GOVERNMENT OF KERALA
KERALA STATE PLANNING BOARD

Recommendations on Improving the Method of Estimation of Gross State Domestic Product in Kerala

A Report

THIRUVANANTHAPURAM
AUGUST 2024

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FOREWORD

The Gross State Domestic Product (GSDP) is an important measure of the overall economic activity, income, and economic growth within a State. It is also used to determine the State's share of Union tax revenue and set the borrowing limits imposed on States. It is, therefore, important to ensure the accuracy and reliability of GSDP estimation.

In the current system, the computation of State income must adhere to the methodology prescribed by the National Statistical Office (NSO) under the Ministry of Statistics and Programme Implementation (MoSPI). This methodology ensures that the aggregates of State estimates align with the national-level estimates published by the NSO. However, the revision of the national income calculation methodology in 2015 marked a shift towards greater dependence on centrally provided data, particularly for the secondary and tertiary sectors. While data for the primary sector is largely obtained from the States themselves, reliance on national-level data for the secondary and tertiary sectors poses challenges for States like Kerala, where distinct features of the economy are not captured by national data.

The Government of Kerala has prioritised improving the calculation of State income. The need for accurate and timely estimates has been particularly evident in the context of assessing the economic impact of events such as the floods of 2018 and the Covid-19 pandemic. These events highlighted the necessity of quarterly and district-level GSDP estimates, in order to better assess the effects of seasonal and short-term factors on the State's economy.

The Kerala State Planning Board (KSPB), in consultation with Kerala State Statistical Commission, initiated a series of efforts to improve the methodology for calculating State income. This included organising national and State-level consultations, workshops, and study groups between 2019 and 2024. These consultations were also attended by relevant officials from the NSO. A key outcome of these efforts was the formation of three study groups that reviewed the methodologies used to estimate income in the primary, secondary, and tertiary sectors. These groups identified critical data gaps and suggested improvements to existing methods. Their findings and recommendations are presented in this report. Kerala is the first State to make such an effort.

The preparation of this report was also facilitated by the support and collaboration of the members of the State Planning Board and the Kerala State Statistical Commission, and officials of the Department of Economics and Statistics, Government of Kerala. The active participation of the NSO and other national experts further enriched the discussions and the report of the study groups.

The findings and recommendations presented in this report will help to improve State Income estimation in Kerala.

V K Ramachandran
Vice Chairperson

PREFACE

Please recall that vide note No. 66/2023-VC dated 03.06.2023 you had directed the Member Secretary State Planning Board to constitute three groups to study and suggest measures to improve the State income estimation in the primary, secondary, and tertiary sectors. Accordingly, the Member Secretary formed three study groups to review the methodology used in estimating Gross State Value Added, to identify critical data gaps in sectors, and to suggest measures to improve methods of calculating State income. The study groups on the primary sector and secondary sectors were headed by Professor R Ramakumar and Shri V Namasivayam, both Members of the State Planning Board. The group for the tertiary sector was headed by Shri P. C. Mohanan, Chairperson, State Statistical Commission.

The three groups have now submitted their reports. Considering that the terms of reference for all three sectors have common issues and recommendations that need to be taken up together, it was considered appropriate to submit the three reports as a single report. Accordingly, the final report contains the findings and recommendations of the three groups in three separate sections with a common introduction and summary on behalf of the three groups.

The groups received full support from the Members of the Board and their work was facilitated by the conveners and support teams from the Planning Board.

We hope the report will help the Directorate of Economics and Statistics streamline the methods by which they compile data on gross value added., and that future State income estimates reflect the State economy more realistically.

P. C. Mohanan

V. Namasivayam

R. Ramakumar

ACKNOWLEDGEMENT

In the Indian federal setup, measuring the economy of a state has as much importance as the study of the national economy. An understanding of the level of every state's economy is also important in devolution of funds from the centre to the states and the balanced economic development of all states. Theoretically, the State level income statistics are an extension of the System of National Accounts prepared at the national level. The National Statistical Office plays a guiding role in ensuring the quality of the estimation of the state income and associated macroeconomic indicators, and the Directorates of Economics and Statistics of the States are responsible for collecting and compiling the state level data.

The differences in statistical competency of the states and the deficiencies of information at the disaggregated level have always been a challenge for preparing reliable and comparable state level estimates. This has been studied in detail by different groups of experts in the past. The State Planning Board has also gone for a series of workshops and deliberations from July 2019 for improving the state statistics with special focus on state income estimation. It constituted three study groups on primary, secondary, and tertiary sectors to study issues connected with the availability, quality and accuracy of state level income statistics, and to draft recommendations.

Professor V K Ramachandran, the Hon'ble Vice Chairperson of the State Planning Board has played a decisive role in leading the whole exercise into preparation of a precise and targeted report on modifying the methodology and processes of the state income estimation. I sincerely acknowledge his efforts and guidance for making this happen.

The involvement of the National Accounts Division of the Central Statistical Office was indispensible in this activity. They have wholeheartedly accepted our invitation for workshops, and actively participated in them. I greatly acknowledge their support with sincere gratitude.

The role of the study groups is equally important. They have made commendable efforts to put it in writing. I express my deepest appreciation to Professor R Ramakumar, Shri V Namasivayam, and Shri P C Mohanan (ISS Rtd.), the chairpersons of the study groups, and Shri S S Nagesh, Dr Bindu P Varghese, and Shri P Pradeep Kumar, convenors of the study groups, and other members of the study groups in accomplishing the report. A special thanks is also expressed to Shri P C Mohanan for his contributions in editing and consolidating the report.

I express my sincere gratitude to the members of State Planning Board, members of the Kerala State Statistical Commission, Chiefs and officers of the State Planning Board for their valuable presence and contributions, and also acknowledge with gratitude the involvement and contributions of Shri Sreekumar B, the Director of Directorate of Economics and Statistics.

Finally, I would like to extend my appreciation to Shri V Jagal Kumar, the Chief in charge of the Perspective Planning Division, State Planning Board and other officers of the Division, for co-ordinating these efforts.

Sarada Muraleedharan I A S
Member Secretary

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ABBREVIATIONS

ASI	Annual Survey of Industries
CCS	Cost of Cultivation Studies
CSO	Central Statistics Office
CSNA	Committee for Sub-National Accounts
CMFRI	Central Marine Fisheries Research institute
CFC	Consumption of Fixed Capital
DE	Departmental Enterprise
NDE	Non-departmental Enterprise
DES	Directorate of Economics and Statistics
EGWS & US	Electricity, gas, water supply and other utility services
GVA	Gross Value Added
GDP	Gross Domestic Product
GSDP	Gross State Domestic Product
GSVA	Gross State Value Added
GVAPW	Gross Value Added Per Worker
IIP	Index of Industrial Production
ISSP	India Statistical Strengthening Project
NAS	National Accounts Statistics
KSSC	Kerala State Statistical Commission
LI	Labour Input
LSG	Local Self Government
NSO	National Statistical Office
NAD	National Accounts Division
SPB	State Planning Board
SDP	State Domestic Product

EXECUTIVE SUMMARY

I. Background

1. The Gross State Domestic Product (GSDP) or the State Income is an important summary indicator of the overall economic activity, income, and economic growth in the State. It is used in the calculation of each State's share of Union tax revenue distributed by the Centre, and to calculate the borrowing limits imposed on States.

2. At present, when computing State income, each State has to follow the methodology prescribed by the National Statistical Office (NSO) under the Ministry of Statistics and Programme Implementation (MoSPI). The aggregates of State estimates have also to be equal with the published national-level estimates. The NSO revised the methodology of calculating national income in 2015. After that, the calculation of GSDP became more dependent than before on the data given by the Centre to the States rather than using data collected by States themselves.

3. Data on incomes from the primary sector come mainly from State sources. Data for most activities in the secondary and tertiary sector come from national-level sources. This often creates problems for Kerala because national data do not take into consideration the distinct features of Kerala's economy.

4. A State Government also requires quarterly estimates of GSDP. Such information can help understand the impact of seasonal and short-term factors that affect the State's economy. The absence of such a measure was felt, for example, when attempting to measure the economic losses from the floods of 2018, and, later, the Covid-19 pandemic.

5. Methods of estimating incomes at the District-level are of crucial importance for a successful decentralised Government.

6. Improving the calculation of State income has been a priority area for the Government of Kerala. This report is the outcome of a series of national and State-level consultations. These consultations were attended also by the relevant officials from the National Statistical Office (NSO) of the Government of India. In July 2019, a two-day national workshop on State-level statistics was organised by the Kerala State Planning Board (KSPB), with a session entirely devoted to State income. In May 2020, a national consultation on methodologies for measuring State-level economic losses in the context of the Covid-19 pandemic was organised by the State Planning Board. The Kerala State Planning Board (KSPB), the Kerala State Statistical Commission (KSSC) and the Department of Economics and Statistics (DES), Government of Kerala jointly organised a two-day national workshop to critically

examine the data gaps and methodological issues prevailing at different stages of calculating State income on March 31 and April 1, 2023. Subsequently, the State Planning Board constituted three study groups to study methods of calculation of incomes from the primary, secondary and tertiary sectors. In March 2024, a single day national workshop was organised by the Kerala State Planning Board and Kerala State Statistical Commission to discuss the suggested improvements, recommendations and specific comments of the three study groups.

7. The three study groups have now submitted a combined report, and have identified measures to be taken by the DES to improve the calculation of State Income. They include the following.
   a. Improving the calculation of incomes from the Construction and Tertiary sectors should be prioritised, as they have the largest share in State's income.
   b. The most urgent and critical task is to invest in capacity building and strengthening of DES. A detailed description of this recommendation is given in Section VI.
   c. DES must enhance the capacity of its State Income Unit by appointing and retaining officers with expertise in the respective domains. The distribution of workforce data from national surveys has problems due to inadequate representation of State-specific sectors in national survey data. Furthermore, DES ought to establish a dedicated survey unit and implement regular survey schemes aimed at addressing the data gaps identified by the three study groups.
   d. DES should strive to establish systems for quarterly estimates within the next 18-24 months. This requires having fundamental building blocks like surveys and sampling frames ready for deployment. The implementation roadmap to be prepared by DES should include this essential prerequisite.
   e. Utilising administrative data from various Government departments including tourism, industry, health, and education can enhance the estimation process by providing cross-validation of estimates and decreasing dependence on survey data, thereby enhancing accuracy. DES should engage in broader stakeholder consultation during the computation of State income.
   f. DES should request the NSO to share datasets pertaining to Kerala. At the same time, DES should develop the necessary institutional capacity to manage extensive databases. DES should also seek the NSO's guidance on using State-level databases that exist but remain unused. NSO should also be consulted on conducting independent studies to evaluate the sufficiency of these data sources.

8. The major recommendations of the study groups are detailed in section II to IV. Section V lists the specific surveys for improving the calculation of State income recommended by the study groups.

II. Primary Sector

9. Income from the primary sector is computed from the following sub sectors.
    a. Crops
    b. Livestock
    c. Forestry and Logging
    d. Fishing and Aquaculture
    e. Mining and Quarrying

10. The income in this sector is calculated, largely, using State-level information collected by the DES.

11. The study group on the primary sector identified a series of problems with the information used for calculating incomes from the primary sector. These are discussed in detail in Chapter 3 of this report.

12. The main recommendations of the study group recommendations to improve the current methodology are the following.
    a. Information from the Cost of Cultivation Survey, after making sufficient changes in the survey to improve its coverage, should be used for the calculation of income from the crop sector.
    b. States are required to use the NSO's classification of crops, which is not accurate. The classification of crops by Kerala Agricultural University (KAU) is more scientific and should be adopted.
    c. An alternative method of estimating the income generated through meat production is to be adopted, by studying the method used in other States.
    d. The market price of minerals should be used for calculating the income generated in the Mining sector.

III. Secondary Sector

13. Income from the secondary sector is computed from the following sub sectors.
    a. Manufacturing
    b. Electricity, gas, water supply and other utility services
    c. Construction

14. The study group on secondary sector identified a series of problems with the information used for calculating incomes from the secondary sector. These are elaborated in Chapter 4 of this report.

15. The main recommendations of the study group recommendations to improve the current methodology are the following.

a. After the adoption of the new methodology in 2015, factory-based data are no longer used to calculate income from manufacturing. All data pertaining to manufacturing are now financial accounts-based data compiled by the Ministry of Corporate Affairs (MCA-21 database). DES should take up the Committee for Sub-National Accounts recommendation that MCA-31 data be shared with States. Along with this demand, DES should also consult the NSO for using State-specific data sets and build necessary capabilities to handle such large databases. DES should also create a list of manufacturing units that are located in the State and are included in the MCA-21 database.

b. DES should explore alternate methods for calculating the income from the Construction sector using State-specific data and conducting special studies. In this regard, DES should explore using the data available with Local Self Governments and the Government's housing schemes. DES should ensure that the data reflect the actual material consumption associated with construction activities in the States.

c. The study group recommends the improvement of sources of manufacturing data by improving the quality and ensuring the timely availability of IIP and ASI data. These surveys should be executed alongside NSO's survey of ASI and IIP. DES should also improve the sample frame in these surveys. DES should also conduct special studies to explore alternate data sources, such as the GST database, to cross-validate the estimates of State income generated in the sector.

IV. Tertiary Sector

16. Income from the tertiary sector is computed from the following sub sectors.
    a. Trade and repair services
    b. Hotels and restaurants
    c. Railways
    d. Road Transport
    e. Water transport
    f. Air Transport
    g. Services incidental to transport
    h. Storage
    i. Communication and services related to broadcasting
    j. Financial services
    k. Real estate, ownership of dwelling and professional services (including IT)
    l. Public administration
    m. Other services (including health and education)

17. The study group on the tertiary sector identified a series of problems with the information used for calculating incomes from the tertiary sector. These are elaborated in Chapter 5 of this report.

18. The main recommendations of the study group recommendations to improve the current methodology are the following.
    a. Similar to the secondary sector, income from the tertiary sector is also calculated largely using NSO's nationally estimated values in the absence of State-level data.
    b. NSO should also be consulted to modify the present classification of sub sectors. Currently, the largest sub sector is "other services", and this includes health, education and other services that ought to be separately considered.

19. In the absence of recent data on employment, many of the new economic activities including gig economy, platform economy, home stays, care homes, and food delivery are not properly reflected in the GSDP of the State. In consultation with the NSO, the DES should initiate steps for surveys and studies covering economic activities not adequately covered currently. This needs to be done before the Government of India next update its national income series and revises the base-year.
    a. The study group on the tertiary sector suggested the analysis of GST data for better understanding of the value addition from most sub sectors in the tertiary sector. In particular, the study group suggests that data from GST and the Ministry of Corporate Affairs should be mapped.
    b. Administrative data should be used to substantiate the data currently being collected by DES. To ensure this, data-sharing agreements between the DES and other Government departments are to be established. This should be supported with the standardisation of data collection formats and the creation of an integrated data framework.

V. List of New Surveys Recommended by the Study Groups to Improve the Calculation of State Income

20. The study groups recommend that DES should undertake State specific studies in all sub-sectors where the present methods depend on information provided by the NSO. Among these studies, the labour force surveys and enterprise surveys would be the most important.

21. The study group on the primary sector recommends the following surveys to improve the calculation of State income.
    a. A one-time census survey of slaughterhouses and poultry stalls to find the extent of imported animals in meat production in the State.
    b. An ad hoc survey by the State Fisheries Department to calculate the input costs and ratios in fish production.
    c. A survey by either the Revenue Department or the Local Self-Government Department to count Trees Outside Forests (TOF).
    d. A LiDAR-drone survey to improve the quality of data on mineral production.

22. The study group on the secondary sector recommends a survey to collect data that reflects the actual material consumption associated with construction activities in the State.

23. The study group on the tertiary sector recommends the following surveys to improve the calculation of State income.
    a. A series of establishment surveys covering the emerging service sector activities are recommended before the Government of India next update its national income series and revises the base-year. They must include the following.
        1. Surveys of Hotels and Restaurants including homestays
        2. Studies on the transport sector for estimating the number of vehicles on road and water
        3. specific health sector surveys including one on medical tourism
        4. Surveys on education sector, including private coaching, tuition, and recreation
        5. Survey on entertainment sector
        6. Survey on Non-Profit Institutions Serving Households (NPISH)
        7. surveys on emerging activities in the sector including online platform and digital activities
        8. surveys on enterprises in the financial sector and cooperative societies providing financial services
    b. DES should plan to have a regular system of detailed employment surveys to assess changes in workforce structure and to get estimates of Labour Input in various sub-sectors relevant for the State. It must be ensured that these surveys are carried out annually.
    c. Such employment surveys should be complemented by enterprise surveys to understand the GVA contribution and value of investments, among other things, by these enterprises.

CHAPTER 1
INTRODUCTION

1. National Income is the value of goods and services produced within the borders of a country. The Gross State Domestic Product (GSDP) is a measure of the income of a State. It is a summary indicator of the overall economic activity, income and economic growth in the State.

2. GSDP plays an important role in the calculation of each State's share of Union tax revenue distributed by the Centre. It is also used to calculate the borrowing limits imposed on States.

3. As an indicator of economic growth and a determinant of State finance, the calculation of GSDP is one of the most important outputs of a State's statistical system.

4. At present, each State has to follow the methodology prescribed by the National Statistical Office (NSO) under the Ministry of Statistics and Programme Implementation (MoSPI) to compute State income. The methodology is prepared as part of the System of National Accounts approved by the Union Government. It is based on a framework whose broad features are accepted internationally, and are used to measure the economic activity of a nation. The current methodology was approved in 2015.

5. NSO is also responsible for publishing reliable and comparable estimates of GSDP figures. The procedure and data used by States to calculate their GSDP is reviewed by NSO, through what are known as "annual reconciliation exercises."

6. Broadly speaking, the methodology is to calculate the income originating within the State boundaries or the value of goods and services produced within the State. State income essentially measures the domestic income irrespective of who has produced it – whether a normal resident of the region or an outsider. The States thus use a production and income method to calculate State income.

7. Three categories of data are used in the computation of GSDP: data on income generated by the primary sector, the secondary sector, and the tertiary sector. The primary sector includes (i) crops, (ii) livestock, (iii) forestry and logging, (iv) fishing and aquaculture, and (v) mining and quarrying. The secondary sector includes (i) manufacturing, (ii) electricity, gas, water supply, and other utility services and (iii) construction. The tertiary sector includes (i) trade, hotels and restaurants, (ii) transport, storage and communication, (iii) financial services, (iv) real estate, ownership of dwellings and professional services, (v) public administration, and (vi) other services.

8. The GSDP calculation uses concepts and definitions that correspond directly to the concepts and definitions used in the National Accounts Statistics compiled by the NSO to calculate the Gross Domestic Product (GDP). State income is calculated by aggregating the income generated by enterprises operating in each sub sector. These enterprises are classified into public sector, private corporate sector and unincorporated (unorganised) sector. Public sector enterprises are further classified into General Government, Departmental Enterprises, and Non-departmental enterprises.

9. The data used to compute State incomes from agriculture, livestock, public administration, and organised manufacturing in the public sector come from State Government sources. For most other sectors, data come from outdated benchmark surveys conducted at the national-level. Since the NSO revised the methodology of calculation of incomes in 2015, a large part of the data used by the States in income calculation is now given to States by the NSO.

10. In addition, there are sector-specific data gaps. Variables on which data are absent or inadequate include the area and production of minor crops, State-level labour force, State-level Wholesale Price Indices and the Consumer Price Index, State-specific private corporate sector, and industries in the unorganised sector.

11. State Governments also require quarterly estimates of GSDP. Such information can help understand the impact of seasonal and short-term factors that affect the State's economy. The absence of such a measure was felt, for example, when attempting to measure the economic losses from the floods of 2018, and later, the Covid-19 pandemic.

12. State Governments also require District-level estimates of GSDP. Such data are of crucial importance for a successful decentralised Government.

1.1 Report of the Government of India's Committee on Regional Accounts (CRA)

13. The calculation of State Income has been studied by many expert groups in the past, notably the Committee on Regional Accounts (CRA) established by the Indian Government in 1972 and the Sub-national Accounts Committee in 2018.

14. The CRA advocated a unified account for States that brought together household and public sector accounts. It outlined concepts, scope, sources, and methodologies for estimating different components of the accounts. Additionally, it identified deficiencies in data used for the calculations and proposed remedies to ensure accurate measurement of State income and associated metrics.

