



TECHNICAL ASSISTANCE REPORT

REPUBLIC OF UZBEKISTAN

Report on National Accounts Mission

(July 24–August 4, 2023)

OCTOBER 2023

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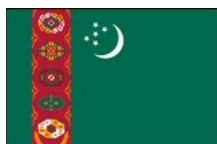
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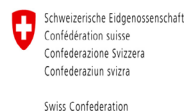


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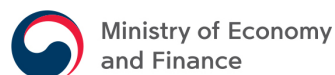
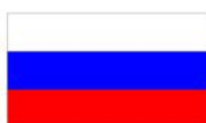
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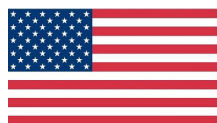


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Acronyms

CCAMTAC	Caucasus, Central Asia, and Mongolia Regional Capacity Development Center
NACE Rev.2	European Classification of Economic Activities
NAD	Department of Macroeconomic Indicators and National Accounts
NOE	Non-observed Economy
SA	The Statistics Agency under the President of the Republic of Uzbekistan
SUT	Supply and Use Tables
TA	Technical Assistance

Summary of Mission Outcomes and Priority Recommendations

1. **The Caucasus, Central Asia, and Mongolia Regional Capacity Development Center (CCAMTAC) conducted a technical assistance (TA) mission on national accounts from July 24 to August 4, 2023.** The mission assisted the Statistics Agency under the President of the Republic of Uzbekistan (SA) in developing the annual supply and use tables (SUT) and improving the non-observed economy (NOE) estimates.
2. **The mission assisted the SA with the compilation of the 2021 SUT at current prices by implementing the Python version of the balancing tool SUTB developed by IMF staff.**¹ The 2021 SUT for Uzbekistan is symmetric with 144 activity types and products. During the balancing process, the SUTB file was expanded and now includes 144 columns and rows of the output and intermediate consumption matrices. A balancing procedure was carried out by applying the SUTB function, which was preceded by the preparation of data and the analysis of statistical discrepancies by individual products.
3. **Since the SUT in Uzbekistan is compiled after the publication of annual GDP, the adjustability coefficients of some indicators equal to 100 percent.** This does not mean that these data are completely reliable, but they cannot be changed after the publication of the annual GDP. The mission recommended that SUTs be compiled before the publication of the annual GDP; that is, the SUT are used as the (more accurate) mechanism used to determine balanced GDP levels. In this case, it is possible to change output and intermediate consumption during the balancing process.
4. **The SA plans to conduct a sector-specific NOE survey covering transport, food and accommodation, education, and health care.** The stratified sample includes 7,000 households. During the mission, a pilot test of the questionnaire was carried out, during which 16 households were interviewed (mostly those of employees of the SA). The results obtained were transferred from the tablet to the MS Access database. The mission and SA staff created several queries in the MS Access database and compiled weighted household expenditures for individual items of the questionnaire. This will help the SA staff to process the entire database after completing the household survey. Field work is scheduled to start on August 7 and end on August 25.
5. **The mission and SA staff discussed further steps of cooperation.** It was agreed that after receiving the initial results of the NOE survey, an online meeting would be organized to discuss the processing of the database and the application of the results to the NOE compilation. The results of the NOE survey will be used for the compilation of national accounts in 2025.
6. **To support the development of national accounts, the mission recommended a detailed action plan with the following priority recommendations:**

TABLE 1. Priority Recommendations

Target Date	Priority Recommendation*	Responsible Institutions
December 2023	Conduct logical control of the initial results of the NOE survey.	SA

¹ For more details, please see Michael Stanger - [“An Algorithm to Balance Supply and Use Tables.”](#)

April 2024	Develop the NOE survey database and prepare the main results.	SA
December 2024	Prepare and manually balance the SUT at current 2022 prices then remove final, minor imbalances by using the SUTB balancing tool.	SA

7. Further details on the priority recommendations and the related actions/milestones can be found in the action plan under Detailed Technical Assessment and Recommendations.

