

Joint ADB/ESCAP Inception Workshop
on RETA 5874
Rebasing and Linking National Accounts Series in Selected
Developing Member Countries (DMCs)
21-24 March 2000
Bangkok, Thailand

Summary of Proceedings



Statistics and Data Systems Division
Economic and Development Resource Center
Asian Development Bank

© EDSD, ADB 2000

Applications for permission to reproduce or translate all or parts of this material should be addressed to: Biswanath Bhattacharyay, Statistics and Data Systems Division, P.O. Box 789, ADB, 0980, Manila, Philippines

TABLE OF CONTENTS

Introduction	1
The Conduct of Inception Workshop	2
Inaugural Session	2
Functional Sessions	2
Workshop Sessions	7
Concluding Session	9
Recommendations	9
Follow-up Activities	11
Appendix 1: Rebasing and Linking Practices in Asian Countries	12
Practices of Linking National Accounts Series of Asian Countries.....	22
Appendix 2: Directory Of Participants.....	24
Bangladesh	24
Bhutan	24
Cambodia.....	24
China	25
Hong Kong, China.....	25
India.....	25
Indonesia.....	25
Macao, China	26
Malaysia	26
Nepal	26
Pakistan.....	26
Philippines.....	27
Republic Of Korea.....	27
Singapore.....	27
Sri Lanka	27
Thailand.....	28
Viet Nam.....	28
Resource Persons	29
Observers.....	29
Intergovernmental Organization	31
ADB Secretariat	32
ESCAP Secretariat	32

Introduction

National accounts aggregates at constant prices provide important indicators for measuring growth in the activity or economy. All countries are compiling national accounts aggregates at current and constant prices. They also update the base year periodically. However, in the Asian region several countries have breaks in their national accounts series resulting from the changes in base year. These breaks in the series have resulted in incomparability of the series based on different base years and therefore the users of the data find difficulties in measuring growth or changes in output over a period of time when there is more than one base year. In the Asian region, the countries that have been regularly updating their national accounts series fall into three groups. The first group comprising of Bangladesh, Cambodia, India, Indonesia, Republic of Korea, Nepal, Sri Lanka, Thailand and Vietnam have rebased their series once or twice since 1980s but not linked the different series. The resulting breaks in the constant price series significantly reduce the usefulness of the data to analysis. The second group consists of countries that have linked their constant price GDP series, namely: Hong Kong, China; Philippines; Singapore; and Taipei, China. The third group consists of those countries that have a long overdue need to rebase their series like Bhutan, Malaysia and Pakistan.

In cognizance of the need to produce a linked series based on a single base year to ensure continuity and comparability of the series, the Asian Development Bank (ADB) came up with Regional Technical Assistance (RETA) 5874: Rebasing and Linking National Accounts Series in Selected Developing Member Countries of ADB.

As an initial activity of the TA, an inception workshop was organized on 21-24 March 2000 in Bangkok, Thailand. The objectives of the inception workshop, organised jointly by the ADB and ESCAP, include the following: (a) apprise the participants of the current status of national accounts series in selected ADB/ESCAP countries; (b) familiarize participants with basic principles in compiling national accounts at constant prices and various methodologies used in linking constant prices series; (c) discuss problems of compilers on producing a continuous and comparable national accounts series; and in the more frequent rebasing of series; (d) explore the possibilities of proposing common method for linking national accounts estimates based on good practices of participating countries; (e) for countries with breaks in their national accounts, formulate a work program of linking the series; and (f) discuss the advantages and approaches towards more frequent rebasing of the national accounts.

The workshop was attended by 34 participants from 17 countries namely: Bangladesh; Bhutan; Cambodia; China; Hong Kong, China; India; Indonesia; Macau, China; Malaysia; Nepal; Pakistan; Philippines; Republic of Korea; Singapore; Sri Lanka; Thailand; and Viet Nam. Besides there were 10 officials from National Economic and

Social Development Board (NESDB), Government of Thailand and two officials from Bank of Thailand who attended the workshop as observers. Also participating were two international experts, Mr. Derek Blades from OECD and Mr. Charles Aspden from Australian Bureau of Statistics. The ADB was represented by Mr. Isidro David and Mr. Biswanath Bhattacharyay from the Statistics and Data Systems Division and Mr. A.C. Kulshreshtha, consultant. The ESCAP was represented by Mr. Andrew Flatt, Ms. Heidi Arboleda and Mr. Joel Jere.

The Conduct of Inception Workshop

Inaugural Session:

At the inaugural session of the workshop Mr. Andrew J. Flatt, Director, Statistics Division, ESCAP spoke on the utility of the workshop in providing an opportunity to discuss a number of important issues and to exchange ideas on some fundamental questions, including how frequently the national accounts series should be rebased and how they can be linked. He hoped that the workshop would give participants a chance to figure out the best approach to deflate their national accounts series given the amount of resources available in their country. He also remarked that the job of the national accountant is not an easy one. After rebasing national accounts series, for example, the new series sometimes show significantly smaller growth rates for recent years. He suggested that the countries that have recently rebased their national accounts share their experience on how they convinced policy makers to accept such new data. Mr. I. P. David, Assistant Chief Economist, ADB in his introductory remarks mentioned in brief how the TA was conceived. He hoped that the countries in the region would take advantage of this opportunity to plan and complete their task relating to the compilation of linked series of national accounts.

Mr. Biswanath Bhattacharyay, Project Officer-in-Charge and the Coordinator of the Workshop, Statistics and Data Systems Division, ADB, presented an overview of RETA 5874 and the inception workshop. The Project will strengthen the capability of participating DMCs to generate a continuous and comparable constant price linked series by an appropriate and commonly agreed methodology. The main objectives are: (a) to help the DMCs that have breaks (more than one base year) in their constant prices national accounts series compile a continuous linked series; and (b) to provide a forum for the DMCs to discuss ways and means to more frequently rebase their national accounts estimates. The TA proposed to conduct an inception workshop during which the second group of DMCs would share their experiences and methodologies used in linking their constant price national accounts series, with the aim that the workshop will find a common methodology to recommend to the first group. The TA includes provision of financial and advisory support to the countries from the first group so that they could link their series to a single base year using the recommended methodology. A lump sum financial amount would be provided to participating countries for executing the task. The TA also includes conduct of a concluding workshop which would be held during the fourth quarter of 2000 where the first group countries will present their newly computed linked series, the problems they encountered and their successful solutions. These new series and updates should find their way in the DMCs and Bank's statistical databases websites and hardcopy publications for universal access.

Functional Sessions:

The workshop proper started with Country Presentations on the current status of national accounts compilation. Mr. Romulo A. Virola, Philippines and Mr. Kusmadi Saleh, Indonesia shared the duty of moderator for the country presentations. All the countries made presentations on their current status of the national accounts statistics: compilation of current price estimates and in particular their practices for compiling

constant price estimates of value added and other national accounts aggregates. It was noted that most countries have up-to-date national income estimates at current and constant prices and their base year is a quite recent one. Some countries at the moment, however, have their base year that is quite old, but they are planning to revise their base year to a more recent one. Main problems noted in the presentations related to data gaps including time lag of data, lag time of rebasing, and frequency of rebasing. Countries expressed their concerns/problems pertaining to timeliness, accuracy and relevance of some of the important data that they require for compiling the estimates on regular basis. Mr. I. P. David, ADB, raised the issue of some countries wherein the statistics office and central banks both produce data on GDP. He cited examples like Sri Lanka which has two series, one by Department of Statistics and the other by the Central Bank; Cambodia which has the National Institute of Statistics and Ministry of Finance producing different numbers; Nepal which has Rastra Bank (Central Bank) and Central Bureau of Statistics generating different figures and Malaysia where Central Bank comes out with quarterly estimates of gross domestic product (GDP) which are independent of the Department of Statistics estimates.

In the third session, Ms. Heidi R. Arboleda, ESCAP, gave a presentation on the Basic Principles of Compilation at Constant Prices. Mr. Derek Blades, OECD, gave his presentation on Measuring Real Value Added in Service Activities: Experiences in OECD Countries. The presentations were followed by a discussion on issues and problems faced by the countries in compilation of constant price estimates of value added and expenditure aggregates. Mr. A. C. Kulshreshtha, ADB Consultant, helped as moderator in the ensuing discussion. It was noted that all countries compile the estimates of value added by economic activities at current prices following production approach or mixed approach of production and income in different sectors. Some countries compile independently the gross domestic product by expenditure approach, while most others compile estimates of some expenditure aggregates (private consumption, gross fixed capital formation) by commodity flow approach.

As regards the practices for compiling the constant price estimates, most countries follow a mixed approach. Mostly for primary sector the technique adopted is the revaluation, for secondary sector it is deflation, and for services it is deflation or volume extrapolation depending upon data availability. Also most countries follow double deflation method for agriculture and allied activities and manufacturing (few countries) and single deflation method for services sectors for obtaining constant price estimates of value added. The main issues raised during the discussions related to old base, lack of policy for change of base year, new standards and classifications, quality changes in products. A specific issue which was raised in the discussion was the negative value added of the banking sector due to the recent financial crisis in Indonesia. Among the problems noted during the discussion, the prominent ones were: lack of sufficient data, relevance of certain indicators that are available in the country, incomplete coverage of the available indicators (for example, indicator related to only part of the economy or to only a section of population), non-availability of item specific deflators.