15. The most comprehensive report on the sub-national accounts or the State-level accounts is the Report of the Committee for Sub-national Accounts under the chairmanship of

Professor Ravindra H. Dholakia. This Committee was constituted after the Government of India changed the base year for the calculation of national income to 2011-12 (This decision was taken in 2015). After the base year was changed, the calculation of GSDP became more dependent than before on the data given by the Centre to the States rather than using data collected by States themselves. The Committee made a large number of recommendations to improve the estimation of GSDP and its components. These included new surveys to be conducted by States, issues of the frequency of GSDP estimation, issues of statistical methodology and approaches to calculating State incomes, and training personnel.

16. The Committee was of the opinion that a "from-below" approach to calculate national aggregates from the corresponding State aggregates was the best approach and should be followed to the extent possible in all sectors except those that involved supra-regional activities.

17. The Committee's recommendations were mainly directed at improving the underlying databases used to estimate value addition from different economic activities at the State-level. The report submitted by the Committee emphasises the role of State Departments/Directorates of Economics and Statistics in improving GSDP estimation.

1.2 Action taken by Kerala State Planning Board

18. In July 2019, a two-day national workshop on State-level statistics was organised by the Kerala State Planning Board in which one session was devoted entirely to State Income Statistics. The workshop was inaugurated by the Chief Minister of Kerala. The main objectives of the workshop were to identify priority areas and make preliminary suggestions on improving the methodology for State-level statistics and building new statistical skills in State Government organisations. One of the key announcements made at the conference was the establishment of a Kerala State Statistical Commission (KSSC). The Commission has been functional from November, 2021.

19. In May, 2020, a National Consultation on Methodologies for Measuring State-Level Economic Losses in the Context of the Covid-19 Pandemic was held at Thiruvananthapuram by the State Planning Board. One of the important outcomes of the conference was to underline the need for quarterly income statistics in the State.

20. The Kerala State Planning Board (KSPB), the Kerala State Statistical Commission (KSSC) and the Department of Economics and Statistics (DES), Government of Kerala jointly organised a two-day national workshop on March 31 and April 1, 2023. The objective of this national workshop was to critically examine the data gaps and methodological issues prevailing at different stages of calculating State income. The workshop was inaugurated by the Finance Minister of Kerala. The broad objectives of the workshop were to:

a. examine the methodology and the database used by DES at different stages of calculating the Gross State Value Added (GSVA) estimates for different compilation categories,
b. find out critical data gaps in estimation of GSVA estimates at various stages and suggest ways to revamp such gaps consistent with international and national practice,
c. prepare a plan to create necessary methodologies and databases before the next base-year revision,
d. identify and prioritise areas where fresh surveys and studies are needed, and
e. suggest methods for improvement of data collection.

21. Experts on national income calculation and representatives of the National Accounts Division of the NSO participated in the workshop.

22. As a follow up of this workshop, the State Planning Board constituted three study groups to address various issues relating to the State Income estimation. Three separate groups were constituted for the primary, secondary and tertiary sectors. The terms of reference for each study group were to:
    a. examine the data and methodology used by the DES for GSDP estimation,
    b. identify significant activities not adequately covered in the current methodology,
    c. suggest alternative/better data sources wherever possible,
    d. identify and prioritise areas and timelines for surveys and studies to address data gaps and resource requirements,
    e. suggest measures for strengthening institutional mechanism including inter-departmental coordination, and
    f. suggest methodology for quarterly estimates of GSDP

23. In March 2024, a single-day national workshop was organised by KSPB and KSSC to discuss the suggested improvements, recommendations and specific comments of the study groups. In addition to the chairman of the three study groups, members of the State Planning Board, members of the State Statistical Commission, and officials from the DES, representatives of the National Accounts Division under the National Statistical Office attended the workshop.

24. This report provides the findings of the three study groups and covers the methodology used in estimation of Gross State Value Added, critical data gaps in the sectors and suggested measures for improving the State income calculation. The current chapter provides an introduction to State income calculation and the constitution of the study groups. Chapter 2 summarises the key recommendations of the study groups. Chapter 3, 4 and 5 are the detailed reports prepared by the study group on primary, secondary and tertiary sectors

respectively, including the details of meetings, main observations, findings and specific recommendations. The annexure to this report provides Government Orders, and other relevant documents.

CHAPTER 2
SUMMARY OF KEY FINDINGS AND RECOMMENDATIONS

2.1 Crop Sector

25. The crop sector includes various agricultural crops and plantation crops, agricultural and horticultural services and ancillary activities. The estimates of domestic product from these activities are prepared using the production approach except in the case of operation of irrigation systems. The production approach requires estimation of gross value of output and value of inputs. The data sources for output are the DES and Commodity Boards.

26. Estimates of the DES based on input rates appear to have overestimated the costs under various heads. These heads were "organic manure and chemical fertilisers", "repair and maintenance of the crop sector", and "market charges for crops". In particular, the market charges for crops appear to have been taken from the mandi tax rates in regulated markets in the rest of India, while Kerala does not have any regulated market. On the other hand, the estimates of the DES based on input rates appear to have underestimated the costs under a few other heads, such as "seed", "organic manure and chemical fertilisers", and "pesticides". It may be ideal if data from a refined CCS system are used in the estimation of GSVA in the crop sector rather than the current system based on input rates.

27. Costs related to electricity charge, diesel and oil charge, feed of livestock, irrigation charges, and market charges are not separately collected in the CCS system. These items may be added to the CCS questionnaire and refined after considering views of experts. The committee also requested the DES to collect the quantity of consumption and prices of fertilizers from the Fertilizer Statistics of the Fertilizer Association of India (FAI). The committee also felt that the question on the usage of organic manure must be particularly carefully drafted in the refined CCS.

28. The cost of cultivation of Kerala's major crops like rubber, tea and coffee are not covered under the present CCS system. It is suggested that the DES contacts the Commodity Boards of these crops and obtains data on costs of cultivation from them. In case such data are not available with the Commodity Boards (as was reported), the DES may conduct a one-time ad hoc survey to collect data on these items from the field.

29. The present system of classification of crops by the DES is not suitable to the conditions in Kerala. It was suggested that the DES uses the grouping suggested by the Agricultural University (KAU).

30. The figures for the area and production of vegetables and fruits reported by the DES and the Department of Agriculture were very different. One reason for this could be that the Department of Agriculture included the area and production of tapioca and banana within this group. The committee advised the Department of Agriculture to check and correct their classification accordingly

31. The committee also suggests some changes in the terminologies used at present. The term "Farm Price" be used instead of "Farm Wholesale Price" (the modal price that farmer gets at the farm site, which is collected from selected farmers with bulk transactions) and "Farm Retail Price" (the price that the farmer gets when farm products are sold at smaller quantities at the rural retail market, after excluding transportation costs). The "farm price" would then mean the actual wholesale price.

2.2 Livestock Sector

32. It was noted that 90% of the meat production in Kerala was by slaughtering animals imported from other States. No authentic and updated figures are available on the number of slaughterhouses and poultry stalls in the State. Steps should be taken to conduct a one-time census of slaughterhouses and poultry stalls in Kerala for use during the next revision of the base year. From this survey, various rates/ratios and data on registered and unregistered slaughterhouses must also become available. Given the large number of animals imported into the State, the cost of animals must also be typically factored into the costs. The committee requested the DES to investigate the method followed in other States and adopt a new method after the completion of the census survey of slaughterhouses and poultry stalls.

2.3 Fisheries Sector

33. Fish production figures are estimated from Marine Catch Assessment Survey and Inland Catch Assessment Survey. The estimation, processing and analysis work is carried out by the CMFRI. Inland Catch Assessment Survey is conducted in all the 14 Districts of the State. In addition, Panchayat-wise data on aquaculture are collected from each Panchayat by aquaculture promoters and coordinators. The basic data on (a) District-wise, variety-wise output and value of marine fish (including salted and sun-dried fish) and (b) District-wise inland fish (in fresh form) are made available to the DES by the State Fisheries Department. Input costs in fish production are not being collected on a regular basis and, as such, no input cost data is available. The committee requested that the State Fisheries Department must conduct an ad hoc survey for calculating the input costs and ratios therein after discussion with CSO officials.

2.4 Forest Sector

34. The economic activities covered under this sector include forestry and logging. The estimates of GSVA are prepared by adopting the production approach. The committee felt that there were a few issues related to the counting of Trees Outside Forests that need to be addressed. A new survey may be conducted by the DES either at the household-level or at the saw mill-level to estimate the contribution of TOF.

2.5 Mining and Quarrying

35. The committee examined the present methodology to estimate GSVA in this sector. It was found that the Department of Geology and Mining presently has no provision to collect the market price of minerals but only has royalty data. The committee recommends that the Department of Geology and Mining provide the data on production of various minerals extracted – disaggregated by their dimensions – to the DES. The Department of Geology and Mining may also share the data available in the KOMPAS portal to the DES to improve the process of fixation of market prices of minerals every year.

2.6 Manufacturing

36. The 2011-12 series has moved from establishment-based data obtained from Annual Survey of Industries (ASI) and Index of Industrial Production (IIP) to financial accounts based MCA21 database of the Ministry of Corporate Affairs. This centralised approach for estimation of National Income has undermined the bottom-up philosophy of our national statistical system and weakened the capacity of DES.

37. One set of recommendations of the Committee for Sub-National Accounts (CSNA) is related to MCA21 data sharing, improvement of ASI frame etc. DES should approach National Account Division for those data sets related to Kerala and build necessary capabilities to handle such large database. The other set of recommendation of CSNA is to organise and present currently available databases with the State to reduce dependence on central estimates based on allocation.

38. Improving the quality and timely availability of the Annual Survey of Industries is the essential starting point in manufacturing GVA estimation at the State-level. The ASI frame with the CIN should be shared with the States. Alternatively States could be provided with a list of manufacturing units that are located in the State and belong to the MCA list of companies. This sharing will help to resolve issues around single or multiple establishments and CIN mismatches between ASI and MCA data.

39. Private quasi corporations and Private unincorporated enterprises is an important segment for Kerala with a share of 13.8% of the secondary sector. Developing a more robust State-level IIP and WPI will facilitate improving the quality of estimates.

40. The Enterprise Survey has to be strengthened by including the State or the State has to take up its own Enterprise Survey for which Survey Division of DES has to be strengthened.

41. DES should develop a road map to prepare and maintain a business register in a definitive timeframe.

2.7 Construction

42. The current Commodity Flow method adopted for estimating GVA from construction in the household segment has many limitations. DES should explore alternate methods using LSG data and housing scheme data available with the Government. The rates and ratios used in construction should be State specific to reflect the material consumption of Kerala. Special attention is required for construction GVA from private sector through studying the off budget financial flows to private contractors and construction of large infrastructure projects

43. The current methodology for Remediation relies on organised remediation efforts of State-level agencies such as KWA. The remediation efforts of Local bodies and private sector are not adequately captured. The current methodology, data sources etc require a review given the emerging nature of this segment.

44. Given today's digital infrastructure and Big Data tools, Kerala should take a lead in conducting a study with multi-disciplinary team of experts – technologists, Big Data specialists, GST database analysts, Statisticians and economists – to develop a pathway to use new datasets. DES also should approach GoI for sharing data related to Kerala from all India data sets.

45. The study group recommends that the quarterly estimates of GSDP may be postponed till the time data availability from the bottom-up process improves to the satisfactory-level. The quarterly estimates may be attempted after ensuring all building blocks for bottom-up process is in place and along with proposals for next base year revision by NAD.

46. Among other things the Government of Kerala should review its posting and transfer policy to retain sectoral expertise and sustain institutional memories. DES should prepare an institutional plan with the guidance of State Statistical Commission. The plan should detail the structural changes required in the department keeping in view the near future base year changes as well as staffing plan given the priority of tasks before DES. A closer look at the organisational set up within the DES has shown that there is at present severe constraints in retaining experienced and trained officers in the Unit.

2.8 Tertiary Sector

47. Due to non-availability of State-level data, allocation of nationally estimated values by NSO is the main method followed in arriving at the GSDP of most of the sub-sectors in the tertiary sector in the State. Among the institutional sectors, direct State related data are used only in the case of public sector. For the corporate sector the DES depends on CSO for its share in the State GSDP. The unincorporated sector or the unorganised sector that has a most significant presence among the tertiary sector are at present mostly based on growth rates provided by CSO. Many of the indictors used for apportioning may also not be the appropriate one.

48. In services sector, the estimation is done by clubbing many activities. In the largest category 'other services' that includes health, education and other services separate estimation is made for health and education and all other services are considered under one category.

49. In all sub sectors, especially in 'other services' sector, component-wise LI and GVA/W is required for estimation of GDP at State and District-level. Specific household/enterprise survey is helpful for almost all subsectors. For the purpose of base year GVA, a large sample survey is needed and in all other years, surveys with smaller samples may be taken for assessing the growth rate of LI and GVA/W.

50. Distributing workers data from national survey could be problematic due to inadequate representation of State specific sectors in national survey data. The States should have surveys on employment-unemployment and also on unorganised services sector units for which the State also needs a specialised survey division comprising of design wing, field operations wing and data processing and analysis wing is essential in the Directorate. A regular set of field investigators at the District-level will be responsible for the fieldwork.

51. Though the corporate data from MCA are shareable with States, the States need to develop capacity and resources to work on these data. Alternate databases also need also to be considered. Those that can be considered include use of Banking Statistical return (BSR), NABARD, IRDAI, TRAI etc. At the State-level expertise should be developed to access and use such data.

52. As for the ownership of dwelling data, these are from the Census and house rent data are from out-dated household surveys and these need updating.

53. The existing methodology does not capture the dynamic nature of the unincorporated economy. To overcome this, launching new, annual services surveys tailored to capture evolving services, such as food delivery, is essential.

54. It is also necessary to avoid applying a common procedure to all services. Instead breaking down of the services sector into sub-sectors capturing data separately for each sub-sector to understand the specific dynamics of each segment is recommended.

55. Currently there is no stakeholder consultation by DES in the compilation or analysis of GSDP numbers. It is essential to engage in regular stakeholder consultations to receive feedback and include new services, besides close collaboration with relevant departments/organisations, such as tourism, to obtain better and real-time data.

56. Integrating administrative data from Government departments, such as tourism department, health departments, and educational institutions, into the estimation process can help cross validate the estimates and reduce reliance on surveys and improve accuracy. This require the establishments of data-sharing agreements with Government departments, standardising formats for data collection, and creating a data integration framework to merge administrative data with existing statistical data.

2.9 Specific Suggestions for Data Collection

57. DES should therefore plan to have (a) a regular system of detailed employment surveys to assess changes in workforce structure and to get estimates of Labour Input in various sub-sectors relevant for the State. These should be annual feature. The employment survey should be designed to cover secondary and tertiary employment data from households in sufficient detail to reflect changing structure of employment especially new and emerging sectors and address the new forms of employment.

58. Employment survey should be complemented by enterprise surveys to understand the GVA contribution and value of investments etc by these enterprises. The enterprise surveys should cover all sectors except the primary sector. The primary objective of these surveys would be to estimate the value added per worker along with other financial information required for State income estimation.

59. In Kerala Government agencies and local bodies have a well-established system of registration of new units and that such registrations are always done in an online mode. DES should work with these agencies to improve the data content and ensure that basic data on the existing and newly started units are taken from the industry department or local bodies. Such lists can be used as a frame for sample surveys by DES for regular assessment of their value addition. Most of the unorganised tertiary sectors can be covered this way.

60. There are several tertiary sector activities in the State that are not adequately reflected in the State income compilation at present. Some of these are activities that have emerged in recent

years and would not have been covered in the bench mark data used. A few of these are listed below:

a. Contribution of Gig Workers employed in food delivery, online education, app based services, data entry and other IT related work
b. Activities in entertainment such as tuition/coaching for arts, drama, painting etc
c. Sports related activities of recent nature such as turf, martial arts training, swimming etc
d. Income from private unlisted tuitions
e. Income from rental services such as airbnb, home based food services
f. Parking lots, advertising, direct marketing
g. Home care services by individuals and agencies

2.10 Suggestions for New Surveys/Studies at State-Level

61. In the next base year revision it is necessary to have the most recent employment and value added per worker data. It is recommended the DES may conduct a series of establishment surveys to get an idea of the value added per worker in these sectors.

a. Surveys of Hotels and Restaurants including homestays
b. Studies on Transport sector for estimating the number of vehicles on road, water transport etc.
c. Health sector specific surveys including medical tourism
d. Education, including private coaching, tuition, recreation etc
e. Survey on entertainment sector
f. Non-Profit Institutions Serving Households (NPISH)
g. New activities in the services including online platform/digital activities
h. Financial sector enterprises and cooperative societies providing financial services

CHAPTER 3
PRIMARY SECTOR

62. The State Domestic Product for the primary sector are compiled and presented under the broad group of the following sub-sectors:
    a. Crops
    b. Livestock,
    c. Forestry and Logging,
    d. Fishing and Aquaculture and
    e. Mining and Quarrying.

3.1 Crop Sector

63. The crop sector includes various agricultural crops including plantation crops, agricultural and horticultural services and ancillary activities like gur making, transportation of own produce to the primary markets and activities yielding rental income from machinery. In the case of the crop sector, the details of production, price and area of all crops are provided to the CSO by the State Directorate of Economics and Statistics (DES). The estimates of domestic product from these activities are prepared using the production approach except in the case of operation of irrigation systems, which is arrived at from the Government records through the income approach.

64. The production approach requires estimation of gross value of output and value of inputs. The estimates of the value of output are prepared using the production figures and the prices compiled by the DES. The data on the production of plantation crops like tea, coffee and rubber are obtained from the respective Commodity Boards.

65. The inputs of the crop sector are divided into ten items: seed, organic manure, chemical fertilisers, current repairs, maintenance of fixed assets and other operational costs, feed of livestock, irrigation charges, market charges, electricity, pesticides and insecticides and diesel oil. The estimates of the value of input at current prices are provided by the NSO, except for the market charges.

66. The committee examined the method of estimation of GSVA in the crop sector based on the current methodology. At present, the costs of various inputs are estimated by the DES based on the GVO/Input Ratio provided by the CSO at the time of fixation of the most recent base year. These input rates and their application, the committee felt, was not reflective of the reality obtained in the crop sector of Kerala. The committee compared these estimates prepared by the DES based on the input rates with the results of the Cost of Cultivation Surveys (CCS) of the DES. These CCS of the DES are based on the national methodology

adopted by the Commission for Agricultural Costs and Prices (CACP). The comparative results are presented in Table 1 for four years.

Table 1 *Comparison of input values and GSVA in the crop sector using CCS method and CSO ratios, Kerala, 2018-19 to 2021-22,* in Rs crore

Input item	2018-19		2019-20		2020-21		2021-22	
	CSO rates	CCS method	CSO rates	CCS method	CSO rates	CCS method	CSO rates	CCS method
Seeds	250.5	632.9	367.8	702.8	352.3	708.4	312.8	709.4
Organic manure and fertilisers	1,809.6	3,189.9	2,135.8	3,378.9	2,479.9	3,898	2,584.1	3,898.7
Pesticides	34.7	276.1	26.7	319.4	24	375.1	26.2	900.7
Repair and maintenance of crop sector	1,911.1	88.8	2,125.4	265.7	2,276.7	183.9	2,685.1	87.6
Electricity	89.6	62.8	94.4	94.5	115.4	115.4	129.4	129.4
Diesel oil	62.8	24.7	57.5	57.5	49.6	49.6	86.1	86.1
Irrigation charges	24.7	26	43.9	43.9	34.9	34.9	45.2	45.2
Market charges for crops	1,180.3	0	1,229.9	0	1,310.2	0	1,387.6	0
Feed of livestock	26	26	26.5	26.5	24.1	24.1	26.4	26.4
Total GVI	5,389.3	4,390.9	6,108.1	4,889.2	6,667.1	5,389.2	7,282.9	5,883.6
GVO	36,636.4	36,636.4	38,196.4	38,196.4	40,689.9	40,689.9	43,092.7	43,092.7
GVA	31,247.1	32,245.6	32,088.3	33,307.2	34,022.9	35,300.7	35,809.8	37,209.1
Difference		998.5		1,218.8		1,277.9		1,399.3

Source: Department of Economics and Statistics

67. Compared to the CCS estimates, the estimates of the DES based on input rates appear to have overestimated the costs under various heads. These heads were "organic manure and chemical fertilisers", "repair and maintenance of the crop sector", and "market charges for crops". In particular, the market charges for crops appear to have been taken from the mandi tax rates in regulated markets in the rest of India, while Kerala does not have any regulated market. On the other hand, the estimates of the DES based on input rates appear to have underestimated the costs under a few other heads, such as "seed", "organic manure and chemical fertilisers", and "pesticides".