Detailed Technical Assessment and Recommendations

Priority	Action/Milestone	Target Completion Date
Outcome: Source data are adequate for the compilation of the national accounts		
H	Conduct logical control of the initial results of the NOE survey.	December 2023
H	Develop the NOE survey database and prepare the main results.	April 2024
H	Use the energy balance data for the SUT compilation.	April 2024
H	Improve the accounting of goods produced for own consumption and adjust the output of manufacturing (wood, meat, and milk processing, etc.).	April 2024
M	Collect price indices for selected SUT indicators.	April 2024
H	Use the tourism satellite accounts data in compiling SUTs.	April 2024
H	Improve data sources for the distribution of gross fixed capital formation by type of asset.	August 2024
H	Prepare and manually balance the SUT at current 2022 prices then remove final, minor imbalances by using the SUTB balancing tool.	December 2024
H	Use the results of the NOE survey in compiling GDP.	April 2025

H – High; M – Medium

A. NON-OBSERVED ECONOMY

8. The SA is planning to conduct a sector-specific NOE survey in August 2023. The survey covers several problematic activities such as transport, food and accommodation, education and health care. For each of these activities, households are asked to provide their expenditures, which will be used to adjust the household final consumption expenditure and NOE.

9. The NOE survey includes 7,000 households selected by using the stratification method. The total population of approximately 7 million households is divided into 27 strata (Tashkent city and 13 regions, which are divided into urban and rural settlements). The next level of geographical division is a mohalla (an area of a town or village; a community). In total, there are 9,000 mohallas in Uzbekistan, of which 309 were selected. From one mohalla, 22 or 23 households will be interviewed, using a specific list of randomly selected addresses. In case of refusal, another household will be interviewed. For this, a reserve list will also be selected, which includes another 23 households.

10. The survey is conducted through tablets, where the electronic version of the questionnaires is entered. Once completed, this information can be transferred to computer databases. The Department of National Accounts mainly uses the MS Access database.

11. During the mission, a pilot test of the questionnaire was conducted, during which 16 households (mostly those of SA employees) were interviewed. The results obtained were transferred from the tablet to the MS Access database. The mission and SA staff made several queries to the MS Access database and calculated the weighted household expenditures for the individual items of the questionnaire. This will help the SA staff process the entire database once the field work is completed.

12. Pilot testing of the questionnaire revealed several issues that interviewers should pay attention to. In the tables of the questionnaire, part of the expenses is filled in for the last month, and in some rows of the same table - for the last year. Because of this, respondents often fill in annual expenses instead of monthly expenses, or vice versa. At the same time, expenses must be filled in 1000 units of national currency, which is sometimes forgotten when filling out the questionnaire.

13. During the mission, the SA conducted training of interviewers focusing on the above issues. SA staff also noted that interviewers may need to make multiple visits to the same household because some expenses (such as restaurants) require interviewing all adults in the household, and some of them may not be at home on the first visit. Field work is scheduled to start on August 7 and end on August 25. The mission noted that after receiving the initial results, an online meeting can be organized to discuss the processing of the database and applying the results in the NOE compilation.

Recommended Actions:

- Conduct logical control of the initial results of the NOE survey.
- Develop the NOE survey database and prepare the main results.
- Use the results of the NOE survey in compiling GDP.

B. SUPPLY AND USE TABLES

Balancing Tool SUTB

14. The TA mission in February 2020 assisted the SA in implementing the resource balancing mechanism and the use of SUTB. This mechanism was based on MATLAB and required the 64-bit version of Excel (version 2016) to be loaded on one computer as an exception. This computer will need to be replaced during the inventory management process after two years, and there is a risk of losing this feature. Therefore, the SA staff were interested in a new framework of the SUTB tool that can work in more modern versions of Excel.

15. The current mission helped the SA to implement the balancing tool SUTB based on Python. The function was downloaded to a local working computer and tested using the 2021 SUT data. The Python version is not particularly limited and can be implemented on any computer using modern versions of Excel.