For the fourth session, Mr. Joel Jere gave a presentation on Price and Volume Measures used for Constant Price Estimation. Mr. Jere reviewed the recent developments in the area of Consumer Price Index (CPI) and deliberated upon the issues relating to seasonal items in the CPI sample and quality adjustments. He elaborated the technique of hedonic regression modeling as a tool to isolate the most important price-determining characteristic of the goods that undergo frequent changes in

quality in the context of compiling the CPI. Mr. A. C. Kulshreshtha lectured on Basic Principles and Practices in Rebasing and Linking National Accounts Series. He discussed the general principles of price and volume measurements in the national accounts, concept of constant prices, price and volume indices and the formulae of the standard price and volume indices, namely Laspeyres, Paasche, and Fisher. He talked about the concept of Gross Value Added (GVA), i.e., the domestic product from production approach at constant prices, which is the most important concern of the national accountants and the concept relating to GDP (from expenditure approach) at constant prices. Further, he deliberated upon the alternative methods of obtaining constant price estimates of value added through production approach and he also talked about practices adopted by the countries for estimating constant price value added and components of gross domestic product from expenditure approach as a prelude to the rebasing of national accounts series. Finally he focused on the issues and practices in rebasing and linking the national accounts series. This was followed by the presentation of Mr. Derek Blades on Maintaining Consistent Time Series of National Accounts: experience of OECD countries. Ms. Heidi R. Arboleda performed the duty of moderator in the presentations and discussions of country experiences on rebasing and linking of national accounts series..

In the preceding presentations, it was noted that constant price estimates use the price relatives of a particular year to weight together the volume components thus each base year would give a different perspective resulting from those weights. As structural changes take place in production structure and relative prices in the economy over a period of time, the pattern of relative prices in the base period tends to become progressively less relevant. Besides, on account of continuous developments new products appear in the market and many old products disappear. Therefore it is necessary to update the base period to adopt weights that are more consistent with current conditions. As the changes in structure of production or consumption appear almost continuously, the participants appreciated that it is desirable to do more frequent rebasing.

As regards linking of national accounts series, the presentation made it clear that in most countries while revising the base year of the national accounts series the countries also simultaneously attempt the following: (i) review the methodologies adopted; (ii) review the existing database and alternative data sets available in the economy and make choices of data sets which are superior in technical sense or which are more recent ones; (iii) review the coverage of the various aggregates to reckon vis-a-vis the emergence of new economic activities in the economy and to incorporate changes on account of possible omissions or duplications; and (iv) attempt to adopt the important recommendations pertaining to new international standards provided by the latest 1993 System of National Accounts. When all this is done a simple chain linking of the series may not give the correct picture of the economy measured for the past years. It therefore becomes necessary for the countries to look into various details of all the individual aspects carefully. For example, in case the coverage review revealed that some activity was missing in the earlier series then numbers relating to this activity have to be seen in the right perspective and then plugged into the back series. If a review of existing data base reveals that another alternative set of data captures the activity more adequately, then change in data base need to be made for the current period and also if possible for the past years. Splicing or a simple linking will not do justice in such situations.

In his presentation on the practices followed by OECD countries in maintaining consistent time series of national accounts Mr. Blades mentioned that most OECD countries make two kinds of revisions to their annual national accounts. These can be described as "regular" and "benchmark" revisions. He also mentioned about the methods used by these countries to "back-cast" estimates following major changes in the national accounts system or the availability of new sources of data. The methods used by these countries are relevant in considering how to improve the consistency over time of national accounts statistics in the ESCAP region. Statistical offices are generally under pressure to publish national accounts estimates before all the basic data on which they are based have become available. These preliminary estimates then need to be revised some months later when a more complete set of basic data is available. In some cases when these revisions are being made to the latest year, the national accounts compilers may realize that revisions also need to be made for earlier years. The general rule, however, is that regular, annual revisions are only taken back for a limited number of years even though, strictly speaking, the revisions may apply to earlier years as well. Revisions for earlier years are stored up for inclusion in the "benchmark" revisions. The reasons for limiting revisions to only a few years are strictly practical. It was mentioned that most OECD countries find that benchmark revisions are required about every ten years. Often these are timed to coincide with major censuses – of industry, population or agriculture. Benchmark revisions are also required when countries adopt new versions of the SNA – in 1968 and 1993. Benchmark revisions are carried back over long periods in order to provide users with consistent time series that are needed to estimate key parameters in analytic and forecasting models. This is commonly referred to as "back-casting". Practices however vary on the question of number of years for providing "back-casting". Mr. Blades also mentioned about the various linking methods adopted by the OECD countries for back-casting that can be roughly classified into four groups, namely: (a) Detailed reworking, (b) Proportion method, (c) Interpolation between benchmarks, and (d) Indicator method.

The participants devoted the fifth session to their presentation and discussion on country experiences on rebasing and linking of national accounts series. Ms. Heidi performed the duty as moderator to this discussion session. It was noted that most countries have the practice of combining the rebasing exercise with benchmarking. Thus the countries in the region are performing the rebasing exercise, i.e., changing the base year along with the (a) incorporation of new data, (b) change in estimation methodology, (c) change in coverage and classification, and (d) other changes. This is a time consuming exercise and requires additional resources.

As regards the choice of base year, it was revealed that while most countries take into account the availability of basic data inputs, some countries make the choice depending on what they perceive to be a normal year. As a result, delay occurs in taking up the rebasing exercise. Also, it was noted that in some countries there was no policy decision on the choice of the base year. The question of time lag between base year and release of estimates as per new base year in different countries was examined. In most countries the time lag varied from 3 to 5 years after the reference year, with some countries having a lag time of more than 5 years. In some cases, the new numbers were restricted for internal use only. With regard to frequency of rebasing among countries, it is generally 5 years or more. Among the countries present at the workshop, it was noted that only Australia adopts chain based national accounts volume measures.

The presentations made by the participants revealed that the countries compiling constant price estimates at new base year make use of deflators which are generally the available price indicators. These are usually Laspeyres indices except in case of implicit price indicators used for deflating expenditure aggregates. Also it was noted that the level of disaggregation for compiling constant price estimates at the revised base year vary among countries. The participants however noted that the estimation would be more accurate at the more detailed level of disaggregation in the compilation exercise of constant price estimates.

The participants in their country presentations raised several issues and problems on the rebasing. The more important ones were: inadequate resources for benchmarking requirements; change in classification system; appearance of new products or activity; estimation of value added at constant prices for activities relating to financing, public administration and defense, and other services; exchange rate adjustments; inconsistent base year of price indices and national accounts; lack of price data; change in composition or coverage; change in definition and treatment of transactions; political implications/ interventions.

Most countries in the region have done linking of their national accounts series. The countries do detailed reworking of the estimates as far back as possible based on benchmark data. Some countries adopt a combination of approaches depending upon availability of data. It also came to light that a few countries while back casting their series resorted to splicing, if other changes were not significant. The practices of releasing the link series vary. Some countries have released link series as far back as the history of their national accounts statistics, while others have done it for past 10-15 years. The participants in their country presentations raised several issues and problems on the linking of their national accounts series. The more important ones were: the inconsistency in classification of components, difference in coverage, lack of statistical policy on linking, non-additivity of linked estimates (total of linked components does not equal linked GDP), lack of rationale for linking, and difficulty in acceptance of new series by users. After discussions at length it was suggested that the countries could consider the issues of rebasing and benchmarking separately. In such a situation linking could be done just by splicing, maintaining the growths observed in the past series. If rebasing is done along with the benchmarking exercise by the country, back casting may be resorted to following a suitable approach as far back as possible (when the differences become insignificant) and thereafter simple splicing by maintaining the growth of previous series is used. The rebasing as well as linking should be undertaken at as much disaggregated level as possible. Also, the general consensus was that the difference between the constant price estimates of components and total need not be adjusted thereby allowing the use of an entry known as "balancing item". User education was suggested to familiarize the users on new and revised statistics.

In the sixth session Mr. Charles Aspden, ABS, Australia made a presentation on Chain Volume Measures in the Australian National Accounts. He discussed methods of construction of annual and quarterly chain volume measures. He also mentioned about the seasonal adjustments made in the Australian quarterly national accounts. It was noted that the SNA93 has recommended the Input-Output approach and chain volume measures in place of the fixed base constant price estimates. With the Australian experience, Mr. Aspden mentioned that experimental analysis revealed that chain volume measures give much better indicators of growth particularly for a few important

series. Australia has replaced the constant price estimates with chain volume measures in September quarter 1998.

The seventh session was devoted to the presentation and discussion on compiling, rebasing and linking quarterly GDP estimates. Many countries in region (Hong Kong, India, Indonesia, Malaysia, Philippines, Korea, and Singapore) are already compiling quarterly GDP, while others (Sri Lanka, Thailand, Viet Nam) have definite plans to do the same. The decision to compile quarterly GDP estimates is influenced by the IMF Special Data Dissemination Standards (SDDS), which gives no option to the subscribing countries on the data category of quarterly GDP. Deseasonalization is not generally practiced. Only Australia compiles chain-based quarterly GDP estimates. The participants in their country presentations raised several issues and problems on the compilation of quarterly GDP estimates. The more prominent ones were: lack of data, reconciliation of quarterly growth rate to annual growth rate, large discrepancy between production and expenditure GDP, treatment of agriculture, government and other services sector, and use of accrual and cash recording. It was reported that the IMF conducted two seminars in the region on compilation methodology of quarterly GDP estimates for the benefit of the countries that have large share of agriculture to GDP. These seminars came out with a consensus methodology on quarterly GDP estimates for agriculture. Harvest approach was recommended, i.e., the output of a crop is considered in the period when it is harvested. The GDP is then computed by considering the output and netting out the material inputs utilizing the input-output ratio observed in the past. The harvest approach was preferred to that of work in progress approach in so far as the agriculture activity is concerned.

