municipal Areas ②	②/①
1981	3,378	5,972	3,665	2,886	2,512	3,256			
1986	3,631	6,949	4,006	3,106	2,555	3,657			
1988	4,106	7,877	4,220	3,400	3,067	3,959			
1990	5,625	11,724	5,827	4,719	3,529	5,153			
1992	7,062	15,951	6,906	5,255	4,525	6,383			
1994	8,262	16,418	8,724	6,260	5,599	8,014			
1996	10,799	21,947	10,907	8,331	7,388	9,846			
1998	12,492	24,929	12,643	9,779	8,546	11,461			
2000	12,150	25,242	13,012	8,652	7,765	11,186	14,572	8,455	0.58
2001	12,185	24,365	12,807	8,930	8,281	10,914	14,787	8,531	0.58
2002	13,736	28,239	14,128	9,530	9,279	12,487	15,972	9,569	0.60
2004	14,963	28,135	16,355	10,885	10,139	14,469			
2006	17,787	33,088	19,279	13,146	11,815	18,668	26,948	13,552	0.50
2007	18,296	34,514	18,647	13,219	12,622	19,394	27,593	13,966	0.51

Source : Data from NSO

Appendix 1.3.3 Gini Coefficient of Thailand and Other Asian Countries

Country	Gini Coefficient
Japan	0.249
Singapore	0.425
Malaysia	0.379
Thailand	0.425
China	0.415
Sri Lanka	0.411
Philippines	0.44
Indonesia	0.394
Viet Nam	0.378
Lao People's Democratic Republic	0.326
India	0.368
Cambodia	0.407
Pakistan	0.312
Nepal	0.473
Bangladesh	0.31

Sources : World Bank (2009). "World Development Indicators".

Appendix 1.3.4 Income Distribution by Quintile, 1990-2007

Income Distribution

	1990	1992	1994	1996	1998	2000	2002	2004	2006	2007
1st quintile	5.9	5.4	5.6	5.7	5.9	5.5	5.7	6.1	5.1	5.7
2nd quintile	9.3	8.9	9.1	9.2	9.6	8.8	9.3	9.8	9.2	9.6
3rd quintile	13.2	13.1	13.6	13.5	13.7	13.2	13.7	14.2	13.9	14.2
4th quintile	21.2	20.7	21.3	21.5	21	21.5	21.2	21.1	20.9	21.3
5th quintile	50.4	51.9	50.4	50.1	49.8	51	50.1	48.8	50.9	49.2
Gini Coefficient	0.443	0.45	0.438	0.431	0.409	0.428	0.418	0.425	0.418	0.397

Source : Data from NSO

Appendix 1.3.5 Trend of Reduction of Poverty

Number of the poor by region and area, year 1988-2007

(thousand person)

Region	Area	1988	1990	1992	1994	1996	1998	2000	2002	2004	2006	2007
Bangkok バンコク及び近郊	Municipal	656.0	700.2	261.3	247.4	73.5	75.8	106.9	144.5	51.3	28.7	64.4
	Total	656.0	700.2	261.3	247.4	73.5	75.8	106.9	144.5	51.3	28.7	64.4
Central 中部	Municipal	1,044.8	845.7	427.4	374.0	234.1	213.4	334.3	242.7	165.0	97.5	119.1
	Non-Municipal	2,935.8	2,308.4	1,842.4	1,045.3	565.8	832.3	912.4	847.7	501.2	427.6	377.1
	Total	3,980.6	3,154.1	2,269.8	1,419.3	799.9	1,045.7	1,246.7	1,090.4	666.2	525.1	496.2
North 北部	Municipal	811.0	608.7	421.6	423.3	299.8	317.8	366.0	317.6	225.9	147.3	133.8
	Non-Municipal	4,105.3	3,115.7	3,082.4	1,823.7	1,651.7	1,507.1	2,224.1	1,972.4	1,616.2	1,262.9	1,384.3
	Total	4,916.3	3,724.4	3,504.0	2,247.0	1,951.5	1,824.9	2,590.1	2,290.0	1,842.1	1,410.2	1,518.1
Northeast 東北部	Municipal	825.9	866.7	712.7	465.3	465.3	557.6	683.5	464.2	428.7	319.4	216.2
	Non-Municipal	9,547.2	7,908.1	7,243.7	5,047.9	4,423.6	5,652.6	6,598.2	4,362.8	3,525.0	3,301.1	2,614.1
	Total	10,373.1	8,774.8	7,956.4	5,513.2	4,888.9	6,210.2	7,281.7	4,827.0	3,953.7	3,620.5	2,830.3
South 南部	Municipal	235.1	263.0	174.6	165.9	117.0	115.8	104.2	88.3	62.0	85.0	102.5
	Non-Municipal	1,958.6	1,759.5	1,628.9	1,145.4	661.6	970.5	1,225.9	695.2	443.4	387.2	410.3
	Total	2,193.7	2,022.5	1,803.5	1,311.3	778.6	1,086.3	1,330.1	783.5	505.4	472.2	512.8
Whole Kingdom 全国	Municipal	3,572.9	3,284.3	1,997.6	1,675.9	1,189.7	1,280.4	1,594.9	1,257.3	932.8	677.9	635.9
	Non-Municipal	18,547.0	15,091.6	13,797.4	9,062.3	7,302.7	8,962.6	10,960.5	7,878.1	6,085.8	5,378.7	4,785.8
	Total	22,119.9	18,375.9	15,795.0	10,738.2	8,492.4	10,243.0	12,555.4	9,135.4	7,018.6	6,056.6	5,421.7

Source : Data from SES, NSO
Compiled by NESDB

Appendix 1.3.6 Trend of Poverty Incidence

Poverty Incidence by region and area, year 1988-2007

(head-count %)

Region	Area	1988	1990	1992	1994	1996	1998	2000	2002	2004	2006	2007
Bangkok バンコク及び近郊	Municipal	11.67	11.90	4.39	4.11	1.21	1.23	1.71	2.24	0.78	0.51	1.14
	Total	11.67	11.90	4.39	4.11	1.21	1.23	1.71	2.24	0.78	0.51	1.14
Central 中部	Municipal	29.89	22.34	10.80	9.04	5.42	4.72	7.04	5.01	3.26	1.94	2.32
	Non-Municipal	36.50	27.84	21.84	12.17	6.48	9.36	10.07	8.97	5.10	3.94	3.43
	Total	34.49	26.12	18.31	11.15	6.13	7.80	9.03	7.63	4.47	3.31	3.08
North 北部	Municipal	39.19	27.82	19.12	19.06	13.41	14.10	16.11	13.54	9.28	6.50	5.90
	Non-Municipal	50.12	37.11	36.25	21.18	18.96	17.08	24.87	22.06	17.36	13.31	14.61
	Total	47.92	35.19	32.73	20.75	17.83	16.47	23.10	20.29	15.68	12.00	12.93
Northeast 東北部	Municipal	32.40	31.14	24.59	15.42	14.95	17.16	20.07	11.93	10.84	8.61	5.75
	Non-Municipal	60.60	48.65	44.06	30.36	26.32	33.25	38.36	25.60	20.35	18.46	14.58
	Total	56.67	46.09	41.14	28.07	24.54	30.67	35.34	23.06	18.58	16.77	13.05
South 南部	Municipal	17.62	18.64	11.76	10.61	7.12	6.69	5.72	4.39	3.01	3.94	4.69
	Non-Municipal	36.68	31.67	28.71	19.77	11.19	16.07	19.86	11.24	7.02	6.00	6.28
	Total	32.87	29.03	25.19	17.82	10.31	13.98	16.64	9.56	6.03	5.49	5.88
Whole Kingdom 全国	Municipal	23.70	20.46	12.11	9.88	6.84	7.14	8.63	6.43	4.64	3.62	3.35
	Non-Municipal	46.69	39.20	35.33	22.87	18.19	21.99	26.49	18.93	14.22	12.04	10.65
	Total	42.21	33.69	28.43	18.98	14.75	17.46	20.98	14.93	11.16	9.55	8.48

Source : Data from SES, NSO
Compiled by NESDB

Appendix 1.3.7 Rural and Urban Poverty, 1988-2007

Rural and Urban Poverty

(Million person)

	1988	1990	1992	1994	1996	1998	2000	2002	2004	2006	2007
Number of Poor in Urban	3.57	3.28	2	1.68	1.19	1.28	1.6	1.26	0.93	0.68	0.64
Number of Poor in Rural	18.55	15.09	13.8	9.06	7.3	8.96	10.96	7.88	6.09	5.38	4.79
Poverty Ratio in Urban	23.70%	20.46%	12.11%	9.88%	6.84%	7.14%	8.63%	6.43%	4.64%	3.62%	3.35%
Poverty Ratio in Rural	46.69%	39.20%	35.33%	22.87%	18.19%	21.99%	26.49%	18.93%	14.22%	12.04%	10.65%
Poverty Ratio Total	42.21%	33.69%	28.43%	18.98%	14.75%	17.46%	20.98%	14.93%	11.16%	9.55%	8.48%

Thailand

Current Poverty Line by region and area, year 1988-2007 (Baht/person/month)

Region	Area	1988	1990	1992	1994	1996	1998	2000	2002	2004	2006	2007
Bangkok	Municipal	980	1,105	1,227	1,346	1,502	1,696	1,736	1,801	1,853	2,020	2,065
	Total	980	1,105	1,227	1,346	1,502	1,696	1,736	1,801	1,853	2,020	2,065
Central	Municipal	813	886	990	1,044	1,173	1,365	1,389	1,457	1,525	1,678	1,716
	Non-Municipal	645	703	791	822	934	1,132	1,142	1,184	1,243	1,383	1,421
	Total	696	760	854	894	1,013	1,211	1,227	1,277	1,339	1,476	1,515
North	Municipal	708	762	860	913	1,023	1,178	1,199	1,252	1,294	1,425	1,469
	Non-Municipal	578	623	705	729	835	984	974	1,032	1,089	1,227	1,292
	Total	604	652	737	767	874	1,023	1,019	1,078	1,131	1,266	1,326
Northeast	Municipal	644	692	787	836	952	1,128	1,131	1,181	1,229	1,365	1,418
	Non-Municipal	500	538	645	684	784	973	966	1,009	1,043	1,215	1,295
	Total	520	560	667	707	811	998	993	1,040	1,078	1,240	1,316
South	Municipal	684	748	837	903	1,029	1,197	1,201	1,265	1,313	1,448	1,491
	Non-Municipal	560	618	694	745	860	986	985	1,041	1,116	1,304	1,347
	Total	584	644	724	778	897	1,033	1,034	1,096	1,164	1,340	1,383
Whole Kingdom	Municipal	821	903	1,009	1,084	1,216	1,397	1,417	1,471	1,525	1,661	1,705
	Non-Municipal	557	604	697	733	839	1,012	1,009	1,058	1,110	1,271	1,333
	Total	633	692	790	838	953	1,130	1,135	1,190	1,242	1,386	1,443

Source : Data from SES, NSO
Compiled by NESDB

Appendix 1.3.8 Human Achievement Index

Human Achievement Index, 2007 (excerpt from Thailand Human Development Report 2009)

	Health	Education	Employment	Income	Housing and Living Environment	Family and Community Life	Transportation and Communication	Participation
Thailand	0.6854	0.438	0.6485	0.5112	0.743	0.7522	0.5304	0.6
Bangkok and Vicinity	0.7892	0.6239	0.8144	0.7443	0.7557	0.7286	0.7171	0.3842
Central	0.6976	0.4566	0.6633	0.5993	0.79	0.7237	0.5724	0.5749
North	0.6989	0.4104	0.6155	0.4789	0.7373	0.7422	0.6228	0.605
Northeast	0.6371	0.3841	0.6446	0.5657	0.6651	0.7991	0.4773	0.6146
South	0.7339	0.4369	0.6167	0.5657	0.8547	0.7075	0.5348	0.6147

Table 1: HAI structure, goal posts, and data

HAI Index	Component	Indicator	Min value	Max value	Data source/Data year
1. Health	1. Quality of life	1. Underweight births (%)	6	30	Bureau of Health Policy and Strategy, Ministry of Public Health, 2007
		2. Population with physical illness (%)	3	45	Health and Welfare Survey, National Statistical Office, 2007
		3. Population with disability and/or impairment (%)	0	9	Disability Survey, NSO, 2007
		4. Population with mental illness (per 1,000)	2	155	Department of Mental Health, 2007
	2. Health promotion	5. Unhealthy behaviour (%)	14	67	Smoking and Alcohol Consumption Survey, NSO, 2007
		6. Population that exercise (%)	9	68	Survey of Exercise Behaviour, NSO, 2007
	3. Health infrastructure	7. Population per physician (persons)	572	11,922	Bureau of Health Policy and Strategy, MoPH, 2007
2. Education	4. Stock of education	8. Mean years of schooling for people aged 15+ (years)	3	13	NSO, 2007
	5. Flow of education	9. Gross upper-secondary enrolment (%)	31	134	Ministry of Education, 2007
	6. Quality of education	10. Average score of upper-secondary students (%)	26	59	O-Net Test Scores, National Institute of Educational Testing Service (public organization), 2007
	7. Educational infrastructure	11. Upper-secondary students per classroom (students)	23	54	Ministry of Education, 2007
3. Employment	8. Employment	12. Unemployment (%)	0	5	Labour Force Survey, NSO, 2007
		13. Underemployment (%)	0	24	Labour Force Survey, NSO, 2007
	9. Labour protection	14. Employees covered by social security (%)	1	100	Social Security Fund, 2007
		15. Occupational injuries (per 1,000 workers)	2	65	Social Security Fund, 2007
4. Income	10. Income level	16. Household monthly income (baht)	5,434	48,775	Household Socio-economic Survey, NSO, 2007
	11. Poverty	17. Poverty incidence (%)	0	81	NESDB, 2007
	12. Debt	18. Households with debts (%)	11	100	Household Socio-economic Survey, NSO, 2007
	13. Disparity	19. GINI	27	74	Poverty Map, NSO, 2007
5. Housing and Living Environment	14. Housing security	20. Households living in own house and on own land (%)	16	100	Household Socio-economic Survey, NSO, 2007
	15. Basic appliances	21. Households with a refrigerator (%)	31	100	Household Socio-economic Survey, NSO, 2007
		22. Households cooking with gas or electric stove (%)	13	100	Household Socio-economic Survey, NSO, 2007
	16. Living environment	23. Population affected by drought (%)	0	51	Department of Disaster Prevention and Mitigation, 2007
		24. Population affected by flood (%)	0	87	Department of Disaster Prevention and Mitigation, 2007

Table 1: HAI structure, goal posts, and data (continued)

HAI Index	Component	Indicator	Min value	Max value	Data source/Data year
6. Family and Community Life	17. Family life	25. Children in distress (per 1,000)	0	385	NRC 2C, Community Development Department, 2007
		26. Working children aged 15-17 (%)	1	54	Labour Force Survey, NSO, 2007.
		27. Single-headed households (%)	8	33	Labour Force Survey, NSO, 2007
		28. Elderly living alone (%)	2	20	Survey of Older Persons, NSO, 2007
	18. Safety	29. Violent crimes reported (per 100,000)	1	79	Royal Thai Police, 2007
		30. Drug-related arrests (per 100,000)	32	1,215	Royal Thai Police, 2007
7. Transport and Communication	19. Transport	31. Villages with all-seasoned main roads (%)	25	100	NRC 2C, Community Development Department, 2007
		32. Vehicle registration (per 1,000)	57	1,217	Department of Land Transport, 2007
		33. Land traffic accidents (per 100,000)	5	1,020	Department of Disaster Prevention and Mitigation, citing Royal Thai Police, 2007
	20. Communication	34. Households with access to TV (%)	44	100	Household Socio-economic Survey, NSO, 2007
		35. Population with mobile phone (%)	9	90	Household ICT Survey, NSO, 2007
		36. Population with internet access (%)	5	37	Household ICT Survey, NSO, 2007
8. Participation	21. Political participation	37. Voter turnout (%)	50	100	National Election Committee, 2007
	22. Civil society participation	38. Community groups (per 100,000)	3	381	Community Organisations Development Institute, 2007
		39. Households participating in local groups (%)	62	100	Basic Minimum Needs, Community Development Department, 2007
		40. Households participating in community activities (%)	64	100	Basic Minimum Needs, Community Development Department, 2007

Table 2: HAI provincial ranking 2007 and 2009

Top ten provinces		Bottom ten provinces	
HAI 2007 (2005 data)	HAI 2009 (2007 data)	HAI 2007 (2005 data)	HAI 2009 (2007 data)
1 Phuket	1 Phuket	67 Nong Bua Lam Phu	67 Kamphaeng Phet
2 Bangkok Metropolis	2 Bangkok Metropolis	68 Phetchabun	68 Nakhon Phanom
3 Pathum Thani	3 Pathum Thani	69 Nakhon Phanom	69 Pattani
4 Phra Nakhon Si Ayutthaya	4 Songkhla	70 Chaiyaphum	70 Buri Ram
5 Nonthaburi	5 Samut Songkhram	71 Narathiwat	71 Surin
6 Songkhla	6 Nakhon Pathom	72 Si Sa Ket	72 Phetchabun
7 Sing Buri	7 Phang-nga	73 Kamphaeng Phet	73 Si Sa Ket
8 Nakhon Pathom	8 Rayong	74 Surin	74 Tak
9 Rayong	9 Phra Nakhon Si Ayutthaya	75 Tak	75 Sa Kaeo
10 Samut Prakan	10 Nonthaburi	76 Mae Hong Son	76 Mae Hong Son

Source: Thailand Human Development Report 2009 (2010, UNDP Thailand)

Appendix 2 Agriculture Statistics

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Appendix 2.1.1 Increase of Per Capita GPP and Composition of GPP in each Provincial

GROSS PROVINCIAL PRODUCT AT CONSTANT 1988 PRICES

	(Millions of Baht)						(Baht)		
	Tertiary sector of industry		Secondary sector of industry		Primary sector of industry		GPP Per capita		
	2001	2008	2001	2008	2001	2008	2001	2008	Increase
KHON KAEN	5,810.6	7,222.4	16,608.4	40,428.1	19,549.0	27,314.3	23,509	39,969	70%
UDON THANI	4,313.2	4,868.6	3,977.2	6,751.2	14,448.9	20,180.5	14,993	19,747	32%
LOEI	3,197.0	3,221.5	972.2	1,704.9	5,622.2	7,799.8	15,613	19,408	24%
NONG KHAI	2,327.7	3,174.6	1,446.2	2,612.4	6,942.3	9,218.6	11,741	15,570	33%
MUKDAHAN	1,035.4	1,254.3	802.6	1,204.9	2,809.8	3,483.1	14,303	17,493	22%
NAKHON PHANOM	2,383.9	2,211.4	1,179.5	1,189.5	5,071.3	6,435.8	12,187	13,248	9%
SAKON NAKHON	2,839.0	3,443.4	1,572.3	2,124.5	8,476.7	11,895.9	11,986	15,304	28%
KALASIN	3,052.2	4,340.1	2,045.1	2,863.3	7,111.3	10,211.2	12,837	17,409	36%
NAKHON RATCHASIMA	10,088.1	13,509.1	15,725.9	20,587.2	26,914.3	35,510.6	20,003	24,948	25%
CHAIYAPHUM	6,388.7	5,201.2	2,207.7	3,717.6	8,597.2	11,245.6	15,233	16,963	11%
YASOTHON	1,680.9	1,910.0	765.8	1,260.5	4,496.8	5,823.5	11,923	14,693	23%
UBON RATCHATHANI	5,264.4	5,672.9	3,277.9	5,221.0	15,977.8	21,182.2	14,038	17,347	24%
ROI ET	4,390.3	4,242.0	2,199.1	3,341.8	10,399.2	14,574.9	13,104	16,408	25%
BURI RAM	4,883.0	5,731.6	2,599.0	4,623.7	10,902.5	14,260.8	11,910	15,077	27%
SURIN	4,060.1	4,771.7	2,069.5	3,029.7	10,094.9	13,458.7	11,841	14,862	26%
MAHA SARAKHAM	3,542.0	3,500.8	1,734.3	2,484.1	7,399.4	10,077.4	13,013	15,726	21%
SI SA KET	4,382.8	5,152.7	1,460.0	2,032.3	10,285.4	13,699.9	11,103	13,710	23%
NONG BUA LAM PHU	1,687.9	1,823.8	662.8	1,318.3	2,632.7	3,753.6	9,949	13,025	31%
AM NAT CHAREON	1,385.5	1,390.4	464.0	577.0	2,376.7	3,345.1	11,316	13,456	19%

Source: NESDB

Appendix 2.1.2 Increase of Agricultural Production and Impact on Provincial Average Income

GROSS PROVINCIAL PRODUCT AT CURRENT MARKET PRICES

Year		ROI ET	BURI RAM	SURIN	MAHA SARAKHAM	SI SA KET	NONG BUA LAM PHU	AM NAT CHAREON	
2001	1	Agriculture, Hunting and Forestry	4,186	5,663	4,688	3,379	5,017	1,716	1,346
	2	Fishing	56	69	84	122	136	108	45
	3	Mining and Quarrying	74	195	214	40	81	64	9
	4	Manufacturing	2,150	3,011	1,710	1,389	877	871	184
	5	Electricity, Gas and Water Supply	509	603	528	428	418	167	119
	6	Construction	609	814	578	628	657	216	266
	7	Wholesale and Retail Trade	5,772	5,636	5,328	3,680	5,713	975	1,046
	8	Hotels and Restaurants	96	89	179	79	266	12	5
	9	Transport, Storage and Communications	1,814	1,838	1,768	1,488	1,743	708	487
	10	Financial Intermediation	1,067	1,027	885	801	831	317	261
	11	Real Estate, Renting and Business Activities	1,406	1,613	1,395	1,060	1,419	529	402
	12	Public Administration and Defence; Compulsory Social Security	1,332	1,054	1,118	732	944	309	304
	13	Education	2,301	2,316	2,054	1,750	2,165	705	576
	14	Health and Social Work	599	566	613	359	505	129	170
	15	Other Community, Social and Personal Services Activities	168	96	103	115	89	64	88
	16	Private Households with Employed Persons	21	27	16	15	25	7	6
		17	Gross Provincial Product (GPP)	22,159	24,616	21,260	16,062	20,885	6,896
2008	1	Agriculture, Hunting and Forestry	4,302	4,761	3,940	3,466	4,209	1,663	1,357
	2	Fishing	88	122	120	76	174	25	29
	3	Mining and Quarrying	57	104	141	26	65	51	3
	4	Manufacturing	1,474	1,481	1,223	1,005	720	350	207
	5	Electricity, Gas and Water Supply	369	417	360	276	295	108	83
	6	Construction	299	597	346	428	379	154	171
	7	Wholesale and Retail Trade	4,097	4,871	4,323	2,692	4,793	727	828
	8	Hotels and Restaurants	52	45	134	48	123	2	5
	9	Transport, Storage and Communications	1,395	1,217	1,151	1,102	1,069	446	275
	10	Financial Intermediation	568	530	424	448	485	160	98
	11	Real Estate, Renting and Business Activities	1,130	1,278	1,127	824	1,140	412	306
	12	Public Administration and Defence; Compulsory Social Security	976	762	840	607	704	230	250
	13	Education	1,553	1,588	1,469	1,267	1,476	483	400
	14	Health and Social Work	494	507	529	302	388	116	118
	15	Other Community, Social and Personal Services Activities	119	85	85	95	83	52	91
	16	Private Households with Employed Persons	16	20	13	15	26	5	6
		17	Gross Provincial Product (GPP)	16,989	18,385	16,225	12,676	16,128	4,983
2008/2001	1~2	Tertiary sector of industry	97%	117%	118%	99%	118%	108%	100%
	3~6	Secondary sector of industry	152%	178%	146%	143%	139%	199%	124%
	7~17	Primary sector of industry	140%	131%	133%	136%	133%	143%	141%
		Total	130%	134%	131%	127%	129%	138%	126%

Source: NESDB

GROSS PROVINCIAL PRODUCT AT CURRENT MARKET PRICES

Year		ROI ET	BURI RAM	SURIN	MAHA SARAKHAM	SI SA KET	NONG BUJA LAM PHU	AM NAT CHAREON	
2001	1	Agriculture, Hunting and Forestry	4,186	5,663	4,688	3,379	5,017	1,716	1,346
	2	Fishing	56	69	84	122	136	108	45
	3	Mining and Quarrying	74	195	214	40	81	64	9
	4	Manufacturing	2,150	3,011	1,710	1,389	877	871	184
	5	Electricity, Gas and Water Supply	509	603	528	428	418	167	119
	6	Construction	609	814	578	628	657	216	266
	7	Wholesale and Retail Trade	5,772	5,636	5,328	3,680	5,713	975	1,046
	8	Hotels and Restaurants	96	89	179	79	266	12	5
	9	Transport, Storage and Communications	1,814	1,838	1,768	1,488	1,743	708	487
	10	Financial Intermediation	1,067	1,027	885	801	831	317	261
	11	Real Estate, Renting and Business Activities	1,406	1,613	1,395	1,060	1,419	529	402
	12	Public Administration and Defence; Compulsory Social Security	1,332	1,054	1,118	732	944	309	304
	13	Education	2,301	2,316	2,054	1,750	2,165	705	576
	14	Health and Social Work	599	566	613	359	505	129	170
	15	Other Community, Social and Personal Services Activities	168	96	103	115	89	64	88
	16	Private Households with Employed Persons	21	27	16	15	25	7	6
		17	Gross Provincial Product (GPP)	22,159	24,616	21,260	16,062	20,885	6,896
2008	1	Agriculture, Hunting and Forestry	4,302	4,761	3,940	3,466	4,209	1,663	1,357
	2	Fishing	88	122	120	76	174	25	29
	3	Mining and Quarrying	57	104	141	26	65	51	3
	4	Manufacturing	1,474	1,481	1,223	1,005	720	350	207
	5	Electricity, Gas and Water Supply	369	417	360	276	295	108	83
	6	Construction	299	597	346	428	379	154	171
	7	Wholesale and Retail Trade	4,097	4,871	4,323	2,692	4,793	727	828
	8	Hotels and Restaurants	52	45	134	48	123	2	5
	9	Transport, Storage and Communications	1,395	1,217	1,151	1,102	1,069	446	275
	10	Financial Intermediation	568	530	424	448	485	160	98
	11	Real Estate, Renting and Business Activities	1,130	1,278	1,127	824	1,140	412	306
	12	Public Administration and Defence; Compulsory Social Security	976	762	840	607	704	230	250
	13	Education	1,553	1,588	1,469	1,267	1,476	483	400
	14	Health and Social Work	494	507	529	302	388	116	118
	15	Other Community, Social and Personal Services Activities	119	85	85	95	83	52	91
	16	Private Households with Employed Persons	16	20	13	15	26	5	6
		17	Gross Provincial Product (GPP)	16,989	18,385	16,225	12,676	16,128	4,983
2008/2001	1~2	Tertiary sector of industry	97%	117%	118%	99%	118%	108%	100%
	3~6	Secondary sector of industry	152%	178%	146%	143%	139%	199%	124%
	7~17	Primary sector of industry	140%	131%	133%	136%	133%	143%	141%
		Total	130%	134%	131%	127%	129%	138%	126%

Source: NESDB

Appendix 2.2.1 Number of Farm Household

Number of Holders

–Northeastern Region–

Item	Number			Percent			Percentage of change	
	1993	1998	2003	1993	1998	2003	1998/93	2003/93
Total number of holders	2,504,676	2,589,319	2,650,797	100.0%	100.0%	100.0%	3.4%	2.4%
By source of household income								
Agriculture only	1,143,145	896,660	484,828	45.6%	34.6%	18.3%	-21.6%	-45.9%
Mainly from agriculture	774,226	924,941	1,117,308	30.9%	35.7%	42.1%	19.5%	20.8%
Mainly from being agricultural worker	49,261	80,952	86,823	2.0%	3.1%	3.3%	64.3%	7.3%
Equally from agriculture and other sources	178,296	125,547	409,056	7.1%	4.8%	15.4%	-29.6%	225.8%
Mainly from other sources	359,593	561,221	552,779	14.4%	21.7%	20.9%	56.1%	-1.5%
By age group								
Under 25 years	38,294	22,730	19,827	1.5%	0.9%	0.7%	-40.6%	-12.8%
25 - 34 years	411,630	350,998	331,335	16.4%	13.6%	12.5%	-14.7%	-5.6%
35 - 44 years	727,418	691,632	723,288	29.0%	26.7%	27.3%	-4.9%	4.6%
45 - 54 years	642,657	753,745	753,512	25.7%	29.1%	28.4%	17.3%	0.0%
55 - 64 years	447,157	513,342	508,254	17.9%	19.8%	19.2%	14.8%	-1.0%
65 years and over	237,520	256,872	314,581	9.5%	9.9%	11.9%	8.1%	22.5%

Data Source : 2003 AGRICULTURAL CENSUS

Appendix 2.2.2 Source of Average Household Income in Rural Northeast

Source of Income of Rural Household

(%)

	1981	1986	1990	1994	1998	2002	2004	2006	2007
Farm Income	30.3	27.1	25.1	16.4	18.8	17.9	19.0	16.6	15.5
Non-Farm Income	21.3	27.1	30.1	39.4	40.2	40.9	42.2	42.1	40.9
Remittance	3.8	3.3	7.9	14.3	12.3	16.4	15.8	18.0	18.1
Other non-money income	44.6	42.5	36.9	29.9	28.7	24.8	23.0	23.3	25.5

Source : Data from NSO

Monthly Household Income by Province, 1994-2006

(Baht)

Province	1994	1996	1998	2000	2002	2004	2006
Kalasin	4,374	6,079	6,908	6,469	8,736	8,908	12,445
Khon Kaen	6,371	9,438	11,521	9,757	11,554	13,088	11,349
Chaiyaphum	4,842	7,166	6,220	7,683	8,364	9,161	11,551
Nakhon Phanom	4,856	6,196	7,909	5,343	7,613	8,168	9,277
Nakhon Ratchasima	8,166	8,803	9,418	8,415	9,494	11,398	13,320
Buri Ram	4,392	6,446	8,365	8,137	7,861	8,632	9,698
Maha Sarakham	4,494	5,171	8,444	8,746	9,642	10,178	13,646
Mukdahan	4,328	7,455	9,890	9,485	9,236	9,284	13,497
Yasothon	4,660	6,581	7,478	4,826	6,045	9,410	9,969
Roi Et	3,675	6,746	5,987	7,207	9,442	9,817	10,849
Loei	4,393	6,875	9,905	7,387	9,289	10,013	12,083
Si Sa Ket	5,179	7,149	7,669	7,593	7,564	8,745	9,406
Sakon Nakhon	5,541	7,746	7,660	7,751	10,227	8,971	11,295
Surin	4,928	6,517	6,398	6,226	6,675	8,095	11,850
Nong Khai	5,926	8,174	11,616	7,547	9,038	10,075	12,281
Nong Bua Lam Phu	5,430	7,147	8,386	5,532	7,326	8,318	11,030
Amnat Charoen	4,856	7,027	8,139	7,711	9,885	11,423	13,134
Udon Thani	6,693	7,766	7,744	6,841	12,258	10,789	14,097
Ubon Ratchathani	6,118	6,950	10,267	9,874	9,307	11,697	12,035

Monthly Household Expenditures by Province, 1994- 2006

(baht)

Province	1994	1996	1998	2000	2002	2004	2006
Kalasin	5,609	6,648	7,033	6,713	8,805	7,011	10,232
Khon Kaen	5,991	7,442	9,251	7,322	8,215	10,642	9,335
Chaiyaphum	5,176	4,902	4,895	5,940	7,269	7,579	8,842
Nakhon Phanom	4,855	5,535	6,982	5,486	7,090	8,704	10,256
Nakhon Ratchasima	7,862	7,402	6,910	6,524	7,405	9,141	10,154
Buri Ram	4,507	6,452	6,687	6,784	6,677	7,585	8,632
Maha Sarakham	4,665	5,098	7,151	7,803	7,977	8,061	10,579
Mukdahan	5,234	6,905	9,119	8,309	8,615	8,792	12,211
Yasothon	5,165	5,998	7,152	5,916	5,744	8,927	8,914
Roi Et	3,980	6,690	5,432	6,462	8,146	9,282	10,053
Loei	5,101	6,608	9,026	6,560	7,487	8,500	12,187
Si Sa Ket	5,574	7,094	7,631	6,174	6,385	7,085	9,316
Sakon Nakhon	6,071	6,143	6,721	6,019	8,998	8,004	11,006
Surin	5,270	6,961	6,540	5,888	6,027	7,020	12,028
Nong Khai	5,926	8,174	11,616	7,547	9,038	10,075	12,281
Nong Bua Lam Phu	5,913	6,513	7,452	5,272	6,062	7,594	11,250
Amnat Charoen	5,314	6,477	7,296	6,363	7,859	9,865	10,361
Udon Thani	5,550	7,502	5,492	5,169	8,053	8,365	11,750
Ubon Ratchathani	5,300	5,750	8,037	7,747	7,335	8,619	9,255

Top and Bottom 5 province in Northeast: Results of Household Socio-Economic Survey

	2000		2004		2007	
Top 1	Ubon Ratchathani	9,874	Khon Kaen	12,734	Udon Thani	17,273
Top 2	Khon Kaen	9,757	Ubon Ratchathani	11,333	Maha Sarakham	15,812
Top 3	Mukdahan	9,485	Nakhon Ratchasima	11,237	Khon Kaen	15,065
Top 4	Maha Sarakham	8,746	Nong Khai	11,218	Ubon Ratchathani	14,534
Top 5	Nakhon Ratchasima	8,415	Amnat Charoen	11,123	Nakhon Ratchasima	14,177
	Northeast Average	7,765	Northeast Average	9,933	Northeast Average	12,995
Bottom 5	Kalasin	6,469	Buri Ram	8,436	Chaiyaphum	11,253
Bottom 4	Surin	6,226	Si Sa Ket	8,365	Si Sa Ket	10,782
Bottom 3	Nong Bua Lam Phu	5,532	Nong Bua Lam Phu	8,198	Buri Ram	10,263
Bottom 2	Nakhon Phanom	5,343	Nakhon Phanom	8,080	Yasothon	10,039
Bottom 1	Yasothon	4,826	Surin	7,777	Nakhon Phanom	10,009

Source: Household Socio-Economic Survey (NSO)