68. The committee felt that it may be ideal if data from a refined CCS system are used in the estimation of GSVA in the crop sector rather than relying on the current system based on input rates. If we use the CCS data as they exist today (that is without refinement), the GSVA the crop sector would rise by Rs 998.46 crore in 2018-19, Rs 1,218.83 crore in 2019-20, Rs 1,277.85 crore in 2020-21 and Rs 1,399.30 crore in 2021-22.

69. The need for refinement in the present CCS system is necessitated by a few drawbacks in the survey method. At present, costs related to electricity charge, diesel and oil charge, feed of livestock, irrigation charges, and market charges are not separately collected in the CCS system. The committee felt that these items may be added to the CCS questionnaire and refined after considering some expert advice. The committee also requested the DES to collect the quantity of consumption and prices of fertilisers from the publication Fertiliser Statistics of the Fertilizer Association of India (FAI). These figures from the FAI – admittedly in the aggregate, as crop-wise figures are not available from the FAI – must be used to compare and reconcile the figures obtained on the same from the CCS of the DES. The committee also felt that the question on the usage of organic manure must be particularly carefully drafted in the refined CCS.

70. The committee also found that the cost of cultivation of Kerala's major crops like rubber, tea and coffee are not covered under the present CCS system. It was suggested that the DES contacts the Commodity Boards of these crops and obtains data on costs of cultivation from them. In case such data are not available with the Commodity Boards (as was reported), it was suggested that the DES conducts a one-time ad hoc survey to collect data on these items from the field.

71. The committee suggested that this issue must be discussed with the CSO in the next reconciliation meeting.

72. The committee also found that the present system of classification of crops by the DES are based on CSO directions, which is followed by all the States. The committee felt that this classification is not suitable to the conditions in Kerala. Based on the directions of the committee, the DES contacted the Kerala Agricultural University (KAU) for a scientific classification of crops under various groups and sub-groups. It was suggested that the DES uses the grouping suggested by the KAU in the future.

73. The committee also found that the figures for the area and production of vegetables and fruits reported by the DES and the Department of Agriculture were very different. One reason for this could probably be that the Department of Agriculture included the area and production of tapioca and banana within this group. The committee advised the Department of Agriculture to check and correct their classification accordingly (see Table 2).

Table 2 *The issues in grouping of crops*

Name of the crop	Present classification	Proposed classification, KAU
Jowar	Cereals	Millets
Ragi	Cereals	Millets
Cashew (raw)	Fruits and vegetables	Commercial crops
Tapioca	Fruits and vegetables	Tubers
Sweet Potato	Fruits and vegetables	Tubers
Garlic	Spices and condiments	Vegetables
Arecanut (dry)	Spices and condiments	Beverages and stimulants
Tea (not processed)	Drugs and narcotics	Beverages and stimulants
Coffee (processed)	Drugs and narcotics	Beverages and stimulants
Betel leaves	Drugs and narcotics	Beverages and stimulants
Cocoa	Drugs and narcotics	Beverages and stimulants
Fodder grass	Miscellaneous crops	Fodder crops
Grass	Miscellaneous crops	Fodder crops
Rubber	Miscellaneous crops	Commercial crops

Source: Department of Economics and Statistics

74. The committee also suggested some changes in the terminologies in the present system. It directed that the term "Farm Price" be used instead of "Farm Wholesale Price" (the modal price that farmer gets at the farm site, which is collected from selected farmers with bulk transactions) and "Farm Retail Price" (the price that the farmer gets when farm products are sold at smaller quantities at the rural retail market, after excluding transportation costs). The "farm price" would then mean the actual wholesale price.

3.2 Livestock Sector

75. The estimation of GSVA in the livestock sector comprises of the value added in various livestock and poultry products and the value of addition in the population of livestock and poultry. Various products like milk, meat and meat products, hides and skin, hair and wool, dung, eggs, value of useful items of fallen animals and increment in livestock are covered under this sector. The estimates of GSVA for this sector are prepared by adopting the production approach.

76. In the case of milk, data on annual milk production and prices – separately for cow, buffalo and goat – supplied by the Directorate of Animal Husbandry are used to arrive at the value of milk production. In the case of meat, which consists of meat and glands of bovines and ovines, figures of meat production and prices are provided by the Directorate of Animal Husbandry. In the case of meat products (consisting of fats, heads, legs, etc.) and by-products (consisting of hides/skins of bovines and ovines), the GSVA estimation is based on the number of slaughtered and fallen animals and the corresponding State-level yield rates. In the case of eggs and poultry meat, data on hen egg production is provided by the Directorate of Animal Husbandry. The estimation of poultry meat is organised using the information on utilisation of eggs and the chickens that survived. In the case of dung, data on utilisation rates and average dung quantity (per bovine, per day) are provided annually by the Directorate of Animal Husbandry.

77. During the deliberations of the committee, it was reported that 90% of the meat production in Kerala was by slaughtering animals imported from other States. However, the exact quantities of total meat production from domesticated animals and from imported animals are not available. The ratio of domesticated animals to imported animals slaughtered in the State is also not available. A figure reported was that out of total slaughtered animals in Kerala, only about 25% of the animals were domestically grown animals.

78. One reason is that though the per capita consumption of meat has increased considerably in the State, there are still no authentic and updated figures available on the number of slaughterhouses and poultry stalls in the State. It also happens to be the case that, given the number of festivals among various communities, there are several short-term or temporary slaughterhouses and poultry stalls in the State that are not registered or licensed.

79. In this context, the committee felt that steps should be taken to conduct a one-time census survey of slaughterhouses and poultry stalls in Kerala for use during the next shift of the base year. From this survey, various rates/ratios and data on registered and unregistered slaughterhouses must also become available. Prior to offering this suggestion, the committee had requested the Directorate of Animal Husbandry to consider and check all the existing sources of data on the number of slaughterhouses and poultry stalls. However, no accurate list of registered/licensed/unregistered slaughterhouses was available. An attempt was also made to contact the GST commissionorate, but it was informed that no GST was levied on live animals imported and raw meat, and GST was applicable only for processed and packed meat. Typically, the deductible inputs in this sector are (a) Feed of Livestock, (b) Market Charges and (c) Operational Costs. However, given the large number of animals imported into the State, the cost of animals must also be typically factored into the costs. The committee requested the DES to investigate the method followed in other States and adopt a new method after the completion of the census survey of slaughterhouses and poultry stalls.

3.3 Fisheries Sector

80. The activities in this sector are commercial fishing, subsistence fishing, fish curing and gathering of sea weeds, seashells, pearls, sponges and other ocean and coastal water products. Commercial fishing is carried out in (a) the ocean, coastal and offshore waters and (b) inland waters, which includes catching, tackling and gathering of fish from rivers, irrigation channels and other canals, lakes, tanks, and inundated tracts. The estimates of GSVA are prepared using the production approach.

81. Fish production figures are estimated with the aid of two surveys; Marine Catch Assessment Survey and Inland Catch Assessment Survey.

Marine Catch Assessment Survey

82. Marine Catch Assessment Survey is conducted in the nine marine Districts of the State. The methodology used is a Multistage Stratified Random Sampling Technique developed by Central Marine Fisheries Research Institute (CMFRI). As per a MoU signed in 2019 between the State Fisheries Department and CMFRI, it was decided that they would jointly do the Marine Catch Assessment Survey.

83. Here, nine enumerators are selected and posted by State Fisheries Department in the nine marine Districts. They are trained by CMFRI on species identification, data collection and online data entry. In each month, three landing centres are randomly selected in each District for data collection. The list of landing centres and sampling days for data collection in each month is prepared by the CMFRI and forwarded to the enumerators in advance. The enumerator must visit the selected landing centres in the prescribed days, in the prescribed time, and collect the fish catch data during that time. The collected data from field is directly entered in a tab by the enumerators. The estimation, processing and analysis work is carried out by the CMFRI with the help of the FCSA software. The CMFRI provides species-wise, gear-wise, and quarterly marine fish production data to State Fisheries Department every year.

Inland Catch Assessment Survey

84. Inland Catch Assessment Survey is conducted in all the 14 Districts of the State. The methodology used here is also a Multistage Stratified Random Sampling Technique. Fish production by capture and culture are collected in this survey. Data are collected both from brackish water areas and freshwater areas. Here, 14 enumerators are posted to each District. In brackish water areas, the enumerator collects catch data in the prescribed sampling days and sampling time from the following categories: (a) from landing centres; (b) from the stake nets and Chinese nets; (c) from handpicked items like clam, mussel, edible oyster, etc.; (d) from the prawn filtration fields; and (e) from culture fields. In freshwater areas, the enumerator should collect the catch data from the following categories: (i) production from culture; and (ii) production from reservoirs, check dams, rivers, lakes, etc. The final data estimation, processing and analysis is carried out by the State Fisheries department. They generate species-wise inland fish production data monthly, which is consolidated quarterly for submission to the Government of India.

85. In addition, Panchayat-wise data on aquaculture are collected from each Panchayat by aquaculture promoters and coordinators. Such data are forwarded to District offices for further transmission of data to the Directorate in a prescribed format. Data are consolidated quarterly and furnished to the Government of India. Similarly, fish seed production data are collected from 15 department hatcheries, four Matsyafed hatcheries and nine ADAK

hatcheries. Seed production data are collected monthly and are consolidated on a quarterly basis for submission to the Government of India.

86. The basic data on (a) District-wise, variety-wise output and value of marine fish (including salted and sun-dried fish) and (b) District-wise inland fish (in fresh form) are made available to the DES by the State Fisheries Department. The value of marine fish (in fresh form, sun dried and salted) and inland fish (fresh form) together gives the GSVO of this sector. No reliable data on subsistence fishing is available and hence its share is assumed as 12.5% of the inland fish production as recommended by the NSO. To estimate costs of inputs, various input rates provided by NSO (as per cent of the GSVO) are used. These input rates used are at 22.5% for marine fish and prawns, 1% for subsistence fish, 1% for fish salting, and 10% for inland fish.

87. One issue that the committee noted was that items of costs of inputs in fish production are not being collected on a regular basis and, as such, no input cost data is available. The committee noted this to be a serious lacuna and requested that the State Fisheries Department must conduct an ad hoc survey for calculating the input costs and ratios therein. A discussion with the CSO officials was also suggested in this regard.

3.4 Forest Sector

88. The economic activities covered under this sector include (i) forestry i.e., planting and conservation of forests, gathering of uncultivated forest products, charcoal burning carried out in the forests; (ii) logging i.e., felling and rough cutting of trees, hewing or rough shaping of poles and blocks and the transportation of the logs up to the permanent lines of transport; and (iii) farmyard wood i.e., industrial wood and firewood from trees outside regular forest. The estimates of GSVA for this sector are prepared by adopting the production approach.

89. The major products comprise of industrial wood and fuel wood. The minor products include items like bamboo, fodder, sandalwood, honey, resin, and gum. The main sources of data are the State Forest Department and Government Budget documents. The GSVA estimates of this sector are compiled based on data on the out-turn of forest products and the prices of the forest produce as furnished by the State Forest Department. Species-wise data on major forest produce are collected from the divisional offices and consolidated at the State-level. As per the scheduled and seignorage rates of timber and other forest produces, species-wise value of timber and other forest produce is determined based on their production by the State Forest Department and passed on to the DES. Production and value of sandalwood received from the Marayur sandal division and minor forest produce (NWFP) from Kerala State Federation of SC/ST Development Cooperatives are also furnished to the DES.

90. The GSVA is estimated separately for (a) industrial wood; (b) plywood; and (c) matchwood species; (d) Bobbin wood species; (e) Pencil wood species; (f) packing case wood species; (g) pulpwood species; (h) miscellaneous species; and (i) minor forest produce. To account for the production of industrial wood outside the periphery of Government forests, private-owned forests and non-traditional forest areas named as "Trees outside Forest" (TOF), a norm of 10 per cent of the recorded production as provided by Forest Survey of India is adopted. Prices for the same are collected from the industrial wood prices.

91. The firewood quantity is worked out by applying the consumption rate of firewood from the results of NSS' 68th round survey. These estimates are then inflated by 7.64% (as per the sources and methodologies provided by the NSO) to account for the consumption of fuel wood in industries and religious purposes.

92. After consideration to the current methodology, the committee felt that there were a few issues related to the counting of TOF that need to be addressed. It was suggested that a new survey must be conducted by the DES either at the household-level or at the sawmill-level to estimate the usage of TOF. However, the Additional Chief Forest Conservator of Forests (F, B and A) informed the committee that an input survey on TOF is not under the purview of the State Forest Department and suggested that this survey be conducted by either the Revenue Department or the Local Self-Government Department.

3.5 Mining and Quarrying

93. The economic activities covered in this sector comprise the extraction of minerals from nature needed to transform the material into a marketable product. All these activities are covered to the extent that they are carried on at the mine sites. The estimates of GSVA for this sector are prepared by the production approach.

94. For estimating the value of output, the data on production and prices of minor minerals is obtained from the Department of Geology and Mining of the Government of Kerala. The input rates for minor minerals provided by Indian Bureau of Mines (IBM), Nagpur are used to arrive at the estimates of the GSVA.

95. The committee examined the present methodology followed to estimate GSVA in this sector. It was found that the Department of Geology and Mining presently has no provision to collect the market price of minerals. The Department of Geology and Mining collects royalty for various minerals as per the rate fixed by the Government every 4 years. The royalty unit is fixed in metric tons. Accordingly, royalty is collected per ton of minerals extracted. The prices of minerals are also fixed based on royalty. The Department of Geology and Mining Provides these figures on royalty to the DES, which in turn uses it to estimate GSVA in the sector.

96. The committee felt that the use of royalties in the place of market prices is not a scientific practice. The DES collects data on market prices of minerals every year. But these prices are not used in the estimation of GSVA. The committee recommends that the Department of Geology and Mining provides only the data on production of various minerals extracted – disaggregated by their dimensions – to the DES. The Department of Geology and Mining may also share the data available in the KOMPAS portal to the DES to improve the process of fixation of market prices of minerals every year.

97. To improve the quality of data on the production of various minerals, the committee has also recommended the introduction of a Drone Lidar Survey. Such a survey does not only improve the quality of data on extraction, but also helps prevent the illegal extraction of minerals across the State.

CHAPTER 4
SECONDARY SECTOR

4.1 Share and Its Significance

98. The secondary sector plays a vital role in Kerala's economy. In this sub-section an analysis of the Kerala's secondary sector is provided to contextualise the observations and recommendations on the data sources and methods of estimation.

99. *Value Addition.* The sector contributes significantly to the Kerala's Gross State Value Added. As per the quick estimates for 2022-23, the share of secondary sector in Kerala's GSVA (constant prices) is 28.40 per cent. If one were to analyse the long run sectoral composition of Kerala's GSVA (constant prices), it is found that till the year 2000, the share of secondary sector was the least among the 3 sectors of the economy. From the 2000s, secondary sector has grown constantly to overtake the Primary Sector as the 2nd largest contributor behind the Tertiary Sector. The recent trends in this regard are shown in Table 3.

Table 3 *Share of secondary sector in total GSVA*

Year	TOTAL GSVA at basic prices (Rs Lakhs)	GSVA of Secondary sector (Rs Lakhs)	Share of secondary sector in total State GSVA
2012-13	3,56,35,472.83	94,54,797.91	26.53
2013-14	3,71,65,147.08	97,84,333.60	26.33
2014-15	3,85,86,962.34	99,91,146.47	25.89
2015-16	4,06,48,006.52	1,10,61,889.13	27.21
2016-17	4,35,37,106.55	1,23,28,949.39	28.32
2017-18	4,60,75,399.56	1,29,86,625.63	28.19
2018-19	4,80,22,603.87	1,30,45,038.73	27.16
2019-20	4,93,97,423.15	1,32,48,024.64	26.82
2020-21	4,44,98,212.67	1,30,95,538.17	29.43
2021-22(P)	5,01,65,601.07	1,40,46,277.91	28.00
2022-23 (Q)	5,32,68,632.00	1,51,30,059.00	28.40

Note: Base year 2011-12
Source: Department of Economics and Statistics

100. Kerala is among the top 5 major States in terms of its per capita income. Kerala's share of population is around 2.76% of India, while its geographical area is only 1.18%. Table 4 below provides the share of Kerala's GVA in Indian secondary sector.

Table 4 *Share of Kerala in Indian GVA, secondary sector and total,* in percentage

Year	Secondary Total	Manufacturing	EGWS & US	Construction	Total GVA (All Sectors)
2011-12	3.9	2.4	2.5	6.8	4.1
2012-13	3.8	2.6	2.5	6.5	4.1
2013-14	3.8	2.4	2.2	7.0	4.1
2014-15	3.8	2.3	1.7	7.2	4.1
2015-16	3.7	2.4	1.8	7.1	4.0
2016-17	3.8	2.7	1.6	7.1	4.1
2017-18	3.8	2.7	1.8	6.9	4.1
2018-19	3.7	2.4	2.1	6.9	4.1
2019-20	3.7	2.5	2.1	6.7	4.0
2020-21	3.6	2.4	2.3	6.7	3.8
2021-22	3.6	2.3	2.5	6.5	3.9

Source: Department of Economics and Statistics

101. As it could be observed, the total share of secondary sector GVA is similar to that of overall State GVA. The share of manufacturing is lower at 2.3% and construction at much higher at 6.5%. The economic activities that contribute to the GVA under secondary sectors are classified into 3 subsectors for the purpose of computation, based on data availability. The sub sectors are: i) Manufacturing, ii) Electricity, gas, water supply and other utility services; and iii) Construction. Construction has the largest share among these 3 sub-sectors followed by Manufacturing. The share of these three sectors within the secondary sector, during the recent years is shown in Table 5.

Table 5 *Share of sub-sectors within the secondary sector in Kerala*

Year	Total GSVA of Secondary Sector	Share of Manufacturing (%)	Share of Electricity, Gas and Water supply (%)	Share of Construction (%)
2011-12	100	37	5	58
2012-13	100	41	5	54
2013-14	100	37	5	57
2014-15	100	38	5	57
2015-16	100	44	4	52
2016-17	100	46	3	50
2017-18	100	47	4	49
2018-19	100	44	5	51
2019-20	100	43	5	52
2020-21	100	45	5	50
2021-22 (P)	100	45	5	49
2022-23 (Q)	100	46	6	49

Note: Difference from 100 due to rounding off
Source: Department of Economics and Statistics

102. *Employment Generation.* The secondary sector contributes significantly to employment generation in Kerala. Industries such as textiles, food processing, and small-scale manufacturing provide jobs to a substantial portion of the population, especially in rural areas. According to Economic Review 2023, the share of Secondary sector in total employment in the State in 22-23 is 26.80 per cent. It comes third behind the tertiary and

primary sectors. However, share of secondary sector in employment in Kerala is higher than the all-India figure of 24.90 per cent. Data relating to the distribution of workers by industry of activity, measured from NSSO surveys for 2011-12 and 2021-22 for Kerala and India are provided in Table 6.

Table 6 *Distribution of usual workers by industry of activity, Kerala and India*

Section	NIC Section	2021-22		2011-12	
		Kerala	All India	Kerala	All India
A	Agriculture, Forestry, Fishing	23.54	45.46	25.53	48.9
B	Mining and Quarrying	0.15	0.33	0.61	0.54
C	Manufacturing	10.45	11.57	13.44	12.6
D	Electricity, Gas, steam and air conditioning supply	0.26	0.28	0.4	0.27
E	Water Supply, Sewerage, waste management and remediation activities	0.34	0.27	0.07	0.25
F	Construction	19.58	12.43	17.29	10.6
	Total secondary sector (C+D+E+F)	30.63	24.55	31.2	23.72
G	Trade, Repair	13.37	10.35	13.11	9.32
H	Transport and Storage	6.44	4.34	8.01	4.06
I	Accommodation, food service	2.33	1.75	2.95	1.64
J	Information, Communication	2.38	1.29	1.15	0.77
K	Financial and insurance activities	2.35	1.04	1.96	0.91
L	Real estate	0.23	0.20	0.34	0.2
M	Professional, scientific and technical activities	1.55	0.66	0.83	0.55
N	Administrative and Support Services	1.61	1.05	1.17	0.66
O	Public Administration, defence	2.00	1.50	2.27	1.67
P	Education	4.54	2.95	3.88	2.98
Q	Health, social work	3.78	1.29	2.83	0.92
R	Entertainment, arts, recreation	0.83	0.23	0.51	0.22
S	Other services	2.66	1.76	2.48	2.13
T	Household services	1.58	1.25	1.15	0.83
U	Extra territorial				
	Total	100	100	100	100

Source: NSS survey on employment-unemployment and Periodic Labour Force Survey

103. *Economic Diversification.* The presence of a diverse secondary sector adds to the economic resilience of Kerala. It reduces dependence on any single sector and provides avenues for economic diversification, thereby mitigating risks associated with fluctuations in other sectors.