The eighth session was the presentation and discussion on compiling, rebasing and linking Subnational (regional) GDP estimates. Many countries compile the subnational (region, state, province, district level) GDP estimates. Compiling agency for subnational GDP estimates is not necessarily the same as the compiler of national estimates. It depends upon the statistical system in the country, whether it is centralized or decentralized. In the countries having decentralized statistical system, the responsibility of compiling the subnational GDP estimates lies with the State/Province authority. The compilation of subnational GDP estimates is generally motivated by internal demand. It was observed that the estimation methodology varied from direct to synthetic depending upon the data availability. The participants in their country presentations raised several issues and problems on the Subnational GDP estimates. The more important ones were: reconciliation of regional totals to national level, treatment of national industries with no specific location, supra-regional sectors estimates, treatment of public administration (e.g., foreign service, defense), treatment of price differentials, and lack of data (regional prices, etc.). Whereas countries compile regional estimates of domestic product at both current and constant prices with periodic rebasing, generally linking of these estimates is not undertaken.

Workshop Sessions:

As a move towards achieving the goal of the workshop, the participants were put in three separate groups to write down their Work Plan on Rebasing and Linking of GDP series. Mr. Bhattacharyay distributed a format (guide questions) for the Individual Country Work Plan and topics (guide questions) for Group Discussion to each country. The results of group discussion on the above selected topics prepared by the country

groupings and Individual country Work Plans prepared by the participants were presented and discussed. Mr. I. P. David, ADB, was the moderator of the discussion. The questions related to demand for constant price series, practices on rebasing/ linking, future technical cooperation, and consensus/recommendations on frequency of rebasing, selection of base year and reducing the time lag in the release of rebased/linked series.

The country groupings by and large came out with common demands for constant price series, namely: Important macroeconomic aggregates: GVA by economic activities, GDP by expenditure categories, subnational GDP. The groups were unanimous in mentioning that users desire more timely and accurate numbers. It was mentioned that in concentrating more on timeliness, sometimes quality suffers. As regards the question on identifying the good practices on rebasing/ linking, all the country groupings agreed that a good practice is to do rebasing more frequently (say, 5 years or less). After listening to the deliberations of the workshop, there was a feeling that eventually countries should be moving towards annual rebasing and chain volume measures as recommended by SNA93. This of course would require additional resources to the national accounts offices of most countries. On the question of good practice on linking, country groupings by and large felt that linking up to previous base year by re-benchmarking and for still earlier years by mechanical splicing (maintaining the growths of the earlier base year) should be regarded as a good practice. The country groupings also desired that good practices include formulating a clear statistical policy, user education, release of a calendar of statistics, and a dissemination policy (publication-hard and soft copy, web-site). For adopting good practices identified, all country groupings were unanimous in stating that the countries would require additional data inputs, technical skills/expertise, statistical software and resources (required manpower and/or consultancy).

On the question about the common problems faced by the countries in producing/releasing rebased and linked series, the country groupings identified several problems. More important ones were: choice of base year, different base years of indices series needed for compiling the national accounts series, insufficient data, frequent quality changes of products, absence of policies or guidelines, performing re-benchmarking and rebasing together or separately, convincing users on new numbers (user education).

The country groupings drew up possible strategies that could be formulated to facilitate regular compilation and release of constant price series at country and international level. At country level, the strategies identified were: creating and maintaining a good data base (may be a data warehouse), formulating policies on rebasing and linking to ensure regular revisions and release of numbers on GDP and growth rates, develop appropriate compilation systems to facilitate quick production of desired statistics once the basic data become available, develop system of designated statistics to ensure provision of required data for the accounts. At international level, the strategies identified were: use of standard concepts and methods, frequent rebasing in all countries, sharing of experiences and methods among countries, information sharing on current practices adopted by different countries (through web site), facilitating regular forum for exchange of views and discussions at regional level, and extension of technical assistance to all countries in the region. As regards the question of adoption of a common base year in the region, the country groupings stated that they could rebase every 5 years preferably years ending in "5" or "0". The appropriate period from practical

point of view for linking to new base year should be one to two years. Other important issues and problems on rebasing/ linking, the country groupings mentioned the following: Lack of personnel who are capable of undertaking the rebasing and linking exercises; Need to document and disseminate the series and practices; Length of period to complete rebasing and linking exercise as the present practice varies; Other priorities of the national accounts offices.

For future technical cooperation the country groupings posed a question on what type of regional technical cooperation would further strengthen the statistical system. The more prominent suggestions offered by the country groupings were: Regular regional forum to discuss problems and solutions specific to the region and to share available materials, Networking for sharing of experiences and materials, Conduct of regional meetings, Technical assistance/ sharing of experiences and expertise. Besides the question on linking of rebased series, the country groupings felt that a future cooperation could also help countries: a) to compile quarterly GDP (both at current and constant prices) and make seasonal adjustments; b) to undertake chaining exercises on selective basis; and c) to develop compilation system (computerization) for chaining/rebasing and linking their national accounts series. The country groupings were unanimous in recommending frequency of rebasing as 5 years, selection of base year on policy basis: next base year as 2000, exerting efforts to reduce the time lag of releasing rebased/linked series so as not to exceed one to three years.

The eleventh session was on the presentation of individual country work plans. Most countries in their work plan indicated that by the end of November 2000 they would be able to come out with a linked series of their GDP at the latest base year prices. Bhutan and Cambodia are still to undertake rebasing exercises on their national accounts series and thus will take time for them to link their national accounts series.

Concluding Session:

The concluding session was devoted to identify the consensus recommendations of the workshop and identify the follow-up activities of the TA. Based on the consensus, the workshop made the following recommendations:

Recommendations

1. As regards the choice of the base year, the individual countries may decide it for themselves based on the availability of required data. It is not worth pegging conduct of the rebasing exercise on the choice of a "normal" year.
2. Rebasing exercise should be done at most disaggregated level as possible as this technique will reduce formula error (on account of using Laspeyres price index for deflation instead of Paasche index) in compiling the constant price estimates.
3. Depending upon the availability of required data and situation of specific sector the countries may adopt one of the appropriate methods (revaluation, deflation, or volume extrapolation) for obtaining the constant price estimates. Theoretically price deflation technique is preferred.

4. Rebasings and benchmarking exercises may be undertaken separately in their own right. The two exercises however need to be coordinated to avoid confusion among users.
5. Rebasings can be done more frequently. A minimum of five-year interval is advisable for rebasing. If rebasing were done separately from benchmarking exercise, it would be possible for countries to undertake more frequent rebasing without demanding detailed data or substantial resources. Ideally speaking, countries will plan on using annual rebasing and chain volume indices as recommended by SNA93.
6. Countries may plan their next base year as a common one for the region, year 2000 is recommended as new base year.
7. Like rebasing exercise, linking exercise is also advised to be undertaken at most disaggregated level as possible. The linking of the national accounts series may be done for at least 10 years backdate for the benefit of the users.
8. When benchmarking is done, the countries undertake back casting of the estimates for some years which may result in change of growth rates. To link the series, the workshop groups' consensus was to apply splicing that is, maintaining the growth rates of GDP and its components to backtrack estimates and allow for residuals or balancing item.
9. The workshop recommended the timely release of rebased national accounts series, preferably within 1-3 years after reference base year. For the combined or benchmarking exercise, the time lag of rebased and linked series should not exceed 4-6 years.
10. The workshop reiterated and strongly recommended countries to explore chain based volume series at their earliest convenience.
11. Besides making recommendations on good practices mentioned above, the workshop considered other related issues like better coordination mechanisms among agencies responsible for compiling various statistics required for the compilation of national accounts in the countries, more timely release of national accounts statistics, maintaining designated statistics including calendar of statistics, develop necessary software to facilitate compilation process, and strengthen linkages with users.
12. The workshop also recommends more regional forum of exchange among countries, and improving other modes of exchange of ideas among countries.

The Workshop concluded with remarks made by Mr. I. P. David, ADB who expressed his satisfaction on the deliberations and sharing of experience and expertise. He also discussed future courses of action. Mr. Andrew J. Flatt, ESCAP in his concluding remarks showed satisfaction on the conduct of the workshop on a very useful topic. He thanked everyone and stated that he looked forward to more ADB/ESCAP undertakings.

Follow-up Activities:

As per preliminary plans drafted by the participants at the workshop, most countries would complete the linking exercise by December 2000. Schedule of work to be done by countries are indicated as follows:

Country	Base Year	Link Series by
<i>RETA Countries :</i>		
Bangladesh	1995-96	Nov. 2000
India	1993-94	Dec. 2000
Cambodia	1993	
Indonesia	1993	Nov. 2000
Rep. of Korea	1995	Available
Nepal	1984-85	Nov. 2000
Sri Lanka	1990	Dec. 2000
Thailand	1988	Available
Viet Nam	1994	Oct. 2000
<i>Other Countries:</i>		
Country	Current Base Year	Proposed Base Year
China	1990	2000
Hong Kong, China	1994	2000
Macau, China	1996	
Malaysia	1987	2000
Pakistan	1980-81	2000-2001
Philippines	1985	2000
Singapore	1990	1995
Thailand	1988	2000

The TA countries will provide their finalized work plan proposals including their resource requirements with the approval of their governments to the ADB within a month's time. The ADB will examine the proposals and provide possible support from TA. The countries will compile their linked series of national accounts within the time frame agreed and make available to the ADB for comments. A final workshop will then be conducted to discuss the results of the exercises undertaken by the countries in linking their national accounts series, and other issues and problems relating to the rebasing, linking and effecting improvements in the national accounts statistics including chain volume measures.