PER CAPITA INCOME OF POPULATION BY PROVINCE, NORTHEASTERN REGION: 2004 - 2008

Baht

Province	2004	2005	2006	2007 ^p	2008 ^p
Northeastern Region	30,897	32,162	36,062	40,144	42,292
Nakhon Ratchasima	43,629	44,295	49,744	54,362	58,481
Buri Ram	24,888	25,828	28,546	31,444	32,850
Surin	24,387	25,296	27,860	31,759	32,703
Si Sa Ket	22,491	24,057	26,346	29,174	29,793
Ubon Ratchathani	29,660	30,860	33,707	36,681	37,508
Yasothon	25,411	25,808	28,682	32,038	33,365
Chaiyaphum	26,669	27,541	31,750	35,578	38,344
Amnat Charoen	22,670	23,946	26,648	30,970	31,800
Nong Bua Lam Phu	21,767	22,460	25,344	29,224	30,936
Khon Kaen	50,019	52,648	63,120	68,103	72,172
Udon Thani	32,569	33,065	37,551	44,476	46,671
Loei	34,346	42,359	40,896	48,721	54,901
Nong Khai	27,605	28,261	31,720	33,941	35,870
Maha Sarakham	25,735	26,603	29,396	33,426	34,206
Roi Et	27,456	28,486	31,902	35,654	36,702
Kalasin	28,472	29,640	33,927	38,560	40,769
Sakon Nakhon	26,165	27,983	30,221	33,784	35,363
Nakhon Phanom	25,358	24,913	27,552	30,305	32,194
Mukdahan	29,503	30,374	34,354	38,404	41,450

P : Preliminary

Source : Office of the National Economic and Social Development Board

Montuly Income by Province (2000/2007)

	baht	
	2000	2007
KHON KAEN	9,757	15,065
UDON THANI	6,841	17,273
LOEI	7,387	13,765
NONG KHAI	9,757	12,885
MUKDAHAN	9,485	13,406
NAKHON PHANOM	5,343	10,009
SAKON NAKHON	7,751	11,957
KALASIN	6,469	12,507
NAKHON RATCHASIMA	8,415	14,177
CHAIYAPHUM	7,683	11,253
YASOTHON	4,826	10,039
UBON RATCHATHANI	9,874	14,534
ROI ET	7,207	11,778
BURI RAM	8,137	10,263
SURIN	6,226	12,257
MAHA SARA KHAM	8,746	15,812
SI SA KET	7,593	10,782
NONG BUA LAM PHU	5,532	12,824
AM NAT CHAREON	7,711	11,889

← (Figure 2.1.2)

Source: Household Socio-Economic Survey (NSO)

Appendix 2.2.3 Average Land Holding Size in Thailand and Northeast Region

Number of Farm Household by Size of Land Holding in the Northeast

Average Landholding Size per Household

Province		Number	Area(rai)	rai/hh
Loei	Upper NE1	91,473	2,097,315	23
Udon Thani	Upper NE1	159,433	3,617,504	23
Nong Khai	Upper NE1	100,113	2,238,669	22
Sakon Nakhon	Upper NE2	142,944	2,496,475	17
Nakhon Phanom	Upper NE2	95,296	1,493,466	16
Mukdahan	Upper NE2	47,007	795,774	17
Chaiyaphum	Lowerl NE1	146,834	2,888,536	20
Nong Bua Lam Phu	Upper NE1	59,878	1,291,784	22
Khon Kaen	Central NE	200,733	3,454,425	17
Maha Sarakham	Central NE	137,618	2,296,251	17
Kalasin	Central NE	141,457	2,060,311	15
Roi Et	Central NE	189,370	3,203,670	17
Yasothon	Lowerl NE2	79,401	1,458,441	18
Nakhon Ratchasima	Lowerl NE1	253,111	6,364,929	25
Buri Ram	Lowerl NE1	174,954	3,398,940	19
Surin	Lowerl NE1	180,444	3,323,151	18
Si Sa Ket	Lowerl NE2	193,962	3,206,418	17
Am nat Chareon	Lowerl NE2	54,775	1,062,895	19
Ubon Ratchathani	Lowerl NE2	204,588	4,397,353	21
Total	Central NE	669,178	11,014,657	16
	Lowerl NE1	755,343	15,975,556	21
	Lowerl NE2	532,726	10,125,107	19
	Upper NE1	410,897	9,245,272	23
	Upper NE2	285,247	4,785,715	17
	Total		2,653,391	51,146,307
Region	Whole country	5,792,519	114,460,932	20
	North	1,367,702	25,346,792	19
	Northeast	2,640,866	51,935,157	20
	Central	901,027	21,869,432	24
	South	882,924	15,309,551	17

Data Source : 2003 AGRICULTURAL CENSUS

Size of total area of holding –Northeastern–

	Number of holding		
	1993	1998	2003
Total	2,505,936	2,589,354	2,653,391
Under 6 rai	330,115	315,846	415,012
6 – 9 rai	312,091	372,310	393,074
10 – 39 rai	1,545,488	1,685,690	1,586,188
40 –139 rai	311,441	211,174	252,561
140 and over	6,801	4,334	6,556

Data Source : 2003 AGRICULTURAL CENSUS

Appendix 2.2.4 Number of farms, Average Farm and Paddy Land Size

Number of Farms, Average Farm Size and Paddy Area per Farm in Northeast Thailand

	Number of Farms ('000)	Average Size per Farm (hectares)	
		Farm	Paddy Land
1975	1,676	4.53	3.25
1976	1,705	4.58	3.25
1977	1,740	4.43	3.19
1978	1,755	4.50	3.24
1979	1,772	4.48	3.21
1980	1,786	4.48	3.21
1981	1,840	4.35	3.15
1982	1,945	4.38	2.98
1983	1,944	4.38	3.01
1984	1,976	4.34	3.00
1985	2,044	4.34	2.91
1986	2,081	4.32	2.88
1987	2,102	4.30	2.84
1988	2,116	4.26	2.81
1989	2,117	4.27	2.83
1990	2,131	4.26	2.81
1991	2,184	4.22	2.78
1992	2,220	4.16	2.74
1993	2,248	4.10	2.69
1994	2,261	4.08	2.68
1995	2,274	4.00	2.67
1996	2,324	3.98	2.60
1997	2,367	3.89	2.55
1998	2,420	3.79	2.48
1999	2,598	3.57	2.32
2000	2,610	3.55	2.32
2001	2,621	3.54	2.32
2002	2,636	3.52	2.31
2003	2,640	3.51	2.30
2004	2,695	3.43	2.25
2005	2,695	3.43	2.22

Source: OAE, Agricultural Statistics of Thailand Crop Years 1978/79-2007 [1978-2007]. Data for 1975-2001 from table on "Land Utilization of Thailand by Region"; data for 2002-2005 from table on "Type of Farm Holding in Thailand by Region."

Sited from Terry B. et al, "Rainfed Revolution in Northeast Thailand", *Southeast Asian Studies*, Vol46, No.3, December 2008

Appendix 2.2.5 Land holding Situation

Land holding for Agriculture in Thailand Year

Year	Province	Land holding for Agri. (rai)	Size (rai/household)	No. (Households)	Situation of their own land (rai)				Situation of other person (rai)					
					Own	mortgage	sell on consignment	Total	Rent from other	Mortgage	receive sell on consignment	get free	Total	
1997	Whole country	131,107,608	25	5,301,771	93,398,544	14,531,569	201,094	108,131,207	14,791,443	823,188	180,149	7,181,621	22,976,401	
	North	28,601,690	23	1,248,485	17,490,415	3,933,288	30,043	21,453,746	4,865,559	98,321	19,534	2,164,530	7,147,944	
	Northeast	57,623,773	24	2,367,454	45,021,910	5,873,889	116,236	51,012,035	3,099,058	581,876	126,300	2,804,504	6,611,738	
	Central	26,313,837	31	857,579	15,473,477	3,034,848	19,867	18,528,192	6,397,922	60,988	17,534	1,309,201	7,785,645	
	South	18,568,308	22	828,253	15,412,742	1,689,544	34,948	17,137,234	428,904	82,003	16,781	903,386	1,431,074	
	LOEI	Upper NE1	2,286,621	32	72,083	1,815,294	177,706	6,541	1,999,541	104,614	12,731	8,508	161,227	287,080
	NONG BUA LAM PHU	Upper NE1	1,490,236	26	57,874	1,292,691	92,170	1,139	1,386,000	66,692	7,423	8,183	21,938	104,236
	UDON THANI	Upper NE1	3,738,728	29	130,370	3,118,067	288,632	1,496	3,408,195	149,657	7,415	21,386	152,075	330,533
	NONG KHAI	Upper NE1	2,563,740	27	95,663	2,018,705	180,670	1,313	2,200,688	162,792	5,494	4,491	190,275	363,052
	SAKON NAKHON	Upper NE2	2,935,817	25	115,383	2,123,934	338,158	23,352	2,485,444	149,821	4,174	1,209	295,169	450,373
	NAKHON PHANOM	Upper NE2	1,497,232	19	78,853	1,179,894	209,722	6,918	1,396,534	35,678	3,111	12,342	49,567	100,698
	MUKDAHAN	Upper NE2	861,244	23	37,493	661,115	53,927	738	715,780	22,194	6,265	937	116,068	145,464
	YASOTHON	Lower NE2	1,699,905	25	67,447	1,467,364	159,504	7,017	1,633,885	33,066	6,471	1,603	24,880	66,020
	AM NAT CHAREON	Lower NE2	1,246,593	27	46,302	978,326	109,802	1,829	1,089,957	15,999	4,798	3,191	132,648	156,636
	UBON RATCHATHANI	Lower NE2	4,831,794	28	170,432	4,102,000	423,388	7,017	4,532,405	174,379	23,241	17,638	84,131	299,389
	SI SA KET	Lower NE2	3,366,862	20	164,607	2,676,778	234,990	6,033	2,917,801	127,541	68,776	3,344	249,400	449,061
	SURIN	Lower NE1	3,498,340	21	163,282	2,661,925	280,589	5,715	2,948,229	255,316	73,137	10,597	211,061	550,111
	BURI RAM	Lower NE1	3,823,007	24	157,478	2,817,040	364,474	8,932	3,190,446	413,202	205,839	3,872	9,648	632,561
	MAHA SAKAKHAM	Central NE	2,690,490	23	117,071	1,986,550	347,754	1,486	2,335,790	125,058	26,296	1,250	202,096	354,700
	ROI ET	Central NE	3,256,837	19	172,121	2,832,340	274,627	5,414	3,112,381	89,018	12,047	4,924	38,467	144,456
	KALASIN	Central NE	2,523,300	20	127,905	1,769,594	383,404	9,876	2,162,874	75,863	11,557	5,703	267,303	360,426
	KHON KAEN	Central NE	4,128,699	22	186,288	3,198,011	597,630	10,746	3,806,387	127,327	13,918	11,322	169,745	322,312
	CHAIYAPHUM	Lower NE1	3,423,538	23	150,474	2,552,927	429,836	4,506	2,987,269	246,315	23,986	509	165,459	436,269
	NAKHON RATCHASIMA	Lower NE1	7,760,790	30	256,328	5,769,355	926,906	6,168	6,702,429	724,526	65,197	5,291	263,347	1,058,361
		Central NE	12,599,326		603,385	9,786,495	1,603,415	27,522	11,417,432	417,266	63,818	23,199	677,611	1,181,894
		Lower NE1	18,505,675		727,562	13,801,247	2,001,805	25,321	15,828,373	1,639,359	368,159	20,269	649,515	2,677,302
		Lower NE2	11,145,154		448,788	9,224,468	927,684	21,896	10,174,048	350,985	103,286	25,776	491,059	971,106
		Upper NE1	10,079,325		355,990	8,244,757	739,178	10,489	8,994,424	483,755	33,063	42,568	525,515	1,084,901
		Upper NE2	5,294,293		231,729	3,964,943	601,807	31,008	4,597,758	207,693	13,550	14,488	460,804	696,535
	2005	Whole country	130,275,993	22	5,795,541	70,590,328	22,348,022	288,143	93,226,494	24,010,681	916,266	131,286	11,991,266	37,049,499
		North	27,501,741	21	1,327,949	11,280,532	4,288,654	50,619	15,619,805	8,489,493	31,113	637	3,360,693	11,881,936
Northeast		57,749,528	21	2,695,471	35,508,764	10,195,811	168,532	45,873,107	5,657,838	811,006	64,674	5,342,903	11,876,421	
Central		25,879,364	29	881,830	11,063,904	3,773,549	29,689	14,867,143	9,442,405	6,638	5,461	1,557,717	11,012,221	
South		19,145,360	22	890,290	12,737,128	4,090,068	39,303	16,866,439	420,945	67,509	60,514	1,729,953	2,278,921	
LOEI		Upper NE1	2,273,629	27	85,741	1,779,317	55,960	3,109	1,838,386	97,411	-	-	337,832	435,243
NONG BUA LAM PHU		Upper NE1	1,510,628	24	63,883	1,115,636	160,969	1,857	1,278,462	97,819	1,238	1,858	131,251	232,166
UDON THANI		Upper NE1	3,682,637	22	168,244	2,522,410	665,504	16,265	3,204,179	318,520	-	-	159,938	478,458
NONG KHAI		Upper NE1	2,526,802	27	95,184	1,821,562	270,773	14,769	2,107,104	272,004	-	-	147,694	419,698
SAKON NAKHON		Upper NE2	2,848,429	19	151,046	1,661,145	750,279	1,316	2,412,740	267,205	15,795	3,949	148,740	435,689
NAKHON PHANOM		Upper NE2	1,489,830	15	97,607	1,070,502	287,922	3,348	1,361,772	27,620	4,185	7,533	88,720	128,058
MUKDAHAN		Upper NE2	915,138	19	49,389	520,096	92,613	523	613,232	8,895	4,709	-	288,302	301,906
YASOTHON		Lower NE2	1,605,381	18	87,270	1,028,283	290,567	-	1,318,850	64,570	-	-	221,961	286,531
AM NAT CHAREON		Lower NE2	1,337,252	27	50,257	940,492	243,481	-	1,183,973	30,908	11,354	-	111,017	153,279
UBON RATCHATHANI		Lower NE2	4,807,070	22	216,781	3,246,975	792,941	12,893	4,052,809	302,994	49,424	2,149	399,694	754,261
SI SA KET		Lower NE2	3,437,913	17	200,846	2,248,766	473,140	17,990	2,739,896	226,676	34,181	-	437,160	698,017
SURIN		Lower NE1	3,554,024	19	187,908	1,598,481	673,991	-	2,272,472	629,704	238,042	-	413,806	1,281,552
BURI RAM		Lower NE1	3,878,482	23	172,119	1,949,799	686,301	-	2,636,100	934,426	82,708	1,760	223,488	1,242,382
MAHA SAKAKHAM		Central NE	2,714,271	18	147,299	1,865,660	612,796	14,438	2,492,894	75,397	28,875	-	117,105	221,377
ROI ET		Central NE	3,241,266	16	201,920	1,877,203	743,867	12,921	2,633,991	132,899	38,762	11,075	424,539	607,275
KALASIN		Central NE	2,612,014	19	134,439	1,637,236	668,059	18,207	2,323,502	28,011	23,809	-	236,692	288,512
KHON KAEN		Central NE	4,132,060	20	205,062	2,750,933	783,016	15,094	3,549,043	164,150	124,528	7,547	286,792	583,017
CHAIYAPHUM		Lower NE1	3,397,904	23	150,498	1,742,276	553,209	25,328	2,320,813	313,263	11,997	-	751,831	1,077,091
NAKHON RATCHASIMA		Lower NE1	7,784,798	34	229,979	4,131,992	1,390,423	10,474	5,532,889	1,665,366	141,399	28,803	416,341	2,251,909
		Central NE	12,699,611		688,720	8,131,032	2,807,738	60,660	10,999,430	400,457	215,974	18,622	1,065,128	1,700,181
		Lower NE1	18,615,208		740,504	9,422,548	3,303,924	35,802	12,762,274	3,542,759	474,146	30,563	1,805,466	5,852,934
		Lower NE2	11,187,616		555,154	7,464,516	1,800,129	30,883	9,295,528	625,148	94,959	2,149	1,169,832	1,892,088
		Upper NE1	9,993,696		413,052	7,238,925	1,153,206	36,000	8,428,131	785,754	1,238	1,858	776,715	1,565,565
		Upper NE2	5,253,397		298,042	3,251,743	1,130,814	5,187	4,387,744	303,720	24,689	11,482	525,762	865,653

Source: OAE

Appendix 2.2.6 Agricultural Land Use by Region, 2008

Land use for agriculture in Thailand

Year	Province	Total area	Forest* area	Agr.holding area	Farm size	No. of farm	Agri. Holding area								None Agri.
							Resident	Paddy	Upland crop	Fruit and perennial tree	Vegetable and flower	Animal feeding glass	Un-use	Others	
1997	whole country	320,696,888	81,441,164	131,107,608	25	5,301,771	3,505,524	66,695,947	30,101,204	24,132,029	961,182	718,642	3,036,300	1,956,780	108,148,116
	North	106,027,680	45,832,649	28,601,690	23	1,248,485	898,218	14,761,648	9,665,306	2,348,582	341,551	88,322	254,082	243,981	31,593,341
	Northeast	105,533,963	13,173,112	57,623,773	24	2,367,454	1,338,745	37,690,952	12,146,770	2,875,026	209,966	476,019	2,050,662	835,633	34,737,078
	Central	64,938,253	14,789,355	26,313,837	31	857,579	759,419	10,973,289	8,210,532	5,025,388	315,426	119,682	358,540	551,561	23,835,061
	South	44,196,992	7,646,048	18,568,308	22	828,253	509,142	3,270,058	78,596	13,883,033	94,239	34,619	373,016	325,605	17,982,636
1998	whole country	320,696,888	81,076,428	130,393,525	24	5,334,974	3,491,908	65,914,065	29,051,965	25,079,407	961,792	693,143	2,950,814	2,250,431	109,226,935
	North	106,027,680	45,660,825	28,274,892	23	1,223,783	891,558	14,565,191	9,355,476	2,539,770	352,231	73,678	247,791	249,197	32,091,963
	Northeast	105,533,963	13,114,948	57,429,749	24	2,420,525	1,345,540	37,540,903	11,715,560	3,176,168	189,615	474,468	1,985,507	1,001,988	34,989,266
	Central	64,938,253	14,722,454	25,883,514	31	845,891	743,184	10,620,727	7,904,648	5,217,633	323,233	113,354	350,892	609,843	24,332,285
	South	44,196,992	7,578,201	18,805,370	22	844,775	511,626	3,187,244	76,281	14,145,836	96,713	31,643	366,624	389,403	17,813,421
1999	whole country	320,696,888	80,610,219	131,341,384	23	5,667,506	3,578,872	65,686,993	28,786,500	26,075,492	1,025,811	802,414	2,864,219	2,521,083	108,745,285
	North	106,027,680	45,394,696	28,312,917	22	1,297,415	913,847	14,401,430	9,217,891	2,840,337	358,847	89,342	236,108	255,115	32,320,067
	Northeast	105,533,963	13,054,854	57,946,997	22	2,598,537	1,389,400	37,745,274	11,728,461	3,393,091	213,386	504,014	1,927,065	1,046,306	34,532,112
	Central	64,938,253	14,664,165	25,941,614	29	891,383	751,920	10,433,893	7,764,175	5,395,150	355,092	133,739	340,707	766,938	24,332,474
	South	44,196,992	7,496,504	19,139,856	22	880,171	523,705	3,106,396	75,973	14,446,914	98,486	75,319	360,339	452,724	17,560,632
2000	whole country	320,696,888	106,319,188	131,195,913	23	5,686,549	3,598,823	65,412,560	28,535,387	26,350,915	1,091,015	846,891	2,796,521	2,563,801	83,181,787
	North	106,027,680	60,168,938	28,133,145	22	1,299,702	924,537	14,167,065	9,103,408	2,981,220	365,757	97,095	234,652	259,411	17,725,597
	Northeast	105,533,963	16,579,250	58,004,285	22	2,610,531	1,393,694	37,849,282	11,654,035	3,376,087	236,380	513,256	1,890,386	1,091,165	30,950,428
	Central	64,938,253	18,687,625	25,886,602	29	893,943	754,074	10,367,007	7,706,319	5,471,784	381,954	147,182	318,168	740,114	20,364,026
	South	44,196,992	10,883,375	19,171,881	22	882,373	526,518	3,029,206	71,625	14,521,824	106,924	89,358	353,315	473,111	14,141,736
2001	whole country	320,696,888	100,638,200	131,059,974	23	5,702,388	3,628,223	65,220,587	28,241,647	26,584,191	1,152,867	885,625	2,744,835	2,601,999	88,998,714
	North	106,027,680	57,269,319	27,982,872	21	1,301,667	938,344	14,032,012	8,926,591	3,105,305	377,408	104,857	233,990	264,365	20,775,489
	Northeast	105,533,963	15,811,166	57,999,229	22	2,621,272	1,400,361	37,932,040	11,562,382	3,353,789	257,903	518,671	1,857,344	1,116,739	31,723,568
	Central	64,938,253	17,617,672	25,892,155	29	895,680	758,725	10,311,050	7,687,686	5,528,242	402,677	158,917	308,095	736,763	21,428,426
	South	44,196,992	9,940,043	19,185,718	22	883,769	530,793	2,945,485	64,988	14,596,855	114,879	103,180	345,406	484,132	15,071,231
2002	whole country	320,696,888	106,319,188	130,892,013	23	5,720,219	3,652,699	65,124,470	28,035,295	26,636,756	1,188,320	899,008	2,718,630	2,646,835	83,485,687
	North	106,027,680	60,168,938	27,823,169	21	1,304,170	943,226	13,922,472	8,811,615	3,158,081	374,744	102,179	239,414	271,438	18,035,573
	Northeast	105,533,963	16,579,250	58,018,015	22	2,635,666	1,411,953	38,019,491	11,495,318	3,329,701	276,401	517,145	1,830,501	1,137,505	30,936,698
	Central	64,938,253	18,687,625	25,884,474	29	897,727	767,775	10,300,323	7,665,258	5,530,840	414,247	164,032	297,877	744,122	20,366,154
	South	44,196,992	10,883,375	19,166,355	22	882,656	529,745	2,882,184	63,104	14,618,134	122,928	105,652	350,838	493,770	14,147,262
2003	whole country	320,696,888	106,319,188	130,682,025	23	5,792,522	3,643,462	64,892,333	27,944,482	26,762,771	1,208,932	919,046	2,827,126	2,683,873	83,695,675
	North	106,027,680	60,168,938	27,766,127	20	1,367,703	943,858	13,838,609	8,808,257	3,173,200	390,339	127,487	211,920	272,457	18,092,615
	Northeast	105,533,963	16,579,250	57,895,115	22	2,640,867	1,407,176	37,917,064	11,445,744	3,366,163	278,617	522,420	1,803,245	1,154,686	31,059,598
	Central	64,938,253	18,687,625	25,882,303	29	901,027	765,898	10,303,218	7,631,447	5,566,509	419,600	167,841	288,389	739,401	20,368,325
	South	44,196,992	10,883,375	19,138,480	22	882,925	526,530	2,833,442	59,034	14,656,899	120,376	101,298	323,572	517,329	14,175,137
2004	whole country	320,696,888	104,744,331	130,480,284	23	5,795,540	3,627,302	64,658,948	27,788,606	26,848,043	1,224,015	1,012,798	2,602,411	2,718,161	85,472,273
	North	106,027,680	57,542,692	27,626,384	21	1,327,948	940,194	13,729,530	8,739,374	3,180,931	386,727	167,479	198,556	283,593	20,858,604
	Northeast	105,533,963	17,559,817	57,836,144	21	2,695,472	1,402,789	37,843,778	11,398,938	3,391,392	285,428	554,397	1,794,291	1,165,131	30,138,002
	Central	64,938,253	18,427,193	25,872,787	29	881,830	756,748	10,291,189	7,595,135	5,591,192	432,475	179,859	283,035	743,154	20,638,273
	South	44,196,992	11,214,629	19,144,969	22	890,290	527,571	2,794,451	55,159	14,684,528	119,385	111,063	326,529	526,283	13,837,394
2005	whole country	320,696,888	104,744,331	130,275,994	22	5,795,540	3,610,930	63,861,066	27,400,423	27,787,972	1,229,807	1,103,271	2,532,003	2,750,522	85,676,563
	North	106,027,680	57,542,692	27,501,742	21	1,327,948	937,640	13,475,437	8,782,700	3,260,049	381,986	197,275	176,053	290,602	20,983,246
	Northeast	105,533,963	17,559,817	57,749,528	21	2,695,472	1,397,360	37,475,277	11,175,997	3,878,787	286,950	584,753	1,773,178	1,177,226	30,224,618
	Central	64,938,253	18,427,193	25,879,364	29	881,830	750,209	10,365,710	7,395,457	5,702,370	442,687	195,990	275,784	751,157	20,631,696
	South	44,196,992	11,214,629	19,145,360	22	890,290	525,721	2,544,642	46,269	14,946,766	118,184	125,253	306,988	531,537	13,837,003
2006	whole country	320,696,888	104,744,331	130,290,717	22	5,795,540	3,609,998	63,551,124	27,249,969	28,626,646	1,236,938	1,132,083	2,290,823	2,593,136	85,661,840
	North	106,027,680	57,542,692	27,455,963	21	1,327,948	938,867	13,478,645	8,599,425	3,387,531	386,420	236,317	153,162	275,596	21,029,025
	Northeast	105,533,963	17,559,817	57,735,688	21	2,695,472	1,397,171	37,116,642	11,252,219	4,403,869	288,186	564,064	1,616,447	1,097,090	30,238,458
	Central	64,938,253	18,427,193	25,830,885	29	881,830	747,360	10,396,507	7,350,771	5,741,806	444,148	206,237	248,672	695,384	20,680,175
	South	44,196,992	11,214,629	19,268,181	22	890,290	526,600	2,559,330	47,554	15,093,440	118,184	125,465	272,542	525,066	13,714,182
2008	Whole country	320,696,888	99,157,878	152,018,035	26	5,864,728	3,550,487	71,030,661	35,807,880	34,582,658	1,229,634	1,313,928	1,611,074	2,891,711	69,520,975
	North	106,027,680	55,230,071	32,587,445	24	1,345,787	1,044,044	15,979,689	10,905,124	3,751,654	305,993	228,598	131,547	240,797	18,210,164
	Northeast	105,533,963	15,343,678	63,545,346	23	2,749,379	821,895	41,773,169	15,338,279	3,596,184	152,767	468,833	813,052	581,168	26,644,939
	Central	64,938,253	17,774,184	32,545,430	38	845,649	1,191,257	11,100,979	9,545,172	7,683,563	701,202	470,699	404,820	1,447,737	14,618,639
	South	44,196,992	10,809,945	23,339,814	25	923,913	493,291	2,176,825	19,306	19,551,257	69,672	145,799	261,655	622,009	10,047,233

Source: OAE data

Appendix 2.2.7 Harvested Area of Major Crops by Province in the Northeast

Harvested Area of Major Crops at Province

Province	unit 10 ³ rai					
	Major Rice 2008	Second Rice 2009	Cassava 2009	Sugercane 2009	Maize 2008	Para rubber 2008
Loei	385	4	161	57	532	39
Udon Thani	1,792	64	184	334	17	52
Nong Khai	1,038	74	39	7	4	126
Sakon Nakhon	1,778	50	65	14	-	22
Nakhon Phanom	1,026	12	14	6	-	32
Mukdahan	357	1	100	95	-	26
Chaiyaphum	1,195	46	410	277	112	7
Nong Bua Lam Phu	873	23	44	35	56	8
Khon Kaen	2,122	146	242	385	7	8
Maha Sarakham	1,674	177	122	27	-	2
Kalasin	1,227	276	302	244	-	20
Roi Et	2,363	166	103	14	-	11
Yasothon	985	47	52	4	-	15
Nakhon Ratchasima	2,930	179	1,984	422	699	5
Buri Ram	2,590	18	230	89	-	76
Surin	2,581	9	52	100	-	42
Si Sa Ket	2,201	27	78	-	75	41
Am nat Chareon	883	2	39	3	-	5
Ubon Ratchathani	3,081	119	140	-	5	33

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Appendix 2.2.8 Harvested Area of Major Crops

Harvested Area of Major Crops at Province

Province		Major Rice		Second Rice		Cassava		Sugercane		Maize		Soybean		GroundNuts		Para rubber		Longans		Shallots		Total Area	
		2001	2008	2001	2009	2001	2009	2001	2009	2001	2008	2001	2008	2001	2008	2001	2008	2001	2008	2001	2009	2001	2008.09
Loei	Upper NE1	429	385	2	4	142	161	87	57	432	532	56	56	9	1	34	39	11	25	-	-	1,202	1,260
Udon Thani	Upper NE1	1,763	1,792	19	64	163	184	421	334	56	17	5	4	11	9	48	52	-	7	-	-	2,486	2,463
Nong Khai	Upper NE1	943	1,038	32	74	62	39	4	7	2	4	13	-	3	1	93	126	3	5	-	-	1,155	1,294
Sakon Nakhon	Upper NE2	1,509	1,778	20	50	81	65	10	14	-	-	1	-	11	5	19	22	-	-	-	-	1,651	1,934
Nakhon Phanom	Upper NE2	846	1,026	15	12	16	14	9	6	-	-	-	-	6	1	28	32	-	-	-	-	920	1,091
Mukdahan	Upper NE2	346	357	-	1	102	100	73	95	-	-	-	-	6	5	22	26	-	-	-	-	549	584
Chaiyaphum	Lower NE1	972	1,195	36	46	407	410	437	277	220	112	61	61	6	1	6	7	-	4	4	2	2,149	2,115
Nong Bua Lam Phu	Upper NE1	801	873	7	23	41	44	23	35	101	56	22	23	3	-	6	8	-	5	-	-	1,004	1,067
Khon Kaen	Central NE	2,158	2,122	124	146	245	242	326	385	12	7	68	55	13	4	7	8	-	-	-	-	2,953	2,969
Maha Sarakham	Central NE	1,473	1,674	109	177	120	122	14	27	-	-	2	1	9	1	2	2	-	-	-	-	1,729	2,004
Kalasin	Central NE	1,108	1,227	201	276	306	302	78	244	-	-	4	4	21	8	16	20	-	-	-	-	1,734	2,081
Roi Et	Central NE	2,164	2,363	67	166	124	103	10	14	-	-	1	-	8	2	10	11	-	-	-	-	2,384	2,659
Yasothon	Lower NE2	961	985	15	47	43	52	5	4	-	-	-	-	4	3	10	15	-	1	1	1	1,039	1,108
Nakhon Ratchasima	Lower NE1	3,184	2,930	128	179	1,364	1,984	420	422	932	699	6	-	16	3	3	5	1	2	-	-	6,054	6,224
Buri Ram	Lower NE1	2,751	2,590	1	18	184	230	72	89	2	-	-	-	15	9	61	76	-	-	1	2	3,087	3,014
Surin	Lower NE1	2,779	2,581	5	9	49	52	2	100	-	-	-	-	9	5	25	42	-	-	1	1	2,870	2,790
Si Sa Ket	Lower NE2	1,800	2,201	20	27	52	78	-	-	123	75	-	-	18	7	36	41	-	2	20	20	2,069	2,451
Am nat Chareon	Lower NE2	901	883	1	2	39	39	2	3	-	-	-	-	4	1	2	5	-	-	-	-	949	933
Ubon Ratchathani	Lower NE2	3,018	3,081	62	119	80	140	-	-	31	5	-	-	14	7	28	33	-	2	-	-	3,233	3,387
Total	Central NE	6,903	7,386	501	765	795	769	428	670	12	7	75	60	51	15	35	41	-	-	-	-	8,800	9,713
	Lower NE1	9,686	9,296	170	252	2,004	2,676	931	888	1,154	811	67	61	46	18	95	130	1	6	6	5	14,160	14,143
	Lower NE2	6,680	7,150	98	195	214	309	7	7	154	80	-	-	40	18	76	94	-	5	21	21	7,290	7,879
	Upper NE1	3,936	4,088	60	165	408	428	535	433	591	609	96	83	26	11	181	225	14	42	-	-	5,847	6,084
	Upper NE2	2,701	3,161	35	63	199	179	92	115	-	-	1	-	23	11	69	80	-	-	-	-	3,120	3,609
Total		29,906	31,081	864	1,440	3,620	4,361	1,993	2,113	1,911	1,507	239	204	186	73	456	570	15	53	27	26	39,217	41,428

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Appendix 2.2.9 Value of Major Crops

Production and Farm Value of Major Crops (2008)

Province		Major Rice		Second Rice		Cassava		Sugercane		Maize		Soybean		GroundNut		ParaRubber		Longans		Shallots		Total Farm Value 10 ⁶ B
		F.P.= 9. 59		F.P.= 10. 26		F.P.= 1. 19		F.P.= 0. 70		F.P.= 7. 02		F.P.= 16. 40		F.P.= 18. 92		F.P.= 73. 66		F.P.= 18. 61		F.P.= 15. 72		
		P	F.V	P	F.V	P	F.V	P	F.V	P	F.V	P	F.V	P	F.V	P	F.V	P	F.V	P	F.V	
Loei	Upper NE1	146	1,400	2	20	567	670	548	380	296	2,080	14.0	230	0.3	10	11	810	10.1	190	-	-	5,790
Udon Thani	Upper NE1	560	5,370	29	300	667	790	3,565	2,500	9	60	0.9	10	2.2	40	15	1,100	1.9	40	-	-	10,210
Nong Khai	Upper NE1	337	3,230	38	390	129	150	67	50	2	10	-	-	0.1	-	35	2,580	2.1	40	-	-	6,450
Sakon Nakhon	Upper NE2	559	5,360	24	250	212	250	138	100	-	-	-	-	1.1	20	5	370	-	-	-	-	6,350
Nakhon Phanom	Upper NE2	309	2,960	13	130	45	50	63	40	-	-	-	-	0.3	10	8	590	-	-	-	-	3,780
Mukdahan	Upper NE2	118	1,130	-	-	347	410	1,048	730	-	-	-	-	1.1	20	7	520	-	-	-	-	2,810
Chaiyaphum	Lower NE1	359	3,440	24	250	1,452	1,730	3,001	2,100	67	470	14.1	230	0.2	-	2	150	1.1	20	3.5	60	8,450
Nong Bua Lam Phu	Upper NE1	282	2,700	12	120	162	190	340	240	33	230	4.6	80	0.1	-	2	150	2.0	40	-	-	3,750
Khon Kaen	Central NE	679	6,510	90	920	790	940	4,357	3,050	4	30	12.8	210	1.0	20	2	150	-	-	-	-	11,830
Maha Sarakham	Central NE	567	5,440	110	1,130	408	490	284	200	-	-	0.2	-	0.1	-	-	-	-	-	-	-	7,260
Kalasin	Central NE	459	4,400	177	1,820	1,165	1,390	2,701	1,890	-	-	0.8	10	2.0	40	5	370	-	-	-	-	9,920
Roi Et	Central NE	805	7,720	102	1,050	350	420	149	100	-	-	-	-	0.5	10	2	150	-	-	-	-	9,450
Yasothon	Lower NE2	303	2,910	25	260	190	230	40	30	-	-	-	-	0.7	10	4	290	0.2	-	2.0	30	3,760
Nakhon Ratchasima	Lower NE1	914	8,770	112	1,150	7,130	8,480	4,459	3,120	417	2,930	-	-	0.6	10	1	70	1.2	20	-	-	24,550
Buri Ram	Lower NE1	882	8,460	9	90	842	1,000	967	680	-	-	-	-	2.3	40	21	1,550	-	-	3.5	60	11,880
Surin	Lower NE1	954	9,150	4	40	185	220	1,082	760	-	-	-	-	1.1	20	11	810	-	-	2.1	30	11,030
Si Sa Ket	Lower NE2	821	7,870	11	110	285	340	-	-	47	330	-	-	1.7	30	14	1,030	0.8	10	44.3	700	10,420
Am nat Chareon	Lower NE2	276	2,650	1	10	145	170	30	20	-	-	-	-	0.2	-	1	70	-	-	-	-	2,920
Ubon Ratchathani	Lower NE2	968	9,280	54	550	500	600	-	-	3	20	-	-	1.9	40	9	660	1.0	20	0.8	10	11,180
Total	Central NE	2,510	24,070	479	4,920	2,713	3,240	7,491	5,240	4	30	14	220	4	70	9	670	-	-	-	-	38,460
	Lower NE1	3,109	29,820	149	1,530	9,609	11,430	9,509	6,660	484	3,400	14	230	4	70	35	2,580	2	40	9	150	55,910
	Lower NE2	2,368	22,710	91	930	1,120	1,340	70	50	50	350	-	-	5	80	28	2,050	2	30	47	740	28,280
	Upper NE1	1,325	12,700	81	830	1,525	1,800	4,520	3,170	340	2,380	20	320	3	50	63	4,640	16	310	-	-	26,200
	Upper NE2	986	9,450	37	380	604	710	1,249	870	-	-	-	-	3	50	20	1,480	-	-	-	-	12,940
Total		10,298	98,750	837	8,590	15,571	18,520	22,839	15,990	878	6,160	47	770	18	320	155	11,420	20	380	56	890	161,790