104. *Exports.* Some industries within the secondary sector, such as coir products, cashew processing, processed food items and handicrafts, contribute to Kerala's export earnings. This helps in earning foreign exchange and enhancing the State's economic standing.

4.2 Methodology Currently Used in Estimation of GVA in Secondary Sector

105. The economic activities that contribute to the GVA under secondary sectors are classified into 3 sub-sectors for the purpose of computation, based on data availability. The sub sectors are:

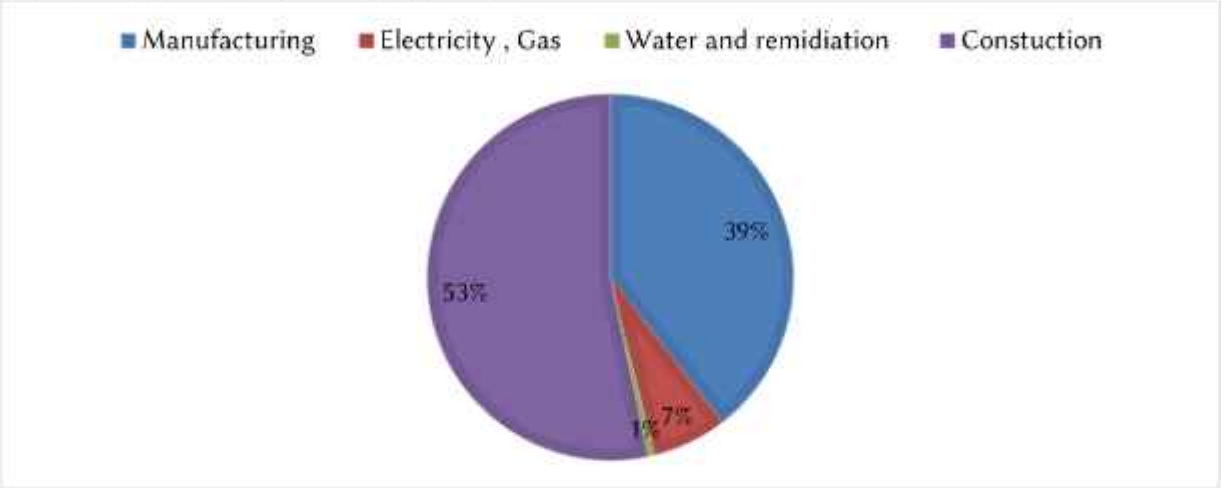
a. Manufacturing

b. Electricity, gas, water supply and other utility services.

c. Construction

106. The relative share of the sub-sectors (2020-21) is provided in Figure 1.

Figure 1 *Share of GVA in secondary sector*



Source: Department of Economics and Statistics

107. The following section provides the summary of the same.

Manufacturing

108. GVA arises from the organised and un-organised sectors. The organised sector includes a) Public corporations : Railway Workshops and Production Units b) Public corporations: Other Departmental Enterprises (DEs) c) Public corporations: Non Departmental Enterprises (NDEs), d) Private Companies/corporations; and e) Private Non – corporate entities. The unorganised sector includes the Private Unincorporated Enterprises.

a. *Public corporations: Railway Workshops and Production Units.* Main Data source is Railway Budget Documents and Wholesale Price Index (WPI). Estimates of GVA is allocated to the States on the basis of State-wise salaries in the case of production units.

b. *Public corporations: Other Departmental Enterprises (DEs).* Main Data source is Budget Documents and Wholesale Price Index (WPI). GVA of Central DEs is allocated to the States on the basis of the location of the DE.

c. *Public corporation: Non Departmental Enterprises (NDEs).* Main data source is Annual Reports of NDEs collected by DES and WPI.

d. *Private Companies.* Data source is MCA 21 database for the annual reports of Private Sector Companies and Annual Survey of Industries (ASI). If ASI data not available, Estimates of GVA are compiled by CSO using production for the Private Sector Companies using MCA 21 database and allocated to States (by compilation category)

on the basis of State-wise value added in manufacturing (total, not institution-wise) as per last available ASI.

e. *Private Quasi-corporations.* Data sources are ASI, Index of Industrial Production (IIP), and WPI. Estimates of GVA are prepared from ASI for quasi-corporations (Factories covered under ASI but not registered under Companies Act). If ASI data is not available, estimates of the preceding year are extrapolated using IIP and WPI.

f. *Private Unincorporated Enterprises.* Data sources are NSS 67th Round ES, 2010-11 and 68th Round EUS, 2011-12, IIP and WPI. GVA for the year 2011-12 is compiled using value added per effective worker from NSS 67th Round and number of effective workers from NSS 68th Round. The benchmark estimates are moved to subsequent years using the State's growth rate of GVA-manufacturing as estimated by ASI, to get the State-level estimate. For the year when ASI is not available, the preceding year estimates are moved using IIP and WPI.

Electricity, gas, water supply and other utility services

109. **Electricity.**

a. *Public corporations. Departmental Enterprises (DEs).* Data source is Budget Documents of Union and State Governments. GVA of State DE is estimated by using AFS of Kerala State Electricity Board. *Central DEs are allocated to the States on the basis of the location of the Des.

b. *Public corporations. Central Non-Departmental Enterprises Electricity generating companies.* Data source is Annual Reports of public Sector electricity generating companies. Estimates of GVA of these multi-state companies is allocated on the basis of State-wise electricity generated

c. *Public corporations. Central Non-Departmental Enterprises Power (Grid Companies).* Data sources are Annual Reports of Public Sector power grid companies, State-wise number of employee's value of assets: Public Enterprises survey of DPE. State-wise quantity of electricity sold: CEA. Estimates of GVA at current prices are allocated to States in the case of multi-state NDEs. CE is distributed on the basis of the number of employees in each State in proportion to State-wise employment in that NDE, while OS is distributed in proportion to the State-wise gross block (Value of Assets) of that NDE.

d. *Private Corporations.* Data sources are MCA 21 database for the annual reports of Private Sector Companies. State-wise quantity of electricity generated and sold by private companies: CEA. Estimates of GVA allocated on the basis of sum of number of units of electricity generated and number of units of electricity sold by private companies. The sum of number of units generated and number of units sold is taken assuming that the companies either generating electricity or involved in distribution.

110. **Gas.**

a. *Public corporations. Central Non-Departmental enterprises (NDEs).* Data source is Annual reports of Public Sector electricity generating. NDE-wise GVA is allocated among States based on State-wise gas sold by the NDE.

b. *Public Corporations. Other Non-Departmental Enterprises (NDEs).* Data source is Annual reports CE is distributed on the basis of the number of employees in each State in proportion to State-wise employment in that NDE, while OS is distributed in proportion to the State-wise gross block(value of Assets) of that NDE.

c. *Private Corporations.* Data source is MCA 21 database for the annual reports of Private Sector Companies. Estimates of GVA compiled and allocated on the basis of State-wise revenue of the Companies.

d. *Private Unincorporated Enterprises. Gobar gas.* Data source is State-wise value of production: Khadi and Village Industries Commission (KVIC). State-wise GVA is calculated as the value of production at current prices. This is duly adjusted for share of KVIC in total biogas plants installed up to current year.

111. **Water supply.**

a. *General Government – State administrative departments.* Estimates of GVA compiled using production approach. Budget documents of State Governments and CPI from MOSPI are the data sources.

b. *Public corporations – non-departmental enterprises.* Estimates of GVA compiled using AFS of Kerala State Water Authority

c. *Private Corporations.* Data source is MCA 21 database for the annual reports of Private Sector Companies and CPI from MOSPI. Estimates of GVA compiled and allocated to the States on the basis of State-wise annual wages of workers in the industry as per NSS 68th Round.

d. *Private unincorporated enterprises.* NSS 68th Round EUS, 2011-12 and CPI from MoSPI. For the base year, the estimate of GVA is calculated as Wage per day. Number of working days and allocated to the States on the basis of State-wise annual wages in the activity as per NSS 68th Round. For the subsequent years, the growth rate of GVA at current prices of Private corporate sector at the national-level in this category is used and allocated according to the base year proportions.

112. **Remediation (recycling).**

a. *Public and private corporations.* Data sources are ASI, IIP and WPI. State-wise GVA are obtained from the result of ASI. For the year when ASI is not available, the previous year's estimates are moved using IIP and WPI.

b. *Private unincorporated enterprises.* NSS 67th Round EUS, 2010-11 and 68th Round EUS, 2011-12 (for the unorganised portion of recycling). National estimates of GVA have been allocated to the States on the basis of State-wise GVA as per NSS 67th

round. The estimates for unorganised recycling are moved to subsequent years using IIP and WPI and are replaced by ASI when its result becomes available.

113. **Sewerage and sanitation.**
   a. *General Government – State administrative departments.* Data Source is Budget documents of State Governments. Estimates of GVA compiled using Budget documents of State Government and Local self-Government.
   b. *Private corporations.* MCA21 database for the annual reports of Private Sector companies. Estimates of GVA compiled using Production approach in the case of Private Sector Companies and allocated on the basis of base GVA obtained from NSS 68th Round.
   c. *Private unincorporated enterprises.* Data source is NSS 67th Round ES, 2010-11 and 68th Round EUS, 2011-12. National estimates of GVA have been allocated to the States on the basis of State-wise GVA as per NSS 67th Round. For the subsequent years, the growth rate of GVA at current prices of Private Corporate Sector at the national-level in this category is used and allocated according to the base year proportions.

114. **Construction.** GVA from construction subsector arises from the operations of establishments under the categories a) General Government: Departmental Enterprises, b) Public Corporations: Departmental Enterprises, c) Public Corporations: Non-Departmental Enterprises, d) Rural/Urban residential buildings (RRB), e) Rural/Urban – non-residential buildings and other construction works f) Plantation in the household sector and g) Residual Sector
   a. *General Government: State Administrative Departments.* Main source of data is Budget documents for Union and State Governments, Annual accounts of local bodies. GVA of State Government in Construction is arised from State Government Budget documents. GVA of Central Government in Construction is allocated to States based on the information in the Budget documents. Expenditure to GVA ratio is calculated in base year and same ratio is using in subsequent years also.
   b. *Public Corporations: Departmental Enterprises.* Main source of data is Budget documents for Central and State Governments, GVA is calculating using Expenditure – GVA ratio. Estimates of Central DEs are allocated to the States using State-wise outlay on construction.
   c. *Public Corporations: Non-Departmental Enterprises.* Main source of data are Annual reports of non-departmental commercial undertaking, State-wise number of employees and value of assets Public Enterprises from Survey of Department of Public Enterprises(DPE) and Length of highway awarded (Number of Kilometres) in Public Private Partnership (PPP) and Engineering, Procurement and Construction(EPC)projects: website of National Highway Authority of India(NHAI).

Estimates of GVA allocated to States by CSO in case of multi-state NDEs. In the case of NHAI, GVA is allocated using State-wise length of highways awarded under PPP and EPC projects in the year. In the case of other NDEs, CE is distributed on the basis of the number of employees in each State in proportion to State-wise employment in that NDE, while Operating Surplus is distributed in proportion to the State-wise gross block (Value of Assets) of that NDE.

d. *Rural/Urban residential buildings (RRB).* Main data source NBO/DES for prices of cement, I&S, bricks and timber and wages of urban labour. The estimates of new construction and repairs and maintenance in respect of rural and urban non-residential buildings of AIDIS (All India Debt and Investment Survey) are moved to later years with the help of growth rate in the number of new dwellings and General Pucca Construction Index (weighted index of Prices of building materials (i.e. Cement, Iron and Steel Bricks and Timber), labour and fixtures and fittings) prepared by DES. In the absence of building statistics/General Pucca Construction Index, AIDIS are moved to later years with the help of inter-censal growth rate in the number of dwellings and Price index,

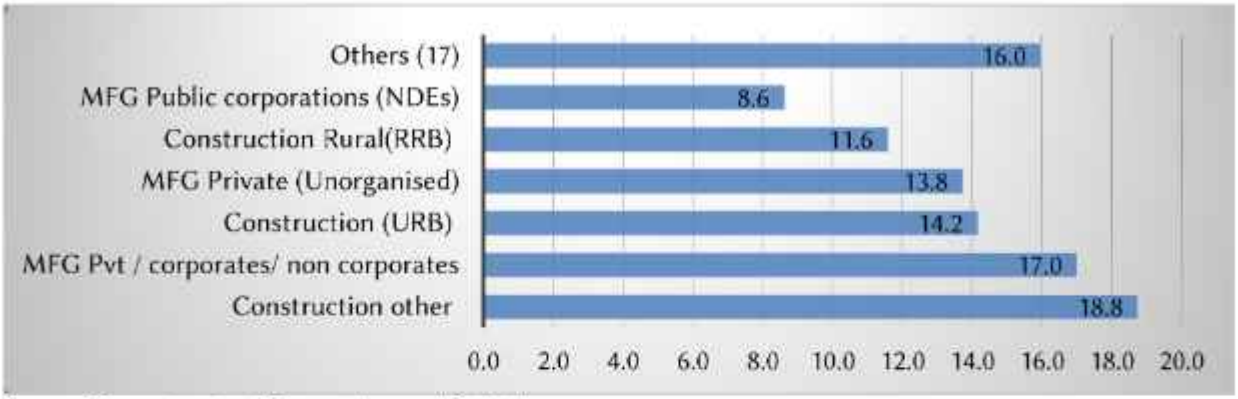
e. *Rural/Urban – non-residential buildings and other construction works.* Main data source is All India Debt and Investment Survey (AIDIS) 2013 for capital expenditure in R/U non-residential buildings and other construction works. Base year estimates are prepared using AIDS 2013 expenditure in rural and urban non-residential buildings. The estimates of new construction and repairs and maintenance in respect of rural and urban non-residential buildings of AIDIS are moved to later years with the help of growth rate in the number of new non-residential buildings and General Pucca Construction Index (weighted index of Prices of building materials (i.e. Cement, Iron and Steel Bricks and Timber), labour and fixtures and fittings) prepared by DES. In the absence of building statistics/General Pucca Construction Index, AIDIS are moved to later years with the help of inter-censal growth rate in the number of non-residential buildings and Price index.

f. *Plantation in the household sector.* Data source is State-wise area under cultivation for plantation crops: National Horticulture Board (NHB) and Commodity Boards. All India estimates of GVA of construction in plantation in the household sector are distributed to the States using State-wise information on increment in area under cultivation of the plantation crops.

g. *Residual Sector and Other households.* Residual Includes data on Private Corporate Sector and other un-allocated portion of GVA construction at the national-level. Estimate allocated on the basis of a composite indicator using State-wise consumption of cement (weight: 19.66%) and iron and steel (weight: 80.34%). Other Households Includes Non-Profit Institutions Serving Households (NPISH) and unincorporated enterprises not covered in AIDS. Obtained as residual through the commodity flow

method of the household sector and allocated on the basis of a composite indicator using State-wise consumption of cement and iron and steel (same as residual sector).

Figure 2 *Relative share of institutional composition within secondary*



Source: Department of Economics and Statistics

4.3 Key Observations on the Current Methodology

115. An analysis of the relative importance of institutional category is undertaken to appreciate the data sources as well as rigor of estimation methodology. Figure 2 provides the relative share of institutional composition within secondary sector in Kerala.

116. There are 31 institutional categories within the secondary sector. Out of these 31 categories, DES able to provide disaggregated estimation only for 23 categories. For the other 8 categories due to current methodology, data sources and since the estimates are allocated from national-level no disaggregated estimation of GVA is available. For example, in manufacturing the corporates and non-corporates institutional categories are provided with combined estimates constituting around 17% of the total secondary sector GVA of Kerala.

117. The other important factor to note that 8 out of 23 categories contribute to 84% of the GVA share. The category "other households" obtained as residual through commodity flow method constitute the highest share of 18.8%. Further the 'residual sector" (Private sector and unallocated GVA portion at the national-level) in construction constitutes another 6.9% and thus taking these two-category share to 25.7%.

118. It is important to note that in the six categories constituting 84% of the GVA of the secondary sector, the methodology involves national data sources and allocations on parameters that are not current. The key observations on subsector methodology are given in the following sections.

Manufacturing

119. The GDP series with base year 2011-12 made significant changes in data source and methodology to manufacturing sector than any other sector. The new series has replaced the earlier template of United Nation's System of National Accounts (UNSNA) with 2008 guidelines. The 2011-12 series fundamentally altered the GVA estimates from earlier volume-based estimates to value-based estimates. To achieve this shift new data sources and methodological changes introduced. It moved from establishment-based data obtained from Annual Survey of Industries (ASI) and Index of Industrial Production (IIP) to financial accounts based data compiled by the Ministry of Corporate Affairs (MCA21 database). This methodological shift was justified in the context of a) Value-based estimates capture the quality and technological changes of a modern and dynamic economy. Developed countries like USA follow this method b) MCA database is large with 3-5 lakh companies (out of the universal 10 lakh companies) compared to 4500 large companies under the RBI database used for estimating private corporate saving and investment C) Corporate results are available without time lag unlike the ASI survey data. D) Currently ASI data is not adequately capturing the value add beyond the establishment boundaries (a claim questioned by researchers)

120. This methodological shift and data source raised many concerns among researchers and data users especially since share of manufacturing, growth rates and even the direction of growth in some cases varied with estimates using the old series. The concern on overestimation of the GDP estimates led to careful review of MCA21 data source as well as other methodological changes. These reviews point out a) the methodological changes especially the multipliers used for blowing up the sample estimates to the universe are not available in public domain for any independent verification b) the income statements of the companies does not provide geographical location-wise breakup c) Only one Corporate identification number is allotted to a company resulting in distortion of multi-product company classification. More importantly the State-level allocation at the aggregate-level is based on ASI composition data. D) there are no reliable estimate of "active" companies distorting the sampling methods and scaling up estimates for the population

121. ASI survey carried out by DES is delayed and not coordinated with NSO efforts. ASI frame itself requires review and reconciliation with MCA21 for single establishment and multiple establishment companies as well as CIN mismatches between MCA and ASI. There is a need to coordinate ASI survey to ensure completion by DES along with the national schedule. Delays in ASI surveys result is use of last available data.

122. Kerala currently uses national IIP data for its estimation. Even though DES publish State IIP, not all compositional categories in manufacturing are operational in Kerala due to closure of companies in the sample set. The weightages are distributed to other categories.

123. During the estimation of State Income, the estimates based on Current Prices are calculated first. Then they are deflated using the relevant WPI. Two indices for WPI are used namely – a) General WPI and b) WPI for unorganised Manufacturing. Currently DES is using the WPI indices provided by Government of India (GoI), though the State had been collecting data and compiling both these indices. The WPI for unorganised Manufacturing at the State-level currently uses old base year, which has to be revised and updated.

124. *Manufacturing – Public corporations.* Other Departmental Enterprises (DEs): Involves both Central and State DEs. Currently, DES codes the State Budget document as per Economic cum Purpose classification and sends the value of State DEs to CSO, which reconciles the figure and adds to it the Central share of DEs and provides a consolidated figure to the State. The split between the Central and State components are not available.

125. It is found that many DEs and NDEs/Autonomous organisations are not sending their Annual Financial Statement to the Department of Economics and Statistics when requested. Time bound auditing of accounts and furnishing details when requested has to be ensured.

Construction

126. The methodology for construction GVA from the household sector is not capturing annual growth rates of construction activities in household sector. The inter-censal growth is very out-dated as we have only the 2011 census data now. Constant inter-censal growth rate is not truly reflecting the year on year changes. The possibility of using the 'building statistics' data, which are collected by DES annually may be examined.