Rebasing and Linking Practices in Asian Countries

The Rebasing and linking practices in seventeen Asian countries that have participated in the inception workshop are summarized below.

Bangladesh

The availability of improved database, need for methodological improvement and restructuring of the sectoral boundaries are factors which determine the periodicity of Bangladesh's rebasing timings. The Bangladesh Bureau of Statistics (BBS) started compilation of production and expenditure based GDP since fiscal year 1972-73. This 1972-73 was used as base year until 1988-89 for constant price estimates. In 1988-89, the base year was shifted to 1984-85 which is still the base year being used for computing constant price estimates. According to the suggestion of the Technical Committee and in fulfillment of BBS' commitment to IMF and ADB, GDP was revised with 1989-90 as base year. Two draft publications have been formulated but not officially published. A national committee was formulated to review the revised national accounts series. In the context of their recommendations, the series was again revised shifting the base year from 1989-90 to 1995-96. The new series with base year 1995-96 base is still under consideration if this is to be officially adopted as provisional estimates. With respect to linking the different available series, Bangladesh has so far not undertaken linking of their GDP series.

Bhutan

Bhutan has so far not rebased its GDP series. Present base year of GDP series is 1980. Bhutan is not able to do rebasing due to lack of experience and expertise. However, it has already embarked on this exercise with both financial and technical assistance from ADB. Data collection activities towards rebasing the year for national accounts and Consumer price Index are under way. With the help of a consultant through the technical assistance from ADB, Bhutan is trying to change the base year of National Accounts to 1995 using administrative records. Later, the base year will be revised to 2000 after completion of Household Income and Expenditure Surveys (HIES) and special case studies that may be required. After revising the base year, Bhutan can link the GDP series.

Cambodia

At the end of 1997, the National Institute of Statistics (NIS) Ministry of Planning was assigned by the Royal Government of Cambodia to be responsible for the compilation of national accounts in Cambodia. The national accounts of Cambodia was mainly estimated by national accounts consultants from the ADB under the technical assistance projects. The project was envisaged to help build the capacity of NIS staff in data collection, evaluation and estimation. The projects were carried out while Cambodia embarked on carrying out fundamental economic reforms primarily shifting from a centrally planned economy into free market economy.

People Republic of China

China's practice in national accounts can be broadly divided into three stages. The first stage is the period from 1952 to 1984 when the National Bureau of Statistics

(NBS) implemented Material Product System (MPS), which is suitable for the highly-centralized planning economic system. The second stage, from 1985 to 1992, is the period when MPS and System of National Accounts (SNA) co-existed. Because the original MPS and its aggregate indicators tended to be difficult to reflect the performance of the economy and to meet the needs of macro-economic management, NBS tried to estimate indicators of SNA on the basis of indicators of MPS. In 1985, with the approval of the State Council of China, NBS began to adopt the basic principles of SNA to estimate the value added of the tertiary industry and GDP. The third stage, from 1993 to present, is the period of establishing national accounts that is basically compatible with SNA. In 1993, NBS stopped estimating national income in the context of MPS, and began to estimate GDP directly according to the principles of the 1968 SNA. At this time, NBS has completed the compilation of the main accounts of SNA. The present series of GDP has base year 1993. Year 2000 is the proposed new base year. On the subject of linking the series, NBS has not undertaken it. NBS proposes to link the time series of GDP at constant prices, at every period of rebasing, not only with the new base year constant price estimates, but also with previous base year constant price values.

Hong Kong, China

The base year of the constant price expenditure-based GDP series for Hong Kong, China is currently 1990. The previous base years adopted were 1966, 1973 and 1980. Primarily, the base year is selected so that it closely reflects the price structure prevailing in the period of comparison. Rebasing is conducted regularly in order to ensure that the comparison of the constant price estimates is not distorted by changes in the price structure over time.

The latest round of rebasing was conducted in 1994, along with the comprehensive revision exercise on GDP. The base year is updated from 1980 to 1990. Constant price series from 1986 onwards are reweighted to the average prices in the new base year of 1990. The general methodology involves compilation of re-weighted price indices for deflating the various expenditure components and re-aggregation of deflated components to obtain constant price aggregates on the new base year. For the data series before 1986, the constant price estimates compiled on the earlier base year at both aggregate and component levels are linked by simple splicing to the re-weighted series in order to produce a comparable constant price series based on the new reference base year of 1990. In selecting the link year (1986 in the last round of rebasing), period of general price instability is avoided.

For the data series from 1986 to present which are based on the 1990 price weights, total GDP at constant prices tallies with the sum of its expenditure categories at constant prices. When the GDP is rebased, the estimates of past application periods are linked to those of the new base year. Linking is carried out at higher levels of aggregation. While the linking procedure preserves the real growth rates of the past and maintain continuity of the data series, the adding-up property between total GDP and its expenditure components no longer holds. For this reason, constant price data prior to 1986 are expressed as volume indices with 1990 as the reference base year.

In the 1994 round comprehensive revision exercise, the method of compiling the constant price trade aggregates was enhanced. The constant price estimates of exports and imports of goods are obtained by summing up the deflated trade values, at disaggregated levels, by the corresponding unit value indices. As the chain index

method is used for compiling the unit value indices, the re-weighting effect due to rebasing on the constant price estimates of trade aggregates should be minimal.

It is planned that the current series with 1990 as base year would be rebased to year 2000 in the near future. This would be introduced in the context of the comprehensive revision to the GDP data series whereby relevant features of the new 1993 SNA standard would also be incorporated into the compilation system for national accounts statistics of Hong Kong.

India

With the gradual improvement in the availability of basic data over the years, a review of methodology for national income estimation and derivation of macro economic aggregates has been undertaken constantly with the objective of updating the data base and shifting the base year to a more recent year.

The Indian national accounts statistics have been rebased from 1948-49 to 1960-61, 1960-61 to 1970-71, 1970-71 to 1980-81 and recently from 1980-81 to 1993-94. On all occasions of rebasing, the earlier series were linked back to 1950-51 in order to form a consistent series that will meet the requirements of research workers who use such data primarily for modeling purposes. As regards methodology of linking, in case of changes in coverage, an attempt is made to account for the changed coverage to as far back in the past as data are available. In the absence of desired information, either the splicing technique is adopted or the growth rate as observed in the past series is maintained. Some of the major series used to link the national accounts series include the series on prices indexes, series on employment/ unemployment, and production indexes.

Indonesia

The GDP series has been revised four times, namely, in 1960, 1973, 1983 and 1993. GDP data is available in four series of different benchmark years, that is, base year 1960 for the series of GDP 1960-1973, base year 1973 for the series of GDP 1973-1983, base year 1983 for the series of GDP 1983-1993, and finally base year 1993 for the series of GDP 1993-2000. The last two series of GDP have incorporated improvements in the scope and coverage of activities through the utilization of Input-Output tables.

The linked series is available for the period 1978-93 with the base year 1983. The linked series was obtained by adopting extrapolation of volume indices and splicing techniques. The linking has not been done for the new base year 1993.

Macau, China

Macau has adopted fixed-based constant price estimates as volume measurement and all constant price estimates in the national accounts of Macau are made by the price deflation method. Currently, 1996 prices are used for constant price estimates of the expenditure accounts and the previous base year was 1989. The base years have been updated periodically as otherwise the price weights will become obsolete and irrelevant. The GDP estimates have been revised by expenditure approach at constant and current prices. The last base year was changed to 1996. In constant

price estimation, the figures for the years 1993 and thereafter were re-calculated according to the relative prices structure of the new base year. For the years before 1993, in order to ensure a continuous time series, the estimates of different components of GDP were compiled using the “splicing” method. The constant prices (1996=100) estimates of the GDP and its components for the years before 1993 were revised independently according to their respective annual growth rates in the old series. In this way, the two different constant price series are linked together to form a continuous series and hence guarantee the retention of the price structure of the more recent period.

Malaysia

National accounts estimates have been produced by the Department of Statistics, Malaysia (DOSM) since 1955. Up until 1969, only annual estimates in current prices, both by activity and expenditure were published. The first constant price series was published for the year 1970 using the 1970 input-output tables as basis. This series was maintained until 1983. A new base was established for year 1978 using the 1978 input-output tables. The 1978 based series was maintained until 1998. In this series, DOSM was compiling and publishing annual estimates of GDP, by expenditure at current and constant 1978 prices, and annual and quarterly estimates of GDP by activity at constant 1978 prices. In late 1993, DOSM undertook to change and upgrade the existing Malaysian national accounts system. Improvement consisted of the following: (a) Benchmarking annual and quarterly accounts to the 1987 input-output table; (b) Developing estimates of GDP by activity at current prices; and (c) Incorporating new source data which has not been possible to incorporate in the 1978 based series.

The Malaysian GDP has been rebased only when input-output tables have been generated. In this context, the 1987 Input-Output Tables is the latest in the series, the earlier ones being for 1970, 1978 and 1983. The current GDP series start with the data from the 1987 Input-Output Tables in the estimation of both the expenditure and production measures.

The GDP volume measures use a fixed base year of 1987. The base year has been updated about every ten years. The previous base year was 1978. Data on earlier bases are not linked to data on the latest base. The linked series are thus not available for Malaysia.