Note : F.P.=Farm gate price (bath/kg), P=Production(103ton), F.V=Farm Value (106bath) F.P×P

Appendix 2.2.10 Harvested Area of Dry Season Paddy by Province, 2001/2009

Harvested Area of Second Rice

-Northeast-
unit 10³rai

		2001	2009
Central NE	Khon Kaen	124	146
	Maha Sarakham	109	177
	Kalasin	201	276
	Roi Et	67	166
Lower NE1	Chaiyaphum	36	46
	Nakhon Ratchasima	128	179
	Buri Ram	1	18
	Surin	5	9
Lower NE2	Yasothon	15	47
	Si Sa Ket	20	27
	Am nat Chareon	1	2
	Ubon Ratchathani	62	119
Upper NE1	Loei	2	4
	Udon Thani	19	64
	Nong Khai	32	74
	Nong Bua Lam Phu	7	23
Upper NE2	Sakon Nakhon	20	50
	Nakhon Phanom	15	12
	Mukdahan	0	1

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Appendix 2.2.11 Planted Area, Harvested Area and Production of Major Rice by Region

Major Rice: Area, Production and Yield by Region and Province, 2006-2008

	Planted Area (rais)				Harvested Area (rais)			
	2005	2006	2007	2008	2005	2006	2007	2008
Whole Kingdom	57,773,844	57,541,825	57,385,921	57,422,337	54,033,611	53,500,163	53,892,143	54,385,144
Northern	12,758,306	12,786,349	12,779,212	12,606,460	11,917,090	11,782,682	11,979,600	12,035,933
Northeastern	33,002,755	32,711,384	32,773,544	33,071,286	30,715,818	30,733,339	30,709,468	31,082,257
Central	9,910,249	9,946,075	9,814,339	9,820,320	9,424,003	9,008,042	9,308,627	9,475,139
Southern	2,102,534	2,098,017	2,018,826	1,924,271	1,976,700	1,976,100	1,894,448	1,791,815
Loei		413,403	452,952	419,374		384,752	416,185	385,321
Nong Bua Lam Phu		918,701	916,025	918,794		889,915	882,737	873,370
Udon Thani		1,850,459	1,849,882	1,853,219		1,800,076	1,741,130	1,791,823
Nong Khai		1,084,502	1,089,287	1,111,632		1,047,298	1,066,769	1,037,612
Sakon Nakhon		1,834,390	1,804,054	1,817,613		1,750,672	1,726,562	1,777,516
Nakhon Phanom		1,038,730	1,063,318	1,064,747		978,357	1,027,410	1,025,750
Mukdahan		360,281	369,736	367,937		351,626	360,737	357,458
Yasothon		1,040,614	1,050,544	1,054,110		972,527	964,930	985,055
Amnat Charoen		912,251	920,980	918,294		879,530	897,276	883,313
Ubon Ratchathani		3,182,153	3,201,999	3,264,948		3,044,758	3,026,142	3,080,598
Si Sa Ket		2,261,120	2,274,139	2,320,840		2,185,797	2,164,636	2,200,553
Surin		2,616,518	2,693,019	2,729,071		2,538,840	2,582,832	2,581,176
Buri Ram		2,755,739	2,754,515	2,764,463		2,593,929	2,599,329	2,590,460
Maha Sarakham		1,805,003	1,804,929	1,813,923		1,617,113	1,667,156	1,674,319
Roi Et		2,581,056	2,583,581	2,584,992		2,419,911	2,333,362	2,363,475
Kalasin		1,294,888	1,287,116	1,309,470		1,188,707	1,206,837	1,226,556
Khon Kaen		2,400,642	2,282,815	2,313,242		2,208,937	2,061,258	2,122,431
Chaiyaphum		1,257,116	1,254,925	1,280,628		1,103,076	1,167,843	1,195,122
Nakhon Ratchasima		3,103,818	3,119,728	3,163,989		2,777,518	2,816,337	2,930,349

	Production (Tons)			
	2005	2006	2007	2008
Whole Kingdom	23,539,186	22,839,695	23,308,385	23,235,476
Northern	6,724,953	6,455,397	6,610,217	6,597,122
Northeastern	10,441,986	10,292,959	10,377,733	10,298,483
Central	5,597,137	5,291,414	5,515,207	5,585,558
Southern	775,110	799,925	805,228	754,313
Loei		134,919	149,228	146,658
Nong Bua Lam Phu		267,751	273,644	282,185
Udon Thani		562,750	563,935	560,128
Nong Khai		329,710	332,233	335,827
Sakon Nakhon		566,649	554,467	559,073
Nakhon Phanom		284,513	299,458	308,866
Mukdahan		110,054	116,803	118,229
Yasothon		292,184	307,118	303,070
Amnat Charoen		275,547	286,743	276,492
Ubon Ratchathani		948,936	970,269	967,810
Si Sa Ket		818,717	825,231	820,598
Surin		956,807	957,896	953,567
Buri Ram		892,826	881,221	881,589
Maha Sarakham		568,645	583,151	566,902
Roi Et		818,529	825,045	805,391
Kalasin		463,669	466,294	459,388
Khon Kaen		727,015	696,258	678,717
Chaiyaphum		355,799	360,164	359,351
Nakhon Ratchasima		917,939	928,575	914,642

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Appendix 2.2.12 Planted Area, Harvested Area and Production of Dry Season Rice

Second Rice: Area, Production and Yield by Region and Province, 2006-2008

	Planted Area (rais)				Harvested Area (rais)			
	2006	2007	2008	2009	2006	2007	2008	2009
Whole Kingdom	9,902,785	10,074,148	12,801,226	12,402,430	9,872,431	10,032,054	12,788,512	12,387,039
Northern	3,331,086	3,477,315	4,476,226	4,375,853	3,307,683	3,448,423	4,469,610	4,367,624
Northeastern	658,058	900,130	1,263,292	1,460,401	656,124	894,528	1,261,067	1,457,100
Central	5,716,711	5,485,903	6,725,838	6,180,701	5,712,112	5,478,758	6,722,791	6,177,172
Southern	196,930	210,800	335,870	385,475	196,513	210,345	335,044	385,143
Loei		2,446	3,391	3,626		2,409	3,379	3,611
Nong Bua Lam Phu		8,403	15,446	22,723		8,368	15,406	22,635
Udon Thani		26,665	52,184	63,698		26,477	52,015	63,458
Nong Khai		41,380	65,733	74,402		40,432	65,206	73,843
Sakon Nakhon		19,340	50,023	50,501		19,084	49,844	50,310
Nakhon Phanom		16,590	32,860	31,877		16,547	32,821	31,799
Mukdahan		140	657	836		140	653	831
Yasothon		27,211	43,446	46,857		26,992	43,355	46,702
Amnat Charoen		376	981	2,162		348	976	2,153
Ubon Ratchathani		68,190	109,817	118,973		67,937	109,745	118,760
Si Sa Ket		14,636	17,098	27,257		14,551	17,061	26,914
Surin		4,004	3,512	9,384		3,994	3,505	9,324
Buri Ram		1,952	7,258	18,090		1,945	7,228	18,020
Maha Sarakham		110,174	158,746	177,499		109,141	158,507	177,250
Roi Et		71,950	123,020	165,871		71,698	122,913	165,600
Kalasin		259,610	267,330	276,044		259,368	267,111	275,709
Khon Kaen		115,847	145,550	145,766		114,327	145,289	145,604
Chaiyaphum		20,515	36,423	46,138		20,207	36,317	46,068
Nakhon Ratchasima		90,701	129,817	178,697		90,563	129,736	178,509

	Production (Tons)			
	2006	2007	2008	2009
Whole Kingdom	6,752,684	6,802,176	8,791,016	8,415,156
Northern	2,268,203	2,311,107	3,061,153	2,898,548
Northeastern	319,292	478,412	685,058	837,282
Central	4,071,713	3,909,721	4,876,470	4,481,873
Southern	93,476	102,936	168,335	197,453
Loei		1,137	1,629	1,830
Nong Bua Lam Phu		4,307	8,007	11,676
Udon Thani		11,971	24,679	28,512
Nong Khai		18,781	32,098	38,381
Sakon Nakhon		7,823	23,168	23,897
Nakhon Phanom		6,421	13,299	12,905
Mukdahan		57	283	352
Yasothon		12,737	20,686	24,716
Amnat Charoen		145	387	872
Ubon Ratchathani		27,561	46,312	54,404
Si Sa Ket		6,296	7,630	11,498
Surin		1,792	1,628	4,009
Buri Ram		773	3,061	8,867
Maha Sarakham		65,186	95,653	110,196
Roi Et		42,907	72,907	102,504
Kalasin		148,299	158,862	177,327
Khon Kaen		59,415	78,702	89,594
Chaiyaphum		9,959	18,274	24,080
Nakhon Ratchasima		52,845	77,793	111,662

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Yield of Rice in Irrigated/ Non-irrigated Area

	(kg/rai)		
	2005	2006	2007
1. Major Rice	407	397	407
- Irrigated Area	528	515	537
- Non-irrigated Area	363	356	364
2. Second Rice	682	675	684
- Irrigated Area	693	688	700
- Non-irrigated Area*	643	635	633

* Non-irrigated Area is outside of irrigation project area but may access to natural water resources by farmers for irrigation

Source: Office of Agricultural Economics (www.oae.go.th)

Appendix 2.2.13 Land Suitability Type and Land Use Area for Major rice

Region	Province	Land Use Area (rai)							
		S-I		S-II		S-III		Total	
Northeast	Kalasin	417,434	29%	930,851	65%	89,627	6%	1,437,912	100%
	Khon Kaen	176,615	9%	1,703,669	88%	57,338	3%	1,937,622	100%
	Chaiyaphum	117,019	12%	560,733	58%	285,551	30%	963,303	100%
	Nakhon Phanom	82,943	8%	647,373	64%	279,188	28%	1,009,504	100%
	Nakhon Ratchasima	547,095	18%	1,964,400	65%	512,703	17%	3,024,198	100%
	Buri Ram	128,515	5%	1,440,264	54%	1,079,759	41%	2,648,538	100%
	Maha Sarakham	305,840	17%	1,123,323	61%	410,069	22%	1,839,232	100%
	Mukdahan	14,946	5%	307,689	95%	-	0%	322,635	100%
	Yasothon	106,328	9%	1,080,508	90%	13,865	1%	1,200,701	100%
	Roi Et	362,948	11%	2,654,757	83%	165,388	5%	3,183,093	100%
	Loei	4,728	2%	189,757	86%	26,400	12%	220,885	100%
	Si Sa Ket	207,344	6%	2,949,597	92%	39,225	1%	3,196,166	100%
	Sakon Nakhon	281,797	13%	1,067,568	48%	856,212	39%	2,205,577	100%
	Surin	89,759	3%	2,096,455	64%	1,075,099	33%	3,261,313	100%
	Nong Khai	48,797	4%	642,088	51%	562,451	45%	1,253,336	100%
	Nong Bua Lam Phu	2,366	0%	555,503	67%	270,311	33%	828,180	100%
	Amnat Charoen	22,387	3%	230,483	33%	456,092	64%	708,962	100%
	Udon Thani	157,637	11%	952,994	69%	277,165	20%	1,387,796	100%
	Ubon Ratchathani	63,574	2%	1,639,198	50%	1,570,048	48%	3,272,820	100%
Total 19 Provinces	3,138,072	9%	22,737,210	67%	8,026,491	24%	33,901,773	100%	
Whole Country	11,849,817	21%	36,828,013	64%	9,122,927	16%	57,800,757	100%	

Source: Report on Major Rice by Land Development Department (LDD) Technical book number 169/11/52

Appendix 2.2.14 Cassava Production by Region

Cassava: Area, Production and Yield by Region and Province, 2007-2009

	Planted Area (rais)				Harvested Area (rais)			
	2006	2007	2008	2009	2006	2007	2008	2009
Whole Kingdom	6,933,418	7,622,883	7,750,413	8,583,557	6,692,537	7,338,809	7,397,098	8,292,146
Northern	967,717	1,112,989	1,155,594	1,462,652	936,958	1,077,490	1,100,088	1,407,607
Northeastern	3,814,409	4,210,676	4,242,134	4,513,883	3,682,924	4,041,061	4,043,856	4,360,695
Central	2,151,292	2,299,218	2,352,684	2,607,022	2,072,655	2,220,258	2,253,154	2,523,844
Loei		163,134	156,307	169,483		154,867	147,836	160,894
Nong Bua Lam Phu		47,055	43,253	45,804		45,711	41,268	44,496
Udon Thani		173,680	179,260	190,790		167,156	170,039	183,623
Nong Khai		40,232	38,220	40,288		38,775	35,697	38,829
Sakon Nakhon		66,952	68,044	68,939		63,290	64,322	65,168
Nakhon Phanom		11,883	13,499	14,896		10,981	12,474	13,765
Mukdahan		96,992	99,591	106,986		91,094	93,535	100,481
Yasothon		46,390	47,133	54,160		44,676	45,391	52,159
Amnat Charoen		31,252	32,608	41,599		29,575	30,858	39,367
Ubon Ratchathani		117,577	121,891	144,175		109,786	113,815	140,069
Si Sa Ket		84,767	81,485	83,696		78,592	75,549	77,599
Surin		39,597	36,458	55,494		36,747	33,834	51,500
Buri Ram		213,081	213,431	237,095		206,512	203,336	220,786
Maha Sarakham		129,605	123,084	130,372		120,996	114,908	121,712
Roi Et		110,286	104,214	108,060		105,357	99,556	103,230
Kalasin		274,230	280,530	312,734		264,962	267,065	302,165
Khon Kaen		224,157	225,660	255,143		212,671	214,097	242,069
Chaiyaphum		401,460	399,012	419,022		382,359	383,730	410,058
Nakhon Ratchasima		1,938,354	1,978,454	2,035,147		1,876,954	1,896,546	1,983,725

	Production (Tons)				Yield per rai (Kgs.)			
	2006	2007	2008	2009	2006	2007	2008	2009
Whole Kingdom	22,584,402	26,915,541	25,155,797	30,088,024	3.375	3.668	3.401	3.628
Northern	3,208,418	3,894,434	3,805,126	5,286,978	3.424	3.614	3.459	3.756
Northeastern	12,152,480	14,577,925	13,448,028	15,570,654	3.300	3.607	3.326	3.571
Central	7,223,504	8,443,182	7,902,643	9,230,392	3.485	3.803	3.507	3.657
Loei		482,566	477,067	566,669		3.116	3.227	3.522
Nong Bua Lam Phu		150,846	135,194	161,788		3.300	3.276	3.636
Udon Thani		615,803	591,566	667,286		3.684	3.479	3.634
Nong Khai		121,792	112,803	128,912		3.141	3.160	3.320
Sakon Nakhon		202,971	205,123	212,578		3.207	3.189	3.262
Nakhon Phanom		34,557	38,657	44,805		3.147	3.099	3.255
Mukdahan		277,563	282,102	346,961		3.047	3.016	3.453
Yasothon		157,304	159,141	190,224		3.521	3.506	3.647
Amnat Charoen		96,296	103,405	144,595		3.256	3.351	3.673
Ubon Ratchathani		395,010	386,061	499,766		3.598	3.392	3.568
Si Sa Ket		274,129	261,173	284,944		3.488	3.457	3.672
Surin		121,522	113,344	184,628		3.307	3.350	3.585
Buri Ram		751,497	710,049	842,395		3.639	3.492	3.666
Maha Sarakham		405,821	377,818	408,466		3.354	3.288	3.356
Roi Et		358,530	334,409	350,156		3.403	3.359	3.392
Kalasin		989,633	924,312	1,164,846		3.735	3.461	3.855
Khon Kaen		779,014	671,836	790,113		3.663	3.138	3.264
Chaiyaphum		1,345,139	1,265,542	1,452,015		3.518	3.298	3.541
Nakhon Ratchasima		7,017,931	6,298,429	7,129,508		3.739	3.321	3.594

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Quality and Export value of Cassava and product of Thailand Year 2005-2009

Year	Cassava Pellets		Cassava Chips		Cassava starch				Total	
	Quality	Value	Quality	Value	Raw Starch		Modified Starch		Quality	Value
					Quality	Value	Quality	Value		
2005	0.258	838	2.773	11,938	1.013	9,396	0.595	10,717	4.639	32,889
2006	0.393	1,387	3.820	15,777	1.672	13,666	0.637	11,008	6.522	41,838
2007	1.651	7,196	2.680	11,136	1.471	13,995	0.736	12,917	6.538	45,244
2008	1.564	8,681	1.202	6,540	1.272	15,000	0.715	14,795	4.754	45,016
2009*	0.260	1,200	4.000	18,400	1.700	15,400	0.700	12,800	6.660	47,800

Source: Department of Customs of Thailand

* estimated on November 2009

Appendix 2.2.15 Sugar Cane Production by Region

Sugarcane: Area, Production and Yield by Region and Province, 2007-2009

	Planted Area (rais)				Production (Tons)				Yield per rai (Kgs.)			
	2006	2007	2008	2009	2006	2007	2008	2009	2006	2007	2008	2009
Whole Kingdom	6,033,331	6,314,295	6,588,174	6,019,794	47,658,097	64,365,482	73,501,611	66,782,715	7,899	10,194	11,157	11,094
Northern	1,690,240	1,765,893	1,796,980	1,780,373	13,674,457	19,045,978	20,569,372	20,846,719	8,090	10,785	11,447	11,709
Northeastern	2,080,782	2,285,977	2,521,455	2,111,756	15,666,587	22,469,011	27,890,193	22,839,496	7,529	9,829	11,061	10,815
Central	2,262,309	2,262,425	2,269,739	2,127,665	18,317,053	22,850,493	25,042,046	23,096,500	8,097	10,100	11,033	10,855
Loei		68,326	66,289	57,027		578,424	623,831	548,238		8,466	8,466	9,614
Nong Bua Lam Phu		25,697	34,766	35,182		217,267	327,454	339,765		8,455	8,455	9,657
Udon Thani		379,950	370,493	333,915		3,243,687	3,920,246	3,564,744		8,537	8,537	10,676
Nong Khai		7,804	7,445	6,542		66,404	75,123	66,914		8,509	8,509	10,228
Sakon Nakhon		17,696	16,337	13,840		137,180	158,904	137,997		7,752	7,752	9,971
Nakhon Phanom		7,134	6,810	6,007		63,080	71,682	63,607		8,842	10,526	10,589
Mukdahan		65,957	94,712	94,884		568,760	1,023,348	1,047,699		8,623	10,805	11,042
Yasothon		4,399	4,162	3,822		37,549	42,796	39,762		8,536	10,283	10,403
Amnat Charoen		3,603	3,230	2,894		29,833	32,843	29,831		8,280	10,168	10,308
Ubon Ratchathani												
Si Sa Ket												
Surin		84,391	159,405	100,368		777,891	1,699,468	1,081,686		9,218	10,661	10,777
Buri Ram		75,552	133,205	88,657		742,628	1,434,526	967,061		9,829	10,769	10,908
Maha Sarakham		31,292	32,691	26,948		313,677	338,149	284,340		10,024	10,344	10,551
Roi Et		14,878	15,521	13,922		150,827	164,522	149,293		10,138	10,600	10,724
Kalasin		256,717	272,119	243,676		2,737,199	3,122,303	2,701,481		10,662	11,474	11,086
Khon Kaen		466,532	482,672	385,158		5,053,847	5,662,234	4,357,474		10,833	11,731	11,313
Chaiyaphum		299,673	310,147	276,817		2,960,432	3,521,550	3,000,946		9,879	11,354	10,841
Nakhon Ratchasima		476,376	511,451	422,097		4,790,326	5,671,214	4,458,658		10,056	11,088	10,563

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Appendix 2.2.16 Farm gate Price of Cassava and Sugarcane, 1997-2009

Cassava Farm Price 2000-2009

	(Baht/kg)												
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Jan	0.68	1.08	0.84	0.65	0.67	1.03	0.93	0.82	1.3	1.38	1.12	1.99	1.16
Feb	0.67	1.29	0.88	0.59	0.66	1.05	0.94	0.76	1.39	1.36	1.16	2.09	1.16
Mar	0.67	1.55	0.95	0.58	0.68	1.11	0.93	0.74	1.48	1.3	1.23	2.2	1.19
Apr	0.65	1.65	0.86	0.64	0.69	1.16	0.93	0.8	1.47	1.18	1.21	2.23	1.13
May	0.55	1.67	0.8	0.67	0.83	1.12	0.92	0.83	1.4	0.99	1.25	2.13	1.11
Jun	0.53	1.68	0.75	0.7	0.99	1.06	0.91	0.98	1.3	0.99	1.35	2	1.13
Jul	0.53	1.83	0.74	0.66	1.06	1.02	0.88	1	1.3	0.96	1.52	1.93	1.21
Aug	0.59	1.47	0.68	0.58	1.03	1.04	0.82	1.06	1.4	0.94	1.72	1.76	1.25
Sep	0.67	1.27	0.62	0.54	0.93	0.98	0.81	1.09	1.3	0.94	1.79	1.53	1.2
Oct	0.71	1.01	0.59	0.56	0.93	0.91	0.77	1.04	1.21	0.87	1.72	1.4	1.24
Nov	0.87	1.12	0.74	0.64	0.99	0.94	0.79	1.1	1.27	1	1.62	1.28	1.45
Dec	0.98	0.94	0.77	0.67	0.99	0.97	0.82	1.2	1.4	1.13	1.82	1.14	1.79

Sugarcane Farm Price 1997-2009

	(Baht/t)												
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Jan	414.00	529.82	509.01	454.00	527.01	427.42	470.00	360.00	520.22	675.29	691.72	580.53	691.32
Feb	420.00	519.70	492.03	466.00	516.06	436.99	491.00	372.00	516.91	703.79	694.03	597.16	707.14
Mar	427.00	505.27	492.40	440.51	520.59	453.86	471.00	377.00	528.92	714.97	663.15	586.13	724.13
Apr	457.00	510.85	497.72	435.40	541.71	457.30	472.00	419.00	520.00	651.89	662.59	589.81	751.37
May	534.00	-	514.27	-	-	480.00	468.00	-	-	-	620.00	674.63	-
Jun	509.00	-	-	-	-	-	-	-	-	-	-	-	-
Jul	-	-	-	-	-	-	-	-	-	-	-	-	-
Aug	-	-	-	-	-	-	-	-	-	-	-	-	-
Sep	-	-	-	-	-	-	-	-	-	-	-	-	-
Oct	-	-	-	-	-	-	-	-	-	-	-	-	-
Nov	468.00	-	430.00	-	-	-	-	511.00	670.00	-	596.60	-	832.10
Dec	481.00	485.00	427.00	491.00	428.96	451.00	365.00	520.00	684.46	679.72	542.76	685.48	845.45

Appendix 2.2.17 Farm Value of Cassava and Sugarcane, 2000-2009

Farm Value of Cassava and Sugarcane

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Year	Farm Price		Yield per rai		Farm Value	
	Cassava B/kg	Sugarcane B/ton	Cassava kg/rai	Sugarcane kg/rai	Cassava baht/rai	Sugarcane baht/rai
2000	0.63	445	2,697	9,466	1,699	4,212
2001	0.69	514	2,805	9,042	1,935	4,648
2002	1.05	435	2,731	9,496	2,868	4,131
2003	0.93	469	3,087	10,429	2,871	4,891
2004	0.80	368	3,244	9,269	2,595	3,411
2005	1.33	520	2,749	7,434	3,656	3,866
2006	1.29	688	3,375	7,899	4,354	5,435
2007	1.18	683	3,668	10,194	4,328	6,963
2008	1.93	557	3,401	11,157	6,564	6,214
2009	1.19	698	3,628	11,094	4,317	7,744

Appendix 2.2.18 Vegetable & Fruit Production in The Northeast

Groundnuts, Planted Areas-Harvested Areas-Yields-Production by Province (1/2)

Province	Planted Areas (Rais)				Harvested Areas (Rais)			
	2004	2005	2006	2007	2004	2005	2006	2007
Whole Kingdom	258,493	257,312	248,396	209,565	249,958	249,353	239,440	201,122
Northeast	97,745	94,260	99,904	97,655	93,291	90,425	101,957	92,780
Provinces	37.8%	36.6%	40.2%	46.6%	37.3%	36.3%	42.6%	46.1%
Amnat Charoen	933	1,001	10,277	9,595	902	964	9,867	8,924
Buri Ram	12,460	12,571	10,188	9,354	11,784	11,908	9,746	9,111
Chaiyaphum	1,550	1,206	1,155	887	1,509	1,174	1,118	844
Kalasin	12,829	11,735	10,260	5,771	12,671	11,673	10,116	5,698
Khon Kaen	4,930	5,397	5,150	2,650	4,812	5,184	4,955	2,598
Loei	3,067	3,181	3,024	2,586	2,878	2,940	2,907	2,388
Maha Sarakham	848	765	697	1319	811	738	674	1301
Mukdahan	2,515	2,477	3,833	2,791	2,462	2,427	3,751	2,736
Nakhon Phanom	1,679	1,764	2,201	2,805	1,612	1,691	2,114	2,763
Nakhon Ratchasima	7,886	6,529	5,989	3,097	7,641	6,321	5,789	3,004
Nong Bua Lam Phu	278	563	569	5945	267	537	538	5807
Nong Khai	705	731	744	2833	671	646	638	2774
Roi Et	3,232	3,264	2,938	6,078	3,085	3,154	2,841	5,885
Sakon Nakhon	5,474	4,908	5,093	2,858	5,182	4,687	4,845	2,684
Si Sa Ket	10,522	9,688	8,654	9,022	9,503	9,085	8,101	8,347
Surin	6,121	6,135	6,529	5,598	5,824	5,824	6,233	5,089
Ubon Ratchathani	11,742	10,691	10,277	9,595	11,367	10,285	9,867	8,924
Udon Thani	6,941	7,499	8,350	5,276	6,468	7,166	7,981	4,979
Yasothon	4,033	4,155	3,976	9,595	3,842	4,021	9,876	8,924

Source : Office of Agricultural Economics

Groundnuts, Planted Areas-Harvested Areas-Yields-Production by Province (2/2)

Province	Yields (kg./Rai)				Production (MT)				% Change	% Share
	2004	2005	2006	2007	2004	2005	2006	2007		
Whole Kingdom	260	267	270	264	64,868	66,595	64,648	53,675	-17.0	100.00
Northeast	254	253	230	237	23,725	22,911	23,497	22,017	1,297	41
Provinces					36.6%	34.4%	36.3%	41.0%	-7643.2%	41.0%
Amnat Charoen	261	267	267	253	235	257	237	445	87.8	0.83
Buri Ram	256	258	247	259	3,021	3,070	2,406	2,356	-2.1	4.39
Chaiyaphum	231	241	241	217	348	283	269	183	-32.0	0.34
Kalasin	279	280	258	244	3,532	3,272	2,606	1,391	-46.6	2.59
Khon Kaen	239	241	232	244	1,151	1,251	1,152	635	-44.9	1.18
Loei	285	290	353	304	819	853	1025	737	-28.1	1.37
Maha Sarakham	248	252	209	239	201	186	141	311	120.6	0.58
Mukdahan	251	261	234	256	619	633	879	700	-20.4	1.30
Nakhon Phanom	220	235	243	242	355	398	513	670	30.6	1.25
Nakhon Ratchasima	240	229	231	255	1,837	1,447	1,339	766	-42.8	1.43
Nong Bua Lam Phu	247	250	255	256	66	134	137	1486	984.7	2.77
Nong Khai	250	279	288	261	168	180	184	723	292.9	1.35
Roi Et	238	247	239	234	735	780	680	1375	102.2	2.56
Sakon Nakhon	235	245	241	227	1,217	1,146	1,166	608	-47.9	1.13
Si Sa Ket	294	282	283	323	2,791	2,562	2,296	2,700	17.6	5.03
Surin	223	220	226	253	1,298	1,279	1,411	1,288	-8.7	2.40
Ubon Ratchathani	258	267	267	253	2,931	2,742	2,635	2,262	-14.2	4.21
Udon Thani	212	188	224	225	1,373	1,347	1,786	1,119	-37.3	2.08
Yasothon	268	271	267	253	1,028	1,091	2,635	2,262	-14.2	4.21

Source : Office of Agricultural Economics

Soybean, Planted Areas-Harvested Areas-Yields-Production by Province (1/2)

Province	Planted Areas (Rais)				Harvested Areas (Rais)			
	2004	2005	2006	2007	2004	2005	2006	2007
Whole Kingdom	949,391	933,946	923,699	831,231	916,664	905,751	903,286	805,456
Northeast	276,766	277,255	279,350	247,931	257,955	266,136	271,523	235,885
Provinces	29.2%	29.7%	30.2%	29.8%	28.1%	29.4%	30.1%	29.3%
Chaiyaphum	61,596	64,285	69,416	56,610	56,081	60,809	67,212	53,386
Kalasin	5,726	6,544	5,780	3,807	5,108	6,127	5,612	3,499
Khon Kaen	57,484	60,000	60,249	59,475	54,408	58,010	58,285	56,907
Loei	61,404	65,341	65,494	59,946	55,765	62,512	63,228	56,221
Maha Sarakham	1,489	1,587	1,598	1,855	1,439	1,519	1,581	1,783
Nong Bua Lam Ph	28,002	23,941	23,357	18,442	26,769	23,263	22,937	17,796
Nong Khai	5,072	3,744	3,951	0	4,833	3,599	3,795	0
Roi Et	275	281	278	282	269	273	273	275
Sa Kaeo	48,558	44,833	42,991	42,608	47,409	43,867	42,448	41,723
Udon Thani	7,160	6,699	6,236	4,906	5,874	6,157	6,152	4,295

Source : Office of Agricultural Economics

Soybean, Planted Areas-Harvested Areas-Yields-Production by Province (2/2)

Province	Yields (kg./Rai)				Production (MT)				% Change	% Share
	2004	2005	2006	2007	2004	2005	2006	2007		
Whole Kingdom	242	254	254	253	222,065	230,271	229,059	203,973	-11.0	100.0
Northeast	231	247	245	252	59,603	65,644	66,653	59,496		
Provinces					26.8%	28.5%	29.1%	29.2%		
Chaiyaphum	241	238	235	229	13,531	14,466	15,819	12,204	-22.9	6.0
Kalasin	206	206	205	223	1,054	1,263	1,150	780	-32.2	0.4
Khon Kaen	219	226	228	233	11,930	13,124	13,282	13,236	-0.3	6.5
Loei	192	249	248	248	10,718	15,588	15,710	13,944	-11.2	6.8
Maha Sarakham	212	217	211	220	305	330	334	393	17.7	0.2
Nong Bua Lam Phu	213	201	202	191	5,706	4,673	4,631	3,401	-26.6	1.7
Nong Khai	224	216	217	0	1,083	777	823	0	-100.0	0.0
Roi Et	201	205	205	215	54	56	56	59	5.4	0.0
Sa Kaeo	296	325	325	351	14,033	14,257	13,800	14,657	6.2	7.2
Udon Thani	202	180	170	191	1,189	1,110	1,048	822	-21.6	0.4

Source : Office of Agricultural Economics

Garlic, Planted Areas-Harvested Areas-Yields-Production by Province

Province	Planted Areas (Rais)				Harvested Areas (Rais)			
	2005	2006	2007	2008	2005	2006	2007	2008
Whole Kingdom	105,986	84,178	76,324	87,422	105,191	83,317	75,587	86,383
Northeast	1,515	3,742	3,862	4,591	1,446	3,704	3,825	4,544
	1.4%	4.4%	5.1%	5.3%	1.4%	4.4%	5.1%	5.3%
Chaiyaphum	780	663	597	637	757	656	592	629
Nakhon Phanom	0	1,771	1,881	1,129	0	1,753	1,862	1,121
Nakhon Ratchasima	735	645	787	841	689	639	779	832
Si Sa Ket	0	663	597	1,984	0	656	592	1,962

Province	Yields (kg./Rai)				Production (MT)				%Change	% Share
	2005	2006	2007	2008	2005	2006	2007	2008		
Whole Kingdom	1,013	977	988	991	106,598	81,376	74,711	85,648	14.6	100.0
Northeast	758	734	748	743	1,096	2,719	2,860	3,375		
					1.0%	3.3%	3.8%	3.9%		
Chaiyaphum	779	773	784	790	590	507	464	497	7.1	0.6
Nakhon Phanom	0	717	735	723	0	1,257	1,369	810	-40.8	0.9
Nakhon Ratchasim	734	701	723	736	506	448	563	612	8.7	0.7
Si Sa Ket	0	773	784	742	0	507	464	1,456	213.8	1.7

Source : Office of Agricultural Economics

Shollot, Planted Areas-Harvested Areas-Yields-Production by Province

Province	Planted Areas (Rais)				Harvested Areas (Rais)			
	2005	2006	2007	2008	2005	2006	2007	2008
Whole Kingdom	109,900	111,446	108,763	106,561	108,280	108,898	108,073	106,053
Northeast	28,285	26,211	28,994	30,510	28,043	25,947	28,725	30,354
	25.7%	23.5%	26.7%	28.6%	25.9%	23.8%	26.6%	28.6%
Buriram	1,447	1,374	1,386	1,513	1,418	1,339	1,372	1,505
Chaiyaphum	2,175	2,264	2,340	2,366	2,131	2,232	2,293	2,359
Si Sa Ket	22,614	20,806	23,575	24,768	22,480	20,649	23,398	24,644
Surin	800	635	673	719	783	615	666	715
Ubon Ratchathani	562	477	349	437	550	467	342	434
Yasothon	687	655	671	707	681	645	654	697