127. The highest contribution from "Other households" obtained through residual allocation (using two commodities of steel and cement) reflect the inadequacies. The data source is NPISH and unincorporated entities not covered in AIDIS. The data sources given the significance in Kerala context requires a detailed review

128. Currently DES uses the all India Costs of Construction Index. This is an all India average figure and the ratio of weightage is based on an earlier study in 2015. Cost of construction index is generated from price data by DES. But the weightage used is based on an earlier study.

129. Except for the base year data none of the year-on-year changes are captured through any State-level data. The State-level data available with LSG and other agencies providing permits and licenses is not organised and made available for comparative study of estimates. The additional data sources with LSG and other institutions needs to be

evaluated for their adequacy and quality. Processes have to be put in place for improving the quality.

130. In the recent years Kerala has been investing in infrastructure through "off-budget" borrowings and other PPP modes. Relying purely upon budgetary document as current being done is not adequate in this context. It is understood so far KIIFB is not included in the estimation process. The value add of KIIFB as financing company may not capture the construction investments made through KIIFB and other SPVs There is a need to identify and capture data related to mega infrastructure projects within the State.

Electricity, gas, and water supply

131. As per DES the primary source that they currently use KSEB annual reports and Central allocation from public sector power generation companies. The current methodology moves the base year estimates with index on quantum of electricity/gas sales. The energy mix of the all generating companies are changing and hence base year estimates have to be revalidated. It is also not very clear how captives, group captives, distributed network generation, renewable energy GVA are arrived in the current methodology.

132. In response to climate change efforts are being made to encourage renewable especially solar energy in private sector at household and non-household sector. The emergence of "prosumer" economy in Solar energy needs to be studied with special surveys to capture both construction and operational GVA. Estimation methods and data sources needs to developed for this segment.

Remediation (recycling)

133. Currently the share of the remediation is less that 1% of the overall GVA of the secondary sector in Kerala. However, this segment is likely to grow in the future given the efforts of recycling, waste management and creation of "circular economy". Currently parameter based indirect estimation method is adopted. It is important to develop data sources and refined methodology for this segment given its importance in the future.

4.4 Recommendations

134. Institutional reforms and strengthening of DES: The most urgent and critical important task is to invest in capacity building and strengthening of DES. The current centralised approach for estimation of National Income has undermined the bottom-up philosophy of our national statistical system and weakened the capacity of DES to manage this complex task. Among other things the Government of Kerala should review its posting and transfer policy to retain sectoral expertise and sustain institutional memories. Kerala DES is comparatively better than many other States in terms of the different estimates compiled by the States in India as detailed in the Final report of the Committee for Sub-National

Accounts (CSNA). There is still a significant scope for improvement and there is an urgency given the requirements for the preparation for base year change in the near future. DES should prepare an institutional plan with the guidance of State Statistical Commission. The plan should detail the structural changes required in the department keeping in view the near future base year changes as well as staffing plan given the priority of tasks before DES.

135. Implementation Road Map on the recommendations of the Committee for sub-National Accounts: Media reports indicate that the Government of India has accepted the recommendations of CSNA. CSNA recommendations strongly advocates to strengthen the bottom-up approach to National Accounting System. DES in this context should prepare a gap report on its outputs, system and practices with that of CSNA recommendations. One set of recommendations of CSNA is related to MCA21 data sharing, improvement of ASI frame etc. DES should approach National Account Division for those data sets related to Kerala and build necessary capabilities to handle such large database. The other set of recommendation of CSNA is to organise and present currently available databases with the State to reduce dependence on central estimates based on allocation. The implementation road map should capture these two distinct but related requirements to strengthen the State's Statistical Systems.

136. Manufacturing data sources: Improving the quality and timely availability of the Annual Survey of Industries is the essential starting point in manufacturing GVA estimation. In this context CSNA recommends that the NAD can supply a list of large companies which cover 70-80% GVA of each compilation category at the all India-level to all the States. This will help the State to verify whether any branch of those large companies operate or not within their boundaries.

137. Further CSNA recommends that ASI frame with the CIN should be shared with the States. Alternatively, it recommends the States could be provided with a list of manufacturing units that are located in the State and belong to the MCA list of companies. This sharing will help to resolve issues around single or multiple establishments and CIN mismatches between ASI and MCA data

138. Private quasi corporations and Private unincorporated enterprises: This is an important segment for Kerala with a share of 13.8% of the secondary sector. Developing a more robust State-level IIP and WPI will facilitate improving the quality of estimates. For unincorporated the data from NSS 67th round and 68th round of Employment and Unemployment Survey. These are more than a decade old and require updated surveys to capture the changes in value added per worker as well as status of employment. Kerala does

not have its own IIP or WPI (Only few States in India do WPI at State-level and mostly restricted to Agriculture). Efforts must be made with priority to compile Kerala's own IIP and for this purpose a methodology could be finalised with the guidance of State Statistical Commission.

139. Enterprise Surveys: The State DES earlier used to be involved in the Enterprises Survey. Now the GoI is doing it on its own. The Enterprise Survey has to be strengthened by including the State. Alternatively, the State has to take up its own Enterprise Survey for which Survey Division of DES has to be strengthened.

140. Business Register: Maintenance of dynamic and updated Business Registers as frame is a challenge to all State DES. The importance of Business Registers to evolve reliable population parameters is emphasised by all the National Committees appointed for strengthening the National Statistical Systems. The quarterly estimates for the secondary sector without such building blocks is not feasible. DES should develop as part of the above mentioned implementation plan a road map to maintain business register in a definitive timeframe.

141. Construction Households: The current Commodity Flow method adopted for estimating GVA in urban and rural household segment has many limitations. Kerala should explore alternate methods using LSG data and housing scheme data available with the Government. The rates and ratios used in construction should be State specific to reflect the material consumption of Kerala. Developing an early understanding of the CBRI, Roorkee which is conducting all State specific studies for arriving at the rates and ratios is essential. Gaps if any of this study needs to be addressed through State Specific Surveys and highlighted during the base year revision discussions. Rajasthan State presented an alternate method to CSNA using Real Estate Regulatory Authority as well as data collected from its local bodies. Learning from this experience a similar attempt could be made by DES Kerala

142. Construction Other Households and Residual Sector: As indicated earlier more than 25% of share GVA comes from these two institutional categories. Both these segments are derived as residual. An alternate method has to be evolved through special studies and related surveys. A special attention is required for construction GVA from private sector through studying the off budget financial flows to private contractors and construction of large infrastructure projects

143. Electricity and Gas: The share of these segments is much lower to compared to all India averages. Kerala currently depends largely upon import of its energy requirements. In the

recent years however, significant efforts are being made to develop decentralised solar energy. A special study by ANERT/KSEB will help to understand the electricity generation in off-grid mode. The study should explore also data sources that be relied upon for future estimates. There has been significant structural shift in electricity generation and distribution towards private sector post 2003 Electricity Act. The captive, group captives and open access for procurement related deregulations facilitated this shift. Hence a study on private sector in electricity with the help of KSEB is essential to understand its growth within Kerala.

144. Remediation: The current methodology relies upon organised remediation efforts of State-level agencies such as KWA. The remediation efforts of Local bodies and private sector is not adequately captured. The current methodology, data sources etc require a review given the emerging nature of this segment.

145. Alternate data sources and methodology: In many ways given today's digital infrastructure and Big Data tools we are more equipped than ever before to check the veracity of data through multiple pathways. Kerala State has invested a lot in creating open database structure to break various silos and especially the efforts at LSG-level are unprecedented. Similarly, the Government of India has built a digital infrastructure and datasets though not easily accessible due to data security concerns. CSNA strongly recommends mining of large datasets with MCA, GST, CBDT etc for official statistics including GSDP estimates. Today we have datasets on interstate movements of goods and services to cross verify the production based methodology used to estimate GSDP. Though the task of mining these large datasets for the purpose of GSDP estimation is complex given the original departmental objectives of these datasets. Kerala should take a lead in conducting a study with multi-disciplinary team of experts – technologists, Big Data specialists, GST database analysts, Statisticians and economists – to develop a pathway to use these datasets. DES also should approach GoI for sharing data related to Kerala from all India data sets. DES could take the help of Kerala University of Digital Sciences. Innovation and technology to form this multi-disciplinary team along with GST department. The guidance of Kerala State Statistical Commission to draw up the Terms of Reference for this study team is essential along with its progress monitoring.

146. Quarterly Estimates: The study group recommends that the quarterly estimates of GSDP may be postponed till the time data availability from the bottom-up process improves to the satisfactory-level. Currently only 3 States (AP, UP and WB) are providing the quarterly estimates and WB with base year 2004-05. Without a robust State-level IIP methodology in the new context of MCA data, the bottom-up process will not be in place for GVA estimation. CSNA recommends using MCA data along with ASI for constructing weights

for IIP. The quarterly estimates may be attempted after ensuring all building blocks for bottom-up process is in place and along with proposals for next base year revision by NAD.

CHAPTER 5
TERTIARY SECTOR

5.1 Overview of the Composition of Tertiary Sector

147. The GDP estimates at the national-level are presented for economic sectors with each sector aggregated from the constituent sub-sectors. The sectoral classification follows the industrial classifications as adopted by the country. However for computational purposes, the activities are always grouped in to smaller sets of categories called the compilation categories. The States also follow these categories for presentation of GSDP.

Composition of the tertiary sectors in State income

148. The tertiary sector is one of the three broad sectors of the State economy; the other two being the primary sector and the secondary sector. The tertiary sector, usually called as the services sector consists of the following sub-sectors of the economy.

a. Trade and repair services
b. Hotels and restaurants
c. Railways
d. Road Transport
e. Water transport
f. Air Transport
g. Services incidental to transport
h. Storage
i. Communication and services related to broadcasting
j. Financial services
k. Real estate, ownership of dwelling and professional services (including IT)
l. Public administration
m. Other services (including health and education)

149. Each of the above subsectors is then further classified based on National Industrial Classification (NIC 2008). Although each activity when totaled should correspond to GSDP, States follow a broader classification based on practical considerations of data availability and sound methodologies to arrive at a reliable GSDP calculation. The States follow a much broader sectoral classification since the introduction of 2011-12 base year and new institutional categories against the conventional method of following groupings adopted by NSO.

150. The change of base year resulted in calculation of State income data due to the fact that much of the information needed for calculation of State income based on new approach is

to be provided by NSO rather than the State DES. This very factor resulted in loss of State specific nature of data.

5.2 An Overview of the Shares of Sectors in the GSVA

151. Table 7 provides the distribution of GSVA among the sub-sectors of the tertiary sector from 2011-12, the year forming the base year for the current series. The three sub-sectors viz. trade, real estate, other services together account for around 70 per cent of the tertiary sector GSVA. The category 'other services' in fact include two major sectors education and health. Financial services, Road Transport and Public Administration follow this (23 per cent). Given that the entire tertiary sector share is slightly over 60 per cent of the total GSVA, these sectors indeed play an important role in the economy and their reliability can substantially improve the overall reliability of the GSDP.

Table 7 *Sub-sector-wise GSDP of Kerala from 2011-12 to 2021-22*

Item	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Trade and repair services	24.49	25.89	24.93	25.55	25.79	24.57	24.97	25.88	26.38	24.32	24.91
Hotels and restaurants	3.05	2.89	2.67	2.48	2.43	2.44	2.35	2.26	2.36	1.27	1.66
Railways	0.51	0.57	0.53	0.54	0.54	0.53	0.60	0.52	0.43	0.24	0.28
Road Transport	10.36	10.13	10.42	10.17	9.43	9.15	7.89	7.76	7.34	6.61	7.69
Water transport	0.15	0.11	0.08	0.09	0.07	0.09	0.10	0.12	0.11	0.12	0.13
Air Transport	0.14	0.24	0.17	0.27	0.42	0.4	0.35	0.17	0.28	0.11	0.11
Services incidental to transport	0.32	0.3	0.27	0.27	0.28	0.41	0.47	0.45	0.42	0.33	0.31
Storage	0.02	0.02	0.01	0.01	0.01	0.02	0.02	0.03	0.03	0.03	0.02
Communication and services related to broadcasting	2.99	2.62	3.04	3.14	3.32	3.17	2.92	2.86	3.04	3.45	3.22
Financial services	7.41	7.26	7.56	7.84	8.31	8.18	7.74	8.56	8.39	10.22	8.88
Real estate, ownership of dwelling and professional services (including IT)	21.85	22.78	24.41	25.53	25.5	25.88	26.59	26.51	26.17	30.54	27.41
Public administration	8.21	7.49	7.00	5.82	5.54	5.68	5.92	5.7	5.26	5.31	6.02
Other services (including health and education)	20.52	19.71	18.93	18.28	18.37	19\.46	20.09	19.18	19.79	17.45	19.34
GSVA in Rs Lakhs	19322139	21044915	22439908	23444940	25044795	26614463	28326851	30366164	31718772	26904033	31418583

Source: Department of Economics and Statistics

Share of Workers among Tertiary Sector

152. It is interesting to look at the share of workers in these sectors as the labour input is directly related to the value addition. The Table 8 gives the Distribution of workers among the sub-sectors constituting the tertiary sector. Overall one notices that the percentage share of workers in the tertiary sector has shown an increase from 44.9 per cent to 47.6 per cent during 2011-12 to 2021-22. The share of Tertiary sector in the total GSDP of the State for 2021-22 is around 64 per cent and has consistently shown an increasing trend at the cost of the primary sector namely the crop production sector.

Table 8 *Share of workers among tertiary sector in 2011-12 and 2021-22*

Sub-sectors of tertiary sector	2011-12	2021-22
Trade and repair of motor vehicles, household goods	30.65	30.00
Hotels and Restaurants	6.57	4.90
Transport (road, rail, air)	17.02	12.72
Services (postal, courier, telecom, real estate, IT, Legal, rental etc)	13.01	17.91
Public Administration and defence	5.06	4.20
Education (including coaching and tuition)	8.64	9.54
Human health activities and care services	6.30	7.95
Other services including personal services	12.76	12.78
Per cent share of workers in tertiary to total workers	44.9	47.57

Source: Department of Economics and Statistics

5.3 Issues in GSDP Compilation after Shifting to the Base Year 2011-12

153. The shifting of the base year from 2004-05 to 2011-12 by the National Statistical Office (NSO) brought about major changes in the presentation of State income related data. It has also been highlighted by experts that this had a major impact on the compilation of State income as large part of the data needed for the new approach had to be provided by NSO rather than the DES using locally generated information. For Kerala, the shift in the base year increased the current price GSDP for 2011-12 by 7.55 per cent compared to the estimate for the same year using the 2004-05 base year. Such increase usually accompanies the introduction of a new base year that has better coverage of some sectors.

154. The key recommendations of the sub-national accounts committee for broad sub-sectors of the tertiary sector were to examine alternate data sources like GST and new surveys and more appropriate indicators from these surveys. Some of these surveys like the Economic Census, Annual Survey of Services Sector Enterprises etc were expected to be available before the next revision of base year. The Committee suggested the analysis of GST data for better understanding of the value addition form most sectors in the services sector; with the total revenue collection from the GST data at the broad-level of economic activity as a good indicator for the Quarterly estimates at the State-level. In particular it also suggested a mapping of the GST and MCA data for better allocation of the overall value added from these sectors. For the Hotels and Restaurants sector, differential Weights based on domestic and foreign tourists was suggested for use for State-wise allocation in line with

the logic of effective labour input was another suggestion. Most of the recommendations actually needed in-depth studies by the States on data from sample surveys on enterprises.

5.4 Methodology Followed in Estimating the GSVA for Various Sub-Sectors

155. As mentioned in the beginning, the various sub-sectors in the tertiary sector, are grouped as follows for the compilation of GSVA

a. Trade and repair services
b. Hotels and restaurants
c. Railways
d. Road Transport
e. Water transport
f. Air Transport
g. Services incidental to transport
h. Storage
i. Communication and services related to broadcasting
j. Financial services
k. Real estate, ownership of dwelling and professional services (including IT)
l. Public administration and defence
m. Other services(incl. Health and Education)

Table 9 *Shares of sub-sectors in GSDP for Kerala in 2011-12 and 2020-21*

Sub-sectors	2011-12	2020-21
Trade and repair services	14.07	16.40
Hotels and restaurants	1.75	0.80
Railways	0.29	0.32
Road transport	5.95	3.76
Water transport	0.08	0.07
Air transport	0.08	0.06
Services incidental to transport	0.18	0.17
Storage	0.01	0.02
Communication and services related to broadcasting	1.72	2.01
Financial services	4.25	5.32
Real estate, ownership of dwelling and professional services	12.55	18.16
Public administration	4.71	3.65
Other services(incl. Health and Education)	11.79	12.06

Source: Department of Economics and Statistics

156. Table 9 gives the shares of the subsectors in the total GSDP of the State. Among the key sectors, there is an increase in the contribution of most sub-sectors except for hotels, road transport and public administration. Clearly these sectors contribute over 60% to the overall Gross State Domestic Product (GSDP) of Kerala. It is a growth-oriented sector, growing approximately 16% in current prices and around 8% in constant prices. Consequently, the tertiary sector plays a pivotal role in the Kerala economy. Improving the methodology for estimating the Gross Value Added (GVA) from the services sector is

crucial for enhancing the accuracy of the overall GSDP as this would provide a more realistic reflection of the dynamic changes taking place in the economy. At the same time some of the groups have very significant shares while others have very small shares implying that the efforts to improvement should concentrate on the sectors having a significant contribution to the State's economy.

Current methodology

157. The overall methodology followed by the DES is a combination of production and income approach. For this purposes the activities in the sub-sectors are grouped by institutional categories that facilitate the compilation. The present institutional category-wise breakup are followed from the 2011-12. These institutional categories are:
    a. Public or Government sector:
        1. General Government (GG)
        2. Departmental Enterprises (DE)
        3. Non-departmental Enterprises (NDE)
    b. Private Corporate Sector (Private Corporate and Quasi-corporate)
    c. Unincorporated Sector (Un-organised enterprises in household sector)

158. For the GG and DE the income approach is used. The income (value added) generated through the production activity is distributed between the two factors namely, labour and capital, which receive respectively the salaries and the operating surplus/mixed income of self-employed. Thus the income approach accounts GDP as the sum of compensation of employees, gross operating surplus and gross mixed income plus taxes net of subsidies on production.

159. Production approach is used in the case of NDE and the Private Corporate part. For the Unincorporated Part, GVA estimates are compiled indirectly through Labour Input Method (LI Method) by using the benchmark-indicator procedure. Benchmark GVA estimates are prepared at detailed activity-level for the base year by using estimated labour input and the value added per worker (VAPW). For subsequent years, GVA is estimated by extrapolation using indicators relevant to each individual activity of the economic activity:

160. Source of data for the public part are the Annual Financial Statements (AFS) collected from the following establishment.