Nepal

The Central Bureau of Statistics (CBS) is publishing national income aggregates since 1964-65 on a regular basis. The estimates of GDP and other macroeconomic indicators from 1964-65 to 1973-74 were made on the basis of the concepts, definitions and classifications of the 1953 System of National Accounts. The base year was shifted to 1976/77 with necessary changes in the concept, definition and coverage according to SNA 1968. The 1976-77 estimates were later estimated back to 1974-75. The planning commission, Nepal independently took up the job pertaining to rebasing of national accounts estimates and in 1994 shifted the base year from 1974-75 to 1984-85. Necessary deflators and indicators were built up to compile the estimates of constant price GDP by major industry group level and the information on output, input and value added were organized at a disaggregated level.

The CBS compiled a time series of the gross domestic product from the period 1974-75 to 1993-94 with base year 1974-75. The constant price estimates of value added in the sectors are obtained either by deflating the current value estimates or by extrapolating it by the volume index or a combination of the two methods. Since very little exercise is done in preparing price indices of inputs of the sectors, double deflation is not done in practice. However, there are some sectors like agriculture where commodity level value added at current prices are derived by double deflation.

As there is no system of regular benchmark economic census and surveys except the census of manufacturing establishments, periodic rebasing and updating of benchmark estimates have not been undertaken. Hitherto, rebasing takes place whenever projects are undertaken for overall improvement and updating of the estimates of GDP. None of the rebasing exercises has done simultaneous linking of the series except for the 1974-75 to 1993-94 series.

Pakistan

The historical estimates of Gross National Product (GNP) of Pakistan are based on the concepts and classifications prescribed in the 1953 and 1968 United Nations System of National Accounts (UN SNA). However, efforts are underway to adopt the 1993 UN SNA. In this regard, Input- Output Table for 1984-85, 1989-90 and 1990-91 have been compiled in line with the 1968 and 1993 UN SNA recommendations. This is also the case with Institutional Sector Accounts of Pakistan for the year 1984-85, 1989-90 and 1990-91. The estimates are computed through a combination of product, income and expenditure methods. Initially, benchmark estimates were compiled for the year 1949-50. Rebasing of the national accounts series have been done periodically, revising the base years to 1959-60 and 1980-81. The present base year (1980-81) is quite old, fails to capture the real growth in the economy, hence, needs revision. There is a plan to rebase the series to 1995-96 and subsequently to 2000-2001. While rebasing the series, the methodology of compilation of national account estimates in the respective sectors will be examined. In this regard, case studies and surveys are proposed to be undertaken together with improvements in questionnaire design and coverage. These will be done to streamline the supply of data that will input into national accounts compilation. This exercise will be instrumental in coming up with an improved national accounts that is reflective of the change in technology, structure of the economy and recent recommendations of SNA.

All the GDP series are linked starting from 1949-50. Linked series is available for GDP components, output, and final expenditure aggregates. Methodology of linking series includes reworking by extrapolation and interpolation or splicing method.

Philippines

The Philippine System of National Accounts (PSNA) has undergone four rebasings/revisions. In general, rebasing of the PSNA is done simultaneously with the overall revision of the accounts. Rebasing of the PSNA is generally directed through a statistical policy resolution (issued now by the NSCB Executive Board) and includes the rebasing of other statistical series as well.

The Philippine national accounts series has been rebased four times with base years 1955, 1967, 1972, and 1985. The NSCB Resolution No. 6 series of 1991,

approved in July 1991, requires that the next synchronized rebasing of all price indices shall have 1994 as the base year. The NSCB is currently drawing up its plans to do a revised - rebased PSNA series with 1994 as base year.

As mentioned above, the rebasing of the PSNA generally coincides with the overall revision of the accounts. The latest rebasing of the PSNA, the shift from 1972 to 1985, covered the period from 1980 to 1990.

Based on the rebasing methodology followed, the current price estimates of GDP and GNP by sectors/subsectors are first revised given the identified changes in data, concepts, coverage and methodology.

The implicit price deflator for each subsector is then estimated based on available price series data. Most production sectors use output deflators except for Government Services and Construction which use wage rates as input deflators. For the expenditure items, the CPI is generally used. Since some of the price indices used have been rebased to 1985, these price indices were used directly as deflators. Otherwise, the price series had to be rebased to 1985 which in practice is done simply by "splicing". For example, the CPI for year Y at 1994 prices is spliced by dividing the 1994 – based CPI for year Y by the 1994-based CPI for 1985 to derive the 1985-based CPI for year Y.

Given the current estimates and the price deflators, the constant price estimates for 1980 to 1990 are derived by simply dividing the current price estimates by the corresponding 1985-based price deflators. This process is applied on a subsectoral/sectoral basis, whichever is appropriate.

To estimate the rebased-revised PSNA series for the period prior to 1980 at current prices, estimates from 1946 to 1980 (1972=100) were linked to the 1980-1990 revised series (1985=100) by splicing. The splicing is implemented by applying/assuming the growth rates for the period for which new backward estimates are to be made. This is done by applying the 1979-1980-growth rate on the 1980 estimate to derive the backward estimate for 1979, and so on.

The 1946-1980 revised current price estimates are deflated using price deflators for said period. These price deflators are the results of linking by splicing the 1946 to 1980 price deflators with the revised 1980-1990 price deflators. The current estimates are simply divided by the price deflators to come up with the revised 1946-1980 revised constant price estimates.

In the Philippines, linking of the PSNA series is timed during its overall revision. The revision of the PSNA series generally starts with the earliest year not covered by the previous revision. Actual revision of the series entails revising the estimates across all the production sectors and the expenditure items including the Income and Outlay Accounts. The revisions are the results of new or revised data, changes in concepts and methodology, additional coverage and rebasing of the accounts.

The portion of the PSNA series not covered by the latest revision is linked to the revised series through the method of "splicing" which was described earlier.

Republic of Korea

Korean national accounts series have been rebased eight times, starting with the first rebasing in 1964. The latest rebasing was completed in 1999. Rebasing is done every five years. The results of the rebasing of the production index and price indices are reflected in the rebasing of the national accounts.

In order to reflect the change of relative prices and economic structure, the value added ratio, distribution ratio for the investment and consumption expenditure are updated. Content and coverage in each industry are also changed in order to include new products and adjust the weights of new and old products.

In order to rebase, reference is made to the recent releases of the Input-Output Tables, the Report on Mining and Manufacturing Survey, the National Wealth Survey, etc.

During the eighth rebasing, some parts of the national accounts reflected the guidelines of the 1993 SNA. First, GNI (Gross National Income) and GDI (Gross Domestic Income) were compiled for the first time. Second, the method for making the growth rate of the agriculture, forestry and fishing sector was changed from the fixed weight method to the chain weight method. Under the latter, the previous year's price is used as weight instead of the base year's price in order to decrease the effects of the large fluctuations of agricultural prices.

Third, there were some changes in the income accounts by institutional sector. Adjusted disposable income, which is disposable income of households plus 'social transfers in kind', was introduced to income accounts. In addition, actual final consumption was introduced to estimate the expenditure level, which includes 'social transfers in kind' to households from government and non-profit institutions serving households. Social transfers in kind consist of social benefits in kind and transfers of individual non-market goods and services provided to resident households by government units, including social security funds, and NPISHs.

The coverage of the social security scheme was expanded to include private social insurance schemes such as the government employees' pension fund. As a result, the item 'adjustment for the change in net equity of households in pension funds' was added to the use of income account.

Fourth, the names and structures of capital finance account were changed in line with the 1993 SNA.

Fifth, to enhance the consistency with the Balance of Payments, the External Accounts were changed in accordance with the 1993 SNA. For example, the valuation of imports of goods has been changed. Before the 1995 rebasing, imports of goods were valued at 'costs, insurance, freight' (c.i.f) price but following the rebasing, they are valued at 'free on board' (f.o.b) price.

In addition, license fees which was regarded as a kind of property income were covered in the exports and imports of services. According to 1993 SNA, license fees are defined as receipts (exports) and payments (imports) of residents and non-residents associated with the authorized use of intangible non-produced non-financial assets and proprietary rights, such as patents, copyrights, trademarks, industrial processes,

franchises, etc., and with the use through licensing agreements of produced originals or prototypes, such as manuscripts, films, etc'.

Since 1998, the acquisition and disposals of non-produced non-financial assets such as patent entities have been estimated.

Sixth, the classification of household final consumption expenditure by purpose was realigned according to the Classification of Individual Consumption by Purpose as recommended by 1993 SNA.

Linking GDP series at constant prices was done in two steps. In the first step, linking was made for the series between 1990 and 1997. This exercise was undertaken from March 1998 until March 1999. For years after the base year, i.e. 1996 and 1997, each year's final results were compiled by applying all the changes that resulted from rebasing.

For the series from 1990 to 1994, interpolation method was used. The difference between the rebased results and the original compilation results of 1995 was interpolated for the 1990 to 1994 series.

In the second step, extrapolation was done for the period 1970 to 1989. The second step started on March 1999 and ended December 1999. In extrapolating the series before 1990, the contents and coverage of the base year and the growth rates of the old series were maintained.

Singapore

Singapore rebases its national accounts once every five years. The rebasing exercise ensures that the national accounts reflect accurate changes in economic structure as well as changes in relative prices.

During the rebasing exercise, GDP estimates from the three approaches are reconciled using the supply and use tables from a benchmark input-output tables. In recognition of the need for continuous time series of constant price estimates, constant price estimates are linked at new base year.