Province	Yields (kg./Rai)				Production (MT)				% Change	% Share
	2005	2006	2007	2008	2005	2006	2007	2008		
Whole Kingdom	1,968	2,070	1,934	1,881	213,060	225,378	208,995	199,435	-4.6	100.0
Northeast	2,053	2,248	1,896	2,063	57,581	58,318	54,466	62,627		
					27.0%	25.9%	26.1%	31.4%		
Buriram	2,000	2,173	2,168	2,175	2,836	2,910	2,974	3,274	10.1	1.6
Chaiyaphum	2,024	2,112	1,880	1,861	4,313	4,714	4,310	4,389	1.8	2.2
Si Sa Ket	2,074	2,285	1,879	2,070	46,624	47,188	43,967	51,022	16.0	25.6
Surin	1,605	1,751	1,733	1,817	1,257	1,077	1,154	1,299	12.6	0.7
Ubon Ratchathani	1,505	1,578	1,614	1,770	828	737	552	768	39.1	0.4
Yasothon	2,530	2,623	2,307	2,690	1,723	1,692	1,509	1,875	24.3	0.9

Source : Office of Agricultural Economics

Potato, Planted Areas-Harvested Areas-Yields-Production by Province

Province	Planted Areas (Rais)				Harvested Areas (Rais)			
	2005	2006	2007	2008	2005	2006	2007	2008
Whole Kingdom	47,494	48,982	50,601	47,824	47,111	48,494	49,880	47,563
Northeast	1,948	1,979	1,037	306	1,909	1,941	1,028	303
	4.1%	4.0%	2.0%	0.6%	4.1%	4.0%	2.1%	0.6%
Loei	272	150	262	89	265	145	259	88
Nong Khai	903	942	775	0	887	927	769	0
Skon Nakhon	773	887	0	217	757	869	0	215

Province	Yields (kg./Rai)				Production (MT)				% Change	% Share
	2005	2006	2007	2008	2005	2006	2007	2008		
Whole Kingdom	2,417	2,445	2,520	2,407	113,881	118,569	125,703	114,499	-8.9	100.0
Northeast	2,656	2,712	2,861	2,785	5,070	5,264	2,941	844		
					4.5%	4.4%	2.3%	0.7%		
Loei	3,125	3,152	3,212	3,141	828	457	832	276	-66.8	0.2
Nong Khai	2,691	2,751	2,743	-	2,387	2,550	2,109	0	-100.0	0.0
Skon Nakhon	2,450	2,597	-	2,642	1,855	2,257	0	568		0.5

Source : Office of Agricultural Economics

Pineapple, Harvested Areas-Yields-Production by Province

Province	Harvested Areas (Rais)				Yields (kg./Rai)			
	2004	2005	2006	2007	2004	2005	2006	2007
Whole Kingdom	556,275	613,800	632,029	590,306	3,777	3,557	4,280	3,702
Northeast	21,303	22,562	23,653	21,526	3,878	3,347	3,819	3,586
Provinces	3.8%	3.7%	3.7%	3.6%				
Loei	1,026	1,085	1,155	1,170	3,459	3,354	3,593	3,656
Nakhon Phanorr	5,927	6,840	6,913	6,387	3,281	3,401	3,893	3,623
Nong Khai	14,350	14,637	15,585	13,969	4,155	3,322	3,803	3,563

Province	Production (MT)				% Change	% Share
	2004	2005	2006	2007		
Whole Kingdom	2,100,979	2,183,280	2,705,179	2,185,275	-19.2	100.0
Northeast	82,618	75,525	90,332	77,187		
Provinces	3.9%	3.5%	3.3%	3.5%		
Loei	3,549	3,639	4,150	4,278	3.1	0.2
Nakhon Phanorr	19,446	23,261	26,912	23,137	-14.0	1.1
Nong Khai	59,623	48,625	59,270	49,772	-16.0	2.3

Source : Office of Agricultural Economics

Longan, Harvested Areas-Yields-Production by Province

Province	Harvested Areas (Rais)				Yields (kg./Rai)			
	2004	2005	2006	2007	2004	2005	2006	2007
Whole Kingdom	684,845	820,985	870,125	939,029	879	867	542	528
Northeast	41,114	43,720	46,426	47,215	460	438	448	406
	6.0%	5.3%	5.3%	5.0%				
Loei	20,959	22,502	24,324	24,804	465	445	453	409
Nakhon Ratchasima	1,575	1,710	1,908	1,958	732	637	642	617
Nong Bua Lam Phu	3,835	4,237	4,582	4,666	485	456	465	412
Nong Khai	4,296	4,501	4,512	4,543	535	525	530	459
Si Sa Ket	2,242	2,242	2,242	2,287	336	317	321	318
Ubon Ratchathani	1,453	1,511	1,699	1,745	623	559	573	538
Udon Thani	6,227	6,462	6,575	6,621	329	315	334	301
Yasothon	527	555	584	591	266	261	269	261

Province	Production (MT)				% Change	% Share
	2004	2005	2006	2007		
Whole Kingdom	601,823	712,178	471,892	495,457	5.0	100.0
Northeast	18,904	19,134	20,813	19,173		
	3.1%	2.7%	4.4%	3.9%		
Loei	9,746	10,013	11,019	10,145	-7.9	2.0
Nakhon Ratchasima	1,153	1,089	1,225	1,208	-1.4	0.2
Nong Bua Lam Phu	1,860	1,932	2,131	1,922	-9.8	0.4
Nong Khai	2,298	2,363	2,391	2,085	-12.8	0.4
Si Sa Ket	753	711	720	727	1.0	0.1
Ubon Ratchathani	905	845	974	939	-3.6	0.2
Udon Thani	2,049	2,036	2,196	1,993	-9.2	0.4
Yasothon	140	145	157	154	-1.9	0.0

Source : Office of Agricultural Economics

Appendix 2.2.19 Livestock in the Northeast

Livestock

	Number of cattle(Heads)		Number of buffaloes(Heads)		Number of dairy-cow(Heads)		Number of swine(Heads)		
	1997	2007	1997	2007	2005	2007	1997	2007	
Whole Kingdom	6,778,445	6,480,876	2,983,928	1,743,546	496,508	495,236	6,893,588	8,381,122	
Northern	1,770,144	1,598,851	363,007	189,760	44,937	39,640	1,210,119	1,320,718	
Northeastern	2,688,419	2,706,425	2,380,384	1,405,743	102,725	99,605	1,316,112	1,605,282	
Central Plain	1,478,934	1,438,998	171,933	104,440	340,288	348,525	3,550,692	4,595,837	
Southern	840,948	736,602	68,604	43,603	8,558	7,466	816,665	859,285	
Central NE	616,728	682,821	548,530	311,737	16,891	17,845	241,017	294,014	
Lowerl NE1	968,550	930,327	661,775	445,269	67,656	66,194	567,086	754,736	
Lowerl NE2	473,420	483,035	544,407	279,609	1,324	1,586	260,719	253,740	
Upper NE1	352,787	348,973	316,431	200,776	11,309	9,384	135,395	184,813	
Upper NE2	276,934	261,269	309,241	168,352	5,545	4,596	111,895	117,979	
Loei	Upper NE1	91,768	93,458	38,260	32,150	3,416	2,566	36,957	39,629
Nong Bua Lam Phu	Upper NE1	56,656	59,987	41,955	30,729	1,406	1,275	19,208	21,176
Udon Thani	Upper NE1	145,427	152,761	143,869	92,500	5,830	4,770	50,953	90,428
Nong Khai	Upper NE1	58,936	42,767	92,347	45,397	657	773	28,277	33,580
Sakon Nakhon	Upper NE2	142,869	136,555	153,682	82,154	5,459	4,542	45,992	43,003
Nakhon Phanom	Upper NE2	73,795	59,631	91,240	52,372	70	41	43,448	46,306
Mukdahan	Upper NE2	60,270	65,083	64,319	33,826	16	13	22,455	28,670
Yasothon	Lowerl NE2	69,801	73,807	69,177	45,233	27	21	24,094	26,043
Am nat Chareon	Lowerl NE2	43,185	52,827	56,621	36,057	63	57	14,232	16,936
Ubon Ratchathani	Lowerl NE2	199,716	196,410	219,442	122,936	581	720	107,595	112,392
Si Sa Ket	Lowerl NE2	160,718	159,991	199,167	75,383	653	788	114,798	98,369
Surin	Lowerl NE1	145,758	139,168	212,564	188,428	1,780	1,615	93,303	107,148
Buri Ram	Lowerl NE1	157,995	187,402	197,580	120,195	4,828	4,125	120,050	164,068
Maha Sarakham	Central NE	118,314	155,247	120,027	73,971	4,149	3,724	47,208	50,026
Roi Et	Central NE	175,020	172,625	167,619	76,356	685	658	78,018	83,441
Kalasin	Central NE	93,810	95,505	101,965	86,791	133	127	34,948	44,956
Khon Kaen	Central NE	229,584	259,444	158,919	74,619	11,924	13,336	80,843	115,591
Chaiyaphum	Lowerl NE1	228,133	185,292	83,576	54,427	1,373	1,834	93,522	142,323
Nakhon Ratchasima	Lowerl NE1	436,664	418,465	168,055	82,219	59,675	58,620	260,211	341,197

Source: OAE data

Appendix 2.2.20 In-land fishery in the Northeast

Production for whole Inland fishery (including freshwater culture), by province 2003 – 2007

		Quantity:ton				
		2003	2004	2005	2006	2007
Total		559,572	727,457	738,221	741,442	750,721 (100%)
Northern		139,234	178,833	172,046	187,415	183,161 (24%)
North-eastern		152,674	178,954	188,245	186,125	207,266 (28%)
Central Plain		242,196	313,893	307,562	297,833	296,033 (39%)
Southern		25,468	55,777	70,368	70,069	64,261 (9%)
Kalasin	Central NE	7,008	8,292	9,669	8,038	8,075 (1%)
Khon Kaen	Central NE	17,845	21,912	21,837	25,347	34,011 (5%)
Chaiyaphum	Lowerl NE1	12,045	10,997	10,028	7,367	8,091 (1%)
Nakhon Phanom	Upper NE2	3,774	4,725	5,755	4,882	5,592 (1%)
Nakhon Ratchasima	Lowerl NE1	9,319	7,092	9,014	7,433	7,473 (1%)
Nong Khai	Upper NE1	10,140	8,342	11,228	11,553	12,241 (2%)
Buri Ram	Lowerl NE1	5,211	4,837	5,215	6,017	5,624 (1%)
Maha Sarakham	Central NE	3,024	8,474	9,274	7,476	9,513 (1%)
Yasothon	Lowerl NE2	4,435	4,984	5,260	4,698	5,604 (1%)
Roi Et	Central NE	3,202	3,921	4,283	4,190	4,085 (1%)
Loei	Upper NE1	5,206	7,701	8,529	8,277	7,815 (1%)
Si Sa Ket	Lowerl NE2	10,921	10,750	10,345	13,376	11,748 (2%)
Sakon Nakhon	Upper NE2	7,836	10,317	10,723	4,853	4,063 (1%)
Surin	Lowerl NE1	6,414	6,788	6,374	7,091	9,179 (1%)
Udon Thani	Upper NE1	12,669	15,056	17,785	20,389	23,052 (3%)
Ubon Ratchathani	Lowerl NE2	17,625	26,812	25,170	26,149	32,663 (4%)
Mukdahan	Upper NE2	5,630	6,457	6,090	4,929	5,008 (1%)
Nong Bua Lam Phu	Upper NE1	6,851	7,901	8,253	12,096	11,405 (2%)
Amnat Charoen	Lowerl NE2	3,519	3,596	3,413	1,964	2,024 (0%)
Central NE		31,079	42,599	45,063	45,051	55,684
Lowerl NE1		32,989	29,714	30,631	27,908	30,367
Lowerl NE2		36,500	46,142	44,188	46,187	52,039
Upper NE1		34,866	39,000	45,795	52,315	54,513
Upper NE2		17,240	21,499	22,568	14,664	14,663

Source : FISHERIES STATISTICS OF THAILAND

Production of Freshwater aquaculture by type of culture and province, 2007

		Quantity:Ton				
		Total	Pond	Paddy cum fish	Ditch	Cage
Total		525,095	453,666	26,796	11,571	33,062
Northern		107,125	101,170	70	735	5,150
Central Plain		263,824	214,296	22,964	8,911	17,653
Southern		53,458	49,842	20	1,895	1,701
North-eastern		100,688	88,358	3,742	30	8,558
Kalasin	Central NE	4,441	3,844	112	-	485
Khon Kaen	Central NE	20,404	17,218	-	-	3,186
Chaiyaphum	Lowerl NE1	7,014	6,585	-	-	429
Nakhon Phanom	Upper NE2	3,277	2,726	476	-	75
Nakhon Ratchasima	Lowerl NE1	5,064	4,825	-	-	239
Nong Khai	Upper NE1	6,377	5,752	25	-	600
Buri Ram	Lowerl NE1	2,043	2,008	8	-	27
Maha Sarakham	Central NE	6,425	4,181	2,203	3	38
Yasothon	Lowerl NE2	676	675	1	-	-
Roi Et	Central NE	2,217	1,941	11	10	255
Loei	Upper NE1	6,514	5,694	6	1	813
Si Sa Ket	Lowerl NE2	2,132	1,779	345	-	8
Sakon Nakhon	Upper NE2	1,494	1,340	32	1	121
Surin	Lowerl NE1	3,949	3,706	115	3	125
Udon Thani	Upper NE1	8,083	7,782	119	-	182
Ubon Ratchathani	Lowerl NE2	13,853	12,213	101	-	1,539
Mukdahan	Upper NE2	3,690	3,173	157	10	350
Nong Bua Lam Phu	Upper NE1	2,300	2,242	7	2	49
Amnat Charoen	Lowerl NE2	735	674	24	-	37
Central NE		33,487	27,184	2,326	13	3,964
Lowerl NE1		18,070	17,124	123	3	820
Lowerl NE2		17,396	15,341	471	-	1,584
Upper NE1		23,274	21,470	157	3	1,644
Upper NE2		8,461	7,239	665	11	546

Source : FISHERIES STATISTICS OF THAILAND

Appendix 2.2.21 Para Rubber Plantation Area

Para rubber : Area, production by region and province, 2005–2007

	Planted area (Rai)				Production (Tons)			
	2005	2006	2007	2008	2005	2006	2007	2008
Whole Kingdom	13,610,062	14,353,567	15,356,703	16,716,945	2,979,722	3,070,520	3,024,207	3,166,843
Northern	112,345	213,692	402,214	600,578	1,442	2,010	4,788	3,710
Northeastern	1,004,136	1,539,623	2,143,206	2,799,209	95,705	117,303	136,128	154,917
Central Plain	1,567,420	1,644,704	1,697,967	1,977,460	295,313	312,393	338,977	364,100
Southern	10,926,161	10,955,548	11,113,316	11,339,693	2,587,262	2,638,814	2,544,314	2,644,116
Chiang Rai	36,445	49,288	81,936	92,851	188	191	195	308
Phayao	17,720	32,740	53,687	81,473	110	124	2,314	205
Lampang	2,048	3,032	7,361	25,866	-	-	-	-
Lamphun	1,991	3,531	8,529	8,865	-	-	-	-
Chiang Mai	5,484	8,716	20,516	32,927	-	-	-	-
Mae Hong Son	378	782	1,435	2,286	-	-	-	-
Tak	1,746	3,831	9,702	18,578	-	8	12	114
Kamphaeng Phet	3,470	28,798	32,215	32,784	152	252	334	258
Sukhothai	3,034	13,558	18,685	19,906	-	-	-	-
Phrae	3,969	6,138	12,840	17,636	-	-	-	-
Nan	10,157	18,818	41,742	47,728	107	109	516	590
Uttaradit	1,520	2,606	6,260	18,025	-	-	-	8
Phitsanulok	10,032	14,531	67,820	145,328	427	614	620	835
Phichit	665	1,276	1,537	1,896	-	-	-	-
Nakhon Sawan	2,142	4,028	5,760	7,982	-	-	-	47
Uthai Thani	5,876	12,765	21,235	21,878	424	624	617	626
Phetchabun	5,668	9,254	10,954	24,560	34	88	180	227
Loei	109,140	195,925	241,513	382,497	8,600	9,440	10,689	11,301
Nong Bua Lam Phu	24,238	30,969	53,930	94,288	1,340	1,584	1,686	2,111
Udon Thani	79,884	101,986	219,270	295,000	10,329	13,470	14,468	14,880
Nong Khai	255,841	425,216	531,520	637,824	21,817	25,367	33,356	36,138
Sakon Nakhon	42,580	62,160	93,240	171,665	2,734	3,689	3,768	4,758
Nakhon Phanom	53,450	82,324	105,876	140,517	5,312	6,771	7,545	8,157
Mukdahan	50,095	67,757	91,895	110,000	4,206	5,661	6,416	6,818
Yasothon	26,005	32,629	43,180	49,657	2,269	2,289	3,330	3,922
Amnat Charoen	16,573	23,197	35,348	42,418	168	370	747	848
Ubon Rachathani	62,394	107,898	159,846	168,523	5,623	7,038	7,162	9,201
Si Sa Ket	69,380	105,965	157,229	176,096	8,942	10,600	11,815	13,595
Surin	51,618	64,452	84,978	90,686	5,047	6,248	6,696	11,316
Buri Ram	89,558	137,632	174,720	178,331	10,942	15,072	17,644	20,660
Maha Sarakham	2,402	2,774	3,234	3,881	278	322	373	449
Roi Et	13,694	17,131	21,441	24,657	1,921	2,102	2,142	2,424
Kalasin	27,971	32,480	50,772	137,398	3,097	3,684	4,440	4,801
Khon Kaen	12,501	18,587	32,089	38,507	1,536	1,558	1,730	1,909
Chaiyaphum	10,455	18,415	26,163	31,431	1,013	1,349	1,349	1,529
Nakhon Ratchasima	6,357	12,126	16,962	25,833	531	689	772	1,100
Prachin Buri	4,403	4,458	4,528	11,539	204	472	490	748
Chachoengsao	109,763	112,233	112,966	116,896	11,240	14,489	16,309	19,575
Sa Kaeo	13,377	13,671	15,426	18,511	2,256	2,273	2,224	2,325
Chanthaburi	353,680	364,786	369,750	463,799	75,178	78,571	85,521	89,514
Trat	210,169	216,117	223,077	250,031	42,495	42,920	44,255	47,731
Rayong	595,567	602,547	616,956	701,732	120,825	126,222	135,833	148,642
Chon Buri	171,373	174,980	176,911	185,757	27,494	30,333	34,083	34,626
Kanchanaburi	36,427	69,218	79,347	97,206	7,989	8,435	8,652	8,849
Ratchaburi	2,810	12,264	12,559	14,077	286	288	423	471
Prachuap Khiri Khan	69,851	74,430	86,447	108,342	7,346	8,390	11,187	11,617
Chumphon	451,079	453,039	459,039	464,662	101,711	109,434	103,067	107,770
Ranong	121,494	120,625	125,625	150,529	26,842	25,462	22,053	23,455
Surat Thani	1,813,652	1,807,643	1,830,161	1,871,907	437,191	447,144	394,270	428,184
Phangnga	655,522	650,427	658,427	757,025	163,129	154,734	139,154	147,271
Phuket	109,302	105,256	101,985	91,787	27,617	27,144	26,018	23,552
Krabi	605,166	602,147	610,147	625,231	135,580	136,318	136,721	138,421
Trang	1,302,127	1,311,635	1,309,313	1,310,188	334,820	336,191	322,956	333,863
Nakhon Si Thammarat	1,368,824	1,368,042	1,400,808	1,447,643	314,455	307,495	280,535	293,137
Phatthalung	520,198	525,400	538,411	538,477	129,282	142,223	140,008	140,590
Songkhla	1,410,927	1,418,927	1,444,012	1,444,302	357,018	364,021	366,301	366,636
Satun	276,947	282,485	289,811	290,019	59,949	65,147	65,651	65,242
Pattani	282,187	287,830	294,607	295,185	55,519	63,198	64,149	67,159
Yala	1,023,063	1,026,563	1,046,438	1,046,872	217,028	222,236	233,762	253,468
Narathiwat	985,673	995,529	1,004,532	1,005,871	227,121	238,067	249,669	255,368
Whole Kingdom	100	105	113	123	100	103	101	106
Northeastern	100	153	213	279	100	123	142	162
Rate Whole Kingdom (2005=100)	100	105	108	126	100	106	115	123
Rate Northeast (2005=100)	100	100	102	104	100	102	98	102

Appendix 2.3.1 Rice market

Rice market share in World marketing, Year 2008-2010

Country	Thailand	Vietnam	Pakistan	USA	India	China	Cambodia	Uruguay	Argentina	Egypt	Brasil	Others	Total
Year 2008													
Quantity (Million ton)	10.216	4.649	3.000	3.270	3.380	0.969	0.500	0.634	0.408	0.750	0.511	1.311	29.598
Market share (%)	34.520	15.710	10.140	11.050	11.420	3.270	1.690	2.140	1.380	2.530	1.730	4.430	100.000
Year 2009													
Quantity (Million ton)	8.600*	5.700	3.000	3.100	2.000	0.800	0.800	0.800	0.500	0.500	0.450	1.962	28.212
Market share (%)	30.480	20.200	10.630	10.990	7.090	2.840	2.840	2.840	1.770	1.770	1.600	6.950	100.000
Year 2010													
Quantity (Million ton)	9.500*	5.500	3.300	3.050	1.500	1.300	0.800	0.800	0.550	0.500	0.400	2.450	29.650
Market share (%)	32.040	18.550	11.130	10.290	5.060	4.380	2.700	2.700	1.850	1.690	1.350	8.260	100.000

Remark: * estimate o Nov.09

Source: World Grain Situation and Outlook, USDA Oct.09

Thai rice export data from Office of Agricultural Economics by cooperative with Thailand Customs Department

Supply and Demand of Thai rice, year 2005 - 2010

Items	Y 2005	Y 2006	Y 2007	Y 2008	Y 2009 (2)	Increasing rate (%)	Y 2010 (1)	Difference (1)and(2)
Produce	28.537	30.292	29.642	32.099	31.650	2.69	31.489	-0.51
Needs	15.860	15.914	16.261	16.815	17.101	2.08	17.829	4.26
Export	11.358	11.355	13.929	15.479	13.030	6.02	14.394	10.47
	(7.496)	(7.494)	(9.193)	(10.216)	(8.600)		(9.50)	

Remark: * estimate on October 2009, () Unit: Million ton of rice, rate of paddy change to rice is 1:0.66

Source

Office of Agricultural Economics

Farm gate price of Rice, FOB Export price, year 2005 - 2010

Year	Jasmine Rice			Rice 5%			Long seed stickyrice 10%		
	Farmer (Baht/ton)	FOB export		Farmer (Baht/ton)	FOB export		Farmer (Baht/ton)	FOB export	
		(Baht/ton)	(\$/ton)		(Baht/ton)	(\$/ton)		(Baht/ton)	(\$/ton)
2005	7,685	16,647	416	6,607	11,554	289	6,057	12,729	318
2006	8,032	18,094	480	6,533	11,583	307	7,612	17,135	456
2007	8,875	19,267	561	6,587	11,242	327	10,710	23,097	673
2008	12,536	30,083	910	9,848	22,767	688	6,327	19,289	585
2009**	14,500	32,000	940	9,650	18,800	550	7,600	17,100	500
Increasing rate (%)	18.71	19.91	25.48	12.39	17.93	23.29	2.73	7.35	12.23

Remark: * FOB export price of Jasmine rice, class 2 (New), ** estimate on November 2009

Source

Office of Agricultural Economics

Quantity and Value of Thailand rice exportation, year 2005 - 2010

Year	Quantity ^{1/} (Million ton of rice)	Value		Exchange Rate ^{2/} (Baht/\$US)
		Million Baht ^{1/}	Million \$US	
2005	7.496	92,994	2,320	40.0761
2006	7.494	98,179	2,602	37.7352
2007	9.193	119,215	3,471	34.3509
2008	10.216	203,219	6,132	33.1413
2009*	8.600	170,000	5,000	34.0000
Increasing Rate	6.020	21.34	27.04	-4.48
2010*	9.500	197,000	5,794	34.0000

Remarks: * estimate on Nov.2009

Source: 1/ Office of Agricultural Economics by cooperative with Thailand Customs Department

2/ Bank of Thailand

Appendix 2.3.2 Trend of Production and Consumption of Para Rubber in the World

(1970-2009)

Unit : thousand tons

	Production ①	Consumption ②	①-②
1970	3,103	2,990	113
1971	3,085	3,093	-8
1972	3,120	3,230	-110
1973	3,505	3,403	103
1974	3,445	3,518	-73
1975	3,315	3,368	-53
1976	3,560	3,555	5
1977	3,625	3,715	-90
1978	3,755	3,725	30
1979	3,860	3,870	-10
1980	3,830	3,850	-20
1981	3,690	3,700	-10
1982	3,755	3,655	100
1983	4,030	3,990	40
1984	4,250	4,230	20
1985	4,340	4,345	-5
1986	4,450	4,420	30
1987	4,780	4,805	-25
1988	5,130	4,790	340
1989	5,150	5,330	-180
1990	5,120	5,330	-210
1991	5,170	5,100	70
1992	5,460	5,390	70
1993	6,340	5,380	960
1994	5,670	5,620	50
1995	6,070	5,950	120
1996	6,440	6,110	330
1997	6,470	6,460	10
1998	6,820	6,570	250
1999	6,863	6,640	223
2000	6,762	7,381	-619
2001	7,332	7,333	-1
2002	7,326	7,556	-230
2003	8,020	7,939	81
2004	8,746	8,718	28
2005	8,904	9,200	-296
2006	9,791	9,677	114
2007	9,801	10,144	-343
2008	10,036	10,173	-137
2009	9,617	9,390	227

data: HOXSINBUSSAN Co

<http://info.hd-station.net/data/rub/sn.pdf>

Appendix 2.3.3 Production and Consumption of Rubber in major Countries (2002-2009)

Production of Natural Rubber in 2002-2009

Unit : thousand tons

Country	2002	2003	2004	2005	2006	2007	2008	2009*
Thailand	2,615.1	2,876.0	2,984.3	2,937.2	3,137.0	3,056.0	3,089.8	2,149.2
Indonesia	1,630.0	1,792.2	2,066.2	2,271.0	2,637.0	2,755.2	2,751.0	1,987.0
Malaysia	889.8	985.6	1,168.7	1,126.0	1,283.6	1,199.6	1,072.4	618.4
China	527.0	656.0	573.0	510.0	533.0	590.0	560.3	410.6
Vietnam	331.4	363.5	419.0	481.6	555.4	601.7	662.9	371.9
India	640.8	707.1	742.6	771.5	853.3	811.1	881.3	536.4
Others	691.9	639.6	792.2	806.7	791.7	782.4	1,008.3	3,722.5
Total	7,326.0	8,020.0	8,746.0	8,904.0	9,791.0	9,796.0	10,026.0	6,796.0

Source : IRSG, October - December 2009.

<http://www.thair.com/en/?detail=stat-world#>

* : Show Detail in below table,

Consumption of Natural Rubber in 2002-2009

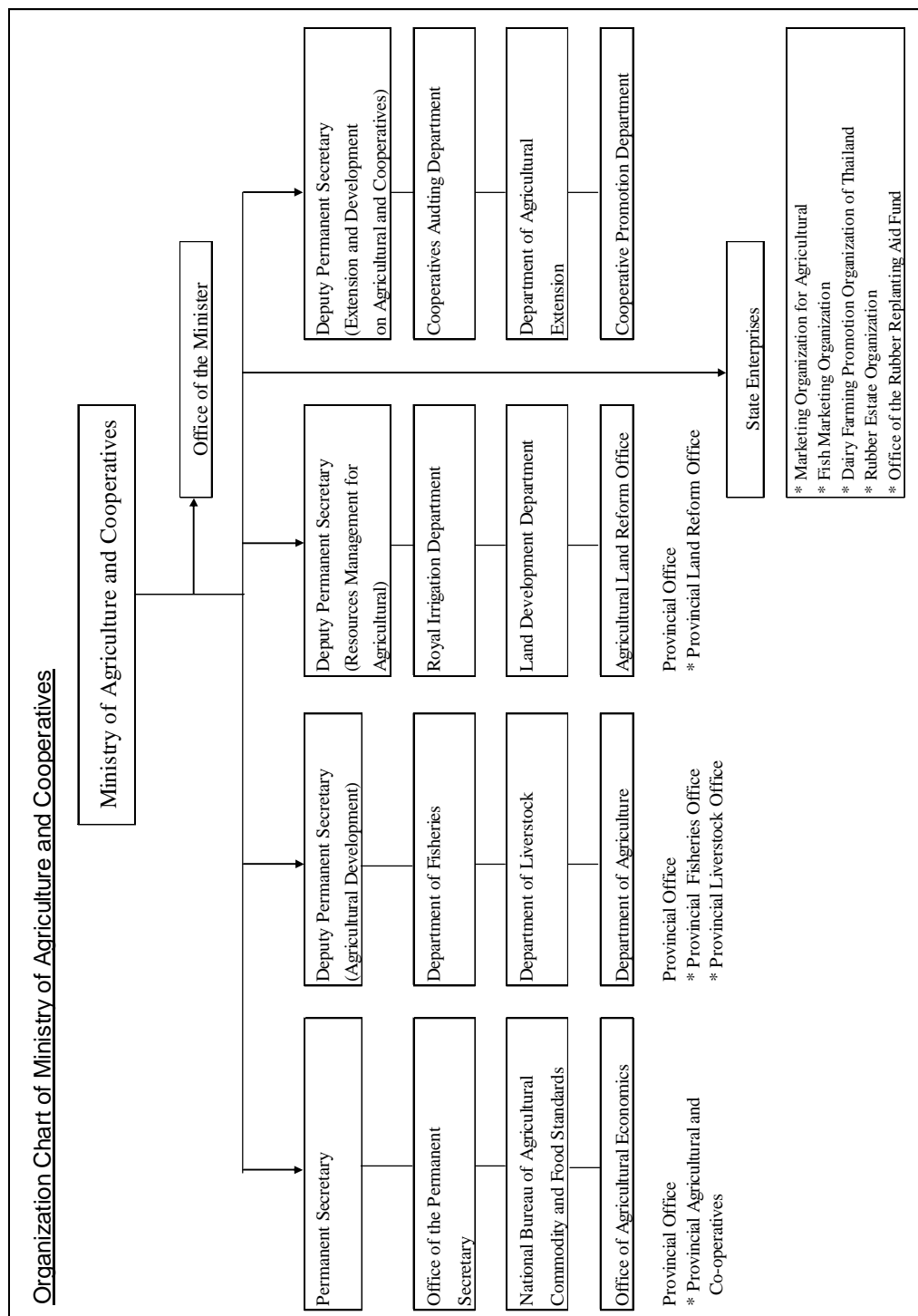
Unit : thousand tons

Country	2002	2003	2004	2005	2006	2007	2008	2009*
Thailand	278.4	298.7	318.6	334.6	320.8	373.7	397.6	90.0
Japan	749.0	784.2	814.8	857.4	873.7	887.4	877.9	160.0
Malaysia	407.9	420.8	402.8	386.5	383.3	446.3	469.0	108.0
China	1,395.0	1,525.0	2,000.0	2,150.0	2,400.0	2,550.0	2,560.0	597.0
U.S.A.	1,110.8	1,078.5	1,143.6	1,159.2	1,003.1	1,018.4	1,041.0	206.6
Rep.of Korea	325.6	332.6	351.7	369.8	363.6	377.3	358.2	74.5
Germany	247.0	260.3	242.3	263.0	269.2	283.3	213.8	37.4
Turkey	95.0	108.7	119.7	130.4	133.3	144.0	136.5	22.0
Others	2,943.3	3,135.2	3,307.5	3,418.1	3,582.0	3,803.6	3,672.0	748.5
Total	7,552.0	7,944.0	8,701.0	9,069.0	9,329.0	9,884.0	9,726.0	2,044.0

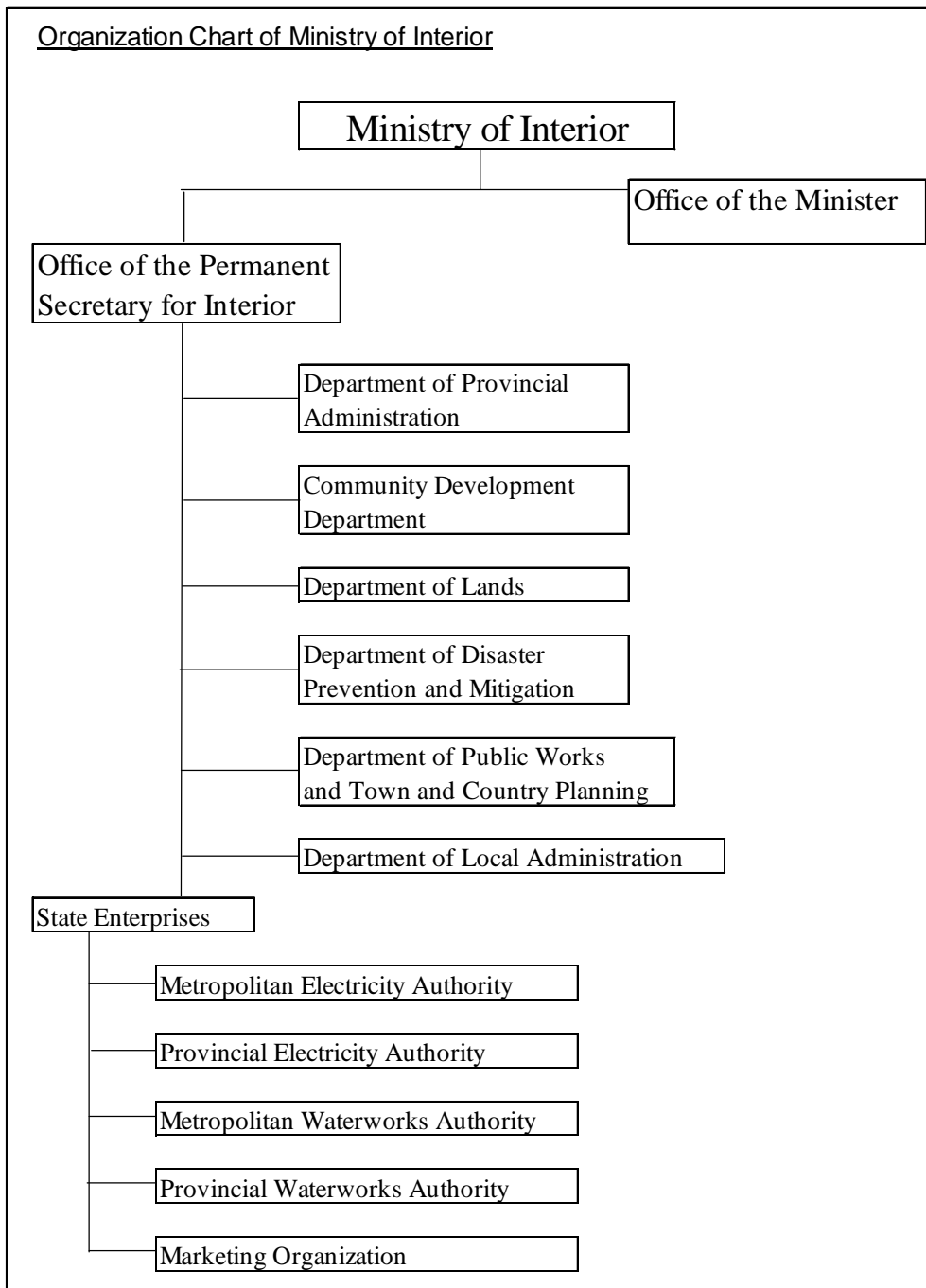
Source : IRSG, April - June 2009.