161. Regular data sources used are the Annual Reports of NDEs. There are 144 NDEs in Kerala, out of which 11 are in Trade and 3 are in hotel and restaurant. GVA of State NDEs are computed by the State while GVA of central NDEs are allocated using the State-wise data of Department of Public enterprises. Production Approach is followed in

compiling GVA from these annual reports. The State undertakings engaged in respective sectors are as given below:

a. Trade and repair services

1. Kerala State beverages manufacturing and marketing corporation Ltd
2. Kerala agro industries
3. Kerala handicrafts development corporation Ltd
4. Kerala State bamboo corporation Ltd
5. Kerala State Cashew Development corporation Ltd
6. Kerala State civil supplies corporation
7. Kerala State handloom development corporation Ltd
8. Kerala State industrial enterprises ltd
9. Flavourit spices trading limited
10. Kanjikode electronics and electrical limited

b. Hotels and restaurants

1. Bekal resorts development corporation limited
2. Kerala tourism Development Corporation limited
3. Kerala Tourism Infrastructure Limited

c. Road transport

1. Kerala State road transport corporation
2. Pratheeksha bus shelters Kerala limited
3. Kerala rapid transit corporation limited
4. Glaube international private limited
5. KSRTC – swift limited

d. Water transport

1. Kerala shipping and land navigation corporation
2. Kerala State maritime development corporation ltd
3. Kerala waterways and infrastructures limited
4. Kochi water metro limited

e. Services incidental to transport

1. Vizhinjam international seaport ltd
2. Kannur international airport limited
3. Azhikkal port limited
4. Thiruvananthapuram international airport limited
5. Vizhinjam international seaport ltd
6. Kannur international airport limited
7. Azhikkal port limited
8. Thiruvananthapuram international airport limited

f. Railways

1. Kochi Metro Rail Limited
2. Kerala High Speed Rail Corporation Limited

3. Kerala Rail Development Corporation Limited

g. Storage

1. Kerala State Warehousing Corporation Ernakulam

h. Broad casting

1. Kerala State film development corporation ltd
2. Educare printers and publishers

i. Other services

1. Kerala Artisan development corporation Ltd
2. Kerala Ex Servicemen development corporation Ltd
3. Kerala Khadi and Village Industries Board
4. Kerala Medical Services Corporation Ltd
5. Kerala School Teacher and NT Corporation Ltd
6. Kerala State Coconut Development Corporation
7. Kerala State Coir Corporation Ltd
8. Kerala State Costal Area Development Corporation Ltd –KSCADC
9. Kerala State Horticultural Products Development Corporation Ltd
10. Kerala State Housing Board
11. Kerala State IT Infrastructure Ltd
12. Kerala State Welfare Corporation for Forward Communities Limited
13. KITCO Ltd
14. Kerala State Polymer Products Development and Workers Welfare
15. Overseas Development and Employment Promo Ltd
16. The Kerala State Womens Development Corp Ltd
17. Vision Varkala Infrastructure Development Corporation Limited
18. Kerala Medical Infrastructure Development Limited
19. Ashwas Public Amenities Kerala Limited
20. Clean Kerala Company Limited
21. Cochin Smart Mission Limited
22. Kerala State Development Corporation For Christian Converts From Scheduled Castes and Recommended Communities
23. Impact Kerala Limited

j. Professional services

1. Kerala State Pottery Manufacturing Marketing and Welfare Development Corporation Limited
2. Muziris Projects Limited
3. Champs Boat League Limited
4. Kerala Life Sciences Industries Parks Private Limited
5. Sports Kerala Foundation
6. Trivandrum Engineering Science and Technology Research Park
7. Kerala Infrastructure and Technology For Education

8. Kerala Academy for Skills Excellence

Estimation procedure of GVA in different sectors

Trade and repair services

162. The trade sector covers wholesale and retail trade in all commodities produced domestically, imported, or exported. It includes activities of (i) Maintenance and repair of motor vehicles (ii) Sale of motor vehicles (iii) Whole sale trade except of motor vehicles + Auctioning activities (iv) Repair of personal and household goods (v) Retail trade (except motor vehicles). Wholesale trade covers units, which resell without transformation new and used goods, generally to the retailer and industries, commercial establishments, institutional and professional users or to other wholesalers. Retail trade covers units, which mainly resell without transformation new and used goods for personal or household consumption.

163. **GVA calculation.**

a. Public Part: Estimates of GVA relating to public sector in trade are based on the analysis of accounts of the public sector enterprises and Budget documents of Government. For the Non-Departmental Enterprises: Compensation of employees (CE) and Operating Surplus (OS= GVA – CE) is considered for the estimation of gross Value of Assets of that NDE.

b. Private Corporations: Estimates of GVA at current prices allocated on the basis of Labour Input in the sector from NSS 68th Round. For subsequent years, GVA at current prices are obtained by using indicators provided by CSO. Quick estimates are prepared from previous year's average growth.

c. Private Unincorporated Enterprises: Base year State-wise GVA allocated by NSO using GVAPW from NSS 67th Round and labour input from NSS 68th Round. For subsequent years, GVA at current prices are obtained by using CSO provided indicators.

Table 10 *GVA in trade and repair services – methodology of estimation*

		2011-12	2021-22
Public	DE	1,20,742	6,75,893
	NDE	65,443	1,50,133
	State GVA	1,86,185	8,26,026
	Sales Tax	18,93,883	59,09,297
	Sales Tax Index	100	312.020
Private Corporate/Organised	NAS-GVA	84,51,100	3,38,23,679
	State GVA Distributed	5,36,864	16,75,123
	Balance allocation	0	8,26,249
	State GVA	5,36,864	25,01,372
Private Unincorporated	State – NAS-GVA	41,62,017	1,29,86,325
	Balance allocation	0	-17,39,675
	State GVA	41,62,017	1,12,46,650
Trade and Repair total		48,85,066	1,45,74,048

Source: Department of Economics and Statistics

164. **Comments/remarks.**

a. For the estimation of GVA, total number of workers engaged in trade sector and GVA/W in base year is required. As this is not available CSO provides these indicators by apportioning All India indicators using national-level criteria. This may not be a realistic methodology for Kerala given its wage structure and trading pattern which is different from other States. The State requires enterprise surveys and/or household surveys for estimating LI and GVA/W in the base year and thereafter calculating annual growth. Coverage of emerging activities like on-line trading needs to be studied as such trading was not very significant when the base year for the current series was fixed.

b. The VAPW which is a constituent of LI method for compilation of GVA in both private corporate and unincorporated sector is still using the data from NSS 67th and 68th rounds which are from 2012-13. There is urgent need for revision of these data sources. Also the advent of online cabs, taxi services etc. are not accounted for even as a rental trade service. There is a need of survey from the part of the State to have a realistic estimate of these unaccounted services.

Hotels and restaurants

165. Hotel and restaurant sector covers services rendered by hotels and other lodging places, restaurants, cafes and other eating and drinking places. This is a very fast growing sector for Kerala. Given the higher young population of the State and changing landscape with regards to liberty and choice more than many Indian States, restaurants, café, eateries etc. have huge growth potential in the State and their contribution to the GVA of the State is as such important.

166. **GVA calculation.**

a. Public Part: Estimates of GVA relating to public sector are based on the analysis of accounts of the public sector enterprises and Budget documents of Governments. For Non-Departmental Enterprises, methodology as in the trade sectors is followed.

b. Private Corporations: Estimates of GVA at current prices compiled using production approach and allocated on the basis of tourist arrivals (domestic and international tourists).

c. Private Unincorporated Enterprises: Base year State-wise GVA compiled using GVAPW from NSS 67th Round and labour input from NSS 68th Round. For subsequent years, current prices estimates are prepared using growth in the corporate sector.

Comments/remarks.

a. For the estimation of GVA, total number of workers engaged in Hotel and restaurant sector and GVA/W in base year requires is required. In the absence of this at the State-

level, CSO provides these indicators by apportioning All India indicators using national-level criteria. Large numbers of establishments operate as street food vendors, especially in specific office areas or tourist spots.

b. Special establishment surveys are necessary for estimating LI and GVA/W in base year and calculating annual growth. More eateries having online presence means the change in structure of LI and can be captured by a fresh survey only.

c. At present data regarding arrival of tourists collected by the DES are not used for any type of estimation of GVA. Arrival of tourist can be considered as a proxy indicator for the performance of this sector. Once LI and GVA/W in base year are estimated from surveys, tourist arrival data may be taken as an indicator for estimating annual growth.

Transport Sector

167. Transport is fundamental to supporting economic growth, creating jobs and connecting people to essential services such as healthcare or education. The State's transport infrastructure is vital for connecting its diverse regions, facilitating economic activities, and enhancing the overall quality of life for its residents. The transport sector is a cornerstone of Kerala's economy and society, supporting economic growth, trade, tourism, employment generation, and social inclusion. The economic activities covered in this sector are Transport by railways, road transport (mechanised and non-mechanised), Water transport (coastal, ocean and inland), Air transport and Services incidental to transport. The NIC 2008, sections for these activities are:

491: Transport via railways.
492: Other land transport.
493: Transport via pipeline
501: Sea and coastal water transport.
502: Inland water transport.
511: Passenger air transport
512: Freight air transport.
522: Supporting and auxiliary transport activities

168. The percentage share of various sub-sectors of the transport sector in the total GVA of the State is given in Table 11. It can be observed that the Road Transport remains the most dominant form of transportation with very high share of GVA in transport sector.

Table 11 *Share of each sub-sector of transport in the total GVA*

Sub Sector	2011-12	2017-18	2020-21	2021-22
Railways	0.29	0.51	0.19	0.19
Road Transport	5.95	7.23	3.67	4.54
Water Transport	0.08	0.09	0.07	0.08
Air Transport	0.08	0.33	0.07	0.07
Services incidental to transport	0.18	0.38	0.17	0.19
Total Transport	6.59	8.53	4.16	5.07

Source: Department of Economics and Statistics

169. Table 11 shows the GVA value of each subsector in the GVA as well as their percentage contribution to tertiary sector and share in the transport sector. From Table 12, it can be noted that for Kerala the road transport accounts for 88 per cent of the GVA of the transport sector.

Table 12 *Share of each sub-sector of transport in the total GVA*

Sub sectors (Transport)	Rs in Lakhs	% to total Tertiary	% to Transport
Railways	1,28,449	0.3	4.5
Road Transport	25,17,525	5.87	88.18
Water Transport	47,985	0.11	1.68
Air Transport	44,912	0.1	1.57
Services Incidental to Transport	1,15,991	0.27	4.06
Transport Total	28,54,862	6.66	
Total Tertiary	4,28,67,433		

Source: Department of Economics and Statistics

Railways

170. Railways serve both passenger and freight transport and are the most important means of transport in the country after road. As the railway is under the Central Government, the GVA is obtained by economic classification of Budget document related to railway. Mainly the constituents are compensation to employees and gross operating surplus. The GVA at current prices is obtained from the production account of Railway Budget as the sum of CE and gross operating surplus. State allocation is based on indicators like section-wise passenger and freight earnings, State-wise number of employees etc.

171. Since most of the GVA calculation accruing to the State is based only on the compensation of employees and gross operating surplus, possible exclusions include earning from parking lots, vendors in and around station complexes, revenue from advertising etc. A survey is needed to identify average earning from such excluded items.

Transport other than railways

172. The main data sources used for these sub-sectors are Budget documents of Central and State Governments relating to transport activities; Annual reports/accounts of Central and State Government enterprises and Private sector registered companies relating to transport activities; Labour Input estimates from Employment and Unemployment survey data of

NSS 67 and 68th round and population census 2011 estimates of work force; Enterprise surveys results of NSS rounds Estimated number of registered transport vehicles according to NIC codes, Consumer price index of Industrial Workers (IW) and Consumer price index of Agricultural Labour. These are noted in more detail below.

Road transport

173. Land transport or road transport is the most important form of transport in Kerala. The road transport accounts for 88 per cent of the GVA of the transport sector of the State. Public Part of the GVA estimate of is prepared by analysing the annual accounts of Road Transport Corporations and Budget documents. GVA of Central DEs are allocated to the States on the basis of the location of the DE. In the case of Central NDEs estimates and CE is distributed on the basis of the number of employees in each State while OS is distributed in proportion to the State-wise gross block (Value of Assets) of that NDE.

174. For Private Corporations estimate of GVA is compiled using production approach and estimated on the basis of GVA estimated using GVAPW from NSS 67th Round and labour input from NSS 68th Round.

175. For the Private Unincorporated Enterprises, base year State-wise GVA estimates are compiled using GVA from NSS 67th Round and LI from NSS 68th Round. Year-wise estimate is obtained by applying index of number of vehicles registered in States and CPI. Constant price estimates are inflated using the CPI for transport and communications. The methodology is given in Table 13 and Table 14.

Table 13 *Procedure used for estimating the GVA from transport other than railways*

Institutional sectors	Base Year	Subsequent years
Public	Budget Documents and Annual Reports	
Private Corporate	MCA-21 database	Growth in regd. Commercial vehicles, adjusted for price effect (using CPI – Transport and Communication
Private Unincorporated	Effective LI method (VAPW from 67th Round and LI from 68th Round)	Base year estimate is moved using the growth in registered commercial vehicle data from State MVD

Source: National Accounts Statistics, CSO

Table 14 *GVA from road transport estimated using the NAS procedure*, in Rs lakh

		2011-12	2020-21	2021-22
Public	Departmental Enterprises	156	0	0
	Non-Departmental Enterprises	73,010	63,959	81,029
	Total State GVA	73,166	63,959	81,029
Private Corporate/Organised Co Operative	State GVA	41,592	78,042	92,782
	Ratio – Base year	0.0067843		
	NAS-GVA	25,500	42,756	67,458
	State GVA	173	290	458
Private Corporate/Organised + Co-operative			37,68,785	46,66,206
		41,765	78,332	80,971
Private Unincorporated	State GSDP	19,16,134	24,26,502	36,43,426
	NAS-GVA		3,81,51,786	6,01,93,635
Road Transport,	Total	20,31,065	25,68,503	38,17,237

Note: NAS stands for National Accounts Statistics of CSO
Source: Department of Economics and Statistics

176. Like in most subsectors of tertiary sectors, for the estimation of GVA, total number of workers engaged and GVA/W in base year is required. This however is provided by CSO and not calculated by State DES. This results in less State specific GVA calculation. In the wake of the pandemic and enhanced road taxes, there has been a reduction in the number of private buses plying on the roads of the State. The existing method of GVA calculation using labour input will not give an accurate representation of the GVA at least with respect to private buses. A survey is recommended to know the number of private buses and average worker/bus or per service to get a better picture.

Water transport

177. Water transport is another important sub-sector in the transport sector that contributes significantly to the GVA of the State. GVA estimate of public part is prepared by analysing the annual accounts of Transport Corporations and Budget documents. GVA of Central DEs are allocated to the States on the basis of the location of the DE. In the case of Central NDEs estimates and CE is distributed on the basis of the number of employees in each State while OS is distributed in proportion to the State-wise gross block (Value of Assets) of that NDE.

178. Private Corporations: Estimates of GVA compiled using production approach and estimated on the basis of GVA estimated using GVAPW from NSS 67th Round and labour input from NSS 68th Round. GVA at the national-level is allocated using share of cargo handled and length of navigable rivers.

179. Private Unincorporated Enterprises: Base year State-wise GVA estimates are compiled using GVA from NSS 67th Round and LI from NSS 68th Round. For subsequent years,

GVA at national-level allocated using index of navigable length and cargo handled growth rate in the public part. Table 15 shows the GVA from water transport for the State as per the methodology adopted by the DES.

Table 15 *GVA from water transport*

		Base year	2020-21	2021-22
Public	Departmental Enterprises (DE)-Center	8,853	NA	NA
	DE-State	3,552	10,737.54	15,098
	Non-DE	615	699	732
	State GVA	13,020	11,436.54	15,830
Private corporate	NAS-GVA	4,72,862	10,08,051	13,50,636
	Ratio (%)	2.21	3.151091	3.376487
	State GSDP	12,938	31,764	45,604
Private unincorporated	Ratio – Base year	0.025395		
	NAS-GVA	1,08,094	1,82,637	2,13,408
	State GVA	2,745	5,755	7,206
		28,703	48,956	68,640

Note: NA refers to period where CSO split up of DE with respect to State and Centre is not available
Source: Department of Economics and Statistics

180. Length of navigable rivers is a bad proxy for calculation of GVA in passenger water transport. If we can have an estimate of the number of water transport vehicles and the average capacity per trip, that can yield a fair estimate of the GVA although subject to seasonal variations. A survey is needed to identify the number of boats or passenger water vehicles.

Air transport

181. Air transport of the State has seen significant rise in the past few years. Kerala has four international airports which are spread through the length of the State. Three of the four airports of the State are among the top ten airports with highest passenger footfall in 2023. The State also stood seventh in terms of passenger footfall in FY 2022-23 with 1,65,30,563 passengers.

182. For the Public Part estimates of GVA compiled using production approach. GVA at the national-level is allocated to States on the basis of passengers handled by the airports in the State during the year. For Private Corporations estimates of GVA compiled using production approach. GVA at the national-level is allocated to States on the basis of passengers handled by the airports in the State during the year.

Service incidental to transport

183. GVA estimate of public part is prepared by analysing the annual accounts and Budget documents and Kerala State Drudging Corporation. For Private Corporations estimates of GVA compiled using production approach. GVA at the national-level is allocated to States on the basis of passengers handled by the airports in the State during the year. Subsequent

years previous year's estimate extrapolated using combined growth of (water+air+land transport) at current prices.

184. Private Unincorporated Enterprises: Base year State-wise GVA estimates are compiled using GVA from NSS 67th Round and LI from NSS 68th Round. For subsequent years, combined growth of (water+land transport) at current prices used to extrapolate the base year estimates.

Storage

185. GVA estimate of public part is prepared by analysing the annual accounts and Budget documents. For Private Corporations, the Base year State-wise GVA estimates are compiled using GVA from NSS 67th Round and LI from NSS 68th Round. GVA at the national-level is allocated using base year proportions as given above.

186. Private Unincorporated Enterprises: Base year State-wise GVA estimates are compiled using GVA from NSS 67th Round and LI from NSS 68th Round; these are used as proportions to allocate the national-level GVA at current prices.

Communication and services related to broadcasting

187. Communication and services related to broadcasting is also a very important sector with respect to the gross value added to the State income.

188. The GVA for the Public Part at current prices is obtained from the production account of the Indian Posts and Telecommunication Departments. Estimates of GVA allocated on the basis of indicators like receipts, rent, interest, etc. In case of broadcasting (PrasarBharati), it has been allocated on the basis of sanctioned strength.

189. For Private Corporations (Courier activities, Cable operators, Telecommunication and Recording, publishing and Broadcasting services), the method followed for estimation of value added from different categories of activities is to use the labour input and value added per worker. GVA from courier activities has been allocated on the basis of GVA of Posts. GVA of Cable operators, recording, publishing and Broadcasting services has been allocated on the basis of population having television in Census 2011. GVA of Telecommunication in the base year has been allocated on the basis of average number of subscribers in the base year. This has been extrapolated using growth in subscribers and CPI (transport and communication) for the subsequent years.

190. Private Unincorporated Enterprises (Courier activities, Cable operators, Telecommunication and Recording, publishing and Broadcasting services). Base year GVA as compiled using GVA from NSS 67th Round and LI from NSS 68th Round has been allocated on the same criteria as used in the Private Corporate Sector.

191. For the estimation of GVA, total number of workers engaged in communication sector and GVA/W in base year is required. CSO provides these indicators by apportioning All India indicators using national-level criteria. A large number of cable operators and newspaper distributers are working in a subsidiary activity. Special surveys for estimating LI and GVA/W in base year are required and appropriate indicators for calculating annual growth. The current method of GVA calculation severely underestimates the GVA in this sector. Private courier services has really picked up due to their faster and efficient services compared to the postal department. Also the current method excludes services like packing and moving. GVA of posts is not a good proxy for these services. Alternate data in the form of average courier expense from State capital to important cities and the number of operators can be collected. Similarly, the GVA from telecommunications can also be improved by conducting a fresh survey on usage of broadband services etc. which gives better picture than television census.

Financial services

192. Estimates of GVA are split into CE, Rent, Profit, etc estimated from Annual report/accounts and are allocated by CSO at the enterprise-level using the information like State-wise salaries, deposits, premiums and number of employees. Although much of the data used here is dependent on CSO, State specific attributes are missed. For example, state can very well collect the details of cooperatives providing financial services. Kerala is known for having some of the largest cooperative banks.

Real estate, ownership of dwellings and professional services

193. The economic activities covered in this sector are (i) ownership of dwellings(occupied residential houses), (ii) real estate services (activities of all types of dealers such as operators, developers and agents connected with real estate), (iii) renting of machinery and equipment without operator and of personal and household goods, (iv) Computer and Related Activities, (v) Accounting, Book-keeping and Related Activities, (vi) Research and development, market research and public opinion polling, business and management consultancy, architectural, engineering and other technical activities, advertising and business activities not elsewhere classified and (vii) legal services. Ownership of dwellings also includes the imputed value of owner occupied dwellings. Services rendered by non-residential buildings are considered to be a subsidiary activity of the industries, which occupy the buildings and therefore, are not included in this sector.

194. The sources of data are Public sector (NDE), Private corporate sector (Real estate +renting, legal and accounting, other professionals), Un-incorporated (Real estate + renting, legal and accounting, other professionals) and for ownership of dwellings, census data on residential building are used.

195. GVA estimate of public part is prepared by analysing the annual accounts and Budget documents. (Real estate and Professional Services) and the compensation to Employee is distributed on the basis of the number of employees in each State.