The formula adopted to link the constant price 1990 series to the previous constant price 1985 series is:

$$E_{90}^x = E_{85}^x \times \frac{E_{90}^{90}}{E_{85}^{90}}$$

where E_{yy}^x is the estimate of year x in base year yy prices.

The above formula will result in the growth rates for the period from 1979 to 1990 correspond to the 1985 price structure, while those for the period prior to 1979 correspond to the 1968 price structure. The growth rates subsequent to 1990 correspond to the 1990 price structure.

Since the linking for each component of GDP is done independently of the aggregate or overall GDP, the linked series are not additive prior to the reference base year. This is in line with the SNA's recommendation that linked series should preserve the appropriate price structure despite the loss of additivity.

Sri Lanka

The most appropriate recent year is selected as base year. The new constant estimates are then derived following the procedure similar to the computation of constant estimates of National Account Series (NAS). Normally, constant values with new base year will have a year or years with data overlapping some years of the old series. This will help examine the validity of the methodology used for two different base years and facilitate the linking of different base year NAS values.

The constant values of GDP by expenditure are compiled using price deflators and value indicators. Same set of indices and volume indicators are used to obtain constant values at new base year. For instance, private consumption expenditure deflated by CPI, Capital Formation is deflated by using different indices related to construction industry, mining and quarrying. Volume indices of imports of investment goods are used to extrapolate different categories of imported investment expenditure values.

The government final expenditure has two parts, namely government services and recurrent expenditure made to produce government services. The constant value of government services is deflated using an indicator relate to government employment and government recurrent expenditure is deflated using relevant producer indices. The relevant trade volume indices are used to extrapolate import and export constant values.

With regard to rebasing a series, a suitable base year for rebasing is first selected. Upon generation of the new series, additional work is entailed in linking the new with the old series. As improvement in NAS takes place with the rebasing of GDP, there are difficulties in linking the two series. Changes such as increase in coverage for particular sectors require greater effort in linking the series. These gaps can be observed from historical GDP data and may be one of several reasons for two different growth rates.

Since there were a lot of issues and problems related to the linking exercise, the attempt to link the series was not pursued despite requests of users for continuous GDP data series at constant prices useful for analytical purposes.

GDP data are available from 1950 and onwards. However, for linking purposes matching of GDP and GDP by economic activity have to be identified very clearly on the basis of classification, definitions and concepts and related indirect taxes and subsidies etc. So for this purpose, GDP series from 1963 and onwards can be used for linking.

The methodology used is the same as the methodology adopted to compile linked series for GDP. First, it is necessary to decide the base year to be used for linking the series. Usually, it is the latest base year. To facilitate linking, there should be overlapping years for the latest base year and the previous base year. An indicator of growth can then be used to multiply to the previous base year series. Then we can obtain a rebased series which now corresponds to the latest base year series. If we

have more base years for historical GDP data series, then this exercise has to be started from the first consecutive two base year data series of GDP. Similar process can be practised for whole data series having different base years.

The Expenditure on GDP series is available beginning early 1950's. The GDP total and expenditure total should be matched to generate the linked series. Similar requirement is needed in the case of income on GDP. The GDP data series by income approach is available from 1963. Since GDP estimates using production approach is considered relatively more reliable on the basis of availability of data on production, this serves as control total for expenditure on GDP and income on GDP. The computed difference between GDE and GDP is called statistical discrepancy.

Thailand

Thailand started its compilation of the national accounts in 1951. It has produced four series of national accounts using four different base years. These series cover the following periods:

1951-1963 series – The first series compiled in accordance with international standard. Base year for this series is 1954. Due to limited data, partial compilation was made on items like Gross Domestic Product (GDP), Gross National Product (GNP), National Income (NI) and expenditures including investments made by household and government. The six accounts (Domestic Product, National Income, Domestic Capital Formation, Households and Private Non-Profit Institutions, General Government and External Transaction) specified in the 1953 SNA were not compiled yet.

1960-1975 series – Base year was changed from 1954 to 1962. The six accounts that were not produced in the earlier series have now been compiled. However, estimation based on the income approach has not been done.

1970-1990 series – Estimation using production, expenditure and income approaches has been done. Base year has been changed to 1972. Simple processing of agricultural products, which previously fell under the manufacturing sector, was reclassified to fall under the agricultural sector.

1980- Present series – Aside from changing the base year to 1988, revisions on detailed items have been made in the series and were generally done in conjunction with efforts at improving data quality based on studies on data availability, accounts analysis and behavior analysis. There were also efforts directed towards the implementation of the 1968 SNA which however were unsuccessful as data were not readily available.

Thailand has a long national accounts series by linking all the 4 available series (1951-1996) using 1988 as base year. The linked and rebased series was achieved through the construction of a relative price or an implicit price deflator (IPD) for each item in the accounts. This procedure gives higher reliability of estimates when derivation of IPDs is done at the more detailed level. The splicing method uses IPDs to deflate current prices to arrive at values at constant prices.

There are limitations in the reliability of the results of the exercise. These may be largely due to the following factors: a) the four series on national accounts may have different definitions, coverage, classification and compilation techniques; and b) the IPD

of each commodity differs from one series to another as a result of differences in commodity representatives and weighted structure. Hence, simply joining the 4 series together through splicing has its disadvantages like structure of production may have changed through the years and are not adequately reflected in the series. This brings to fore the need to use the results with caution. It is recommended that the pre-rebasing series be likewise examined.

Viet Nam

After replacing the Material Products System (MPS) by the System of National Accounts (SNA), Viet Nam has estimated Gross Domestic Products (GDP) at both current and constant price since 1990.

In Viet Nam, first year of economic - development planning period (five or ten years) of the country is often chosen as base year in estimating GDP at constant prices. For example, National Income (in MPS) was estimated at 1960, 1970 and 1980 prices. For the period 1989 - 1994, base year 1989 was chosen to estimate GDP at constant price. Base year 1994 was chosen for the period 1995 onwards. Although for the period 1989 –1994, two base years were selected to meet the demand of economic planners. At present, GDP for the period 1990 - 1999 was estimated at the prices of 1994. It is also possible to rebase the data to 1989.

To arrive at constant price estimates, Vietnam uses different approaches. For major products in agriculture, forestry, fishery, mining and quarrying, manufacturing and electricity and water supply sectors, gross output of one sector is estimated by multiplying base year price of products in that sector with the product's volume. For some sectors which have statistics on volume but none on base year prices, gross output at price of base year is estimated by multiplying gross output of base year with the production index of the reference year over the base year of that sector. Sectors which do not have statistics on volume use the consumer price index to deflate value added at current prices.

Vietnam's available linked series covers the period 1989 to 1999 and is available at both 1989 and 1994 prices. Linking of the series was basically done through the use of the splicing method.

Practices of Linking National Accounts Series of Asian Countries

The practices of linking NAS, future plan of rebasing and nature of assistance required in seventeen Asian countries are summarized below based on provisional individual country plans submitted during the workshop. Six out of seventeen countries have not yet compiled linked NAS. Out of eleven countries that have produced linked series, six of them have used the method of splicing and the rest have used a combination of splicing, reworking, and extrapolation. Except for Philippines (1994) and Bangladesh (1995), the next base year for all countries will be 2000. All countries except for Hong Kong, China, India, Korea and Singapore require technical assistance for rebasing and linking.

PRACTICES OF LINKING NATIONAL ACCOUNTS SERIES OF ASIAN COUNTRIES

Country	Linked Series Approach	Length of latest Link Series	Base Year of Linked Series	Present Base year	Next Base year	Assistance Required
Bangladesh	not compiled	not compiled	not compiled	1984-85	1995-96	Yes: Training, Consultancy
Bhutan	not compiled	not compiled	not compiled	1980	2000-01	Yes: Training, Consultancy
Cambodia	not compiled	not compiled	not compiled	1993	2000	Yes: Training, Consultancy
China	not compiled	not compiled	not compiled	1990	2000	Yes: Training, Consultancy
Hong Kong, China	Splicing	back to 1961	1986	1990	2000	No
India	Reworking/ Splicing	back to 1950-51	1980-81	1993-94	1999-2000	No
Indonesia	Reworking/ Splicing	1978-1993	1983	1993	2000	Yes: for updating data
Macau, China	Splicing	1982-1998	1996	1996	2000	Not for linking
Malaysia	not compiled	not compiled	not compiled	1987	2000	Yes: Consultancy
Nepal	Splicing	1974-75 to 1993-94	1974-75	1984-85	2000	Yes: financial, Consultancy
Pakistan	Reworking/ Splicing	back to 1959-60	1980-81	1980-81	2000-01	Yes: Training, Consultancy
Philippines	Reworking/ Splicing	back to 1946	1985	1985	1994	Yes: Training, Consultancy
Republic of Korea	Extrapolation/Splicing	back to 1970	1995	1995	2000	No
Singapore	Splicing	back to 1960	1990	1990	2000	No
Sri Lanka	not compiled	not compiled	not compiled	1990	2000	Yes: financial, Consultancy
Thailand	Splicing	back to 1951	1988	1988	2000	Yes
Viet Nam	Splicing	1989-1999	1994	1994	2000	Yes

DIRECTORY OF PARTICIPANTS**BANGLADESH**

Mr Abul Layes Khan, Deputy Director, Bangladesh Bureau of Statistics, National Accounting Wing, 14/2, Topkhana Road, Dhaka-1000

Tel: (880-2) 9564235

Fax: (880-2) 8615166

Email: itlsbbs@bdonline.com

Ms Lutfon Nahar, Statistical Officer, National Accounting Wing, Bangladesh Bureau of Statistics, 14/2, Topkhana Road, Dhaka-1000