16. The SUTB function requires the following five arguments to generate a balanced SUT; the unbalanced SUT, three sets of accounting constraints, and a set of reliability coefficients. The constraints are grouped by type: two accounting-type constraints (supply-use and netting adjustments) and user-defined explicit constraints. The reliability coefficients represent the relative robustness of the initial estimates. The scale of the coefficients has been defined from 0 to 100, with 100 representing fully reliable data and thus not subject to adjustments.

17. Since the SUT is established after the calculation of annual GDP, the reliability of a few indicators is assessed as 100 percent. This does not mean that these data do not contain errors, just

that they can no longer be changed after the publication of the annual GDP. The mission recommended that SUTs be compiled before the publication of the annual GDP; that is, the SUT are used as the (more accurate) mechanism used to determine balanced GDP levels. In this case, it is possible to change output and intermediate consumption during the balancing process, which has positive impact on the quality of national accounts.

18. During the missions, the 2021 SUT was balanced using the SUTB function. The SUT for Uzbekistan is symmetrical and includes 144 types of activities and products. During balancing, the SUTB file was expanded to include 144 columns and rows of the output and intermediate consumption matrices. A balancing procedure was carried out according to the appropriate formula, which was preceded by data preparation and analysis of statistical differences for individual products.

The 2021 SUT

19. Initially, the mission reviewed the unbalanced SUT at current 2021 prices and analyzed discrepancies by each product. For the following products, the discrepancy between supply and use was significant:

- Extraction of crude petroleum (NACE Rev.2 - 06.1)
- Other food products except sugar (NACE Rev.2 - 10.8 except 10.81)
- Sugar (NACE Rev.2 - 10.81)
- Forestry and logging (NACE Rev.2 - 02)
- Passenger rail transport, interurban (NACE Rev.2 - 49.1)
- Dairy products (NACE Rev.2 - 10.5)
- Plastics in primary forms (NACE Rev.2 - 20.16)

20. Data on extraction and imports of crude petroleum are based on regular surveys, and the structure of intermediate consumption is taken from the 2019 detailed survey. Consequently, intermediate consumption is a relatively less reliable indicator. The mission noted that for crude petroleum, the main data source is the energy balance. In 2021, an experimental energy balance was published on the SA website. The energy balance provides volume indicators of output, changes in inventories and consumption. During the mission, intermediate consumption of crude oil was compiled by using the energy balance data, which was about 40 percent higher than the preliminary estimate. After adjustment, the discrepancy between supply and use of crude petroleum was reduced.

21. Given that the gross value added (GVA) extraction of crude petroleum has already been published and cannot be changed, intermediate consumption was revised using a special technique. After the revision of intermediate consumption for crude oil, other products used in the manufacturing of petroleum products were reduced by the same amount, which was distributed proportionally to the structure of other products. Finally, intermediate consumption for manufacturing of oil products did not change but its structure was significantly redistributed from crude oil to other products.

22. The next step was to discuss the large gap between supply and use of sugar. There are two large sugar processing enterprises in Uzbekistan that process raw sugar. Raw sugar is classified into two types: (i) sugar cane, which is an agricultural product (NACE Rev.2 - 01.14) and (ii) processed sugar cane, which is supplied to a sugar refinery (10.81). The mission observed that the SA classified processed sugar cane as NACE Rev.2 - 01.6, while it corresponds to NACE Rev.2 - 10.81. In the questionnaire of the 2019 intermediate consumption survey, there was only one question on sugar cane, the corresponding code for which was 01.6. This led to the inaccurate structure of intermediate consumption. In accordance with the mission's recommendation, the SA changed the structure of intermediate consumption and classified sugar cane as NACE rev.2 - 10.81, which significantly reduced the discrepancy between the sugar supply and use.

23. The supply of forestry products far exceeded their use. A detailed analysis showed that the output of roundwood (NACE Rev.2 – 02.2) is significantly (almost twice) higher than the output of manufacture of wood products and paper (NACE Rev.2 – 16 and 17), which uses roundwood as an intermediate input. The mission met with employees of the SA department of agriculture, who compile the output of forestry. It turned out that more than half of the production of this sector is produced by households, which mainly process wood material for themselves and use it in the own-account construction of residential buildings. This whole long chain of own-account production should be fully accounted first, when compiling the industrial production index and then in the compilation of national accounts.