* : Jan.- Mar. 2009 , the detail ws shown on below.

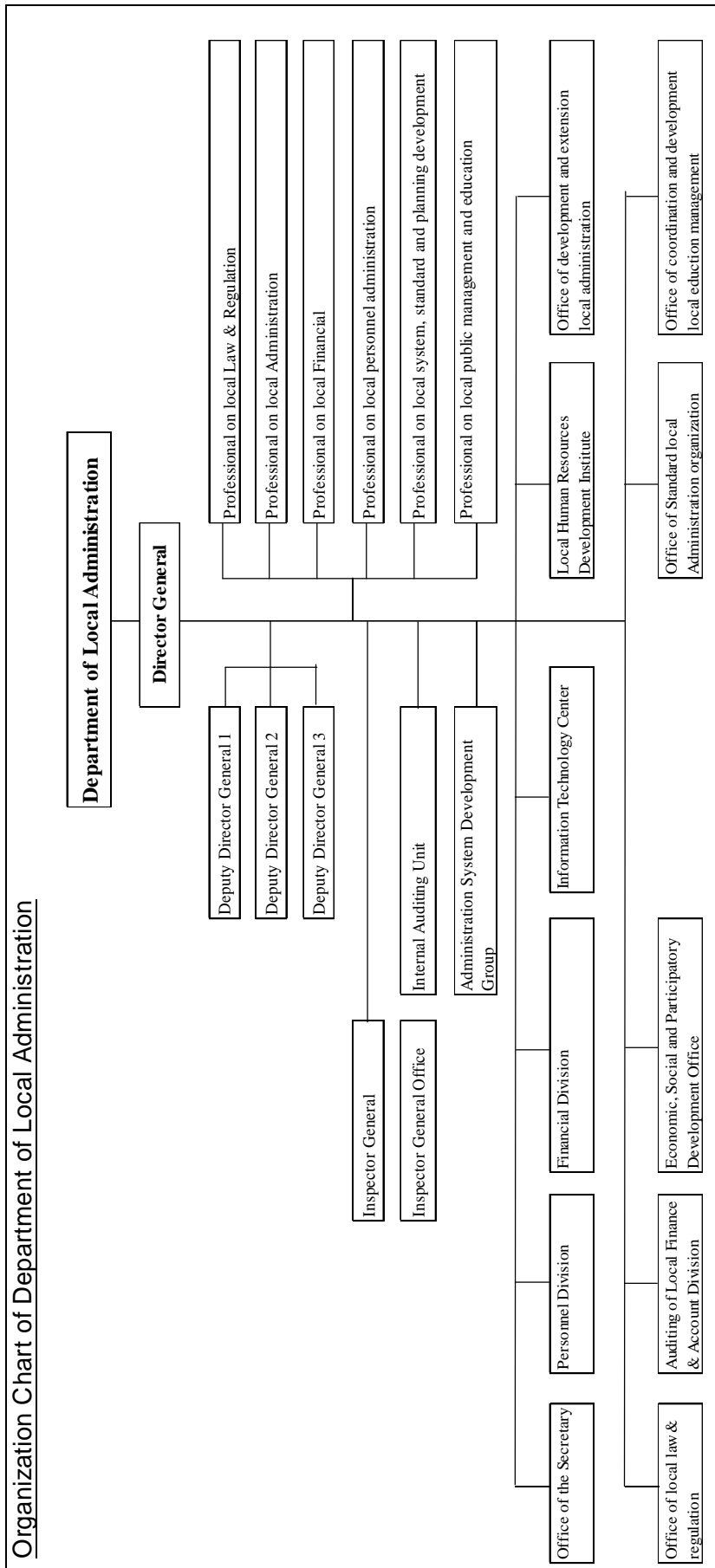
Appendix 2.4.1 Organization Chart of Ministry of Agriculture and Cooperatives



Appendix 2.4.2 Organization Chart of Ministry of Interior



Appendix 2.4.3 Organization Chart of Department of Local Administration



Appendix 2.5.1

Higher-priorities-given Policies/Development Plans for Agriculture/Water Management

The main pillar of the present survey can be briefly phrased as “To contribute to narrowing the regional income disparity between the NE Region and the others through attaining higher income for the NE Region by means of improvement of agricultural productivity which can be realized through improvement in water management (IWRM manner) and the resultant increase of irrigation areas in the Region”. Accordingly, as the higher-priorities-given policies, currently on-going 10th NESDB Plan and the policy statement announced by the present government on December 2008 were taken up for review so as to confirm the policy directions on social, economic as well as environmental aspects. Among others the issues/matters related with agriculture and water management policies were reviewed fully with due attention.

1 Five Year National Economic and Social Development Plans

(1) Transition of NESDB Plans

In Thailand, the first NESDB Plan was launched in 1961. To date, as many as 10 NESDB Plans have been implemented for about 50 year period continuously, serving constantly great roles as the guideline of development plans at the national level. In the early 1960’s, ever existing economic development manner as initiated/led by the then government hit a snag. It was then the government headed by General Sarit T. who changed in direction and made his time an important turning point through appointing preferentially such economic technocrats at the leading positions for the national development. The Prime Minister Sarit T. called the 1960’s as “The era for Development” and placed the followings at the top agenda for the national development policies.

- * Industrialization initiated mainly by private business
- * Active promotion of foreign investment in Thailand
- * Formulation of national economic and social development plan
- * Construction of infrastructure for industrial development

The government placed an emphasis on agricultural development in addition to the above and this concept has been highly appreciated in the later stage that the concept brought about a firm basis for Thailand to be developed as “Newly developed Agro-Based Industrialized Country” in the following years. The first NESDB Plan was formulated with due assistances by the Missions dispatched by WB and since then subsequent NESDB plans have been formulated every 5 years sustainably in response to the changing contexts in and around the country and served greatly as guidelines for a number of development plans implemented. It can be said that the overall performance attained during the 35 year period of NESDB plans 1st-7th was quite stable and satisfactory as a prelude to be a newly industrialized country thereafter.

Table 1 Economic Growth

	1960	1980	1990	1995
GDP	60,000 million B	660,000 million B	2,180,000 million B	4,190,000 million B
Growth rate	1-	5.17 %	11.17 %	9.24 %

Table 1 Change of Composition of GDP by Agriculture Manufacturing sector

	1960	1970	1980	1990	2000	Q1/2010
Agriculture	33.4 %	25.9 %	23.2 %	12.5 %	9.0 %	12.1 %
Manufacturing	14.5 %	16.1 %	21.5 %	27.2 %	33.6 %	36.6 %

(2) 8th and 9th NESDB Plans

Prior to grasping the outlines involved in the currently on-going 10th NESDB Plan, review was made on the precedent 8th and 9th Plans based on the Summary paper in English as prepared by NESDB. The 8th Plan (1997-2001) is positioned as introducing the important turning point in the overall NESDB plan formulation, adopting new sense of values and way of thinking as needed by Thai society. That is the human-centered development concept where emphasis is placed on the people's participation (All the stakeholders composing the society) in every stage of development. Good balance among economy, social and environment is given with higher priority and economy is positioned as a mean to help the people attain greater happiness and higher standard of life in its quality. In the early stage of the 8th Plan implementation, however, the country unfortunately encountered with the never-experienced disastrous currency and economic crisis world-wide as originated from Thailand, and there was no other choice for the government but to concentrate the efforts in overcoming the crisis by recovering the economy and to minimize the damages by the crisis. This implies that in fact the 8th plan was abandoned for its substantial implementation.

Under the 9th Plan (2002-2006), the "Sufficiency Economy Concept" as suggested by His Majesty the King was introduced as the backbone/guideline in general for the national development as well as for government administration. Simultaneously, the concept of human-centered development was adopted with greater emphasis as inherited from the 8th Plan so as to apply a comprehensive manner approach in the development plan formulation. Performance of 9th Plan is assessed generally favorably successful as the most of the targets were accomplished as planned. During the Plan period, the economy grew favorably with 5.7 % growth rate per annum and the stability was much strengthened. However, Thai economy was still not firmly sustainable enough in dealing with the external uncertain factors and remained such prevailing problems as poverty, income distribution (Disparity), education, security in life and asset protection and the transparency and governance of the government administration.

(3) 10th NESDB Plan

The 10th Plan (2007-2011) is currently underway in which there is an appreciation of the situation surrounding Thailand that the country has to face in her development efforts both opportunities and

constraints as affected by varieties of changing contexts to occur internally and externally. There is an understanding that globalization will be further accelerated on one side and the “Sufficiency Economy Concept” as suggested by His Majesty the King of Thailand is an important principle for the country on the other side. The outlines on the above shall be noted briefly as follows.

1) Changing context under globalization

On global basis, the changing contexts will influence on the development of Thailand, of which major tendencies are as follows.

- i) Regional basis economic integration will be enhanced and global basis financing market will enlarge its activities
- ii) Dramatic advancement in technology
- iii) Social changes and measures for more commercialized society
- iv) Free movement by human
- v) Changes in environment and natural resources

2) Vision and Missions

- i) Vision: “Green and Happiness Society” is the destination targeted. In the society, people are sincere with having knowledge of international standard, homes are warmly comfortable, communities are reinforced, society is peaceful, economy is efficient and sustainable and equitable, environment is of high quality, the natural resources are sustainable and the administration reveals at good governance, so that the nation be one of the respected member of international society.
- ii) Missions: Along with the direction as involved in the sufficiency economy concept, “Green and Happiness Society” shall be pursued under the 10th Plan.
 - * Human development (Highly-qualified, sincere and with having knowledge of international standard)
 - * Promotion of efficient, sustainable and equitable economy (Competitiveness under the globalization, ample saving, technological innovation, Richness in bio-diversities, Thainess and equitable income distribution)
 - * Conservation of bio-diversities, natural resources and environment (Balance between development and conservation, placing emphasis on role of community and Environmentally-friendly)
 - * Materialization of good governance (Equitable distribution of development benefit, decentralization and participatory approach)

The above shows the outlines of the 10th plan and the followings are confirmed under the present survey as the important points.

- Sufficiency economy concept as the backbone of the development plan which aims at

strengthening of Thai economy and society under the trend of globalization.

- Counter-measures against the impacts by external factors
- Human-centered development (Intensified education)
- Importance of participatory approach (Necessity for sustainability)
- “Green and Happiness Society” by balancing
- Seeking of development manner where development and conservation harmonized
- Equitable income distribution and narrowing the gap
- Pursuing of Good Governance
- Importance of participation by Private business

2.2 Policies by the Present Government (Abhisit Administration)

(1) Policy Statement in Parliament on Dec. 29, 2008

The content of the policy statement by the then Prime Minister shall play a role of guideline for the actions to be taken by the subject government, though its implementation requires more detailed action plans and/or road map to be prepared subsequently. The Prime Minister spoke about the “Disintegration and conflict” with which Thai society facing at the time in his opening remark and pointed out the necessity to settle the problem with the highest priority as soon as possible. The statement said the prevailing situation was of quite worrisome and if it remained unsolved for some periods, it would cause considerable negative damages on the national development. At the time of November, 2008, the negative effects were already such serious as the Thai export being declined by 18.6 % in value and 22.6 % in volume. The number of tourists visiting Thailand was reduced by 16.5 % in the month of September, 2008 and the application for invest promotion was reduced also by 40 % as compared with the previous year.

In addition to the urgent issues as stated above, the policy statement pointed out the education problem as the long-lasting weak point of Thailand on its quality and the quantity and further appealed the necessity to solve the health and medication problem issues towards the ageing society to which the country was heading for rather rapidly. Moreover, the statement referred the fact that the further deterioration of natural resources and environment had been accelerated bringing about negative impacts on the quality of people’s life and competitiveness of the country.

In view of the foregoing, the statement described the necessities for the country to implement a variety of policies for attaining sustainable development and further progressing through taking such counter-measures for ageing society, climate changes, global warming food security and energy security.

The government policy, then, referred to the Sufficiency Economy philosophy as suggested by His Majesty the King of Thailand and declared to adopt the philosophy in the government administration. In the Constitution, the philosophy is defined to be the knowledge as derived from morality and considering the great influence by His Majesty in Thai society it was understood that the sufficiency economy philosophy would be regarded as the backbone of all the development plans to be implemented by the

government of Thailand.

Through reviewing the policy statement as described above, it was confirmed that the followings are the main pillars to be given with higher priorities concerning the direction on agriculture and water management issues.

- * Putting the sufficiency economy philosophy into practice
- * Rectifying the regional income disparity
- * Development of water management and irrigation systems and expansion of irrigation area
- * Putting emphasis on people's participation and on environmental conserving (Securing of sustainability)
- * Sustainable prices for farm produces and introduction of risk insurance
- * Zoning of farm land and increasing of bio-energy crops
- * Agro-processing of international standard (Food safety)

2.3 Agricultural Development Plan under 10th NESDB Plan

A review was made on the national agricultural development plan (2007-2011), which was composed of the following content.

Chapter 1 Performance of agricultural development plans in the past, economic situation and agricultural resources

1. Agricultural development plans under 1st-9th NESDB Plans
2. Economic situation and agricultural resources

Chapter 2 Assessment of present Agriculture

Chapter 3 View points and Implementation Guideline for Agricultural Development under 10th Plan

Chapter 4 Agricultural Development Strategy

(1) Assessment of Present Agriculture

The Agricultural Development Plan put an emphasis on the country's advantage and suitability in further production increase and expansion of investment through re-confirming the favored natural conditions and abundant bio-diversities by varieties of ecological systems in the country, in addition to the geographical/logistic advantages. The prevailing globalization will bring about chances for Thailand as assessed in the Plan. Finally the Plan indicates the necessities for reinforcing the country's capability to respond to changes and to strengthen the competitiveness and the resultant possibility for further export expansion. (Popularization of sufficiency economy philosophy-----→

Adoption of local wisdom and self-reliance by farmers and potential capacity building against globalization)

The results of SWOT analysis conducted by NESDB are as presented below.

Strengths at present

- * Being one of the powerful food exporting countries in the world (Ranked 8th)
- * Export volume sustainably increasing
- * Established inspection system (Experience accumulated)
- * Brisk activities by varieties of research institutes

Weaknesses at present

- * Low productivity (Big potential if improved)
- * Lack of knowledge and fund for creation of higher value commodities
- * Increasing higher production cost
- * Less commercial-oriented research/development
- * Ageing of farming labor
- * Non-sustainable resources/environmental management plans
- * Old-fashioned rules and regulations
- * Insufficient irrigation system and lack of efficiency

Opportunities in future

- * Tendency for environmental conservation and nature-oriented preference
- * Diversification in farm produces and foods
- * Expansion of contract farming
- * Demand increase in alternative energy crops
- * Potential for technology innovation

Threats in future

- * Instability of world economy-→unstable prices for farm produces
- * Delays in protection of crop varieties/patent and conservation of local wisdom
- * Presence of tariff and non-tariff barrier
- * Natural disaster and global warming
- * Frequent occurrences of inflectional diseases

(2) Vision and targets set in the 10th Agricultural Development Plan

1) Vision

“The plan supports farmers in a way as they can manage their lives sufficiently and satisfactorily.”

2) Development Targets in general

- * By the year 2011, the poverty farm households shall be reduced to less than 4 %.
- * At least one quarter of farm households practices an integrated/new theory farming based on the sufficiency economy philosophy.

- * Application of insecticide/pesticides be encouraged to be reduced.
- * GDP in agriculture sector shall be expanded at 3 % per annum or higher.
- * Farms and factories producing agriculture related commodities be encouraged to secure industrial standards.

3) Strategies for Agricultural Development

As strategies for agricultural development, four (4) important items were fixed. These strategies are for strengthening the structural relationship between farmers and agriculture-related government agencies, developing new agro-related produces, managing of agricultural resources and improving management efficiencies and etc. Those strategies are connected with the 10th NESDB Plan

(3) Strategies closely related with the present survey

1) Strategy to strengthen the structural relationship between farmers and government agencies

- i. Objectives: To encourage leveling up the quality of life in communities and organize by networking the knowledge learning process with research institute. Also through developing the community's project aiming at agricultural development, own problem solution capability shall be raised up based on the concept of self-reliance/coexistence.
- ii. Targets:
 - * Through collaborations by communities, an agricultural community development plan at Tambon level shall be formulated.
 - * In 2006, there were 1,338,000 (9.55 %) of poverty farm households. This poverty shall be reduced to less than 4 % in 2011.
 - * One quarter of farming families will practice the integrated farming following the sufficiency economy philosophy. The number of farm households was 5,796,000 in 2006, therefore, the number will reach to 1,449,000 in 2011.
 - * Required land to earn the living will be distributed to more than 700,000 persons.
 - * Before 2011, organize 54,876 cooperative-type groups, 10,000 vocational group and 28,240 community enterprises.
- iii. Strategies:
 - * Promotion of knowledge dissemination/popularization about sufficiency economy so as to let the farmers understand the new theory.
 - * Distribution of lands suitable for farmers to earn the living and issuance of land title deed
 - * Promotion of vocational training and agricultural group activities and develop cooperatives and community enterprises

- * Enhancement of agro-tourism and health-tourism promotion to secure non-farm income sources

2) Strategy for utilization/management of agricultural resources

Previous national development plans placed the emphasis on economic development and growth fully dependent on the use of resources. This was due to the necessity to respond to the rapidly increasing population in the country, but later on the same caused directly and indirectly inefficient use of natural resources and the resources were reduced and deteriorated. The situation was further worsened by having confusions in the use of natural resources and the resultant competitions often occurred. Other than the above, the government was not capable enough to deal with the wide –range and larger scale problems encountered on the natural resources and environment, and the natural resources have been left wastefully used for a long time. As was the case, quality as well as quantity of the natural resources have been degraded and caused constraints for the target to pursue a balanced development in sustainable manner for a longer term. Important natural resources include, among others, the followings.

Water resources:

Under the situation having extremely fluctuating rainfall pattern and the management efficiency being rather low, water shortage problems in dry season happen so often. In the year 2005, the country's water storage capacity by the existing reservoirs was 51.1 Billion m³, considerably smaller as compared with the water demand of estimated 92.7 Million m³. Further, it is expected that demand will be increased up to 114.4 Billion m³ in the year 2009. In Thailand, water use has not been properly organized/institutionalized so far, and any new consumers can freely join in. This implies that the water use efficiency can not be improved, and there have been varieties of conflicts/competitions among various production sectors as well as between the government and private sectors in securing water in shortage. Moreover, other problems are flooding in wet season and drought in dry season as caused by continuously decreasing water conservation forest areas, while, problematic soil erosions are continued in some areas. All this indicates the basic problem that there is a lack of adequate water management on demand side.

Land resources:

Deterioration of land resources is advanced due to the absence of appropriate use of resources suited to the soil capability. Examples of problems are soil erosion, insufficient mineral content in soil, saline soil and peat soil . In 1989, the problem soils covered as big as 182.1 Million rai area in the country but the same was increased to 192.7 Million rai in 2001 sharing as high as 60 % of the country's total land area.

Farmers manage about 111.2 Million rai area as farm land, of which some 40 % is not used properly matching with the soil capability. The average farm land holding per capita has been reduced from 21 rai in 1993 to 19.3 rai in 2003. While demand for farm land to cultivate is increasing, the average size of the land holding for farming is decreasing. It is particularly true that the lands favored with high fertility has

been decreasing more considerably. Also, there is a limited abandoned area which can be recovered for farming again and that is why more chemical are needed for production leaving the serious problems on residual agricultural chemicals.

Aside from the above viewpoints, the strategy paper describes about development policies and strategy as follows in relation with the water resources management.

Objective: increase of irrigation area by 800,000 rai in the plan period.

Policies: Systematization of water resource management

- * Reduce the risks to encounter in water use on drought, floods and dam safety
- * Support the water use for agriculture in harmony with the uses for industrial purpose and services
- * Aiming at expansion of irrigation area for increase of production and income, build farm ponds in farm lands and support new theory and mixed farming
- * Develop advanced modern data-base system and forecasting system
- * Establish thinking, understanding and knowledge on water conservation and efficient water use

Strategy: Solve the drought and flood problems and secure good quality water with participatory manner by community and private sectors

2.4 Agricultural Policy by the Present Government

Policy framework by the Ministry of Agriculture and Cooperatives was formulated as the basis for policy statement by the government as announced in the parliament in accordance with the stipulation under the present Constitution. Policy framework included 1) Urgent policies 2) Structural adjustment in agriculture sector 3) Strategy, of which the following strategies 1-3 judged important concerning the present study shall be noted in this Appendix as follows.

Strategy 1: Developing Farmers and Agricultural Institutes

- Creating stability in the price of the agricultural products and solving the farmers' problems by adopting the risk assurance system, particularly that on crops, to meet their widespread demands, offering help to farmers who suffer the problems of production and price by strengthening the markets for agricultural products, establishing the main regional retail and wholesale markets, establishing the world-class market for agricultural products, promoting contract farming system and implementing the Tripartite System to solve the problem of price decline in agricultural products.
- Establishing the National Agricultural Council in accordance with the provision under the Constitution of the Kingdom of Thailand B.E. 2550, Section 84(8) and Section 303.

- Creating jobs for labor returnees, launching supportive policies/ projects, and registering and providing training for those interested in farming.
- Promoting and strengthening farmers and agricultural institutes by enhancing the efficiency of the institutes to operate agricultural business and assist members in production and marketing and producing a new generation of farmers knowledgeable in both theory and practice for sustainable agricultural development.
- Solving the problems in the three southernmost provinces in Thailand by providing career opportunities, developing the production of agricultural products and basing the strengthening of the agricultural skills related to the farmers' lifestyle and culture on the sufficiency economy policy and collaborative development.
- Promoting agriculture which lies in HM the King's guidelines, expanding the network of learning processes and developing the royally-initiated New Theory, School Lunch projects and cattle bank to ensure food stability.

Strategy 2: Developing Production

- Enhancing the efficiency in agricultural production to increase agricultural profits and reduce the costs by promoting the production of important cash crops in different areas, supporting research and development, launching strategies to make a long-term development of agricultural products such as crops, livestock and fisheries with an emphasis on productivity and cost reduction, and promoting the production and development of alternative energy plants through careful production planning to create the balance between food plants and energy plants.
- Creating the added values of agricultural products by improving production quality and that of the inspection system through the promotion of agricultural products and food safety in all communities, emphasizing organic farming, integrated farming, agro-forestry that meet the community demand to reduce the use of chemical substances and add the agricultural values to the products, creating a link between agricultural production and agricultural industry, improving the quality of products and that of the inspection system of crops, livestock and fisheries, promoting quality food processing which reaches the international standard, strengthening the certification marks of the agricultural products, establishing economic development areas to add comprehensive values to the products, and engaging in international trade negotiations, particularly on the standards of agricultural food and products.

Strategy 3: Development fundamental factors and missions

- Reviving agricultural economy through an effective management of natural resources to provide a short-term assistance for farmers in need such as constructing micro pumping

stations, encouraging farmers' participation in production planning, promoting the use of rubber-made water pipes and farm ditches.

- Expanding the irrigation system through the improvement of irrigation sites, launching campaigns on effective water use, supplying water to all kinds of users through the launch of mega-sized and medium-sized irrigation projects, systematic land allocation and the establishment of small irrigation system in each community.
- Developing and reviving land and fisheries resources through the issue of law protecting land for future and sustainable agricultural use, improving the quality of soil, establishing the land banks to provide help for impoverished farmers and issuing documents of rights in form of community land title deeds for them, encouraging the launch of agricultural settlement to develop community farming
- Administering for effective restructuring of the economy of the agricultural sector.

Appendix 2.6.1 Yield of Rice in the World

countries	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Bangladesh	1,700	1,530	1,769	1,707	1,683	1,583	1,694	1,747	1,746	1,686	1,602	1,572
China	2,079	2,370	2,683	2,829	2,967	3,144	3,101	3,187	3,141	3,416	3,315	3,247
India	1,542	1,396	1,550	1,617	1,294	1,295	1,548	1,613	1,609	1,685	1,711	1,605
Indonesia	1,762	1,786	1,723	1,763	1,771	1,775	1,759	2,140	2,249	2,376	2,425	2,456
Pakistan	1,392	1,386	1,390	1,494	1,417	1,452	1,583	1,960	2,220	2,194	2,329	2,362
Philippines	1,230	1,255	1,245	1,248	1,310	1,322	1,380	1,334	1,710	1,746	1,598	1,443
Thailand	1,658	1,720	1,872	1,838	1,781	1,836	1,750	1,788	1,847	2,021	1,937	1,831
Viet Nam	1,897	1,994	2,140	1,944	1,941	1,808	1,916	1,710	1,788	2,153	2,227	2,194

countries	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Bangladesh	1,808	1,729	1,853	1,784	1,940	1,938	1,881	2,020	1,954	2,014	2,235	2,145
China	3,482	3,503	3,528	3,496	3,637	3,981	4,249	4,143	4,332	4,889	5,092	5,363
India	1,726	1,574	1,858	1,637	1,961	1,991	1,610	2,000	1,962	1,850	2,183	2,127
Indonesia	2,557	2,641	2,630	2,784	2,793	2,886	2,985	3,293	3,493	3,736	3,853	3,906
Pakistan	2,435	2,163	2,296	2,347	2,330	2,423	2,371	2,423	2,604	2,612	2,507	2,488
Philippines	1,462	1,546	1,664	1,797	2,014	2,025	2,113	2,211	2,298	2,634	2,323	2,430
Thailand	1,924	1,825	1,831	1,845	1,591	1,955	1,821	1,888	1,952	1,888	2,035	2,067
Viet Nam	2,212	2,156	2,120	2,233	1,938	1,792	2,072	2,080	2,197	2,519	2,627	2,732

countries	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Bangladesh	2,169	2,178	2,240	2,281	2,556	2,566	2,659	2,689	2,718	2,533	2,653	2,763
China	5,250	5,327	5,403	5,282	5,501	5,717	5,624	5,796	5,846	5,829	6,021	6,205
India	2,329	2,205	2,199	2,549	2,616	2,612	2,627	2,609	2,830	2,864	2,697	2,823
Indonesia	3,942	3,977	4,039	4,111	4,247	4,302	4,346	4,345	4,375	4,345	4,349	4,417
Pakistan	2,350	2,532	2,477	2,351	2,293	2,315	2,320	2,369	2,740	2,433	2,752	2,868
Philippines	2,588	2,717	2,623	2,644	2,705	2,979	2,824	2,939	2,874	2,887	2,804	2,856
Thailand	2,061	2,052	2,015	2,146	2,085	1,956	2,253	2,174	2,175	2,352	2,416	2,410
Viet Nam	2,776	2,806	2,695	2,961	3,214	3,181	3,113	3,334	3,482	3,566	3,690	3,769

countries	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Bangladesh	2,743	2,936	3,214	3,484	3,402	3,490	3,577	3,536	3,781	3,854	4,012	3,995
China	6,311	6,353	6,334	6,264	6,152	6,186	6,061	6,309	6,253	6,276	6,422	6,556
India	2,846	2,881	2,978	2,851	3,116	2,616	3,118	2,976	3,154	3,176	3,303	3,370
Indonesia	4,432	4,197	4,252	4,401	4,388	4,469	4,543	4,536	4,574	4,620	4,705	4,895
Pakistan	2,805	2,893	3,074	3,031	2,754	3,019	2,955	2,991	3,174	3,161	3,318	3,520
Philippines	2,933	2,698	2,947	3,068	3,187	3,280	3,370	3,513	3,588	3,684	3,801	3,770
Thailand	2,379	2,465	2,424	2,613	2,619	2,609	2,652	2,856	2,963	2,916	3,009	2,973
Viet Nam	3,877	3,959	4,102	4,243	4,285	4,590	4,639	4,855	4,889	4,894	4,987	5,223

Source : FAO

Appendix 2.6.2 Trend of Agricultural Production Price (Farm Gate Price)

Farm Price

	Year	Major Rice B/ton	Second Rice B/ton	Cassava B/kg	Sugarcane B/ton	Maize B/kg	Oil palm B/kg	Para rubber B/kg
Current Price	1999	5,428				4.31	2.21	18.12
	2000	4,765	4,189	0.63	445	3.82	1.66	21.53
	2001	5,307	4,099	0.69	514	3.95	1.19	20.52
	2002	5,555	4,487	1.05	435	4.14	2.30	27.69
	2003	5,910	4,693	0.93	469	4.43	2.34	37.76
	2004	6,741	5,349	0.80	368	4.59	3.11	44.13
	2005	7,164	6,617	1.33	520	4.78	2.76	53.57
	2006	7,394	6,726	1.29	688	5.45	2.39	66.24
	2007	9,951	6,427	1.18	683	6.89	4.07	68.90
	2008	9,593	12,127	1.93	557	7.02	4.23	73.66
Constnt at 2007 price (CPI 2007=100)	1999	-	-	-	-	-	-	-
	2000	3,979	3,498	0.53	372	3.19	1.39	17.98
	2001	4,506	3,480	0.59	436	3.35	1.01	17.42
	2002	4,744	3,832	0.90	371	3.54	1.96	23.65
	2003	5,142	4,083	0.81	408	3.85	2.04	32.85
	2004	6,026	4,782	0.72	329	4.10	2.78	39.45
	2005	6,691	6,180	1.24	486	4.46	2.58	50.03
	2006	7,231	6,578	1.26	673	5.33	2.34	64.78
	2007	9,951	6,427	1.18	683	6.89	4.07	68.90
	2008	10,111	12,782	2.03	587	7.40	4.46	77.64
Index Year 2000=100	1999							
	2000	100	100	100	100	100	100	100
	2001	113	99	111	117	105	73	97
	2002	119	110	170	100	111	142	132
	2003	129	117	154	110	121	147	183
	2004	151	137	136	89	129	201	219
	2005	168	177	236	131	140	186	278
	2006	182	188	240	181	167	169	360
	2007	250	184	224	184	216	294	383
	2008	254	365	387	158	232	322	432
2009		307	236	196				

Agricultural Statistics of Thailand 2008

CPI

Item	weight	2007 = 100												Source: Bank of Thailand	
		1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008		
Consumer Price Index (Headline CPI)	100	75.9	82	82.2	83.5	84.9	85.4	87	89.4	93.4	97.8	100	105.4		
Food	33.01	74.5	81.5	80.8	79.9	80.5	80.8	83.8	87.6	91.9	96.1	100	111.6		
Clothing and Footwear	2.96	88.9	95.5	96.6	97.5	98.5	98.9	99	99.2	99.6	99.8	100	100.3		
Housing	23.48	88.8	93.8	93.8	95.2	96.7	96.7	96.2	96.7	97.9	99.9	100	96.9		
Personal and medical care	6.87	79.3	86.1	88.7	91	92.8	93.8	94.7	96.1	97.8	99.2	100	101		
Transportation	26.8	61.5	66.1	66.9	72.7	75	76	78.4	81.7	89.8	97.9	100	106.2		
Recreation, publication and education	5.21	89.2	93.7	94.1	93.8	94.7	95.7	95.6	97.1	98.1	98.9	100	101.4		
Tobacco and alcoholic beverage	1.66	67.6	80	82.8	83.4	88.5	90.5	89.9	89.2	90.7	98.5	100	102.9		
Non-food	66.99	76.8	82.4	83.2	85.9	87.8	88.5	89.1	90.6	94.5	98.9	100	101.7		
Raw Food and energy	24.54	57.3	63.5	60.6	63.3	65.1	65.8	70.3	76.9	86.3	95.3	100	112.4		
Core CPI (All items less raw food and energy)	75.46	84.8	90.8	92.4	93.2	94.3	94.7	94.9	95.3	96.8	99	100	102.3		

<http://home.att.ne.jp/yellow/tomotoda/consumerindex.htm>

CPI	weight	2007				2008				2009			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	100.00	98.2	100.0	100.1	101.5	103.2	107.5	107.4	103.7	102.9	104.5	105.0	105.7
		100.0				105.5				104.5			

**Appendix 2.6.3 Projection of Aged Population (over 60 years-old) in 19 Provinces
of the Northeast Region (2000-2020)**

		2000	2001	2002	2003	2004	2005	2006	2007
Total	Khon Kaen	1,768,766	1,785,161	1,801,016	1,816,077	1,830,269	1,844,282	1,855,782	1,866,131
	Udon Thani	1,498,774	1,516,674	1,533,405	1,548,790	1,562,904	1,576,545	1,588,026	1,599,775
	Loei	621,934	627,127	632,158	636,939	641,439	645,906	649,616	652,835
	Nong Khai	902,072	912,703	922,283	930,796	938,392	945,682	951,233	957,696
	Mukdahan	320,939	324,945	328,195	330,756	332,774	334,583	335,880	337,714
	Nakhon Phanom	700,238	708,528	715,549	721,349	726,188	730,659	734,000	738,184
	Sakon Nakhon	1,062,819	1,075,239	1,086,864	1,097,605	1,107,514	1,117,176	1,124,948	1,133,470
	Kalasin	941,609	951,034	959,916	968,129	975,671	982,985	989,139	995,003
	Nakhon Ratchasima	2,609,443	2,636,001	2,662,049	2,687,109	2,710,992	2,734,875	2,754,628	2,773,326
	Chaiyaphum	1,118,303	1,128,713	1,138,974	1,148,918	1,158,480	1,168,126	1,175,714	1,182,709
	Yasothon	576,629	582,352	587,739	592,718	597,294	601,756	605,356	608,910
	Ubon Ratchathani	1,726,781	1,746,672	1,765,132	1,781,939	1,797,184	1,811,890	1,824,440	1,837,171
	Roi Et	1,284,074	1,296,404	1,307,262	1,316,651	1,324,794	1,332,483	1,338,519	1,344,393
	Buri Ram	1,525,962	1,543,569	1,559,756	1,574,423	1,587,753	1,600,650	1,611,178	1,622,157
	Surin	1,355,611	1,370,224	1,382,579	1,392,830	1,401,458	1,409,533	1,415,462	1,422,754
	Maha Sarakham	965,582	974,044	982,275	990,169	997,726	1,005,311	1,011,482	1,016,667
	Si Sa ket	1,435,815	1,452,625	1,467,023	1,479,092	1,489,261	1,498,671	1,506,197	1,514,723
	Nong Bua Lam Phu	494,785	500,900	506,353	511,126	515,309	519,237	522,402	526,047
	Am Nat Chareon	369,436	373,459	377,256	380,779	384,036	387,204	389,832	392,436