Tel: (880-2) 9564235

Fax: (880-2) 8615166

Email: itlsbbs@bdonline.com

BHUTAN

Mr Kuenga Tshering, Head, Central Statistical Organization, Planning Commission, Royal Government of Bhutan, Post Box No.338, Thimphu

Tel: (975-2) 25402

Fax: (975-2) 23069, 22928

Email: kuenga@druknet.net.bt

Mr Sonam Wangdi, Chief, National Accounts Section, Central Statistical Organization, Royal Government of Bhutan, Post Box No.338, Thimphu

Tel: (975-2) 25402

Fax: (975-2) 22928

Email: kuenga@druknet.net.bt

CAMBODIA

Mr Heang Kanol, Deputy Director, General Statistics Department, National Institute of Statistics (NIS), Ministry of Planning, No.386 Preah Monivong Blvd., Phnom Penh

Tel: (855) 15 832762

Fax: (855) 23 721352, 210944

Email: sansythan@forum.org.kh

Mr Oeur Sophal, Vice Bureau Chief, National Accounts Bureau, National Institute of Statistics (NIS), Ministry of Planning, Phnom Penh

Tel: (855-15) 832762

Fax: (855-23) 210944

Email: sansythan@forum.org.kh

CHINA

Mr Dong Lihua, Senior Statistician, Deputy Director, Production Accts. Division, National Accounts Department, National Bureau of Statistics, 75 Yuetan Nanjie, Sanlihe, Beijing 100826

Tel: (86-10) 68576357
Fax: (86-10) 68576354
Email: npad@stats.gov.cn

HONG KONG, CHINA

Mr Joseph Wong Yiu-chung, Senior Statistician (National Income), Census and Statistics Department, Hong Kong Special Administrative Region, Hong Kong, China

Tel: (852) 25824788
Fax: (852) 28021192
Email: jycwong@censtatd.gcn.gov.hk

INDIA

Dr Gulab Singh, Director, Government of India, Ministry of Statistics and Programme Implementation, Sardar Patel Bhavan, Sansad Marg, New Delhi 110001

Tel: (91-11) 3364374
Fax: (91-11) 3342384
Email: dosnad@del2.vsnl.net.in

Mr Ramesh Kolli, Director, Government of India, Ministry of Statistics and Programme Implementation, Sardar Patel Bhavan, Sansad Marg, New Delhi 110001

Tel: (9111) 3366169, 3348523
Fax: (9111) 3342384, 3362966
Email: dosnad@del2.vsnl.net.in

INDONESIA

Mr Kusmadi Saleh, Deputy Director General for Distributive and National Accounts Statistics, BPS Statistics Indonesia, Jalan dr. Sutomo No.6-8, P.O. Box 1003, Jakarta 10010

Tel: (62-21) 3846304, 3857045, 3810291, 3841157, 3841195, 3842508
ext.6000-1
Fax: (62-21) 3519744, 3857046, 3846304
Email: kusmadi@bps.go.id

Mr Komet Mangiri, Bureau Chief of Production Accounts Statistics, BPS Statistics Indonesia, Jalan dr. Sutomo No.6-8, P.O. Box 1003, Jakarta 10010

Tel: (62-21) 3857045, 3810291, 3841157, 3841195, 3842508 ext. 6330-1
3863739
Fax: (62-21) 3519744, 3857046
Email: komet@mailhost.bps.go.id

MACAO, CHINA

Mr Lei Ion Chong (Frederick), Statistician, Direccao de Servicos de Estatistica e Censos, Alameda Dr. Carlos d=Assumpcao, N. 411-417, Edf. ADynasty Plaza, 16/17 andar, Macao, Macao, China

Tel: (853) 580966, 728188, 3995916
Fax: (853) 561884
Email: frederick@dsec.gov.mo

MALAYSIA

Ms Chellam Palanyandy, Head, National Accounts Division, Department of Statistics Malaysia, Wisma Statistik, Jalan Cenderasari, 50514 Kuala Lumpur

Tel: (60-3) 2944264 ext.141
Fax: (60-3) 2943932, 2937171
EMail: chellam@stats.gov.my

Mr Zainuddin bin Ahmad, Statistician, National Accounts Division, Department of Statistics Malaysia, Wisma Statistik, Jalan Cenderasari, 50514 Kuala Lumpur

Tel: (60-3) 2944264 Ext.148
Fax: (60-3) 2943932, 2937171
Email: zain_ahmad@stats.gov.my

NEPAL

Mr Haribol Shrestha, Deputy Director, National Accounts Section, Central Bureau of Statistics, Ramshah Path, Thapathali, Kathmandu

Tel: (977-1) 229406
Fax: (977-1) 227720
Email: env@stat.wlink.com.np

Mr Rudra Suwal, Statistical Officer, National Accounts Section, Central Bureau of Statistics, Ramshah Path, Thapathali, Kathmandu

Tel: (977-1) 229406
Fax: (977-1) 227720
Email: env@stat.wlink.com.np

PAKISTAN

Mr Mohammad Ajmal, Director, Federal Bureau of Statistics, Government of Pakistan, Ministry of Finance and Economic Affairs, SLIC Building No. 5, Blue Area, F-6/4, Islamabad

Tel: (92-51) 9208172
Fax: (92-51) 9206284
Email:

Mr Mohammed Ramzan Shah, Statistical Officer, Federal Bureau of Statistics, Government of Pakistan, Ministry of Finance and Economic Affairs, SLIC Building No. 5, Blue Area, F-6/4, Islamabad

Tel: (92-51) 9208172
Fax: (92-51) 9206284
Email:

PHILIPPINES

Mr Romulo A. Virola, Secretary General, National Statistical Coordination Board (NSCB), 2nd Floor, Midland Buendia Building, 403 Sen. Gil J. Puyat Avenue Extension, Makati, Metro Manila
Tel: (632) 8952395, 8972171
Fax: (632) 8961778
Email: ra.virola@nscb.gov.ph

Ms Estrella V. Domingo, Director, National Statistical Coordination Board (NSCB), Midland Buendia Building, 403 Gil J. Puyat Avenue Extension, Makati, Metro Manila
Tel: (632) 8952481
Fax: (632) 8909397
Email: ev.domingo@nscb.gov.ph

REPUBLIC OF KOREA

Mr Kwon-Soon Moon, Director, Statistical Analysis Division, National Statistical Office of Korea, Government Complex III, #920, Dunsan-dong, So-gu,, Taejon 302-701
Tel: (82-42) 4812206
Fax: (82 42) 4812465
Email: ksmoon@nso.go.kr
jaeho@nso.go.kr

Mr Kang Hwan-koo, Associate Economist, National Accounts Statistics Team, Economic Statistics Department, Bank of Korea, 110, 3-Ga, Namdaemun-Ro, Jung-Gu, Seoul 100-794
Tel: (82-2) 7594372
Fax: (82-2) 7594387
Email: hkkang@bok.or.kr

SINGAPORE

Ms Chew Heh Ning, Statistician, Economic Accounts Division, Singapore Department of Statistics, 100 High Street, #05-01 The Treasury, Singapore 179434
Tel: (65) 3327778
Fax: (65) 3327129
Email: chew_heh_ning@singstat.gov.sg

Ms Pang Shoo Hoon, Statistical Officer, Economic Accounts Division, Singapore Department of Statistics, 100 High Street, #05-01 The Treasury, Singapore 179434
Tel: (65) 3327780
Fax: (65) 3327129
Email: pang_shoo_hoon@singstat.gov.sg

SRI LANKA

Mr D. Amarasinghe, Deputy Director, National Accounts Division, Department of Census and Statistics, 16/15 Maitland Crescent, Colombo 07
Tel: (94 1) 594071
Fax: (94-1) 697594, 594071
Email: dcensus@lanka.ccom.lk or dcs4@itmin.lk

Ms Geethangali Gunasekera, Statistical Investigator, National Accounts Division, Department of Census and Statistics, 16/15 Maitland Crescent, Colombo 07

Tel: (94-1) 594071
Fax: (94-1) 697594, 594071
Email: dcs4@itmin.lk

THAILAND

Ms Luckana Yuvaprakorn, Chief of Industrial and Business Statistics Branch, Economic Statistics Division, National Statistical Office, Office of the Prime Minister, Larn Luang Road, Bangkok 10100

Tel: (662) 2810333 ext. 1805
Fax: (662) 2818617
Email: eindbusi@nso.go.th

Ms Somjit Janyapong, Policy and Plan Analyst 7, National Accounts Division, National Economic and Social Development Board (NESDB), 962 Krung Kasem Road, Bangkok 10100

Tel: (662) 2165430-4 ext. 108
Fax: (662) 2165425-6
Email: somjit-j@nesdb.go.th

Mr Chamnong Paungpook, Policy and Plan Analyst 7, National Accounts Division, National Economic and Social Development Board (NESDB), 962 Krung Kasem Road, Bangkok 10100

Tel: (662) 2165430 ext. 133
Fax: (662) 2165425-6
Email: chamnong-p@nesdb.go.th

Mr Prapan Kiatikomol, Economist, Bank of Thailand, 273 Samsen Road, Bangkumprom, Bangkok 10200

Tel: (662) 2836184, 283-5651
Fax: (662) 2825082
Email: macro1@bot.or.th

Ms Yuwawan Rattakul, Economist, Bank of Thailand, 273 Samsen Road, Bangkumprom, Bangkok 10200