196. For Private Corporations, Real Estate and Professional Services: Estimates of GVA compiled using production approach has been allocated on the basis of Base year GVA as compiled using GVA from NSS 67th Round and LI from NSS 68th Round.

197. In case of dwellings in urban area, the gross rental is calculated using no of urban houses * rent per household. For rural dwellings, Gross rental at the national-level is estimated through user cost approach, using the capital stock of rural residential buildings. The national-level estimates are allocated to States using State-wise stock of rural dwellings as estimated from AIDIS, duly extrapolated for the reference year using growth in the number of dwellings and CPI(R).

198. In the case of house rent presently no reliable data available. Rental per dwelling in urban area is estimated by applying CPI for the housing group into the base year rental. But in the case of rural no such method is adopted by the State as it is directly taken from CSO. Both are not good practice for the State estimation. Estimate of rental rate both in Urban and rural by a regular baseline household surveys are required.

199. The estimates of real estate, legal services, and business services (except software development) are supposed to be prepared using labour input and value added per worker approach. As per the CSO methodology, the estimates of software development activities are prepared using NASSCOM data of output from these services and Gross Value Added (GVA) to Gross Value Output (GVO) ratio obtained from the annual reports of various companies engaged in software development activities. For ownership of dwellings, the user cost approach (used internationally where the number of rented dwellings are less than 25%) is used for rural residential houses and for the urban houses, the methodology consists of estimating the gross rental of residential buildings(including owner occupied) and deducting therefrom the cost of repairs and maintenance to obtain the estimates of GVA. The rent used is imputed rent (calculated based on opportunity cost which is subjective) rather than actual rent.

Computer and information related services

200. Estimates of GVA for private corporations are compiled using production approach and are allocated on the basis of information on State-wise software exports made by units registered under STPI. For private unincorporated sector, Base year GVA has been allocated on the basis of GVA as compiled using enterprise information from NSS 67th

Round and LI from NSS 68th Round. For the subsequent years estimates are moved using Corporate Growth (same as in organised sector).

201. The GVA estimates of this sector exclude the activities in hardware products. Also repair services and activities like security cameras are also excluded.

Public administration

202. For Central Government, estimates of GVA at current prices are allocated on the basis of number of Central Government employees across States. State Governments and Local Bodies: Estimates of GVA at current prices compiled using production approach.

203. Autonomous Institutions: Estimates of GVA are compiled using production approach for the sample autonomous institutions for the base year and these benchmark estimates have been projected at the national-level with the help of total grants given to all autonomous institutions. These are allocated to the States on the basis of indicators like location of these institutions and State-wise public sector LI proportions as per NSS 68th Round.

204. For the estimation of GVA, total number of workers engaged in these sectors and GVA/W in base year requires is required. CSO provides these indicators by apportioning All India indicators using national-level criteria. It may not be realistic in Kerala, because Kerala's wage structure and density of population are different from other States. Here large number of real estate brokers work in a subsidiary capacity. So Kerala require ad-hoc survey or household survey for estimating LI and GVA/W in base year and calculating annual growth. It must cover LI engaged in online services also.

Other services

205. Other services is an umbrella term for all the services not listed. These include important activities/sectors like Education, Health services, personal services, recreational services, activities of membership organisations. The notable changes in this broad sector are as follows:
    a. Activities of extra territorial organisations and bodies are not a part of GDP and have hence been excluded from this group in 2011-12 series.
    b. The categories 'Sewerage and refuse disposal' and 'Veterinary services' have been removed from this group and included as a part of utility services in 'Electricity, gas, water supply and utility services' and 'professional services' respectively.

Education

206. GVA estimate of public part is prepared by analysing the annual accounts and Budget documents.

207. For Private Corporations, estimates of GVA compiled using production approach and allocated for the base year on the basis of LI from NSS 68th Round. For subsequent years, previous year's estimate moved using State-wise inter survey growth, between NSS 64th and NSS 71st Rounds, in the expenditure on education.

208. Private Unincorporated Enterprises: Base year GVA has been allocated on the basis of GVA from NSS 67th Round and LI from NSS 68th Round. For subsequent years, previous year's estimate moved using State-wise inter survey growth, between NSS 64th and NSS 71st Rounds, in the expenditure on education. GVA from education for the years 2011-12, 2020-21 and 2021-22 is shows in the Table 16.

Table 16 *GVA from education*, Rs in lakh

		2011-12	2020-21	2021-22
Public	Autonomous(Center+State)		1,37,300	1,58,673
	Local bodies		7,531	7,531
	State Administration	13,15,073	26,24,357	40,88,435
	Center Administration	3,65,863	1,757	1,751
	Railways		1,695	1,812
	NVA		27,72,639	42,58,202
	CFC		77,158	1,20,220
	State GVA	16,80936	28,49,797	43,78,422
Private Corporate/Organised +Co-operative	LI Proportion	0.0540302		
	NAS-GVA	15,61,331	57,87,614	70,72,723
	State GVA	84,359	3,12,706	3,82,141
Private Unincorporated	Growth Rate	23.12		
	State GVA	2,98,831	15,38,544	19,00,192
Education Total		20,64,126	47,01,047	66,60,755

Note: NAS – National Accounts Statistics
Source: Department of Economics and Statistics

209. For the estimation of GVA, total number of workers engaged in education sector and GVA/W in base year is required. CSO provides these indicators by apportioning All India indicators using national-level criteria. A large number of private tuition centre, coaching centres (both online and offline) are found in the State. Special surveys are necessary for estimating LI and GVA/W in base year and calculating annual growth. It needs to cover LI engaged in online services also.

Human health activity

210. GVA estimate of public part is prepared by analysing the annual accounts and Budget documents.

211. For Private Corporations, estimates of GVA compiled using production approach and allocated for the base year on the basis of LI from NSS 68th Round. For subsequent years,

previous year's estimate is moved using State-wise inter survey growth, between NSS 64th and NSS 71st Rounds, in the expenditure on health.

212. In the case of Private Unincorporated Enterprises, base year GVA has been allocated on the basis of GVA from NSS 67th Round and LI from NSS 68th Round. For subsequent years, previous year's estimate moved using State-wise inter-survey growth, between NSS 61th and NSS 68th Rounds, in the consumer expenditure on health.

Table 17 *GVA from health sector*, Rs in lakh

Human Health Activity		2011-12	2020-21	2021-22
Public	Autonomous(Center+State)		3,399	3,973
	Local bodies		5,517	5,517
	State Administration	2,16,306	2,82,313	4,01,532
	Center Administration	36,213	33,507	33,300
	CGHS (Central Govt Health Scheme)		1,452	1,438
	Railways		2,878	3,188
	NVA		3,29,066	4,48,948
	CFC		14,614	21,562
	State GVA	2,52,519	3,43,679	4,70,510
Private Corporate +Co-operative	Ratio	0.120003812		
	NAS-GVA	25,60,177	83,67,960	1,08,73,256
	State GVA	3,07,230	10,04,187	13,04,832
Privat Unincorporated	Growth	14.1		
	State GVA	4,58,270	12,48,847	14,16,660
Human Health Activity Total		10,18,019	25,96,713	31,92,002

Source: Department of Economics and Statistics

213. For the estimation of GVA, total number of workers engaged in health sector and GVA/W in base year requires is required. As these are not available for the State, CSO provides these indicators by apportioning All India indicators using national-level criteria. The State has a substantial delivery of health services through private agencies.

Remaining social and personal services

214. For private corporations, estimates of GVA compiled using production approach and allocated on the basis of LI from NSS 68th Round. In the case of private unincorporated sector, base year GVA has been allocated on the basis of GVA from NSS 67th Round and LI from NSS 68th Round. For subsequent years, previous year's estimate moved using inter-survey growth in consumer expenditure in non-food items (excluding education and health). The data used are NSS 68th Round EUS, 2011-12, NSS 67th Round ES, 2010-11, NSS 61st and 68th Rounds CES, 2004-05 and 2011-12, respectively and CPI from NSO.

Private households with employed persons

215. In the case of Private unincorporated sector, base year GVA has been allocated on the basis of LI from NSS 68th Round. For subsequent years, previous year's estimate moved using inter-survey growth of LI (between NSS 61st Round and NSS 68th Round) and CPI (General). This sector also severely excludes many emerging activities especially online work.

Table 18 *GVA from other services*

		2011-12	2020-21	2021-22
Public	State GVA	2,590	9,741	7,121
Private Corporate +Co-operative	Ratio	0.078387086		
	NAS-GVA	53,52,897	35,96,215.44	46,12,300
	State GVA	4,19,597	2,81,897	3,61,544
Private Unincorporated	Growth	15.2		
	State GVA	3,95,572	7,90,706	9,53,113
Others Total	Total	8,17,759	10,82,344	13,21,778
Private House Holds				
	CPI General	100	173.322148	180.81
	GVAPW	39,943	86,600.	92,952
	CAGR	1		
	LI	1,48,902	1,48,902	1,48,902
	State GVA	64,052	86600	92,952
Other Services		39,63,958	84,66,705	1,12,67,488

Source: Department of Economics and Statistics

5.5 Summary of Findings and Recommendations

Issues with the current methodology

216. An examination of the compilation of the GSDP shows that, among the institutional sectors, direct State related data are used only in the case of public sector where data from general Government and the undertakings under its control are taken from published financial statements. In the case of corporate sector the DES depends on CSO for its share in the State GSDP. The unincorporated sector or the unorganised sector that has a most significant presence among the tertiary sector are at present mostly based on growth rates provided by CSO. Lack of State specific indicators that realistically reflect annual changes are simply not available.

217. Due to non-availability of State-level data, allocation of nationally estimated values by NSO is the main method followed in arriving at the GSDP of most of the sub-sectors in the tertiary sector in the States. This is so in all States/UTs. For supra-regional sectors, this will remain so in future also. Many of the indictors used for apportioning may also not be the appropriate one. For example use of tourist arrival data for assessing the contribution of

the hotels and restaurants may not be very appropriate for estimating value addition form the hotels and restaurants sector. Though the corporate data from MCA are shareable with States, the States need to develop capacity and resources to work on these data.

218. In services sector, all sub-activities are expected to be covered separately. However for the State, except for the specified compilation categories, the estimation is done by clubbing many activities. In the largest category 'other services' that includes health, education and other services separate estimation is made for health and education and all other services are considered under one category. This is a major lacuna as many emerging service sector activities are actually in this group that needs to be rectified. This will require LI and GVA/W of all sub activities separately and need to estimate the GVA of these services separately.

Additional data are required by DES

219. In all sub sectors, especially in 'other services' sector, component-wise LI and GVA/W is required for estimation of GDP at State and District-level. Specific household/enterprise survey is helpful for almost all subsectors. For the purpose of base year fixation, a large sample may be taken and in all other years, small samples may be taken for assessing the growth rate of LI and GVA/W. In addition to the surveys, a Business register is also useful for making quick assessment of outputs of private organised sector.

Organisational arrangements for regular collection data

220. The overdependence on allocation method may not reflect the real GSDP of the States nor the dependence on national indicators. The Labour Input method used could have become out-dated due to the passage of time and the economic structure of the State moving differently from the rest of the country. To overcome this, the states should have surveys on employment-unemployment and also on unorganised services sector units. Just as the National Sample Survey Organisation (NSSO) was created to fill up the data gaps for GDP estimation, the State also needs a specialised survey division comprising of design wing, field operations wing and data processing and analysis wing is essential in the Directorate. A regular set of field investigators at the District-level will be responsible for the fieldwork.

221. Services production indices have been under consideration for a long time. Eight experimental service production indexes are being tried like rail, postal, banking, business services, and telecom. Nature of service delivery is changing in most services with multilevel service deliveries. Capturing these emerging areas is an issue to be addressed.

Use of alternate data sources

222. Alternate databases also need also to be considered. In the financial sector covering RBI, scheduled commercial banks, cooperative banks, use of Banking Statistical return (BSR) could be considered. CSO uses banking rate methods which can also be adopted by DES. There is a NABARD publication providing information similar to BSR. In the insurance sector, IRDAI provides some aggregates that can be tried. Mutual funds data are also available from concerned agencies. At the State-level expertise should be developed to access and use such data.

223. Communication activities like postal activities can be obtained at the State-level. For telecom, TRAI reports giving number of subscribers, subscription data, average usage etc can be utilised and intermediate consumption data at national-level can be used.

224. As for the ownership of dwelling data, these are from the Census and house rent data from out-dated household surveys and clearly these need updating. Distributing workers data from national survey could be problematic due to inadequate representation of specific sectors in national survey data. Large scale household surveys or sector specific surveys need to be conducted by States to capture specific sectors.

225. As for collection of private corporate sector data from units registered with the State Registrar of Companies, this may not be enough as there are units in the State that are registered elsewhere in the corporate sector. There are also problems in enterprise surveys to capture the entirety of activities in that sub-sector like where compensation to workers is reported as intermediate consumption.

226. The existing methodology does not capture the dynamic nature of the unincorporated economy. To overcome this, launching new, annual services surveys tailored to capture evolving services, such as food delivery, is essential. Indicator appropriateness requires re-evaluation for all sectors and development of new indicators that reflect individual service categories.

Sub-sector breakdown

227. It is also necessary to avoid applying a common procedure to all services. Instead breaking down of the services sector into sub-sectors capturing data separately for each sub-sector to understand the specific dynamics of each segment is required.

Stakeholder consultation

228. Currently there is no stakeholder consultation by DES in the compilation or analysis of GSDP numbers. It is essential to engage in regular stakeholder consultations to receive

feedback and include new services, besides close collaboration with relevant departments/organisations, such as tourism, to obtain better and real-time data.

Integrating administrative data

229. From Government departments, such as tourism department, health departments, and educational institutions, into the estimation process can help cross validate the estimates and reduce reliance on surveys and improve accuracy. This require the establishments of data-sharing agreements with Government departments, standardising formats for data collection, and creating a data integration framework to merge administrative data with existing statistical data. We may consider extending the use of the Labour Input Method to more subsectors of the services sector for improved productivity differentiation.

Developing specialisation in DES

230. A closer look at the organisational setup within the DES has shown that there is at present severe constraints in retaining officers in the State Income Unit which is a very specialised field. Regular workshops and training programmes are being organised by the CSO and also by DES to State-level officers on State income compilation. However there is no system to ensure that the trained officers are retained in the State income division.

Suggestions for data collection

231. The Group observed that the present methodology of computing State income use very little current State specific data/indicators except for the Government part. As such the base year estimates that used the 2011-12 employment survey and the previous year surveys on unorganised sector enterprises are being updated using indicators provided by CSO during the reconciliation process. Even the base year data used results from the NSS data of the central sample. DES should therefore plan to have (a) a regular system of detailed employment surveys to assess changes in workforce structure and to get estimates of Labour Input in various sub-sectors relevant for the State. These should be annual feature.

232. The employment survey should be designed to cover secondary and tertiary employment data from households in sufficient detail to reflect changing structure of employment especially new and emerging sectors and address the new forms of employment.

233. Employment survey should be complemented by enterprise surveys to understand the GVA contribution and value of investments etc by these enterprises. The enterprise surveys should cover all sectors except the primary sector. Considering the complexity of the enterprise surveys, this can be split into three or four separate sectoral surveys. The primary objective of these surveys would be to estimate the value added per worker along with other financial information required for State income estimation.

Use of data from Government agencies and local bodies

234. In the current methodology followed by DES, there is no scope to account for the new enterprises even as an indicator of annual growth. The idea of a Business Register for improving State income estimation through regular establishment surveys was mooted since long. In Kerala Government agencies and local bodies have a well-established system of registration of new units and that such registrations are always done in an online mode. It is also seen that the basic information furnished by the units are too sketchy to be of much statistical use. For example most often the detailed industrial activity nor employment or capital invested are provided at the time of registration. DES should work with these agencies to improve the data content and ensure that basic data on the existing and newly started units are taken from the industry department or local bodies and used for improving the State statistical system. Such lists can be used as a frame for sample surveys by DES for regular assessment of their value addition. Most of the unorganised tertiary sectors can be covered this way.

Specific areas for data collection by DES

235. As already noted there are several tertiary sector activities in the State that are not adequately reflected in the State income compilation at present. Some of these are activities that have emerged in recent years and would not have been covered in the bench mark data used. A few of these are listed below:

a. Contribution of Gig Workers employed in food delivery, online education, app based services, data entry and other IT related work
b. Activities in entertainment such as tuition/coaching for arts, drama, painting etc
c. Sports related activities of recent nature such as turf, martial arts training, swimming etc
d. Income from private unlisted tuitions
e. Income from rental services such as airbnb, home based food services
f. Home care services by individuals and agencies

Suggestions for new surveys/studies at State-level

236. Surveys of establishments to primarily to estimate value addition and number: The present practice is that the establishments in the corporate sector are covered through the MCA database by the CSO and allocated to the State using the base year labour input or employment details available from the base year survey. In the next base year revision it is necessary to have the most recent employment and value added per worker data. The DES should plan for an establishment survey that specifically ensures the coverage of the activities noted above. There will be issues in designing a single survey covering all these activities with desired precision at the State-level. It is recommended the DES may conduct a series of establishment surveys to get an idea of the value added per worker in these sectors.

a. Surveys of Hotels and Restaurants including homestays
b. Studies on Transport sector for estimating the number of vehicles on road, water transport etc.
c. Health sector specific surveys including medical tourism
d. Education, including private coaching, tuition, recreation etc
e. Survey on entertainment sector
f. Non-Profit Institutions Serving Households (NPISH)
g. New activities in the services including online platform/digital activities
h. Financial sector enterprises and cooperative societies providing financial services

237. Regular employment surveys to estimate employment in the tertiary sector providing reliable estimates for State specific activities. Currently the Periodic Labour Force Survey (PLFS) does provide State-level estimates on key employment-unemployment parameters. As noted these are not adequate to provide reliable estimates for specific activities levels. It is recommended that the DES should design a regular annual employment survey series that can also provide quarterly estimates for use in quarterly estimation of GSDP. The survey design should ensure coverage of the modern sectors and where necessary provide separate codes to identify such activities that may not be possible in the existing industry classification. Along with employment-unemployment, labour migration is also a very important issue for the State and should become part of this employment survey.

Annexure 1

PROCEEDINGS OF THE MEMBER SECRETARY STATE PLANNING BOARD, THIRUVANANTHAPURAM

(Present Sri. Puneet Kumar IAS)

Sub: State Income Statistics – Formulation of three study groups – Reg:-

Read: 1. VC's Note No. 66/2023-VC dated 03.06.2023 to Member Secretary

2. Minutes of the preliminary meeting held on 22.06.2023 at SPB

Order No. SPB/732/2023-PPD **Dated. 25/07/2023**

A National Workshop on State Income Statistics had been conducted between March 31st and April 1st 2023. The workshop identified data gaps and methodological issues in estimation of Gross State Value Added in the State. In the light of the workshop, the Hon'ble Vice Chairperson, State Planning Board, vide reference 1st cited above has directed to constitute three Study Groups in Primary, Secondary and Tertiary sectors to study and suggest measures to improve the Income Statistics estimation in the State.

In this circumstance, three study groups, as detailed below, are being constituted in Primary; Secondary and Tertiary sectors to relook the methodology used in estimation of Gross State Value Added, critical data gaps in sectors, and suggest measures to improve it. The constitution of study groups and Terms of Reference are as follows.