		2008	2009	2010	2011	2012	2013	2014	2015
Total	Khon Kaen	1,875,567	1,882,640	1,891,104	1,896,252	1,902,116	1,908,529	1,915,282	1,922,133
	Udon Thani	1,610,379	1,619,571	1,628,546	1,635,776	1,643,317	1,651,067	1,658,888	1,666,620
	Loei	655,708	657,527	660,161	661,421	663,036	664,951	667,085	669,363
	Nong Khai	963,725	969,126	974,795	979,228	983,627	987,949	992,107	996,024
	Mukdahan	339,695	341,678	344,005	345,801	347,483	349,038	350,455	351,702
	Nakhon Phanom	742,500	746,655	751,251	754,931	758,388	761,623	764,591	767,264
	Sakon Nakhon	1,141,132	1,147,971	1,154,568	1,160,031	1,165,650	1,171,375	1,177,113	1,182,786
	Kalasin	1,000,305	1,004,405	1,008,913	1,012,100	1,015,694	1,019,621	1,023,777	1,028,072
	Nakhon Ratchasima	2,790,096	2,805,285	2,819,290	2,829,115	2,840,480	2,775,999	2,866,585	2,880,490
	Chaiyaphum	1,188,709	1,193,818	1,198,174	1,201,028	1,204,646	1,220,693	1,213,740	1,218,942
	Yasothon	612,112	614,906	617,229	619,059	621,149	629,286	626,063	628,824
	Ubon Ratchathani	1,849,104	1,860,031	1,869,711	1,878,065	1,886,984	1,912,218	1,906,263	1,916,400
	Roi Et	1,350,461	1,360,644	1,360,995	1,365,242	1,369,476	1,373,663	1,377,699	1,381,518
	Buri Ram	1,632,693	1,642,550	1,651,530	1,659,316	1,667,170	1,689,044	1,682,897	1,690,607
	Surin	1,430,509	1,438,339	1,445,894	1,452,669	1,459,099	1,477,990	1,471,181	1,476,883
	Maha Sarakham	1,021,401	1,024,610	1,028,413	1,030,770	1,033,530	1,036,625	1,039,966	1,043,473
	Si Sa ket	1,523,351	1,531,739	1,539,563	1,546,277	1,553,022	1,573,298	1,566,601	1,573,393
	Nong Bua Lam Phu	529,438	532,533	535,613	538,182	540,736	543,259	545,715	548,059
	Am Nat Chareon	394,805	396,914	398,718	400,206	401,873	407,239	405,686	407,786

		2016	2017	2018	2019	2020
Total	Khon Kaen	1,927,767	1,932,967	1,938,196	1,943,017	1,947,623
	Udon Thani	1,673,921	1,681,221	1,687,832	1,694,367	1,700,611
	Loei	671,252	672,853	674,557	675,960	677,206
	Nong Khai	1,000,015	1,004,085	1,007,885	1,011,720	1,015,481
	Mukdahan	353,142	354,611	356,043	357,512	359,013
	Nakhon Phanom	770,255	773,262	776,285	779,318	782,378
	Sakon Nakhon	1,188,256	1,193,668	1,198,458	1,203,181	1,207,633
	Kalasin	1,031,856	1,035,422	1,038,834	1,042,041	1,045,065
	Nakhon Ratchasima	2,891,949	2,903,053	2,913,774	2,924,190	2,934,394
	Chaiyaphum	1,222,885	1,226,791	1,230,641	1,234,424	1,238,160
	Yasothon	631,000	633,276	635,618	637,989	640,376
	Ubon Ratchathani	1,926,042	1,935,615	1,945,067	1,954,386	1,963,557
	Roi Et	1,385,171	1,388,889	1,393,054	1,397,258	1,401,692
	Buri Ram	1,698,101	1,705,751	1,713,513	1,721,353	1,729,267
	Surin	1,483,038	1,489,633	1,496,650	1,504,038	1,511,788
	Maha Sarakham	1,046,309	1,048,892	1,051,644	1,054,112	1,056,456
	Si Sa ket	1,580,326	1,587,506	1,594,895	1,602,432	1,610,087
	Nong Bua Lam Phu	550,550	553,019	555,253	557,450	559,549
	Am Nat Chareon	409,723	411,615	413,463	415,245	416,950

Source : Data from NESDB

		2000	2001	2002	2003	2004	2005	2006	2007
60 years and over	Khon Kaen	152,236	157,150	162,464	168,254	174,612	181,587	190,548	195,326
	Udon Thani	106,484	110,351	114,655	119,413	124,648	130,385	123,418	141,538
	Loei	56,913	57,986	59,298	60,834	62,568	64,492	67,105	68,229
	Nong Khai	71,770	73,490	75,458	77,690	80,204	83,021	86,589	88,247
	Mukdahan	26,421	26,999	27,626	28,327	29,123	30,044	31,278	31,850
	Nakhon Phanom	57,005	58,425	60,072	61,956	64,107	66,540	69,731	71,332
	Sakon Nakhon	74,786	77,431	80,507	83,982	87,802	91,945	97,017	99,826
	Kalasin	74,950	77,464	80,453	83,892	87,755	92,029	97,169	100,059
	Nakhon Ratchasima	256,758	264,047	271,677	279,841	288,823	298,826	308,062	318,865
	Chaiyaphum	111,232	114,938	119,066	123,671	128,823	134,580	139,916	145,813
	Yasothon	55,203	57,149	59,530	62,315	65,456	68,914	72,047	75,351
	Ubon Ratchathani	151,029	154,918	159,908	165,943	172,926	180,817	187,861	195,456
	Roi Et	114,231	117,799	121,992	126,854	132,457	138,853	146,614	151,018
	Buri Ram	134,393	139,093	144,355	150,198	156,678	163,841	170,608	178,008
	Surin	130,796	134,586	139,020	144,114	149,897	156,393	162,341	168,835
	Maha Sarakham	81,219	84,296	87,919	92,068	96,732	101,908	108,110	111,764
	Si Sa ket	129,997	134,780	140,385	146,747	153,769	161,414	168,486	175,934
Nong Bua Lam Phu	35,367	36,445	37,696	39,132	40,759	42,587	44,858	46,135	
Am Nat Chareon	32,287	33,341	34,633	36,141	37,830	39,681	41,314	43,041	

		2008	2009	2010	2011	2012	2013	2014	2015
60 years and over	Khon Kaen	203,359	208,582	221,486	229,172	237,469	246,477	256,359	267,179
	Udon Thani	147,805	151,923	161,599	167,596	174,146	181,366	189,428	198,432
	Loei	70,430	71,569	75,665	77,950	80,593	83,661	87,245	91,389
	Nong Khai	91,314	93,016	98,335	101,275	104,598	108,396	112,804	117,891
	Mukdahan	32,984	33,674	35,708	36,900	38,228	39,712	41,375	43,220
	Nakhon Phanom	74,128	75,899	80,438	83,198	86,207	89,496	93,121	97,102
	Sakon Nakhon	104,185	107,093	113,891	118,170	122,970	128,360	134,430	141,245
	Kalasin	104,472	107,319	113,889	117,888	122,275	127,100	132,444	138,358
	Nakhon Ratchasima	331,232	345,105	360,501	373,318	387,337	348,691	419,588	438,096
	Chaiyaphum	152,200	158,986	166,113	172,075	178,458	193,492	193,009	201,451
	Yasothon	78,769	82,209	85,605	88,300	91,149	98,328	97,925	102,184
	Ubon Ratchathani	203,567	212,157	221,158	228,758	237,323	258,030	257,944	270,312
	Roi Et	157,792	181,919	171,566	177,095	182,819	188,872	195,457	202,719
	Buri Ram	185,988	194,465	203,393	210,932	219,048	237,665	237,419	247,892
	Surin	175,792	183,105	190,699	196,985	203,776	220,272	219,332	228,352
	Maha Sarakham	117,105	120,702	128,180	132,858	137,846	143,194	148,966	155,229
	Si Sa ket	183,734	191,856	200,274	207,233	214,854	232,703	232,518	242,797
Nong Bua Lam Phu	48,176	49,588	52,884	55,056	57,483	60,158	63,066	66,201	
Am Nat Chareon	44,873	46,840	48,938	50,694	52,731	57,470	57,695	60,636	

		2016	2017	2018	2019	2020
60 years and over	Khon Kaen	276,470	284,810	298,486	310,817	323,804
	Udon Thani	206,299	213,568	224,935	235,400	246,448
	Loei	95,169	98,650	104,106	109,045	114,157
	Nong Khai	122,376	126,580	133,364	139,640	146,287
	Mukdahan	44,863	46,378	48,805	51,040	53,411
	Nakhon Phanom	100,557	115,814	108,644	113,189	118,020
	Sakon Nakhon	147,260	152,777	161,055	168,571	176,327
	Kalasin	143,287	147,647	154,660	160,971	167,612
	Nakhon Ratchasima	454,681	473,430	494,148	516,552	540,461
	Chaiyaphum	208,598	216,711	225,648	235,203	245,249
	Yasothon	105,599	109,643	114,155	118,880	123,670
	Ubon Ratchathani	280,908	292,672	305,396	318,766	332,592
	Roi Et	208,290	213,125	221,850	229,569	237,788
	Buri Ram	256,713	266,539	277,291	288,833	301,099
	Surin	235,721	243,954	253,028	262,910	273,559
	Maha Sarakham	160,222	164,481	171,539	177,735	184,225
	Si Sa ket	251,217	260,504	270,575	281,308	292,611
Nong Bua Lam Phu	68,982	71,432	75,134	78,475	81,980	
Am Nat Chareon	63,152	65,872	68,751	71,731	74,761	

Source : Data from NESDB

Appendix 2.6.4 Population Projection in Thailand and Northeast Region (2002-2025)

Population projection by age group and sex

(1 . July)

(in Thousand)

	Northeast				Whole KingdomMedium Fertility Assumption			
	Mail		Female		Mail		Female	
	2009	2025	2009	2025	2009	2025	2009	2025
0-4	751	577	786	612	2,164	1,548	2,252	1,638
5-9	823	634	868	682	2,331	1,723	2,430	1,818
10-14	905	673	962	720	2,374	1,891	2,501	1,988
15-19	959	699	1,010	735	2,574	2,067	2,691	2,152
20-24	906	755	967	813	2,564	2,325	2,670	2,402
25-29	847	826	928	913	2,630	2,330	2,695	2,435
30-34	809	905	846	958	2,699	2,541	2,689	2,631
35-39	923	883	892	935	2,853	2,538	2,689	2,620
40-44	922	838	885	912	2,858	2,592	2,661	2,632
45-49	823	771	798	813	2,641	2,630	2,475	2,605
50-54	725	871	691	833	2,290	2,758	2,120	2,555
55-59	584	887	543	819	1,767	2,767	1,604	2,470
60-64	476	781	430	712	1,327	2,537	1,175	2,217
65-69	371	670	312	578	1,056	2,168	883	1,796
70-74	273	508	211	401	856	1,604	662	1,219
75-79	184	362	130	254	564	1,066	392	719
80+	141	346	88	190	482	1,101	284	568
Sub Total	11,425	11,985	11,346	11,879	34,030	36,186	32,873	34,465
	Total :		22,771	23,864	Total :		66,903	70,651

Source : Data from NESDB

[Same data sets are included in Data CD for reference]

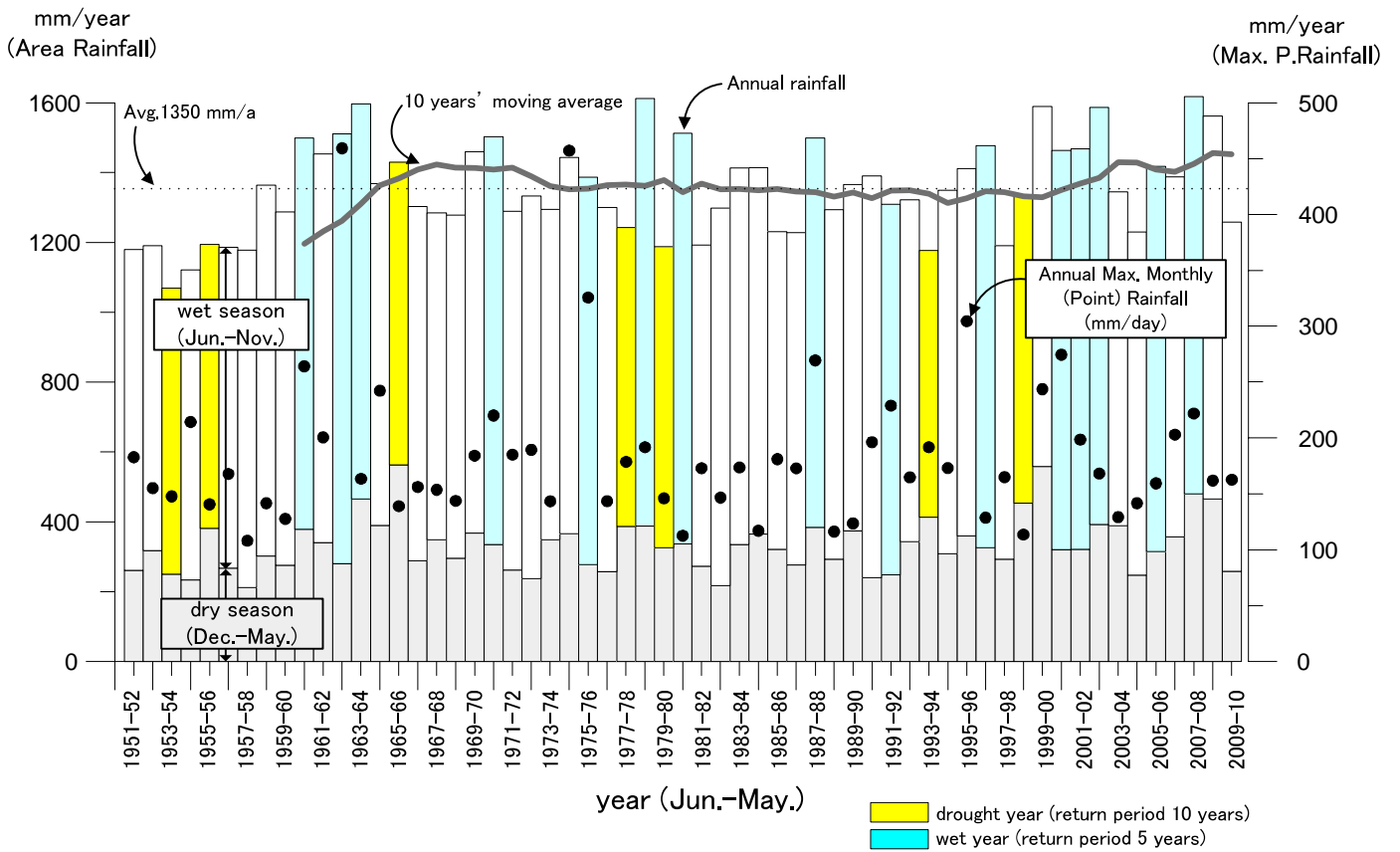
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Appendix 3.3.1 Annual Rainfall (1951/52-2009/10)



Area rainfall of Northeast Thailand (mm/year)

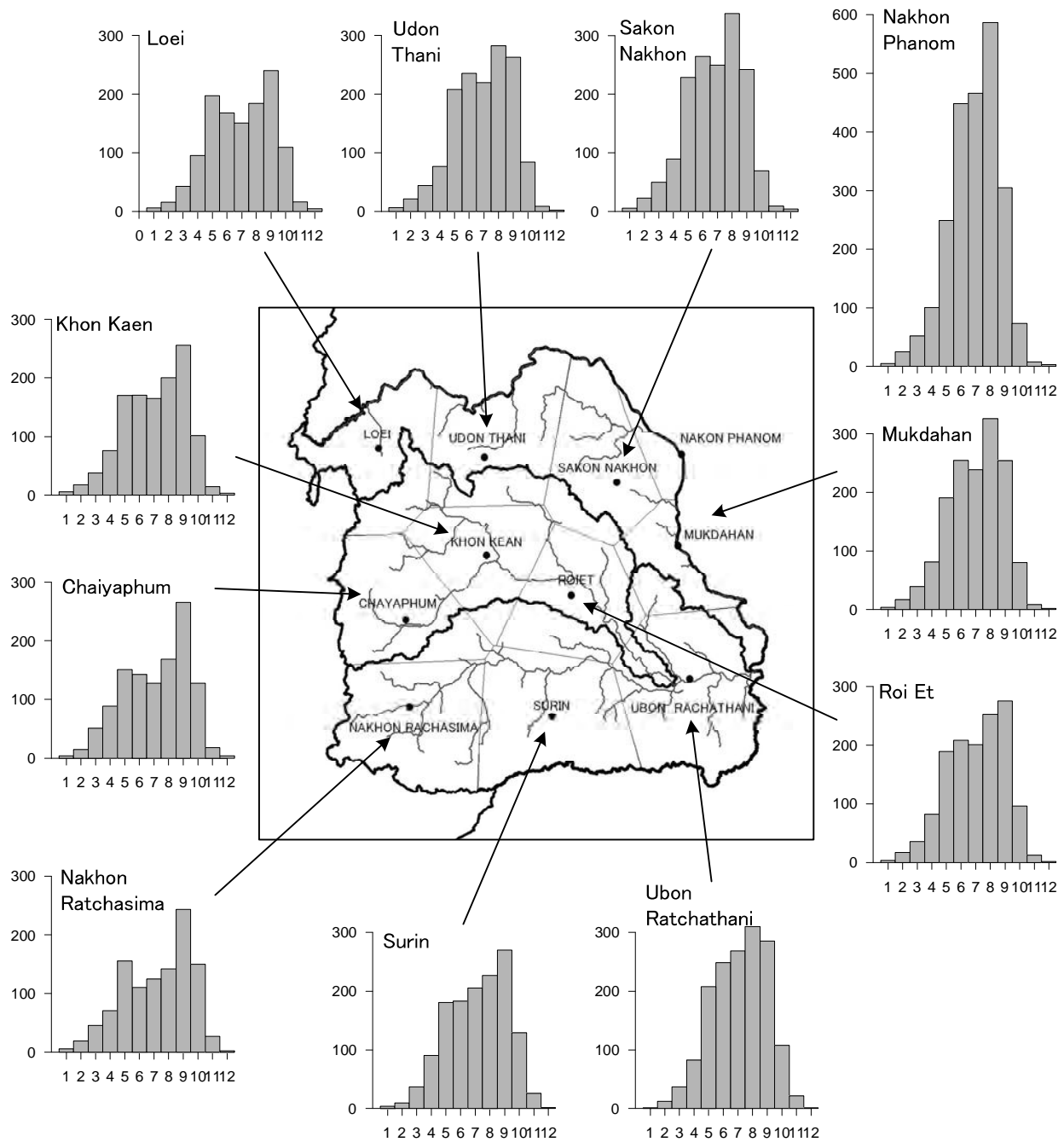


Thiessen polygon and TMD synoptic stations applied for Time-Series (Area Rainfall) Calculation

Wet Season's Rainfall Intensity Having Recurrence Interval of T years			
non-exceedence probability		exceedence probability	
Return Period	Rainfall (Wet Season)	Return Period	Rainfall (Wet Season)
1/2	1,020	1/2	1,020
1/3	972	1/3	1,067
1/4	946	1/4	1,095
1/5	928	1/5	1,113
1/8	894	1/8	1,148
1/10	880	1/10	1,163
1/15	856	1/15	1,187
1/20	841	1/20	1,204
1/25	830	1/25	1,216
1/30	821	1/30	1,225
1/40	807	1/40	1,240
1/50	797	1/50	1,250
1/60	789	1/60	1,259
1/80	777	1/80	1,272
1/100	768	1/100	1,282
1/150	753	1/150	1,299
1/200	742	1/200	1,310
1/250	734	1/250	1,319
1/300	728	1/300	1,326
1/400	718	1/400	1,337
1/500	710	1/500	1,345

Provability Analysis for Wet Season's Rainfall (May-Oct.)

Appendix 3.3.2 Mean Monthly Rainfall for Major Station



Average Monthly Rainfall (1951–2010)

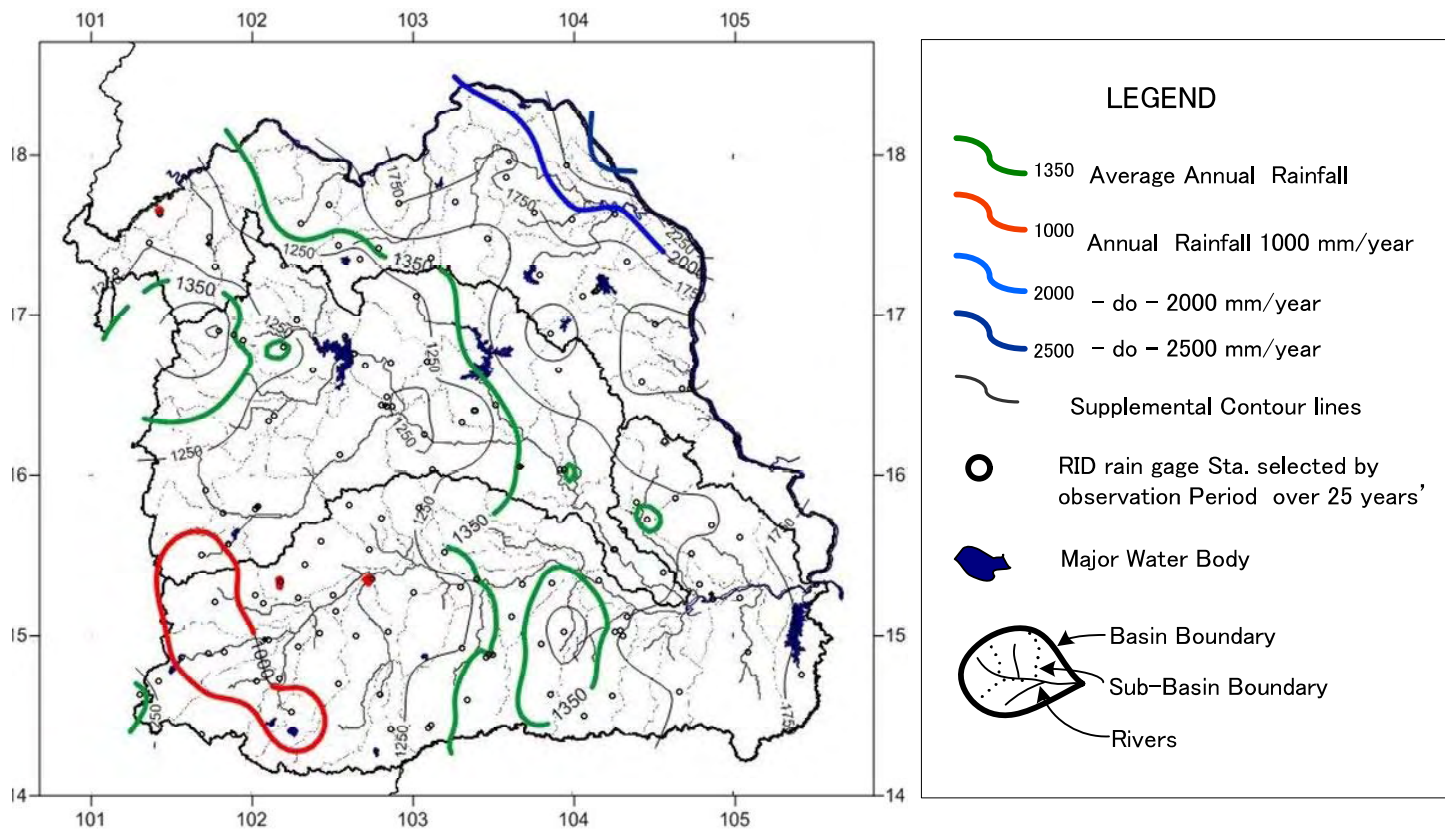
Average Rainfall in Season (1951–2010)

Station Name	Rainfall Amount in Wet/Dry Season(mm)		
	Wet Season (Avg. 1951-2009)	Dry Season (Avg. 1951-2009)	Annual (Avg. 1951-2009)
Chaphum	983	179	1,162
Khon Kean	1,063	157	1,220
Loei	1,049	183	1,232
Mukdahan	1,342	150	1,492
Nakhon Phanom	2,109	193	2,302
Nakhon Ratcahsima	925	173	1,099
Roi Et	1,224	151	1,375
Sakhon Nakhon	1,391	180	1,571
Surin	1,193	169	1,362
Ubon Ratchathani	1,428	156	1,583
Ubon Thani	1,293	159	1,452

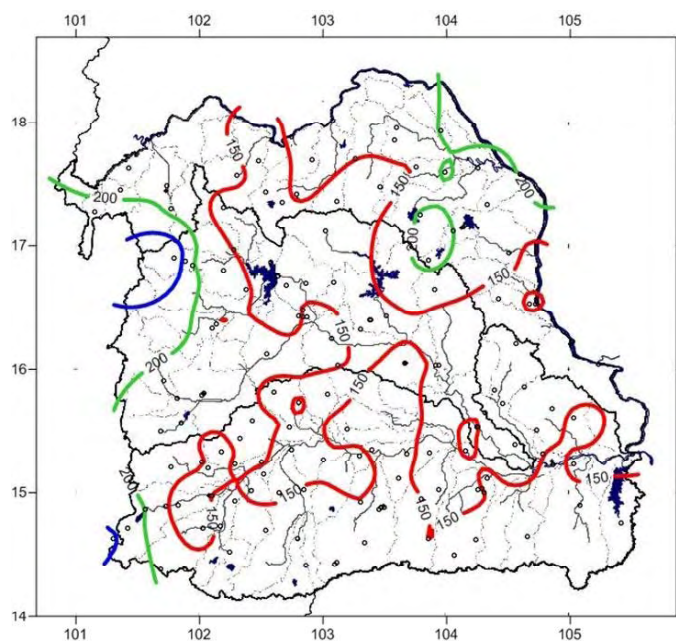
Annual Min/Max/Average Point Rainfall (1951–2010)

Station Name	Annual Point Rainfall (mm/year)		
	Min(1951-2009)	Max(1951-2009)	Average(1951-2009)
Chaphum	613	1,724	1,162
Khon Kean	906	1,660	1,220
Loei	833	1,754	1,232
Mukdahan	979	2,073	1,492
Nakhon Phanom	1,558	3,033	2,302
Nakhon Ratcahsima	608	1,473	1,099
Roi Et	922	1,832	1,375
Sakhon Nakhon	1,053	2,138	1,571
Surin	938	2,136	1,362
Ubon Ratchathani	1,132	2,090	1,583
Ubon Thani	1,051	2,216	1,452
Avg. Annual Area Rainfall (mm/year)	1,350 mm (225 cu.km)		

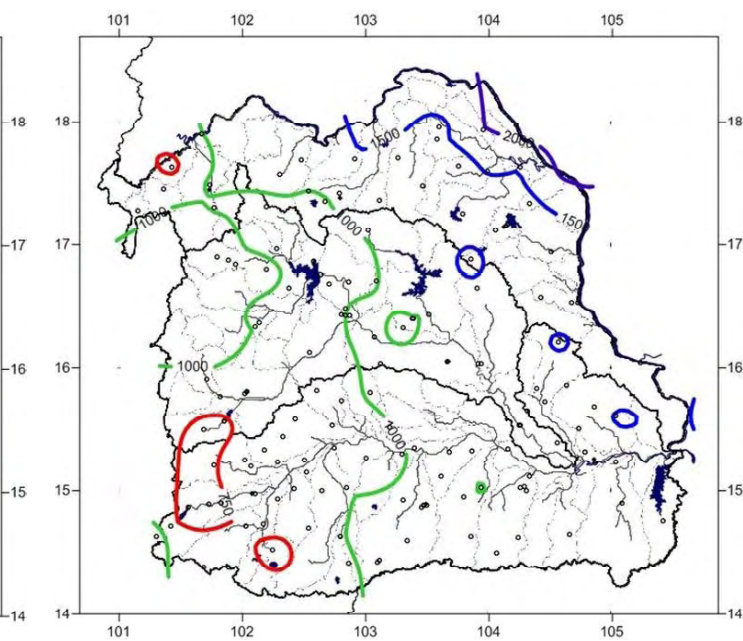
Appendix 3.3.3 Isohyetal Map of Mean Annual Rainfall (1970-2010)



Isoyetal Map of Annual Rainfall (1970-2010)



Isoyetal Map of Rainfall in Dry Season (1970-2010)

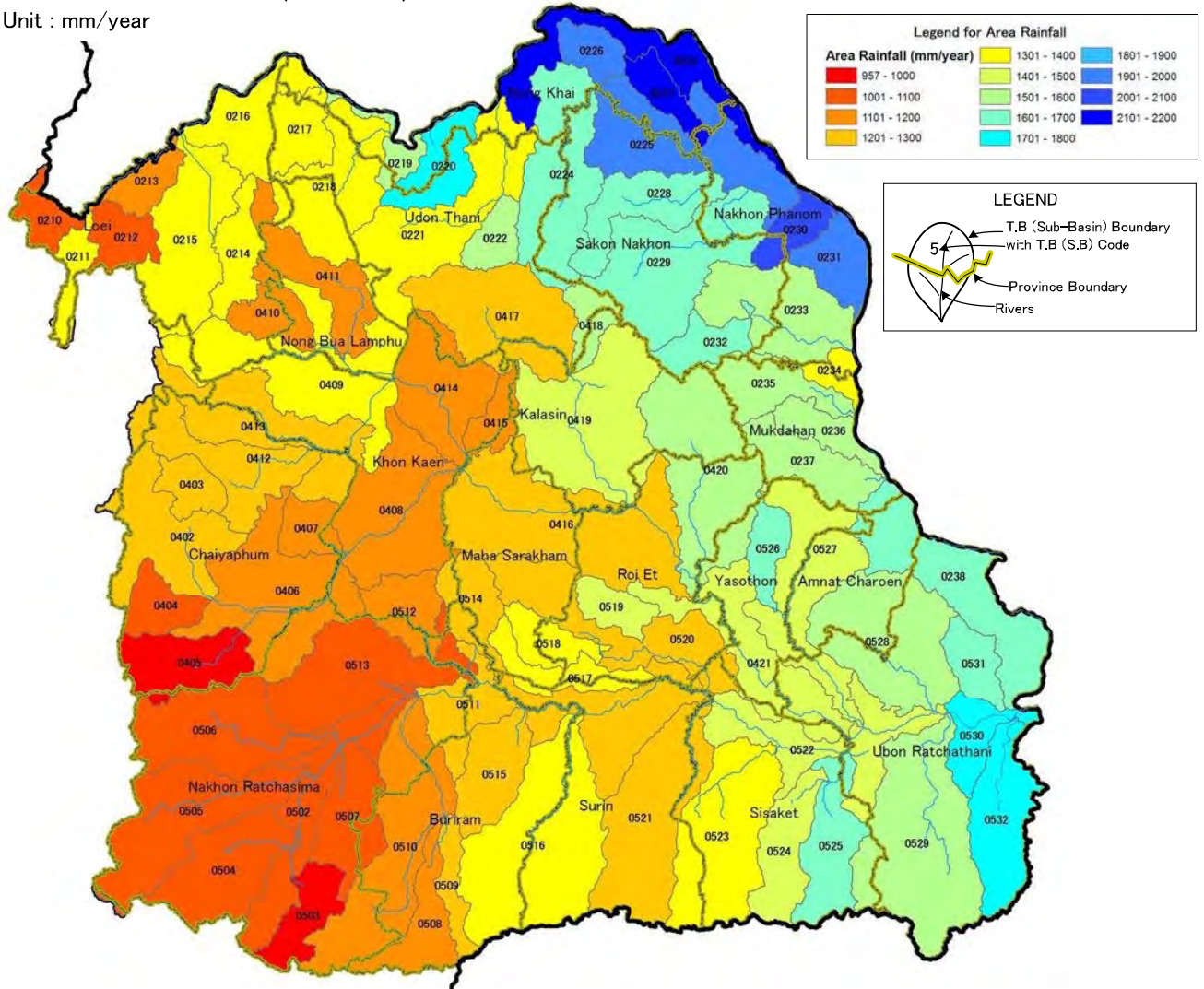


Isoyetal Map of Rainfall in Wet Season (1970-2010)

Appendix 3.3.4 Area Rainfall and Rainwater Amount Estimated for Tributaries

Area Rainfall for Tributaries (Sub-Basins)

Unit : mm/year



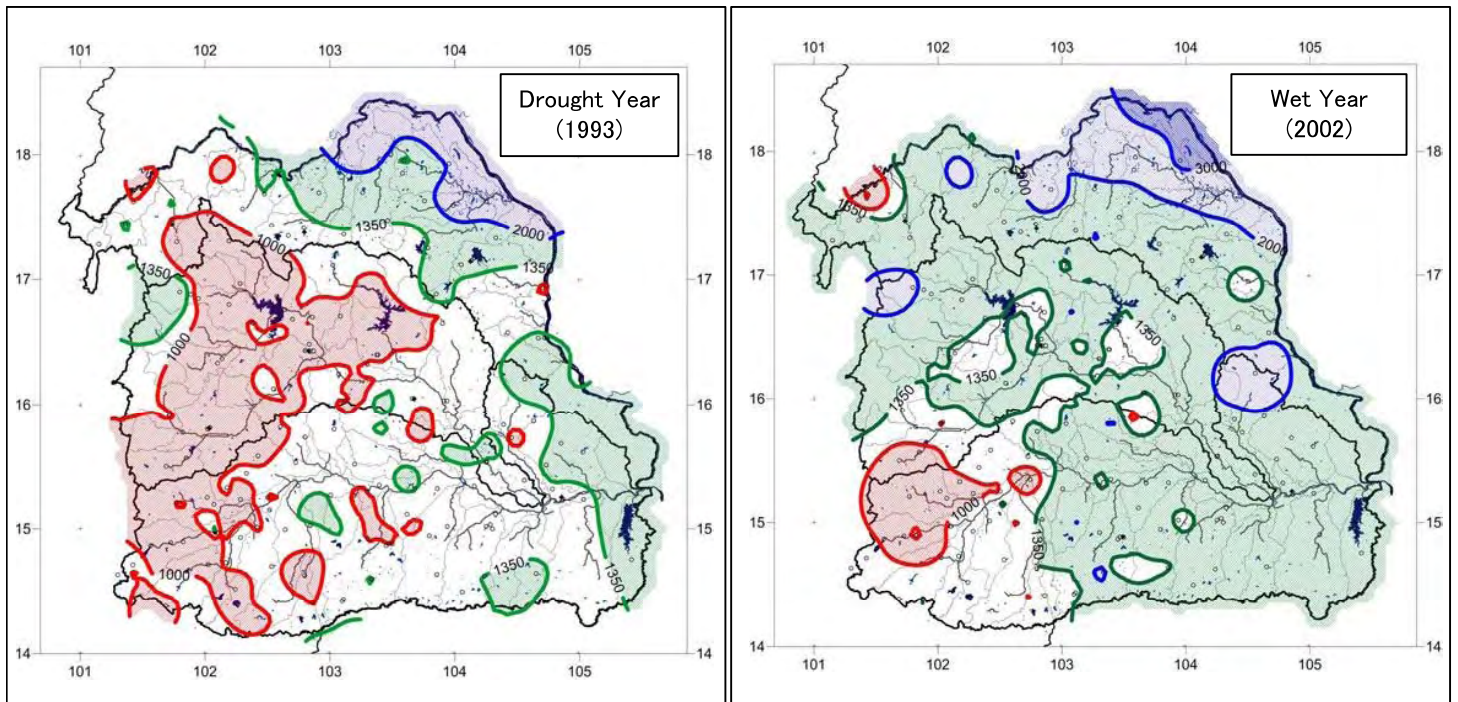
Rainfall Water for Tributaries (Sub-Basins)