Tel: (662) 2836184, 283-5651
Fax: (662) 2825082
Email: yuwawanr@bot.or.th

VIET NAM

Dr Nguyen Van Chinh, Director of SNAD, General Statistical Office (GSO), 2 Hoang Van Thu Street, Hanoi

Tel: (84-4) 8463494
Fax: (84-4) 264345, 864345
Email:

Mr Nguyen Bich Lam, Specialist, National Accounts Statistics Department, General Statistical Office (GSO), 2 Hoang Van Thu Street, Hanoi

Tel:

Fax: (84-4) 264345, 864345

Email: vie97051@undp.org.vn

RESOURCE PERSONS

Mr Charles Aspden, Director Constant Price Estimates Section, Australian Bureau of Statistics (ABS), P.O. Box 10, Belconnen, A.C.T. 2616

Tel: (61-2) 62526711

Fax: (61-2) 62525327

Email: charles.aspden@abs.gov.au

Mr A.C. Kulshreshtha, Deputy Director General, Central Statistical Organisation, Ministry of Statistics and Programme Implementation, Sardar Patel Bhavan, Parliament Street, New Delhi 110 001, India

Tel: (91-11) 3362966

Fax: (91-11) 3342384, 3362966

Email: nadcso@hub.nic.in

OBSERVERS

Ms Wanida Mahakit, Assistant Director, National Accounts Division, National Economic and Social Development Board (NESDB), 962 Krung Kasem Road, Bangkok 10100

Tel: (662) 2165430-4 ext. 130

Fax: (662) 2165425-6

Email:

Mr Suriya Junkrajang, Chief of Regional and Provincial Accounts Section, National Accounts Division, National Economic and Social Development Board (NESDB), 962 Krung Kasem Road, Bangkok 10100, Bangkok

Tel: (662) 2165430-4

Fax: (662) 2165425-6

Email:

Ms Suchavadee Srisuwannakan, Chief of National Expenditure Section, National Accounts Division, National Economic and Social Development Board (NESDB), 962 Krung Kasem Road, Bangkok 10100

Tel: (662) 2165430-4 ext. 103

Fax: (662) 2165425-6

Email:

Ms Jutarat Shompooon, Chief of National Income Section, National Accounts Division, National Economic and Social Development Board (NESDB), 962 Krung Kasem Road, Bangkok 10100

Tel: (662) 2165430-4 ext. 117

Fax: (662) 2165425-6

Email:

Ms Somboon Wong-on, Policy and Plan Analyst 7, National Accounts Division, National Economic and Social Development Board (NESDB), 962 Krung Kasem Road, Bangkok 10100
Tel: (662) 2165430-4 ext. 127
Fax: (662) 2165425-6
Email:

Ms Siriwan Pongmongkolsam, Policy and Plan Analyst 7, National Accounts Division, National Economic and Social Development Board (NESDB), 962 Krung Kasem Road, Bangkok 10100
Tel: (662) 2165430-4 ext. 127
Fax: (662) 2165425-6
Email:

Mr Suchart Chanapai, Policy and Plan Analyst 7, National Accounts Division, National Economic and Social Development Board (NESDB), 962 Krung Kasem Road, Bangkok 10100
Tel: (662) 2165430-4
Fax: (662) 2165425-6
Email:

Ms Sivalee Tiewsangwan, Policy and Plan Analyst 7, National Accounts Division, National Economic and Social Development Board (NESDB), 962 Krung Kasem Road, Bangkok 10100
Tel: (662) 2165430-4 ext. 119
Fax: (662) 2165425-6
Email:

Mr Apichai Thamsermsuk, Policy and Plan Analyst 6, National Accounts Division, National Economic and Social Development Board (NESDB), 962 Krung Kasem Road, Bangkok 10100
Tel: (662) 2165430-4 ext. 126
Fax: (662) 2165425-6
Email:

Mr Thammanoon Sodsrichai, Economist, Bank of Thailand, 273 Samsen Road, Bangkunprom, Bangkok 10200
Tel: (662) 2835650, 2835643
Fax: (662) 2825082
Email: agriaservice@bot.or.th

Ms Rawadee Rattananubal, Economist, Bank of Thailand, 273 Samsen Road, Bangkunprom, Bangkok 10200
Tel: (662) 2835650, 2835643
Fax: (662) 2825082
Email: agriaservice@bot.or.th

Ms Jitraporn Makkrajaing, Policy and Plan Analyst 6, National Economic and Social Development Board (NESDB), 962 Krung Kasem Road, Bangkok 10100
Tel: (662) 2165430-4
Fax: (662) 2165425-6
Email:

INTERGOVERNMENTAL ORGANIZATION

Mr Derek Blades, Head of Division for Non-Members, Statistics Directorate, Organization for Economic Cooperation and Development (OECD), 2 rue Andre Pascal, 75775 Paris CEDEX 16, France

Tel: (331) 45248819

Fax: (331) 45241713

Email: derek.blades@oecd.org

ADB SECRETARIAT

Mr. Isidoro P. David

Assistant Chief Economist
Statistics and Data System Division
Economics and Development Resource Center
Asian Development Bank (ADB)
P.O. Box 789, 0980 Manila, Philippines
Tel: (632) 6326699
Fax: (632) 6322370
Email: ipdavid@adb.org

Mr. Biswanath Bhattacharyay

Statistician
Statistics and Data System Division
Economics and Development Resource Center
Asian Development Bank (ADB)
P.O. Box 789, 0980 Manila, Philippines
Tel: (632) 6325691
Fax: (632) 6362370
Email: bbhattacharyay@adb.org

Ms. Concepcion L. Javier

Assistant Statistics Analyst
Statistics and Data Systems Division
Economics and Development Resource Center
Asian Development Bank (ADB)
P.O. Box 789, 0980 Manila, Philippines
Tel: (632) 6326696
Fax: (632) 6362370
Email: cjlavier@adb.org

ESCAP SECRETARIAT

Mr. Andrew J. Flatt

Director
Statistics Division, ESCAP
8th floor, United Nations Building
Rajdamnern Nok Avenue
Bangkok 10200, Thailand
Tel: (662) 2881611
Fax: (662) 2881082
Email: flatt.unescap@un.org
URL: <http://www.unescap.org/stat>

Mr. M. Khalid Siddiqui

Chief, Statistics Development Section
Statistics Division, ESCAP
8th floor, United Nations Building
Rajdamnern Nok Avenue
Bangkok 10200, Thailand
Tel: (662) 2881653
Fax: (662) 2881082
Email: siddiqui.unescap@un.org

Mr. Loh, Meng Kow
Chief
Statistical Information Services Section
Statistics Division, ESCAP
8th floor, United Nations Building
Rajdamnern Nok Avenue
Bangkok 10200, Thailand
Tel: (662) 2881646
Fax: (662) 2881082
Email: loh.unescap@un.org

Ms. Selma Guven
Statistician
Statistics Development Section
Statistics Division, ESCAP
8th floor, United Nations Building
Rajdamnern Nok Avenue
Bangkok 10200, Thailand
Tel: (662) 2881521
Fax: (662) 2881082
Email: guven.unescap@un.org

Mr. Ilpo Survo
Programme Officer
Statistics Development Section
Statistics Division, ESCAP
8th floor, United Nations Building
Rajdamnern Nok Avenue
Bangkok 10200, Thailand
Tel: (662) 2881649
Fax: (662) 2881082
Email: survo.unescap@un.org

Mr. Blaise Ehounoubakrohi
Statistician and Database Administrator
Statistical Information Services Section
Statistics Division, ESCAP
8th floor, United Nations Building
Rajdamnern Nok Avenue
Bangkok 10200, Thailand
Tel: (662) 2881648
Fax: (662) 2881082
Email: ehou.unescap@un.org

Mr. Joel Jere
Statistician
Statistics Development Section
Statistics Division, ESCAP
8th floor, United Nations Building
Rajdamnern Nok Avenue
Bangkok 10200, Thailand
Tel: (662) 2881659
Fax: (662) 2881082
Email: jerej@un.org

Ms. Kesarin Roongruangmanirat Associate Statistician
Statistics Development Section
Statistics Division, ESCAP
8th floor, United Nations Building
Rajdamnern Nok Avenue
Bangkok 10200, Thailand
Tel: (662) 2881593
Fax: (662) 2881082
Email: roongruangmanirat.unescap@un.org

Mr. Roberto Pagan Associate Statistician
Statistical Information Services Section
Statistics Division, ESCAP
8th floor, United Nations Building
Rajdamnern Nok Avenue
Bangkok 10200, Thailand
Tel: (662) 2881645
Fax: (662) 2881082
Email: pagan.unescap@un.org

Ms. Heidi Arboleda Regional Adviser on National Accounts
Statistics Development Section
Statistics Division, ESCAP
8th floor, United Nations Building
Rajdamnern Nok Avenue
Bangkok 10200, Thailand
Tel: (662) 2881656
Fax: (662) 2881082
Email: arboleda.unescap@un.org

Ms. Carmelita N. ERICTA Expert on Gender Statistics
Statistics Development Section
Statistics Division, ESCAP
8th floor, United Nations Building
Rajdamnern Nok Avenue
Bangkok 10200, Thailand
Tel: (662) 2882492
Fax: (662) 2881082
Email: ericta.unescap@un.org

Mr. M. Nuri Ozsever ESCAP Adviser on Population Data Processing
and Database Management
UNFPA Country Support Team Office for East
and South Asia
United Nations Building
Rajdamnern Nok Avenue
Bangkok 10200, Thailand
Tel: (662) 2881575
Fax: (662) 2802715
Email: ozsever.unescap@un.org