Sl No	Name	Designation	Status in the Study Group
	Primary Sector		
1	Prof. R Ramakumar	Member State Planning Board	Chairperson
2	Sri. S S Nagesh	Chief, Agriculture Division, State Planning Board	Convener
3	Dr. A Suresh	Principal Scientist, Agricultural Economics, Central Institute of Fisheries Technology (ICAR-CIFT), Ernakulum, Kerala	Member
4	Dr. K P Chandran	Principal Scientist, ICAR-Central Plantation Crops Research Institute, Kasaragod, Kerala	Member
5	Sri. Vinodan. T.P	Senior Joint Director, Department of Economics and Statistics	Member
6	Smt. Deepa. S.A	Deputy Director, Directorate of Agriculture and Farmers' Welfare Department	Member
7	Dr. K.G. Geetha	Joint Director, Directorate of Animal Husbandry	Member

8	Smt. L. Geetha	Deputy Director, Office of the Principal Chief Conservator of Forests	Member
	Secondary Sector		
1	Shri. V Namasivayam	Member State Planning Board	Chairperson
2	Sri.P Pradeep Kumar	Chief (i/c), Industry and Infrastructure Division, State Planning Board	Convener
3	Prof. R Nagaraj	Former Professor, Indira Gandhi Institute of Development Research	Member
4	Prof.Surajit Mazumdar	Professor, Centre for Economic Studies and Planning, Jawaharlal Nehru University	Member
5	Sri. Gopakumar. S	Deputy Director, Agriculture Census, Department of Economics and Statistics	Member
6	Smt. Yamuna. A.R	Manager(EI), District Industries Centre, Thiruvananthapuram	Member
	Tertiary Sector		
1	Sri. P C Mohanan ISS(Rtd.)	Vice Chairman, State Statistical Commission, Kerala	Chairperson
2	Dr. Bindu P Verghese	Chief, Social Services Division, State Planning Board	Convener
3	Sri. G Sajeevan ISS (Rtd.)	ADG (Rtd.), MoSPI	Member
4	Sri. S V Ramana Murthy	Head (Rtd.), National Income Division, CSO	Member
5	Sri. T Baskaraan ISS(Rtd.)	ISS(Rtd.), MoSPI	Member
6	Sri.Vijayakumar. V	Deputy Director, Department of Economics and Statistics, Kollam	Member
7	Smt. Prabha George	Demographer, Directorate of Health Services	Member
8	Smt. Resmi. C.P	Joint Director, Office of the Director General of Education	Member
9	Sri. Abhilash. K	Research Officer, Directorate of Tourism	Member

The Terms of Reference of the study groups are as follows

1. Examine the data and methodology used by the Department of Economics and Statistics for GSDP estimation
2. Identify significant activities not adequately covered in the current methodology
3. Suggest alternative/better data sources wherever possible
4. Identify and prioritise areas and timelines for surveys and studies to address data gaps and resource requirements

5. Suggest measures for strengthening institutional mechanism including inter-departmental coordination
6. Suggest methodology for quarterly estimates of GSDP

The Chairs are permitted to co-opt officials to their study groups, if needed, from the State Government departments, under intimation to the under signed. However any modification or addition to the ToR shall be made only with the concurrence of the Member Secretary, SPB. The conveners of the study groups shall convene meetings online/offline in consultation with the Chairs concerned. The report of the study groups shall be submitted within two months from the date constitution of the study groups. The report will be finalised by the joint meeting of the study groups.

The TA and accommodation facilities for the non-official members of the study groups, if needed, shall be provided as per the extant rules and procedures of the State Government. The expenditure on account of this will be met form the H/A 3451-00-101-93-34-03(P) V, 'Preparation of Plans and Conduct of Surveys and Studies-II (2)' during the current financial year 2023-24.

Sd/-
Puneet Kumar IAS
Member Secretary

Forwarded by Order
Chief (i/c)
Perspective Planning Division

Annexure 2

PROCEEDINGS OF THE MEMBER SECRETARY STATE PLANNING BOARD, THIRUVANANTHAPURAM

(Present Sri. Puneet Kumar IAS)

Sub: State Income Statistics – Formulation of three study groups – Revised Order – Reg:-

Read: 1. Order even No. dated 25/07/2023 of the Member Secretary, SPB

2. VC's Note No. SPB/85/2023-VC dated 10.08.2023 to the Member Secretary

Order No. SPB/732/2023-PPD **Dated. 24/08/2023**

As per the order read as 1st above, the State Planning Board has constituted three study groups in Primary; Secondary and Tertiary sectors to relook the methodology used in estimation of Gross State Value Added, examine critical data gaps in sectors, and suggest measures to improve it.

As per the note read as 2nd above, the Hon'ble Vice Chairperson has directed to invite the Chairperson of the Kerala State Statistical Commission to the meetings of the study groups and to incorporate a statistical specialist in each study group to take on the task of preparing the technical methodology notes to accompany the reports.

In the light of the above, the order read as 1st above is stand modified to the extent below.

Sl No	Name	Designation	Status in the Study Group
	Primary Sector		
1	Prof. R Ramakumar	Member State Planning Board	Chairperson
2	Sri. S S Nagesh	Chief, Agriculture Division, State Planning Board	Convener
3	Dr. A Suresh	Principal Scientist, Agricultural Economics, Central Institute of Fisheries Technology (ICAR-CIFT), Ernakulum, Kerala	Member
4	Dr. K P Chandran	Principal Scientist, ICAR-Central Plantation Crops Research Institute, Kasaragod, Kerala	Member
5	Sri. Vinodan. T.P	Senior Joint Director, Department of Economics and Statistics	Member
6	Smt. Deepa. S.A	Deputy Director, Directorate of Agriculture and Farmers' Welfare Department	Member

7	Dr. K.G. Geetha	Joint Director, Directorate of Animal Husbandry	Member
8	Smt. L. Geetha	Deputy Director, Office of the Principal Chief Conservator of Forests	Member
	Secondary Sector		
1	Shri. V Namasivayam	Member State Planning Board	Chairperson
2	Sri.P Pradeep Kumar	Chief (i/c), Industry and Infrastructure Division, State Planning Board	Convener
3	Prof. R Nagaraj	Former Professor, Indira Gandhi Institute of Development Research	Member
4	Prof.Surajit Mazumdar	Professor, Centre for Economic Studies and Planning, Jawaharlal Nehru University	Member
5	Sri. Gopakumar. S	Deputy Director, Agriculture Census, Department of Economics and Statistics	Member
6	Smt. Yamuna. A.R	Manager(EI), District Industries Centre, Thiruvananthapuram	Member
	Tertiary Sector		
1	Sri. P C Mohanan ISS(Rtd.)	Chairperson, State Statistical Commission, Kerala	Chairperson
2	Dr. Bindu P Verghese	Chief, Social Services Division, State Planning Board	Convener
3	Sri. G Sajeevan ISS (Rtd.)	ADG (Rtd.), MoSPI	Member
4	Sri. S V Ramana Murthy	Head (Rtd.), National Income Division, CSO	Member
5	Sri. T Baskaraan ISS(Rtd.)	ISS(Rtd.), MoSPI	Member
6	Sri.Vijayakumar. V	Deputy Director, Department of Economics and Statistics, Kollam	Member
7	Smt. Prabha George	Demographer, Directorate of Health Services	Member
8	Smt. Resmi. C.P	Joint Director, Office of the Director General of Education	Member
9	Sri. Abhilash. K	Research Officer, Directorate of Tourism	Member
10	Sri. Suresh Kumar N	Deputy Director (Rtd.), Department of Economics and Statistics, Kerala	Member

The Conveners of the study groups are directed to invite the Chairperson, Kerala State Statistical Commission for all meetings of study groups and statistical officers of departments concerned in specific meetings.

The Terms of Reference for the study groups are listed below.

1. Examine the data and methodology used by the Department of Economics and Statistics for GSDP estimation
2. Identify significant activities not adequately covered in the current methodology
3. Suggest alternative/better data sources wherever possible
4. Identify and prioritise areas and timelines for surveys and studies to address data gaps and resource requirements
5. Suggest measures for strengthening institutional mechanism including inter-departmental coordination
6. Suggest methodology for quarterly estimates of GSDP

The Chairs are permitted to co-opt officials to their study groups, if needed, from the State Government departments, under intimation to the under signed. However any modification or addition to the ToR shall be made only with the concurrence of the Member Secretary, SPB. The conveners of the study groups shall convene meetings online/offline in consultation with the Chairs concerned. The report of the study groups shall be submitted within two months from the date constitution of the study groups. The report will be finalised by the joint meeting of the study groups.

The TA and accommodation facilities for the non-official members of the study groups, if needed, shall be provided as per the extant rules and procedures of the State Government. The expenditure on account of this will be met form the H/A 3451-00-101-93-34-03(P) V, 'Preparation of Plans and Conduct of Surveys and Studies-II (2)' during the current financial year 2023-24.

Sd/

Puneet Kumar IAS

Member Secretary

Forwarded by Order

Chief (i/c)

Perspective Planning Division

Annexure 3
List of participants in the workshops conducted
(in alphabetical order)

1. A Bheemeshwar Reddy, Assistant Professor, Department of Economics and Finance, Birla Institute of Technology and Science (BITS), Hyderabad
2. A Jayathilak IAS
3. A Meera Sahib, Director,Institute for Monitoring Economic Growth, Thiruvananthapuram
4. A Nalinakshan, Pro-Vice Chancellor, Kerala University of Health Sciences Medical college, Thrissur
5. A P Kuttikrishnan, Project Director, Samagra Shiksha Keralam, SSA Bhavan, Thiruvananthapuram
6. A Shahjahan IAS, State Election Commissioner, Government of Kerala
7. A V Jose, Honorary Visiting Professor, Centre for Development Studies, Thiruvananthapuram
8. A C Kulshrestha, Former Addl.DG, CSO (NAD), New Delhi
9. A K. Dharni IFS, Retired Principal Chief Conservator of Forests
10. A Shajahan IAS
11. A Suresh, Principal Scientist, Agricultural Economics, Central Institute of Fisheries Technology,EKM
12. Abhijit Sen, Former Member, Planning Commission, GOI and Retired Professor, Centre for Economic Studies and Planning, School of Social Sciences, Jawaharlal Nehru University New Delhi
13. Ajayakumar Varma, Executive Director, Suchitwa Mission, Thiruvananthapuram
14. Ajith Patil, Commissioner, GST, TVPM
15. Aloke Kar, Visiting Scientist (Hon) Sampling and Official Statistics Unit, Indian Statistical Institute, Kolkata
16. Anandi Subramanian, Principal Advisor, Ministry of Environment, Forest and Climate Change,Government of India, New Delhi
17. Ankita Singh, Director, National Accounts Division, Ministry of Statistics and Programme Implementation
18. Anwar Sadath, Vice Chairman and Executive Director, KITE, Thiruvananthapuram
19. Aparajita Bakshi, Associate Professor,Institute of Public Policy, National Law School of India University Karnataka
20. APM Mohammed Hanish IAS,
21. Asha Thomas IAS,
22. B Ashok IAS,
23. B S Thirumeni IAS,
24. Biju Prabhakar IAS,
25. Bindhu P Varghese, Chief, Social Service Division, State Planning Board

26. Bishwanath Sinha IAS, Additional Chief Secretary, GoK
27. Biveesh U C, Nodal Officer, RUSA, State Project Directorate, Thiruvananthapuram
28. Brinda Vishwanathan, Professor, Madras School of Economics, Chennai
29. C Sunil Raj, Principal and Controlling Officer, Govt. Homoeo Medical College, Thiruvananthapuram
30. Chandrasekhar.S IAS,
31. Chitra S IAS,
32.D K Singh IAS,
33.D Narayana, Former Director, GIFT
34. Devendra Kumar Singh IAS,
35.G Raveendran, Former Additional Director General, CSO, GOI
36.G Sajeevan ISS (Rtd), Addl Director General (Rtd), MoSPI
37.G Suresh, Director, Centre For Management Development, Thiruvananthapuram
38. Gayathri Nair IES, Economic Advisor to Vice Chairperson, Kerala State Planning Board
39. Girja D, Registrar, Kerala Agriculture University
40. Harikrishnan Namboothiri.K, CEO, NORKA ROOTS
41. Haritha V Kumar, IAS,
42. I Sundararaman, Visiting Faculty, JIPMER, International School of Public Health, Puducherry
43. Indira K P, Director of Technical Education, Thiruvananthapuram
44. J Dennis Rajakumar, Director, Economic and Political Weekly Research Foundation, Kandivli (East) Mumbai
45. J V Meenakshi, Professor, Department of Economics, Delhi School of Economics, University of Delhi, New Delhi
46. J Justin Mohan IFS, Director, GWD, Department of Water Resources
47. J Prasad, Director, State Council of Educational Research and Training (SCERT), Thiruvananthapuram
48. Jayan Jose Thomas, Professor, IIT Delhi
49. Jollykutty Eapen, Director, Directorate of Ayurveda Education,b Thiruvananthapuram
50. Josephine J, Chief, Decentralised Planning Division Kerala State Planning Board
51. Joy Elamon, Director, KILA Thrissur
52. K A Santhoshkumar (Rtd), Former Managing Director,KINFRA House, Thiruvananthapuram
53. K Ellagovan IAS,
54. K Jamuna, Director, Directorate of Homoeopathy, Thiruvananthapuram
55. K K George, Chairman, Centre for Socio-economic and Environmental Studies, Kochi
56. K Narayanan Nair, Former Director, CDS
57. K P Chandran, Principal Scientist, ICAR-Central Plantation Crops Research Institute
58. K P Kannan, Honorary Fellow, Centre for Development Studies, Thiruvananthapuram

59. K Ravi Raman, Member, Kerala State Planning Board
60. K S Girija, Chief Town Planner Town and Country Planning Department, Thiruvananthapuram
61. K S Kavi Kumar, Professor, Madras School of Economics, Chennai
62. K S Priya, Director, Directorate of ISM, Thiruvananthapuram
63. K Sudhir, The Director, Directorate of Handloom and Textiles Vikas Bhavan, Thiruvananthapuram
64. K. Jayakumar IAS (Rtd)
65. K. Jeevan Babu, IAS,
66. K A Joshy, Chief Engineer, IDRB, Department of Water Resources
67. K H Shamsudeen, Chief Engineer (1&A), Department of Water Resources
68. K J Joseph, Professor, Centre for Development Studies, Thiruvananthapuram
69. K M Abraham, CEO and MS, KIIFBI
70. K P Aravindan, Medical Director and Senior consultant Pathologist, Micro Health Reference Laboratories, Kozhikode
71. K R Jyothilal IAS,
72. K S Srinivas IAS,
73. Keshvendra Kumar IAS, State Mission Director, NRHM, Thiruvananthapuram
74. M A Oommen, Regional coordinator, Institute of Social Sciences, Kowdiar
75. M H Suryanarayana, Professor, Indira Gandhi Institute of Development Research, Mumbai
76. M Kumara Raja, Secretary Coir Board, Coir House, Kochi
77. Madhura Swaminathan, Member, Kerala State Statistical Commission and Professor, Economic
Analysis unit, Indian Statistical Institute. Bangalore
78. Manoj Joshi IAS,
79. Mini Sukumar, Member, Kerala State Planning Board
80. Mohan Delampady, Professor, Indian Statistical Institute, Bangalore Karnataka
81.James Mathew, Statistical Advisor, Non-Governmental Organisation (NGO) Cell, Ministry of
Environment, Forest and Climate Change, New Delhi
82. Mridul Eapen, Former Member, Kerala State Planning Board
83. Muhammed Hanish IAS,
84. N K Manoj, The Managing Director, Hadicrafts Development Corporation of Kerala Ltd, Thiruvananthapuram
85. N Padmakumar IAS,
86. N Sasidharan Nair, Chairman,Public Sector, Restructuring and Internal Audit Board (RIAB) Thiruvananthapuram
87. Nagesh S S, Chief, Agriculture Division, State Planning Board
88. P G Sankaran, Vice Chancellor, Department of Statistics, Cochin University of Science and

Technology, Cochin

89. P Mara Pandiyan, The Chairman and Managing Director, Kerala cashew Board Limited, Thiruvananthapuram

90. P V Velayudhan, Director, MSME Development Institute, Thrissur

91. P Venugopal IAS,

92. P C Mohanan, ISS (Rtd.), Chairperson, Kerala State Statistical Commission

93. P C Mishra, Additional Director General, National Accounts Division, Ministry of Statistics and Programme Implementation

94. P K Jamila, Member, Kerala State Planning Board

95. Pradeep Kumar.P, Chief (i/c), Industry and Infrastructure Division, State Planning Board

96. Prakashan P P, Joint Director, Higher Secondary Education, Thiruvananthapuram

97. Pramod.P, Director, Factories and Boilers

98. Pranabjyoti Nath IAS

99. Jiju P Alex, Member, Kerala State Planning Board

100. Vinoj Abraham, Professor, Centre for Development Studies, TVPM

101. Pronab Sen, Programme Director, India Team, India Programme of the International Growth Centre (IGC) Indian Statistical Institute, Delhi

102. Puneet Kumar, IAS,

103. R Mohan IRS (Rtd.)

104. R Nagaraj, Professor, Indira Gandhi Institute of Development Research, Mumbai, Maharashtra

105. R Ramakumar, Member, Kerala State Planning Board

106. R Govinda, Professor, Counsel for Social Development, New Delhi

107. R Chandra Babu, Vice Chancellor, Kerala Agriculture University

108. R Girja IAS

109. R Radhakrishna, Chairman and Honorary Professor, CESS, Hyderabad

110. Rajan N Khobragade IAS,

111. Rajan Verghese, Member Secretary, Kerala State Higher Education, Council for Science and

Technology, Thiruvananthapuram

112. Rajeev Sadanandan IAS (Rtd.),

113. Rajesh Ramakrishnan, Managing Director, Kerala State Cashew Development Corporation Ltd KSCDC, Kollam

114. Rani George IAS,

115. Rathan U Kelkar IAS,

116. Rathan U. Kelkar IAS,

117. Remla Beevi A, Director,Directorate of Medical Education, Thiruvananthapuram

118. S Irudaya Rajan, Professor, Centre for Development Studies, Thiruvananthapuram

119. S L Shetty, Former Director of EPW Research Foundation, Maharashtra

120. S M Vijayanand IAS (Rtd),
121. S Anilkumar, Managing Director, Cashew Workers Apex Society (CAPEX)
122. S Harikishore IAS,
123. S C Joshy IFS(Rtd), Chairman, Kerala State Biodiversity Board, TVPM
124. S Venketasapathy IAS,
125. Sajan.C.V, Labour Commissioner
126. Sajeevu P P, Former Director, Department of Economics and Statistics
127. Santhosh George Kulangara, Member, Kerala State Planning Board
128. Sarada Muraleedharan IAS, Member Secretary,Kerala State Planning Board and Additional Chief Secretary, Planning and Economic Affairs Department, Government of Kerala
129. Saritha R L, Director, Health Services
130. Sekhar L Kuriakose, Member Secretary SDMA, Thiruvananthapuram
131. Shajeena M, Exe.Director, Kerala Institute of Labour and. Employment
132. Sharmila Mary Joseph, Principal Secretary, Local Self-Government
133. Sheeba George IAS
134. Shirish K, Chairman, Kerala State Agency for the expansion of Cashew (KSACC) Kollam
135. Sindhu M T, Economic Adviser to Vice Chairperson, State Planning Board
136. Sreekumar, Director, Bureau of Public Enterprises Planning and Economic Affairs (BPE) Department of Govt. Secretariat
137. Sreekala S, Member Secretary, Kerala State Pollution Control Board
138. Sreekumar B, Director, Economics and Statistics Department, TVPM
139. Subhash Ashutosh, Director General, Forest Survey of India, Ministry of Environment and Forest and climate change, Uthartakhand
140. Subhra Sarker, Deputy Director General, Ministry of Statistics and Programme Implementation
141. Sulabha Parasuraman, Former Professor and Head, Dept of Population Policies and Programmes, International Institute for Population Sciences, Deonar, Mumbai
142. Suman Billa IAS,
143. Sunil Mani, Former Director, Centre for Development Studies, (CDS) Thiruvananthapuram
144. Sunitha A S, Chief, Evaluation Division, State Planning Board
145. Surajit Mazumdar, Assistant Professor, Centre for Economic Studies and Planning, School of Social Sciences, Jawaharlal Nehru Univerasity, New Delhi
146. Surjith Vikraman, Member, KSSC and Associate Professor, Centre for corporate social responsibility, Public Private Partnership and people action, NIRDPR, Hyderabad
147 T J Rao, Retired Professor, Indian Statistical Institute Kolkata
148. T M Thomas Isaac, Former Finance Minister, Government of Kerala
149. T P Vinodan, Secretary, Kerala State Statistical Commission
150. T K Jose IAS

151. Tinku Biswal IAS
152. Tom Jose IAS
153. U S Misra, Centre for Development Studies, Thiruvananthapuram 695011
154. Usha Titus IAS
155. V K Ramachandran, Vice Chairperson, Kerala State Planning Board
156. V Namashivayam, Member, Kerala State Planning Board
157. V Jagal Kumar, Chief (i/c), Perspective Planning Division, State Planning Board
158. Venu V IAS, Chief Secretary, GoK
159.Vimal Lal, Secretary (i/c), Kerala Khadi and Village Industries Board, Grama Soubhagya, Vanchiryoor Thiruvananthapuram
160. Vishwas Mehta IAS