24. The mission met with employees of the SA industrial statistics department and discussed issues related to measuring own-account production. At this stage, when compiling the index of industrial production, own-account production of agriculture and food industry is included. However, the own-account production of wood is not considered. Also, the output of food industry does not include the own-account production of meat. Processing of wood and meat by households for their own consumption should be valued at producer prices and added to the output of these industries.

25. The output of passenger rail transport was much less than the use of the same service. The mission and SA staff analyzed information on rail passenger traffic. In addition, the mission met with the head of the SA service statistics department and discussed specific issues in this area. As a result, it was found that output, intermediate consumption, household consumption and exports of services logically correspond to the situation in 2021. However, imports of services are much lower than in previous years. During the mission, the SA staff compared these estimates with the balance of payments data. The balance of payments data on railway transport are available only at an aggregated level without further breakdown by passenger and freight. At the same time, the SA compiles exports, and imports of services from two different sources: (i) the foreign economic activity survey, which includes corporations; and (ii) tourism research involving visitors and local households. After a detailed examination of both sources, the mission concluded that the data from the tourism surveys are more reliable than those from the foreign trade surveys. After changing the data source, imports of services increased and the difference between supply and use reduced significantly.

26. Final consumption of dairy products was almost twice the output at basic prices. The main reason for this is dairy products produced by households for own consumption, which are not fully accounted for when compiling output. By considering this factor, the statistical discrepancy will be significantly reduced.

27. The mission also discussed plastics in primary forms, where resources far exceeded their use. The main reason is the underestimation of intermediate consumption. Imports in 2021 significantly exceed intermediate consumption, with these products almost entirely used in the production process as intermediate consumption. The mission noted that in such cases it is necessary to change the output or intermediate consumption. In conditions where these estimates are fixed, balancing is particularly difficult. This is a specific example of why it is better if the SUT is compiled before publishing the annual GDP.

28. The mission and SA staff discussed the next steps for preparing and publishing SUTs. The 2021 SUT will be published in December 2023. At the same time, the preliminary 2022 SUT at current prices will be compiled at the end of October 2023, and the final version will be published in December 2024. In 2024 the SA also plans to compile the SUT at the previous year's prices.

Recommended Actions:

- Prepare and manually balance the SUT at current 2022 prices then remove final, minor imbalances by using the SUTB balancing tool. Use the energy balance data for the SUT compilation.

- Improve the accounting of goods produced for own consumption and adjust the output of manufacturing (wood, meat, and milk processing, etc.).
- Use the tourism satellite accounts data in compiling SUTs.
- Improve data sources for the distribution of gross fixed capital formation by type of asset.
- Collect price indices for selected SUT indicators.

C. OFFICIALS MET DURING THE MISSION

Name	Institution
Mr. Agzam Ikramov	Deputy Director of SA
Mr. Abrorali Mamadjanov	Head of the Macroeconomic Indicators and National Accounts Department (NAD), SA
Mr. Odiljon Mamadaliev	Head of the International Cooperation Department, SA
Mr. Sardor Juraev	Head of the Industrial Statistics Department, SA
Mr. Abdugafir Mirzakhidov	Head of the Service Statistics Department, SA
Mr. Akrom Sultanov	Head of the Coordination and Monitoring Department, SA
Ms. Zuhra Mamadjanova	Head of the Input-Output Statistics Division, NAD, SA
Mr. Umarjon Obidov	Deputy Head of the NAD, SA
Mr. Rakhmatjon Urusbayev	Head of the Satellite Accounts Division, NAD, SA
Mr. Farkhod Ganiev	Deputy Head of the Satellite Accounts Division, NAD, SA
Ms. Tatyana Kuksina	Chief Specialist, NAD, SA
Ms. Zioda Kamilova	Chief Specialist, NAD, SA
Mr. Jakhongir Mekhmonov	Chief Specialist, NAD, SA