Code	Name	Basin Area	Rainfall -year-	Rainwater Amount -year-	Code	Name	Basin Area	Rainfall -year-	Rainwater Amount -year-	Code	Name	Basin Area	Rainfall -year-	Rainwater Amount -year-
0210	Khong part 3	674	1,076	725	0402	Upper Chi	2,489	1,239	3,084	0502	Upper Mun	2,998	1,042	3,124
0211	Nam Mhun	622	1,329	827	0403	Lam Saphung	758	1,266	960	0503	Lam Sae	1,174	994	1,167
0212	Nam Sam	876	1,089	954	0404	Lam Krajuan	886	1,084	960	0504	Lam Phra Ploeng	2,211	1,031	2,280
0213	Khong part 4	808	1,113	899	0405	Lam Khanchoo	1,635	957	1,565	0505	Lam Takong	3,518	1,017	3,578
0214	Huai Nampuan	658	1,359	894	0406	Chi part 2	3,808	1,103	4,200	0506	Lam Choeng Krai	2,622	1,019	2,672
0215	Lower Loei	2,902	1,309	3,799	0407	Huai Sammo	729	1,122	818	0507	Lam Chakkaraj	1,614	1,098	1,772
0216	Khong part 5	1,823	1,350	2,461	0408	Chi part 3	3,244	1,131	3,669	0508	Lam Nang Rong	1,326	1,184	1,570
0217	Huai Namsoem	1,056	1,334	1,409		Upper Chi	13,549	1,126	15,256	0509	Lam Pa Tear	623	1,244	775
0218	Nam Moeng	2,718	1,356	3,686	0409	Upper Phong	4,424	1,314	5,813	0510	Lam Plai Maas	3,991	1,117	4,458
0219	Khong part 6	540	1,508	814	0410	Huai Phuay	916	1,105	1,012	0511	Mun part 2	4,189	1,298	5,437
0220	Nam Sui	1,310	1,702	2,230	0411	Lam Phanieng	1,912	1,154	2,206	0512	Huai Aek	1,083	1,143	1,238
0221	Huai Luang	3,425	1,387	4,750	0412	Nam Phrom	2,320	1,260	2,923	0513	Lam Sathaed	2,589	1,088	2,817
0222	Huai Dam	681	1,529	1,041	0413	Lam Namchern	2,922	1,269	3,708	0514	Lam Phang Chu	1,231	1,205	1,483
0223	Khong part 7	2,407	2,108	5,074	0414	Lower Phong	2,386	1,193	2,846		Upper Mun	29,169	1,110	32,371
	Upper Khong	20,500	1,442	29,563	0415	Huai Saibarth	741	1,115	826	0515	Huai Ta Khong	1,152	1,222	1,408
0224	Upper Songkhram	3,299	1,643	5,420	0416	Chi part 4	5,410	1,298	7,022	0516	Lam Chi	4,591	1,329	6,101
0225	Lower Songkhram	3,030	1,993	6,039		Middle Chi	21,031	1,253	26,356	0517	Lam Phub Phlao	1,112	1,348	1,499
0226	Huai Khong	693	1,972	1,367	0417	Upper Lampao	3,282	1,291	4,237	0518	Lam Tao	847	1,351	1,144
0227	Huai Hi	715	2,132	1,524	0418	Lam Phanchard	657	1,531	1,006	0519	Lam Siew Noi	698	1,406	981
0228	Huai Namyarm	1,733	1,635	2,833	0419	Lower Lampao	4,264	1,447	6,170	0520	Lam Siew Yai	2,790	1,275	3,557
0229	Huai Nam Con	3,469	1,678	5,821	0420	Lam Namyoung	4,145	1,551	6,429	0521	Huai Thab Thun	3,571	1,283	4,582
0230	Huai Thuay	788	2,007	1,582	0421	Lower Chi	2,548	1,465	3,733	0522	Mun part 3	2,780	1,498	4,164
0231	Khong part 8	1,186	1,985	2,354		Lower Chi	14,896	1,448	21,575	0523	Huai Samran	3,502	1,382	4,840
0232	Nam Phung	971	1,691	1,642		Chi Basin	49,476	1,277	63,187	0524	Huai Tha	1,572	1,414	2,223
0233	Huai Nam Kham	2,537	1,549	3,930						0525	Huai Khayung	1,775	1,632	2,897
0234	Khong part 9	644	1,303	839							Middle Mun	24,390	1,369	33,396
0235	Huai Bangsai	1,366	1,511	2,064						0526	Huai Phoeng	788	1,632	1,286
0236	Huai Muk	552	1,548	854						0527	Lam Sebai	2,969	1,475	4,379
0237	Huai Bang Ei	1,590	1,576	2,506						0528	Lam Sebok	3,518	1,593	5,604
0238	Lower Khong	3,387	1,677	5,680						0529	Lam Dom Yai	4,846	1,568	7,599
	Lower Khong	25,960	1,712	44,455						0530	Lower Mun	1,013	1,712	1,734
	Khong Basin	46,460	1,593	74,018						0531	Huai Tung Lung	843	1,616	1,362
										0532	Lam Dom Noi	2,164	1,790	3,874
											Lower Mun	16,141	1,601	25,838
											Mun Basin	69,700	1,314	91,605
											Khong/Chi/Mun	165,636	1,381	228,810

Unit
Basin Area: s,q,km
Rain fall: mm/year
Rainwater Amount: MCM/year

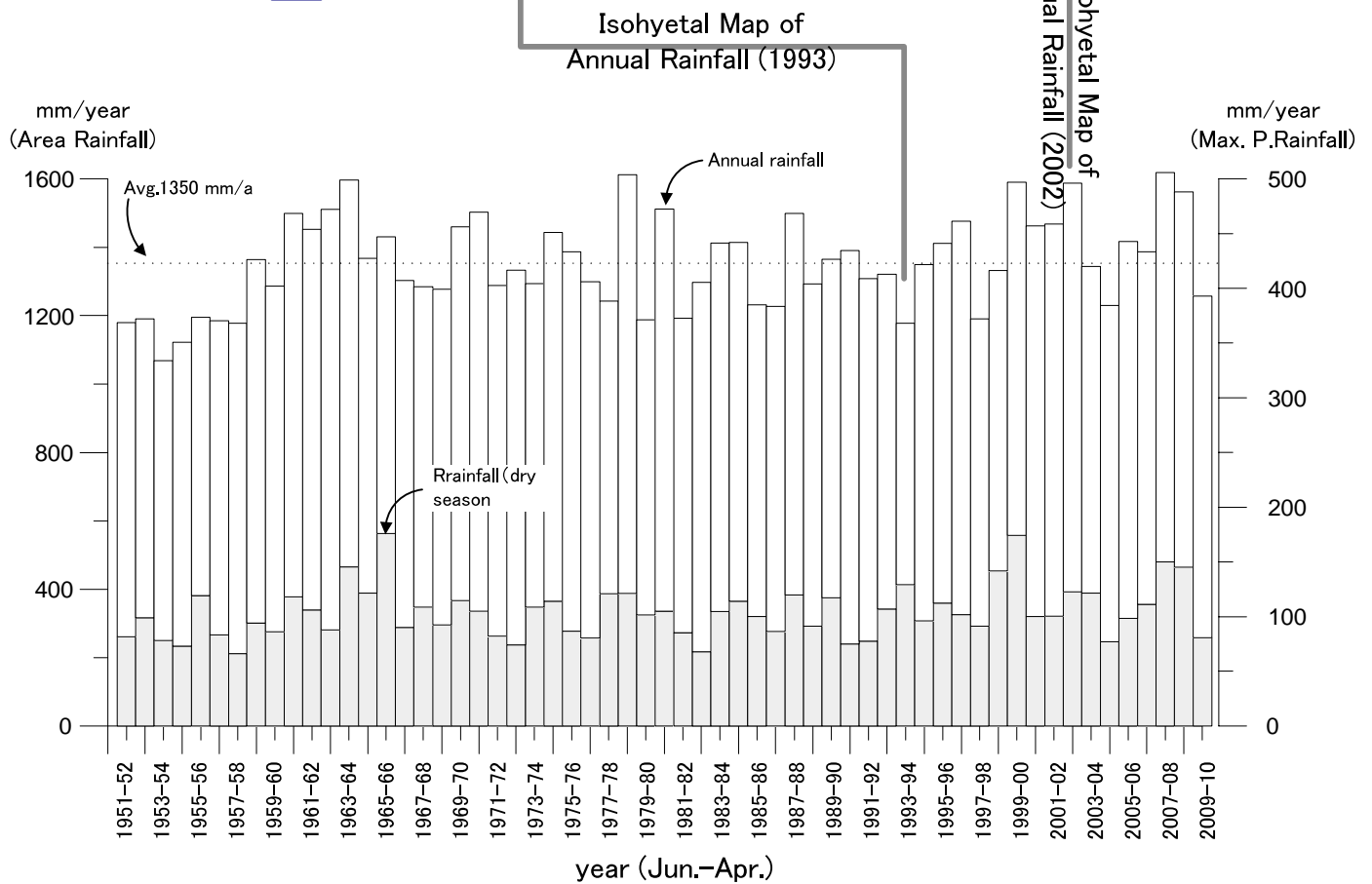
Area Rainfall and Rainwater Amount Estimated for Tributaries (Sub-Basins) (mm/year)

Appendix 3.3.5 Isohyetal Map of Annual Rainfall in Dry/Wet Year

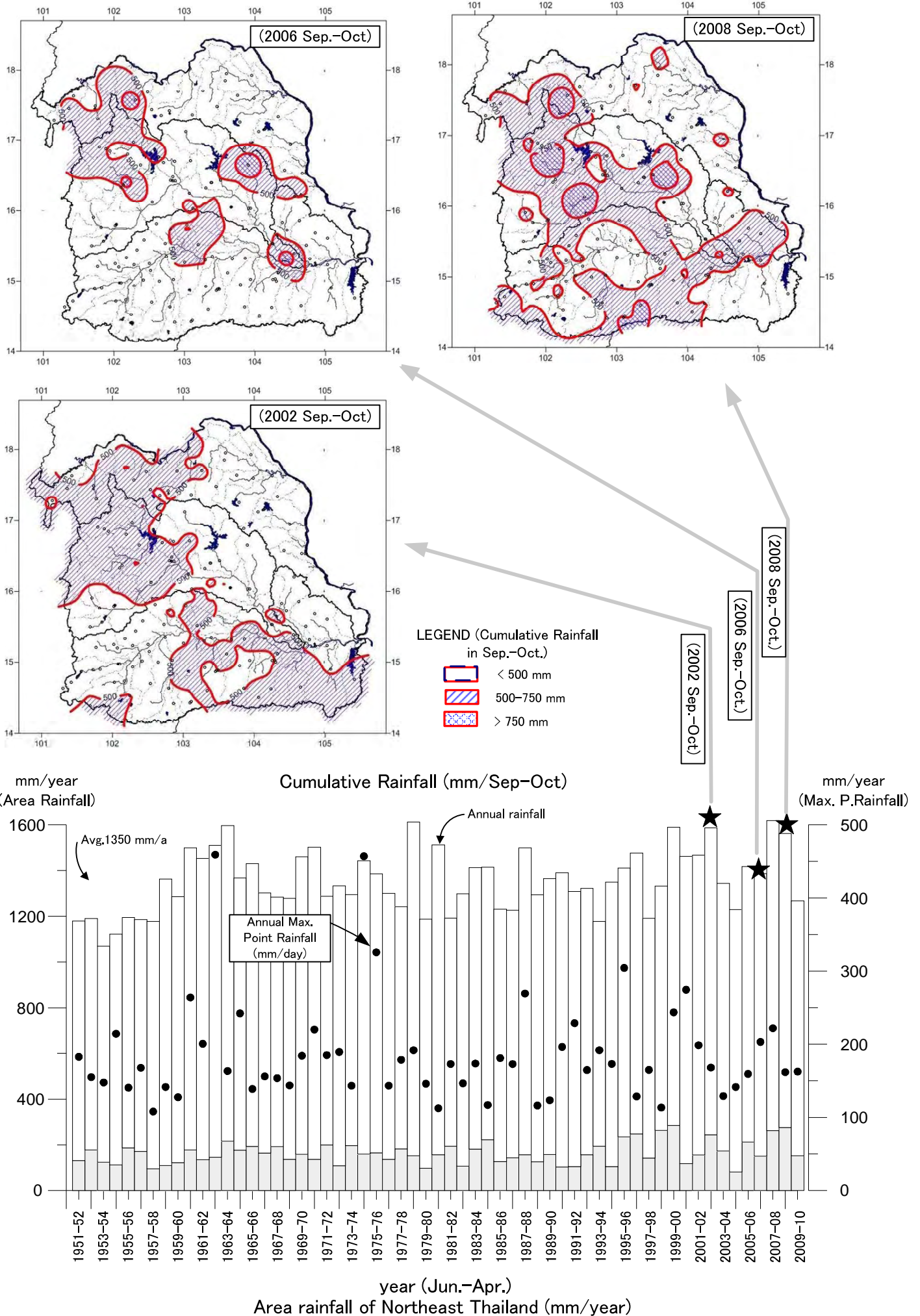


LEGEND (Annual Rainfall)

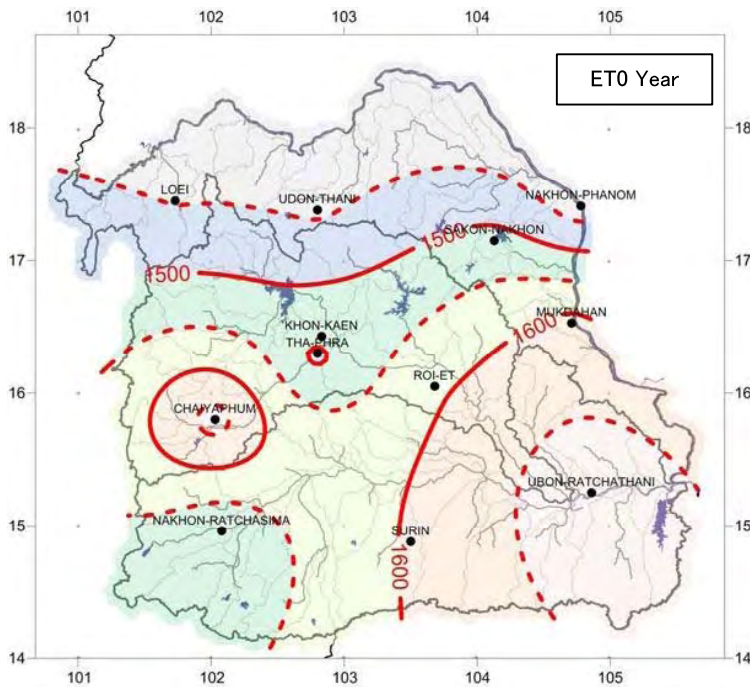
- < 1000 mm/year
- 1000–1350mm/year
- > 2000 mm/year



Appendix 3.3.6 Isohyetal Map of Annual Rainfall in Wet Month (Sep.- Oct.)



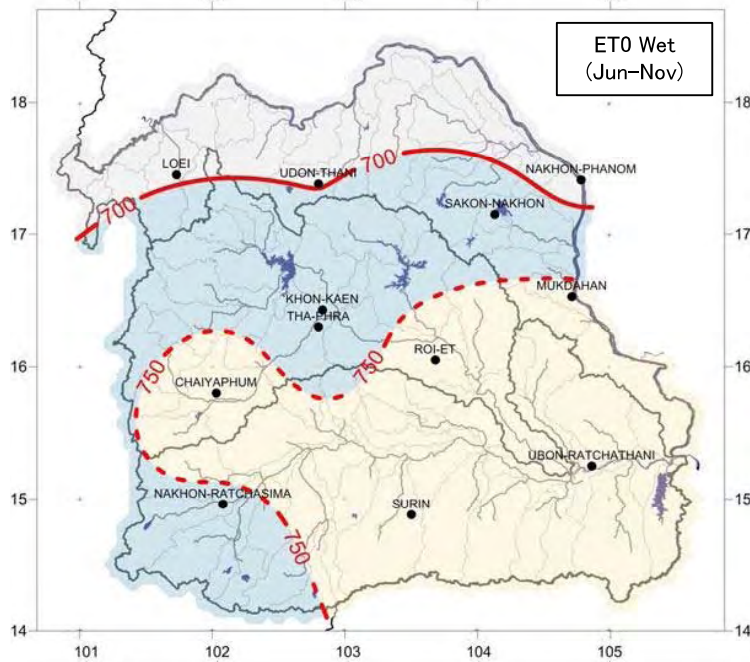
Appendix 3.3.7 Potential Evapotranspiration (ET₀) in Khong, Chi, Mun Basin



Potential Evapotranspiration
ET₀ (mm/year)
- Year Total-

LEGEND

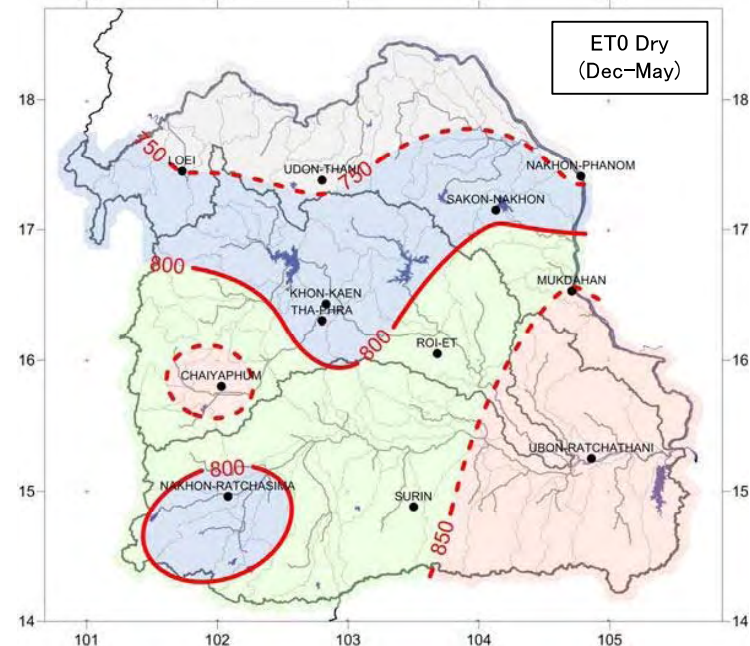
- HIGH (> 1600 mm/year)
- MIDDLE (1550-1600 mm/year)
- MIDDLE (1500-1550 mm/year)
- LOW (1450-1400 mm/year)
- LOW (< 1400 mm/year)



Potential Evapotranspiration
ET₀ (mm/wet season)
- Wet Season (Jun-Nov)-

LEGEND

- HIGH (> 750 mm/year)
- MIDDLE (700-750 mm/year)
- LOW (< 700 mm/year)



Potential Evapotranspiration
ET₀ (mm/dry season)
- Dry Season (Dec-May)-

LEGEND

- HIGH (> 850 mm/year)
- MIDDLE (800-850 mm/year)
- MIDDLE (750-800 mm/year)
- LOW (< 750 mm/year)

Appendix 3.4.1 Landuse of Sub-basin Estimated by Province Statistics

Landuse of Sub-basin estimated by Province Statistics

Basin and Province	Area rate (%)	Total Land	Forest Land	Farm Land				Other Land
				Paddy	Field crop	Tree crop	Sub Total	
1. Upper Khong								
Loei	95	6,780	2,410	430	870	630	1,930	2,440
Nong Bua Lam Phu	40	960	80	360	90	70	520	360
Udon Thani	60	4,400	370	1,350	600	180	2,130	1,900
Nong Khai	40	1,830	130	540	130	300	970	730
Subtotal	-	13,970	2,990	2,680	1,690	1,180	5,550	5,430
2. Loewr Khong								
Nong Khai	60	2,750	190	800	190	450	1,440	1,120
Sakon Nakhon	100	6,000	920	2,090	210	210	2,510	2,570
Nakhon Phanom	100	3,450	640	1,120	30	180	1,330	1,480
Mukdahan	100	2,710	870	420	180	170	770	1,070
Amnat Charoen	20	400	70	190	10	20	220	110
Ubon Ratchathani	10	980	150	320	30	30	380	450
Subtotal	-	16,290	2,840	4,940	650	1,060	6,650	6,800
Khong Ttotal	-	30,260	5,830	7,620	2,340	2,240	12,200	12,230
3. Upper Chi								
Chaiyaphum	100	7,990	2,240	1,570	1,330	230	3,130	2,620
Khon Kaen	5	340	30	130	40	20	190	120
Subtotal	-	8,330	2,270	1,700	1,370	250	3,320	2,740
4. Middle Chi								
Loei	5	360	130	20	50	30	100	130
Nong Bua Lam Phu	60	1,450	120	550	130	100	780	550
Khon Kaen	95	6,460	570	2,400	850	260	3,510	2,380
Maha Sarakham	55	1,820	40	1,150	200	90	1,440	340
Roi Et	50	2,600	160	1,430	80	50	1,560	880
Kalasin	20	860	80	290	120	40	450	320
Subtotal	-	13,550	1,100	5,840	1,450	570	7,840	4,610
5. Lower Chi								
Udon Thani	40	2,930	250	900	400	120	1,420	1,260
Roi Et	10	520	30	290	20	10	320	170
Kalasin	80	3,470	340	1,160	480	150	1,790	1,340
Yasothon	70	1,820	200	910	90	100	1,100	520
Subtotal	-	8,740	820	3,260	990	380	4,630	3,290
Chi Total	-	30,620	4,190	10,800	3,790	1,200	15,790	10,640
6. Upper Mun								
Nakhon Ratchasima	100	12,810	1,820	3,960	3,090	380	7,430	3,560
Buriram	100	6,450	510	2,910	410	250	3,570	2,370
Subtotal	-	19,260	2,330	6,870	3,500	630	11,000	5,930
7. Middle Mun								
Maha Sarakham	45	1,490	40	940	170	70	1,180	270
Roi Et	40	2,080	130	1,140	60	40	1,240	710
Surin	100	5,080	500	3,060	220	240	3,520	1,060
Si Sa Ket	100	5,520	620	2,680	290	380	3,350	1,550
Subtotal	-	14,170	1,290	7,820	740	730	9,290	3,590
8. Lower Mun								
Yasothon	30	780	80	390	40	40	470	230
Amnat Charoen	80	1,580	260	760	60	90	910	410
Ubon Ratchanthon	90	8,860	1,360	2,870	240	290	3,400	4,100
Subtotal	-	11,220	1,700	4,020	340	420	4,780	4,740
Mun Total	-	44,650	5,320	18,710	4,580	1,780	25,070	14,260
Grnad Total	-	105,530	15,340	37,130	10,710	5,220	53,060	37,130

Note: (1) Area data is based on Agriculture statistics of Thainald, 2007

(2) Area rate is approximately studied by JICA

Estimation of Unit Water Use Value by Land Use

1. Wet Season

1.1 Forest & Tree Crop Area

○ Consumptive Use Water by Tree	3.5 mm/day x 180 days	=	630 mm.
○ Seepage into Sub-Soil covered with fallen leaves	1.5 mm/day x 180 days	=	270 mm.
Total unit water use			900 mm.

1.2 Paddy Area

○ Consumptive use water of paddy (Pounding period 150 days for local paddy with long stem.)	6 mm/day x 150 days	=	900 mm.
○ Seepage into sub-soil under pounding	2 mm/day x 150 days	=	300 mm.
○ Evaporation at the area without pounding	1.5 mm/day x 30 days	=	45 mm.
○ Seepage of rainfall into above area	0.5 mm/day x 30 days	=	15 mm.
Total unit water use		=	1,260 mm.

1.3 Field Crops (Sugarcane, Maize)

○ Consumptive Use of crops (Water using period of 120 days)	3.5 mm/day x 120 days	=	420 mm.
○ Seepage into sub-soil	1.5 mm/day x 120 days	=	180 mm.
○ Evaporation at area without planting	1.5 mm/day x 60 days	=	90 mm.
○ Seepage of rainfall into above area	0.5 mm/day x 60 days	=	30 mm.
Total Unit Water Use			720 mm.

1.4 Other Area (Hilly Area and Wetland)

○ Chi and Mun Basin, (Evapo 1.5 mm., Seepage 0.5 mm.), (1.5+0.5) x 180	=	360 mm.
○ Khong Basin with large wetland (E 2 mm, S = 1 mm.), (2.0+1.0) x 180	=	540 mm.

2. Dry Season

As the dry season has 90 days with small rainfall from March to May, but 90 days without rain from December to February. Accordingly, seepage water is not occurred by high evaporation.

2.1 Forest and Tree Crops

(1) Water Use, Consumptive Use Water, Water use decreases due to suspension of tree growth	3.0 mm/day x 180 days	=	540 mm.
(2) Return Flow (wet season seepage water)	1.5 mm/day x 180 days	=	270 mm.
(3) Balance	540-270	=	270 mm.

2.2 Paddy Area (No plantation, only evaporation from paddy field)

(1) Water Use, Evaporation from wetland in rainy days	2.5 mm/day x 90 days	=	225 mm.
Evaporation from sub-soil in drying days	2.0 mm/day x 90 days	=	180 mm.
Total		=	405 mm.
(2) Return Flow (wet season seepage water),	(2x150) + (0.5x30)	=	315 mm.
(3) Balance	405-315	=	90 mm.

2.3 Field Crop (sugarcane, Cassava, Cropping intensity 40%)

(1) Water Use, Growing period,	4mm x 90 days x 40%	=	144 mm.
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Appendix 3.5.1 (1) List of Existing Water Resources and Irrigation Project

(Lists of Large Scale, Medium Scale, Small Scale, Pump Project and EGAT project shall be referred to the attached file in CD at the end of Annex I)

Existing Project in the NE

Basin	Large Scale		Medium Scale		Small Scale				
	No.of Project	Water Storage (MCM)	Irrigation Area (rai)	No.of Project	Water Storage (MCM)	Irrigation Area (rai)	No.of Project	Water Storage (MCM)	Irrigation Area (rai)
Khong	5	819	395,495	102	310	404,375	1,678	422	803,971
Chi	7	1,662	1,130,496	82	451	305,358	1,318	242	621,861
Mun	9	1,269	928,285	172	910	775,363	2,458	327	1,399,967
Total	21	3,750	2,454,276	356	1,671	1,485,096	5,454	991	2,825,799
Remarks	Reference: RID, "Irrigation Project Information System 2552 and National Irrigation Sector Review by MRC 2009								

Basin	Pumping			EGAT's Power Plant			Total (Except EGAT)		
	No.of Project	Water Storage (MCM)	Irrigation Area (rai)	No.of Project	Water Storage (MCM)	Irrigation Area (rai)	No.of Project	Water Storage (MCM)	Irrigation Area (rai)
Khong	297	-	479,412	1	165	-	2,083	1,716	2,083,253
Chi	447	-	725,536	3	2,452	-	1,857	4,807	2,783,251
Mun	252	-	339,391	3	1,966	-	2,894	4,472	3,443,006
Total	996	-	1,544,339	7	4,583	-	6,834	10,995	8,309,510

Appendix 3.5.1 (2) List of Existing Water Resources and Irrigation Project

Large scale project [Existing]

RID, "Irrigation Project Information System 2552

No.	Project	Province	Water storage (MCM)	Irrigation area (rai)	start	completed
①Khong River basin						
1	Huai Luang O&M Project	Udonthai	113.00	86,987	1970	1984
2	Huai Mong O&M Project	Nongkhai	-	61,708	1983	1987
3	Nam Oon O&M Project	Sakhon Nakhon	520.00	185,800	1967	1981
4	Nong Ham Project	Sakhon Nakhon	186.00	-		
5	Kam Basin Development Project	Nakhon Phanom	-	61,000	1995	2001
5		total	819.00	395,495	-	-
②Chi River basin						
1	Nong Wai O&M Project	Khonkaen	81.00	264,020		
2	Lam Pao O&M Project	Kalasin	1,430.00	315,098	1963	1985
3	Thung Sang Badon	Roi-et	-	180,000	1939	1955
4	Prom Chern		-	80,000	1977	1995
5	Upper Chi O&M Project		56.00	47,500	1994	1996
6	Middle Chi O&M Project		38.40	133,678	1991	2005
7	Lower Chi and Lower Sebai O&M Project		56.10	110,200	1991	2005
7		total	1,661.50	1,130,496	-	-
③Mun River basin						
1	Siaw Yai O&M Project	Mahasarakham	-	41,940	1990	2002
2	Dom Noi O&M Project	Ubon Ratchathani	-	150,000	1968	1984
3	Lam Phra Phloeng O&M Project	Nakhon Ratchasima	149.00	78,100	1963	1984
4	Lam Takhong O&M Project	Nakhon Ratchasima	314.00	123,125	1964	1969
5	Thung Samrit O&M Project	Nakhon Ratchasima	-	153,000	1939	1958
6	Lam Nangrong O&M Project	Burirum	121.00	68,400	1980	1991
7	Upper Mun - Lamsae O&M Project	Nakhon Ratchasima	416.00	142,500	1980	2008
8	Lam Plai Mass O&M Project	Nakhon Ratchasima	98.00	56,800	1986	2002
9	Lower Mun O&M Project	Srisaket	171.38	114,420	1991	2004
9		total	1,269.38	928,285	-	-
④Khong,Chi,Mun River basin						
21		total	3,749.88	2,454,276	-	-

Medium scale project [Existing]

RID, "Irrigation Project Information System 2552

No.	Project	Province	Water storage (MCM)	Irrigation area (rai)	start	completed
①Khong River basin						
102		total	309.70	404,375	-	-
②Chi River basin						
82		total	450.65	305,358	-	-
③Mun River basin						
172		total	909.75	775,363	-	-
④Khong,Chi,Mun River basin						
356		total	1,670.10	1,485,096	-	-

RID, "Irrigation Project Information System 2552
and National Irrigation Sector Review by MRC 2009

Small scale project 【Existing】

Reference: MRC

No.	Project		Water storage (MCM)	Irrigation area (rai)	start	completed
①Khong River basin						
	1678	total	422.04	803,971	-	-
②Chi River basin						
	1318	total	242.23	621,861	-	-
③Mun River basin						
	2458	total	326.92	1,399,967	-	-
④Khong,Chi,Mun River basin						
	5454	total	991.19	2,825,799	-	-

: from MRC : from MRC

Pumping project 【Existing】

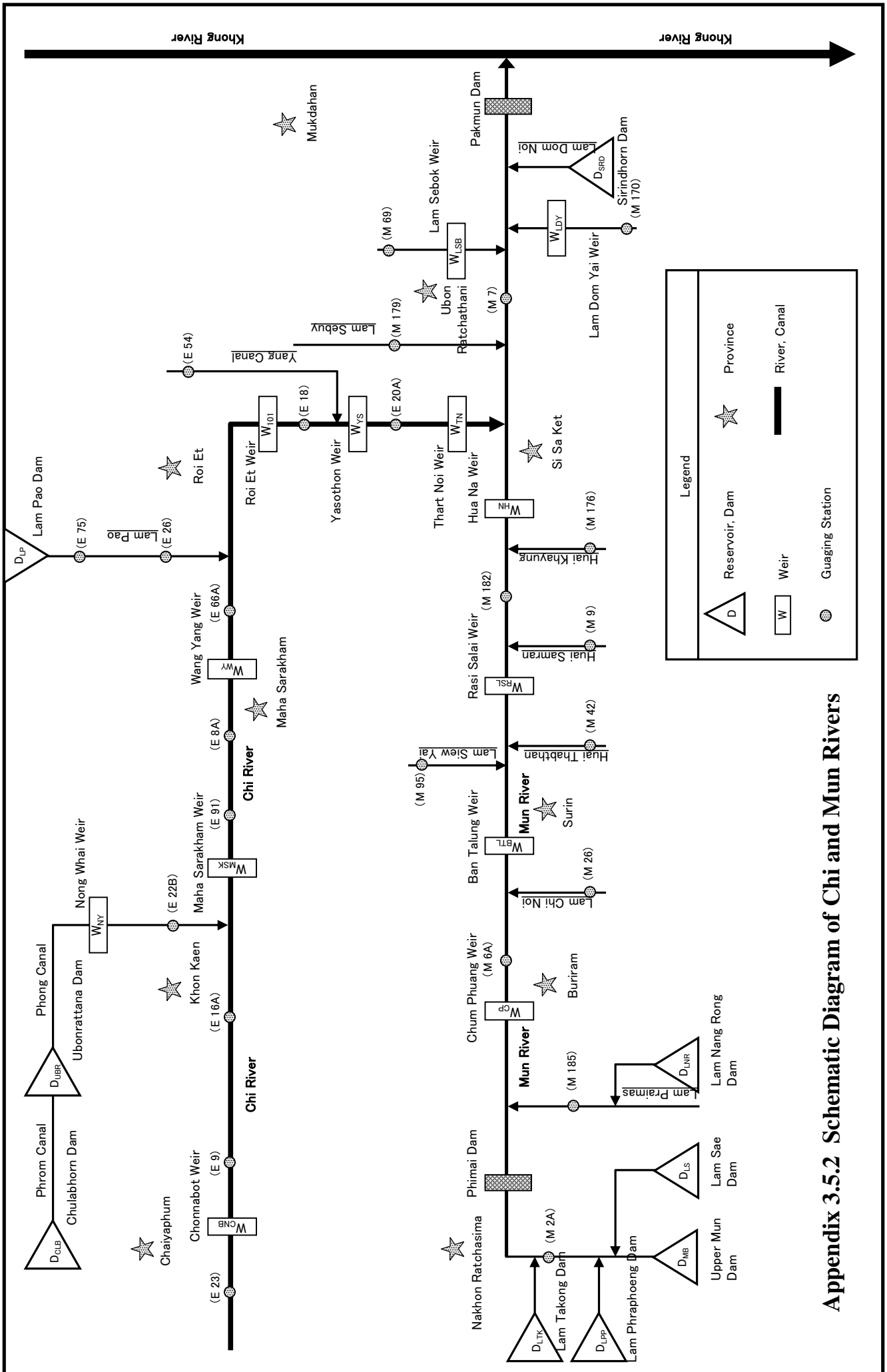
Reference: MRC

No.	Project		Water storage (MCM)	Irrigation area (rai)	start	completed
①Khong River basin						
	297	total	-	1,399,967	-	-
②Chi River basin						
	447	total	-	725,536	-	-
③Mun River basin						
	252	total	-	339,391	-	-
④Khong,Chi,Mun River basin						
	996	total	-	2,464,894	-	-

Hydropower Dams in Notheast Thailand

Reference: RID, "Irrigation Project Information System 2552

No.	Project	Province	Water storage (MCM)	Irrigation area (rai)	start	completed
1	Nam Phung dam	Sakhon Nakhon	165.48	-	-	-
2	Ubonrat dam	Khonkaen	2,264.00	-	-	-
3	Sirinthon dam	Ubon Ratchathani	1,966.00	-	-	-
4	Chulaphorn dam	Chaiyaphum	188.00	-	-	-
5	Huai Kum dam	Chaiyaphum		-	-	-
6	Pak Moon dam	Ubon Ratchathani		-	-	-
7	Lam Takong dam	Nakhon Ratchasima		-	-	-
	7	total	4,583.48			



Appendix 3.5.2 Schematic Diagram of Chi and Mun Rivers

Summary of Basin Water Balance (Khong 1/2)

Basin			Landuse										Surface water									
No.	Code	Basin Name	Population (person)	Basin Area (km2)	Basin Area -land Use- (km2)	Forest Area (km2)	Agriculture Area (km2)	Water Body (km2)	Other Area (km2)	Rainfall -wet- (mm)	Rainfall -dry- (mm)	Rainfall -year- (mm)	Rainwater Amount -wet- (mcm)	ET0 -wet- (mm)	ET0 -dry- (mm)	ET0 -year- (mm)	Potential Surface Runoff (mcm)	Potential Surface Runoff (mm)	Annual Runoff -observed- (mm)	Annual Runoff -station- (mm)	Annual Runoff -ref. RID -Inf- (mcm)	
1	0210	Khong part 3	13,007	674	681	440	160	100	77	851	225	1,076	725	574	693	766	1459	294	436	-	-	287
2	0211	Nam Mhun	32,587	622	626	344	244	153	0	942	387	1,329	827	586	698	772	1470	274	441	200	Dan Sai	271
3	0212	Nam Sam	40,326	876	853	356	440	275	40	918	171	1,089	954	804	697	762	1460	368	420	338	Tee Tang Khuan	399
4	0213	Khong part 4	41,551	808	824	288	388	243	20	801	312	1,113	899	647	693	751	1444	343	425	1,469	Ban pak huay	377
5	0214	Huai Nampuan	136,829	658	1,056	168	820	513	36	1,003	356	1,359	894	660	702	758	1460	382	581	-	-	0
6	0215	Lower Loei	268,820	2,902	2,950	1,112	1,608	68	162	1,018	291	1,309	3,799	2,954	699	757	1456	950	327	995	Kh.58A	1,240
7	0216	Khong part 5	110,294	1,823	1,745	788	720	450	84	1,129	221	1,350	2,461	2,058	689	738	1427	714	392	-	-	887
8	0217	Huai Namsoem	70,829	1,056	1,060	352	660	413	0	1,185	149	1,334	1,409	1,251	690	737	1427	357	338	-	-	530
9	0218	Nam Moeng	291,995	2,718	2,678	636	1,844	1,153	84	1,155	201	1,356	3,686	3,139	695	742	1437	847	312	925	Ban guad	1,020
10	0219	Khong part 6	126,198	540	616	60	372	233	76	1,239	269	1,508	814	669	691	735	1426	194	359	43	Ban Hua Khua	282
11	0220	Nam Sui	192,238	1,310	1,318	180	972	608	68	1,431	271	1,702	2,230	1,875	693	738	1431	435	332	-	-	418
12	0221	Huai Luang	483,714	3,425	3,418	520	2,568	1,605	192	1,221	166	1,387	4,750	4,182	698	744	1442	1,047	306	608	Kh.73	2,110
13	0222	Huai Dern	104,775	681	692	51	620	388	19	1,134	395	1,529	1,041	772	703	751	1454	239	351	-	-	0
14	0223	Khong part 7	267,677	2,407	2,357	356	1,496	935	248	1,845	263	2,108	5,074	4,441	684	734	1418	1,911	794	-	-	1,410
		Sub-total	2,180,850	20,500	20,874	5,651	12,912	8,070	939	1,201	241	1,442	29,563	24,612	-	-	-	8,355	-	-	-	9,231
15	0224	Upper Songkhrai	432,969	3,299	3,288	212	2,824	1,765	144	1,335	308	1,643	5,420	4,404	698	747	1445	2,490	755	1,280	Kh.74	0
16	0225	Lower Songkhrai	308,377	3,030	3,137	376	2,292	1,433	332	1,769	224	1,993	6,039	5,360	692	747	1439	2,319	765	4,699	Ban tah kok daeng	10,388
17	0226	Huai Khong	73,639	693	708	64	572	358	28	1,715	257	1,972	1,367	1,188	684	733	1417	672	970	-	-	0
18	0227	Huai Hi	89,720	715	726	60	592	370	36	1,925	207	2,132	1,524	1,376	687	739	1426	689	964	954	Ban Nong yang	0
19	0228	Huai Nanyam	229,082	1,733	1,742	220	1,392	870	60	1,340	295	1,635	2,833	2,322	702	761	1463	1,450	837	824	Ban kom sai	0
20	0229	Huai Nam On	417,171	3,469	3,537	852	2,300	1,438	276	1,349	329	1,678	5,821	4,680	714	775	1489	2,598	749	1,556	Kh.54	0
21	0230	Huai Thuay	102,496	788	801	244	436	273	44	1,829	178	2,007	1,582	1,441	692	759	1451	748	949	-	-	252
22	0231	Khong part 8	195,125	1,186	1,123	296	712	445	48	1,755	230	1,985	2,354	2,081	696	763	1459	1,055	890	-	-	443
23	0232	Nam Phung	72,143	971	875	508	320	200	32	1,310	381	1,691	1,642	1,272	736	802	1538	407	419	311	Ban sa phan thang hai	0
24	0233	Huai Nam Khiam	412,906	2,537	2,615	640	1,708	1,068	148	1,305	244	1,549	3,930	3,311	723	793	1516	1,171	462	933	Kh.19	1,879
25	0234	Khong part 9	68,266	644	453	128	304	190	20	1,197	106	1,303	839	771	740	819	1559	259	402	-	-	274
26	0235	Huai Bangsai	55,616	1,366	1,385	896	460	288	12	1,131	380	1,511	2,064	1,545	744	822	1566	691	506	628	Ban sa phan nong aek	685
27	0236	Huai Muk	120,270	552	807	192	504	315	20	1,197	351	1,548	854	661	758	841	1599	303	549	-	-	278
28	0237	Huai Bang E	153,018	1,590	1,507	644	808	505	12	1,285	291	1,576	2,506	2,043	765	849	1614	794	499	-	-	933
29	0238	Lower Khong	254,246	3,387	3,353	1,888	1,056	660	164	1,386	291	1,677	5,680	4,694	772	867	1639	1,580	466	-	-	1,886
		sub-total	2,985,044	25,960	26,057	7,220	16,280	10,175	1,376	1,431	281	1,712	44,455	37,149	-	-	-	17,226	-	-	-	17,018
		Total	5,165,894	46,460	46,931	12,871	29,192	18,245	2,315	1,329	264	1,593	74,018	61,761	-	-	-	25,581	-	-	-	26,249

Summary of Basin Water Balance (Khong 2/2)

No.	Basin		Water use										Groundwater					Balance				
	Code	Name	Basin	Effective Reservoir Capacity		Irrigation Area -wet-		Agricultural Water Demand - wet -	Agricultural Water Demand - dry -	Agricultural Water Demand - year -	Domestic Water Demand	Current Water Demand	Renewable Groundwater Resources	Groundwater Withdrawal	Water Resource Potential	Developed Water Resource	Developing Water Potential	Balance Water Potential vs. C.W. Demand (mcm)	Balance Developed vs. C.W. Demand (mcm)			
				(mcm)	(mcm)	(ha)	(rai)													(mcm)	(mcm)	(mcm)
1	0210	Khong part 3	Khong	2	160	1,000	1	0	0	1	1	2	12	1	306	3	303	304	1			
2	0211	Nam Mhun	Khong	0	0	0	0	0	0	0	2	14	1	288	1	287	286	(1)				
3	0212	Nam Sam	Khong	3	432	2,700	3	0	0	3	6	16	3	384	2	382	378	(4)				
4	0213	Khong part 4	Khong	3	2,040	12,750	15	1	16	3	19	15	15	358	4	354	339	(15)				
5	0214	Huai Nampan	Khong	8	6,668	41,675	47	1	48	10	58	15	2	397	10	387	339	(48)				
6	0215	Lower Loei	Khong	46	12,555	78,469	91	11	102	20	122	63	5	1,013	51	962	891	(70)				
7	0216	Khong part 5	Khong	5	2,685	16,781	18	0	18	8	27	41	1	755	6	749	729	(20)				
8	0217	Huai Namsoem	Khong	15	2,630	16,438	17	1	18	5	23	19	2	376	17	359	353	(6)				
9	0218	Nam Moeng	Khong	34	14,039	87,744	91	21	111	21	133	49	8	896	41	855	764	(91)				
10	0219	Khong part 6	Khong	9	13,985	87,406	87	73	160	9	169	11	10	205	18	187	36	(150)				
11	0220	Nam Sui	Khong	4	7,343	45,894	45	5	49	14	63	30	7	465	11	454	402	(52)				
12	0221	Huai Luang	Khong	155	25,442	159,013	156	53	209	35	244	63	8	1,110	163	947	866	(81)				
13	0222	Huai Dam	Khong	2	784	4,900	5	0	5	8	12	14	2	253	4	249	241	(9)				
14	0223	Khong part 7	Khong	24	21,051	131,569	125	54	179	20	198	68	4	1,979	29	1,950	1,781	(170)				
		Sub-total	Upper Khong	309	109,814	686,338	701	219	920	159	1,079	429	52	8,785	361	8,425	7,706	(717)				
15	0224	Upper Songkhrai	Khong	63	9,879	61,744	59	4	63	32	95	72	6	2,562	69	2,494	2,467	(27)				
16	0225	Lower Songkhrai	Khong	62	11,038	68,988	66	7	72	23	95	81	2	2,400	64	2,336	2,305	(31)				
17	0226	Huai Khong	Khong	9	2,096	13,100	12	0	12	5	18	18	1	690	10	680	672	(8)				
18	0227	Huai Hi	Khong	12	1,363	8,519	8	0	8	7	15	20	1	709	13	696	695	(2)				
19	0228	Huai Namyarn	Khong	29	6,840	42,750	41	3	45	17	61	38	1	1,488	31	1,457	1,427	(31)				
20	0229	Huai Nam Oon	Khong	517	53,161	332,256	325	153	478	31	509	78	6	2,676	523	2,153	2,167	15				
21	0230	Huai Thuey	Khong	9	6,895	43,094	42	5	46	8	54	21	2	769	12	757	715	(42)				
22	0231	Khong part 8	Khong	28	8,333	52,081	50	6	56	14	70	31	1	1,086	29	1,057	1,016	(42)				
23	0232	Nam Phung	Khong	208	10,403	65,019	65	6	71	5	76	22	1	429	210	219	353	134				
24	0233	Huai Nam Kham	Khong	78	22,715	141,969	140	16	156	30	186	52	8	1,223	86	1,137	1,037	(100)				
25	0234	Khong part 9	Khong	26	2,090	13,063	13	1	14	5	19	11	1	270	27	243	251	8				
26	0235	Huai Bangsai	Khong	15	3,250	20,313	20	2	22	4	27	28	0	719	16	703	693	(11)				
27	0236	Huai Muk	Khong	9	2,362	14,763	15	2	17	9	25	11	1	314	10	304	289	(16)				
28	0237	Huai Bang B	Khong	34	5,482	34,263	34	5	40	11	51	33	2	827	36	791	776	(15)				
29	0238	Lower Khong	Khong	10	8,537	53,356	52	6	59	19	77	76	3	1,656	13	1,643	1,579	(64)				
		sub-total	Lower Khong	1,110	154,444	965,275	944	215	1,159	218	1,377	593	37	17,818	1,147	16,670	16,441	(230)				
		Total	Khong Basin	1,419	264,258	1,651,613	1,645	434	2,079	377	2,456	1,022	89	26,603	1,508	25,095	24,147	(948)				

Summary of Basin Water Balance (Chi 1/2)

No.	Code	Basin Name	Basin	Landuse						Surface water															
				Population (person)	Basin Area (km ²)	Basin Area - land Use (km ²)	Forest Area (km ²)	Agriculture Area (km ²)	Water Body (km ²)	Other Area (km ²)	Rainfall -wet- (mm)	Rainfall -dry- (mm)	Rainfall -year- (mm)	Rainwater Amount -wet- (mcm)	ET0 -wet- (mm)	ET0 -dry- (mm)	ET0 -year- (mm)	Potential Surface Runoff (mcm)	Potential Surface Runoff (mm)	Annual Runoff -observed-	Annual Runoff -station-	Annual Runoff -ref. RID -Inf-			
30	0402	Upper Chi	Chi	167,392	2,489	2,553	1,320	840	525	280	113	1,028	211	1,239	3,084	2,559	748	839	1,587	736	296	789	E.32A	0	
31	0403	Lam Saphung	Chi	5,009	758	744	652	20	13	68	4	1,095	171	1,266	960	830	743	831	1,574	216	285	-	-	0	
32	0404	Lam Krijuan	Chi	41,512	886	894	364	428	268	76	26	886	198	1,084	960	785	842	1,597	254	287	-	-	-	0	
33	0405	Lam Khandoo	Chi	169,514	1,635	1,733	120	1,332	833	192	89	753	204	957	1,565	1,231	759	834	1,593	477	292	-	-	0	
34	0406	Chi part 2	Chi	482,135	3,808	3,782	604	2,652	1,658	428	98	879	224	1,103	4,200	3,347	772	857	1,629	1,141	300	1,128	E.23	0	
35	0407	Huai Sammo	Chi	103,849	729	746	84	592	370	24	46	903	219	1,122	818	658	759	833	1,592	207	284	-	-	0	
36	0408	Chi part 3	Chi	466,910	3,244	3,297	308	2,496	1,560	364	129	917	214	1,131	3,669	2,975	736	796	1,532	967	298	1,944	E.16A	0	
	Sub-total	Upper Chi		1,436,321	13,549	13,749	3,452	8,360	5,225	1,432	505	914	212	1,126	15,256	12,385	-	-	-	3,998	-	-	-	-	0
37	0409	Upper Phong	Chi	400,991	4,424	4,065	1,292	2,072	1,295	540	161	948	366	1,314	5,813	4,194	722	784	1,506	1,292	292	739	Ban Jom Thong	0	
38	0410	Huai Phuey	Chi	104,781	916	896	152	664	415	32	48	907	198	1,105	1,012	831	712	772	1,484	252	275	211	Ban Khok leam	0	
39	0411	Lam Phanieng	Chi	204,033	1,912	1,874	476	1,232	770	96	70	878	276	1,154	2,206	1,679	707	758	1,465	541	283	342	Ban wang Muen	0	
40	0412	Nam Phrom	Chi	188,065	2,320	2,256	1,216	768	480	184	88	1,054	206	1,260	2,923	2,445	741	819	1,560	661	285	167	Ban Phrom Tai	0	
41	0413	Lam Namdhem	Chi	338,035	2,922	2,931	1,068	1,572	983	196	95	1,064	205	1,269	3,708	3,109	733	803	1,536	840	287	425	Ban Tha Dua	0	
42	0414	Lower Phong	Chi	358,794	2,386	2,313	204	1,792	1,120	236	81	939	254	1,193	2,846	2,240	733	776	1,509	681	285	1,466	E.22A	0	
43	0415	Huai Saibarth	Chi	132,943	741	674	36	532	333	36	70	1,022	93	1,115	826	757	739	783	1,522	202	273	-	-	0	
44	0416	Chi part 4	Chi	1,154,969	5,410	5,280	108	4,588	2,868	240	344	1,057	241	1,298	7,022	5,718	755	808	1,848	1,848	342	6,791	E.18	0	
	Sub-total	Middle Chi		2,882,551	21,031	20,289	4,552	13,220	8,263	1,560	957	997	256	1,253	26,356	20,973	-	-	-	6,317	-	-	-	-	0
45	0417	Upper Lampao	Chi	385,720	3,282	3,238	260	2,740	1,713	140	98	1,049	242	1,291	4,237	3,443	720	766	1,486	1,186	361	-	-	0	
46	0418	Lam Phanchard	Chi	36,389	657	692	184	436	273	60	12	1,245	286	1,531	1,006	818	726	779	1,505	284	432	-	-	0	
47	0419	Lower Lampao	Chi	633,377	4,264	4,186	388	3,336	2,085	244	218	1,239	208	1,447	6,170	5,283	744	795	1,539	1,496	351	1,713	Kamata Sai	0	
48	0420	Lam Nemyoung	Chi	582,622	4,145	4,106	516	2,944	1,840	456	190	1,253	298	1,551	6,429	5,194	762	829	1,591	1,459	352	968	Ban Na Thom	0	
49	0421	Lower Chi	Chi	480,321	2,548	2,741	284	2,012	1,258	292	153	1,142	323	1,465	3,733	2,910	781	861	1,642	947	372	8,965	E.20A	10,541	
	sub-total	Lower Chi		2,118,429	14,896	14,963	1,632	11,468	7,168	1,192	671	1,185	263	1,448	21,575	17,648	-	-	-	5,372	-	-	-	-	10,541
	Total	Chi Basin		6,437,301	49,001	49,001	9,636	33,048	20,655	4,184	2,133	1,031	246	1,277	63,187	51,006	-	-	-	15,687	-	-	-	-	10,541

Summary of Basin Water Balance (Chi 2/2)

No.	Basin		Water use										Groundwater				Balance			
	Code	Name	Basin	Effective Reservoir Capacity (mcm)	Irrigation Area -wet-		Agricultural Water Demand - wet - (mcm)	Agricultural Water Demand - dry - (mcm)	Agricultural Water Demand - year - (mcm)	Domestic Water Demand (mcm)	Current Water Demand (mcm)	Renewable Groundwater Resources (mcm)	Groundwater Withdrawal (mcm)	Water Resource Potential (mcm)	Developed Water Resource (mcm)	Developing Water Potential (mcm)	Balance Water Potential vs. C.W. Demand (mcm)	Balance Developed vs. C.W. Demand (mcm)		
					(ha)	(rai)														
30	0402	Upper Chi	Chi	7	5,459	34,119	52	0	52	64	59	4	795	11	784	731	(53)			
31	0403	Lam Saphung	Chi	1	744	4,650	7	0	7	7	18	0	234	1	233	227	(6)			
32	0404	Lam Krajan	Chi	2	723	4,519	7	0	7	10	18	0	272	3	269	262	(8)			
33	0405	Lam Khanchoo	Chi	71	4,169	26,056	43	3	45	58	30	1	507	72	435	449	14			
34	0406	Chi part 2	Chi	115	19,711	123,194	193	3	196	231	81	7	1,222	122	1,100	991	(108)			
35	0407	Huai Sammo	Chi	4	3,110	19,438	28	0	28	36	16	4	223	8	215	187	(28)			
36	0408	Chi part 3	Chi	115	16,378	102,363	131	2	134	168	70	17	1,037	131	906	869	(37)			
	Sub-total	Upper Chi		315	50,294	314,338	461	8	469	574	292	33	4,290	348	3,942	3,716	(226)			
37	0409	Upper Phong	Chi	25	13,520	84,500	102	2	105	134	111	15	1,403	39	1,364	1,269	(95)			
38	0410	Huai Phuey	Chi	1	920	5,750	7	0	7	8	19	2	271	3	268	257	(11)			
39	0411	Lam Phanieng	Chi	36	4,687	29,294	32	1	34	49	42	11	583	47	536	535	(1)			
40	0412	Nam Phrom	Chi	150	14,427	90,169	126	18	144	157	56	7	717	157	560	560	(0)			
41	0413	Lam Namthem	Chi	43	14,970	93,563	123	12	135	160	71	13	911	56	855	752	(103)			
42	0414	Lower Phong	Chi	1,900	49,721	310,756	342	427	769	796	55	3	736	1,903	(1,167)	(60)	1,107			
43	0415	Huai Saibath	Chi	5	2,462	15,388	17	0	17	27	16	2	218	7	211	192	(20)			
44	0416	Chi part 4	Chi	181	94,561	593,506	663	111	773	858	135	20	1,983	201	1,782	1,125	(657)			
	Sub-total	Middle Chi		2,340	195,668	1,222,925	1,412	571	1,983	2,194	505	73	6,822	2,413	4,409	4,628	219			
45	0417	Upper Lampeo	Chi	126	16,872	105,450	108	25	133	161	81	4	1,267	130	1,137	1,106	(31)			
46	0418	Lam Phanchard	Chi	48	5,538	34,613	35	28	62	65	19	0	303	48	255	238	(17)			
47	0419	Lower Lampeo	Chi	1,420	69,762	436,013	460	462	922	969	118	14	1,614	1,434	180	645	466			
48	0420	Lam Namyoung	Chi	100	23,469	146,681	151	20	171	213	123	16	1,582	116	1,466	1,369	(97)			
49	0421	Lower Chi	Chi	100	40,539	253,369	263	71	334	369	72	15	1,019	115	904	650	(254)			
	sub-total	Lower Chi		1,793	156,180	976,125	1,017	605	1,622	1,55	414	50	5,785	1,843	3,942	4,008	67			
	Total	Chi Basin		4,448	402,142	2,513,388	2,890	1,184	4,074	4,470	1,211	157	16,897	4,604	12,293	12,353	60			

Summary of Basin Water Balance (Mun 1/2)

No.	Code	Basin Name	Basin	Landuse					Surface water													
				Basin Area (km2)	Forest Area (km2)	Agriculture Area (km2)	Water Body (km2)	Other Area (km2)	Rainfall -wet- (mm)	Rainfall -dry- (mm)	Rainfall -year- (mm)	Rainwater Amount -wet- (mcm)	Rainwater Amount -year- (mcm)	ET0 -wet- (mm)	ET0 -dry- (mm)	ET0 -year- (mm)	Potential Surface Runoff (mcm)	Potential Surface Runoff (mm)	Annual Runoff -observed-	Annual Runoff -station-	Annual Runoff -ref. RD -Inf-	
50	0502	Upper Mun	Mun	2,998	508	1,608	1,005	36	147	849	193	1,042	3,124	2,545	743	788	1,531	448	149	890	Ban tha wha	0
51	0503	Lam Sae	Mun	1,174	516	552	345	20	27	755	239	994	1,167	886	742	792	1,534	258	220	-	-	0
52	0504	Lam Phra Phoen	Mun	2,211	680	1,560	975	36	49	804	227	1,031	2,280	1,778	785	1,524	374	169	-	-	-	0
53	0505	Lam Takong	Mun	3,518	576	2,321	1,413	84	401	757	260	1,017	3,578	2,663	741	790	1,531	492	140	-	-	0
54	0506	Lam Choeng Kra	Mun	2,622	2,959	20	2,752	60	127	780	239	1,019	2,672	2,045	750	807	1,557	414	158	-	-	0
55	0507	Lam Chakkarej	Mun	1,614	72	1,580	988	8	36	861	237	1,098	1,772	1,390	748	792	1,540	311	193	-	-	0
56	0508	Lam Neng Pong	Mun	1,326	568	664	415	28	37	968	216	1,184	1,570	1,284	751	811	1,562	277	209	-	-	0
57	0509	Lam Pa Tear	Mun	623	60	540	338	20	42	1,023	221	1,244	775	637	754	816	1,570	177	284	-	-	0
58	0510	Lam Phai Maas	Mun	3,991	636	3,108	1,943	76	112	883	234	1,117	4,498	3,524	751	803	1,554	530	133	433	M,8	0
59	0511	Mun part 2	Mun	4,189	220	3,392	2,120	284	179	1,090	208	1,298	5,437	4,566	767	834	1,601	829	198	3,224	Ban tha toom	0
60	0512	Huai Aek	Mun	1,083	24	1,064	665	36	48	872	271	1,143	944	944	754	816	1,570	242	223	-	-	0
61	0513	Lam Sathad	Mun	2,589	48	3,016	1,885	56	67	863	225	1,088	2,817	2,234	759	818	1,577	535	207	571	Ban dom man	0
62	0514	Lam Phang Chu	Mun	1,231	48	1,100	688	12	38	1,005	200	1,205	1,483	1,237	750	809	1,559	272	221	-	-	0
	Sub-total	Upper Mun		29,169	3,976	23,196	14,498	756	1,310	882	228	1,110	32,371	25,733	-	-	-	5,159	-	-	-	0
63	0515	Huai Ta Khong	Mun	1,152	44	1,376	860	44	91	984	238	1,222	1,408	1,134	761	819	1,580	256	222	-	-	0
64	0516	Lam Chi	Mun	4,591	328	4,152	2,595	164	395	1,095	234	1,329	6,101	5,027	763	831	1,594	902	196	760	Ban laloon	0
65	0517	Lam Phub Phiao	Mun	1,112	48	912	570	20	71	1,089	259	1,348	1,499	1,211	765	826	1,591	248	223	-	-	0
66	0518	Lam Tao	Mun	847	24	732	458	28	56	1,070	281	1,351	1,144	906	761	821	1,582	193	228	-	-	0
67	0519	Lam Sew Noi	Mun	698	728	612	383	48	44	1,124	282	1,406	981	785	828	1,597	162	232	-	-	-	0
68	0520	Lam Sew Yai	Mun	2,790	136	2,396	1,498	152	106	1,126	149	1,275	3,557	3,142	770	834	1,604	573	205	396	Ban ku pra na	0
69	0521	Huai Thab Thun	Mun	3,571	284	3,024	1,890	108	241	1,067	216	1,283	4,582	3,810	773	850	1,623	717	201	776	Ban Huy tab tan	0
70	0522	Mun part 3	Mun	2,780	348	1,812	1,133	240	172	1,282	216	1,498	4,164	3,564	785	881	1,666	1,811	651	19,383	M,7	0
71	0523	Huai Samran	Mun	3,502	408	2,840	1,775	64	211	1,174	208	1,382	4,840	4,111	778	862	1,640	2,299	656	643	M,9	0
72	0524	Huai Tha	Mun	1,572	328	1,136	710	20	58	1,197	217	1,414	2,223	1,882	781	870	1,651	1,004	639	-	-	0
73	0525	Huai Khayung	Mun	1,775	292	1,400	875	32	60	1,150	482	1,632	2,897	2,041	782	877	1,659	1,139	642	1,113	Ban saphan huey kayung	0
	Sub-total	Middle Mun		24,390	2,264	20,392	12,745	920	1,505	1,132	237	1,369	33,396	27,613	-	-	-	9,304	-	-	-	0
74	0526	Huai Phoen	Mun	788	68	576	360	104	12	1,288	344	1,632	1,286	1,015	774	854	1,628	492	624	-	-	0
75	0527	Lam Sebai	Mun	2,969	3105	2,260	1,413	208	105	1,305	170	1,475	4,379	3,875	777	863	1,640	1,938	653	854	M,32	0
76	0528	Lam Sabok	Mun	3,518	800	2,668	1,668	80	81	1,365	228	1,593	5,604	4,802	781	876	1,657	2,310	657	-	-	0
77	0529	Lam Dom Yai	Mun	4,846	1,292	3,344	2,090	60	162	1,281	287	1,568	7,599	6,208	783	882	1,665	3,217	664	-	-	0
78	0530	Lower Mun	Mun	1,013	998	744	465	40	26	1,447	265	1,712	1,734	1,466	782	883	1,665	638	630	24,010	Ban pak run	19,556
79	0531	Huai Tung Lung	Mun	92,411	843	416	260	16	14	1,485	131	1,616	1,362	1,252	778	877	1,655	527	625	-	-	0
80	0532	Lam Dom Noi	Mun	2,164	2171	1,084	704	440	292	91	1,410	380	3,874	3,051	780	881	1,661	1,398	646	-	-	0
	sub-total	Lower Mun		16,141	4,368	10,712	6,695	800	491	1,342	259	1,601	25,838	21,669	-	-	-	10,520	-	-	-	19,556
	Total	Mun Basin		69,700	10,608	54,300	33,938	2,476	3,306	1,076	238	1,314	91,605	75,015	-	-	-	24,983	-	-	-	19,556
	Ground Total	Khong/Cri/Mun		165,636	33,115	116,540	72,838	8,975	7,992	1,134	247	1,381	228,810	187,782	-	-	-	66,251	-	-	-	45,805

Summary of Basin Water Balance (Mun 2/2)

No.	Basin		Water use										Groundwater				Balance			
	Code	Name	Basin	Irrigation Area -wet-		Agricultural Water Demand - wet - (mm)	Agricultural Water Demand - dry - (mm)	Agricultural Water Demand - year - (mm)	Domestic Water Demand (mm)	Current Water Demand (mm)	Renewable Groundwater Resources (mm)	Groundwater Withdrawal (mm)	Water Resource Potential (mm)	Developed Water Resource (mm)	Developing Water Potential (mm)	Balance Water Potential vs. C.W. Demand (mm)	Balance Developed vs. C.W. Demand (mm)			
				(ha)	(rai)															
50	0502	Upper Mun	Mun	152	53,779	533	58	592	21	612	60	4	508	156	352	(104)	(456)			
51	0503	Lam Sae	Mun	278	15,287	149	62	211	5	216	22	1	280	279	1	64	64			
52	0504	Lam Phra Phoen	Mun	169	19,312	198	79	277	15	292	44	3	418	172	246	126	(120)			
53	0505	Lam Takong	Mun	338	27,892	291	120	411	31	442	69	9	561	347	214	119	(95)			
54	0506	Lam Choeng Kral	Mun	60	13,943	145	2	147	25	172	51	2	465	62	403	293	(110)			
55	0507	Lam Chakkarakaj	Mun	48	8,277	79	5	84	17	101	34	2	345	50	295	244	(51)			
56	0508	Lam Nang Rong	Mun	169	22,112	192	25	218	8	226	30	2	307	171	136	81	(55)			
57	0509	Lam Pa Tear	Mun	31	6,102	52	17	69	7	76	15	2	192	33	159	116	(43)			
58	0510	Lam Hai Maas	Mun	152	27,859	251	46	297	33	331	85	8	615	160	455	285	(171)			
59	0511	Mun part 2	Mun	58	23,742	168	36	204	45	248	104	20	933	78	855	685	(171)			
60	0512	Huai Aek	Mun	16	7,556	65	1	65	16	81	24	4	266	20	246	185	(61)			
61	0513	Lam Sathad	Mun	37	13,418	126	2	128	30	158	54	4	589	40	549	432	(117)			
62	0514	Lam Phang Chu	Mun	53	13,541	108	7	115	14	128	28	7	300	61	239	172	(68)			
	Sub-total	Upper Mun		1,561	252,800	2,357	460	2,817	265	3,082	621	69	5,779	1,629	4,150	2,697	(1,452)			
63	0515	Huai Tai Khong	Mun	74	11,562	72,263	13	104	25	129	27	5	283	79	204	154	(50)			
64	0516	Lam Chi	Mun	132	34,437	215,231	46	306	63	369	117	13	1,019	145	874	650	(224)			
65	0517	Lam Phub Phiao	Mun	10	3,034	18,963	0	22	8	31	29	1	277	12	265	246	(19)			
66	0518	Lam Tao	Mun	13	3,482	21,763	26	27	9	36	22	4	215	17	198	179	(19)			
67	0519	Lam Sew Noi	Mun	8	2,121	13,256	15	18	8	26	19	4	181	13	168	155	(13)			
68	0520	Lam Siew Yai	Mun	57	27,163	169,769	19	208	43	251	68	14	641	71	570	390	(180)			
69	0521	Huai Theb Thun	Mun	101	22,187	138,669	152	29	181	48	229	8	805	109	696	576	(120)			
70	0522	Mun part 3	Mun	220	13,660	85,375	27	115	40	155	80	10	1,891	229	1,662	1,736	74			
71	0523	Huai Samran	Mun	143	36,913	230,706	22	271	45	316	93	9	2,392	152	2,240	2,076	(164)			
72	0524	Huai Tha	Mun	70	10,085	63,031	67	69	17	86	43	5	1,047	74	973	961	(12)			
73	0525	Huai Khayung	Mun	65	13,882	86,763	91	115	21	136	56	5	1,195	70	1,125	1,059	(65)			
	Sub-total	Middle Mun		893	178,526	1,115,788	188	1,437	327	1,763	640	79	9,946	972	8,975	8,183	(792)			
74	0526	Huai Phoen	Mun	8	4,383	27,394	0	28	7	36	25	3	517	11	506	481	(24)			
75	0527	Lam Saba	Mun	139	24,240	151,500	33	187	30	217	84	8	2,022	147	1,875	1,805	(70)			
76	0528	Lam Sabok	Mun	82	14,539	90,869	91	108	36	144	107	6	2,417	89	2,328	2,274	(55)			
77	0529	Lam Dom Yai	Mun	128	21,284	133,025	137	162	39	201	146	8	3,363	136	3,227	3,162	(64)			
78	0530	Lower Mun	Mun	227	599	3,744	4	1	5	14	33	2	671	229	442	657	215			
79	0531	Huai Tung Lung	Mun	3	614	3,838	4	4	7	11	26	2	553	5	548	543	(6)			
80	0532	Lam Dom Noi	Mun	1,176	35,127	219,544	222	305	9	314	74	2	1,472	1,178	294	1,158	864			
	sub-total	Lower Mun		1,764	100,786	629,913	639	798	137	936	495	31	11,015	1,795	9,220	10,079	859			
	Total	Mun Basin		4,217	532,112	3,325,701	808	5,052	729	5,781	1,756	178	26,740	4,395	22,345	20,959	(1,386)			
	Ground Total	Khong/Chi/Mun		10,084	1,198,512	7,490,702	8,780	11,205	1,576	12,781	3,989	424	70,240	10,508	59,733	57,459	(2,273)			