

# Republic of Moldova: Technical Assistance Report-National Accounts Statistics Mission



# REPUBLIC OF MOLDOVA

## TECHNICAL ASSISTANCE REPORT—NATIONAL ACCOUNTS STATISTICS MISSION

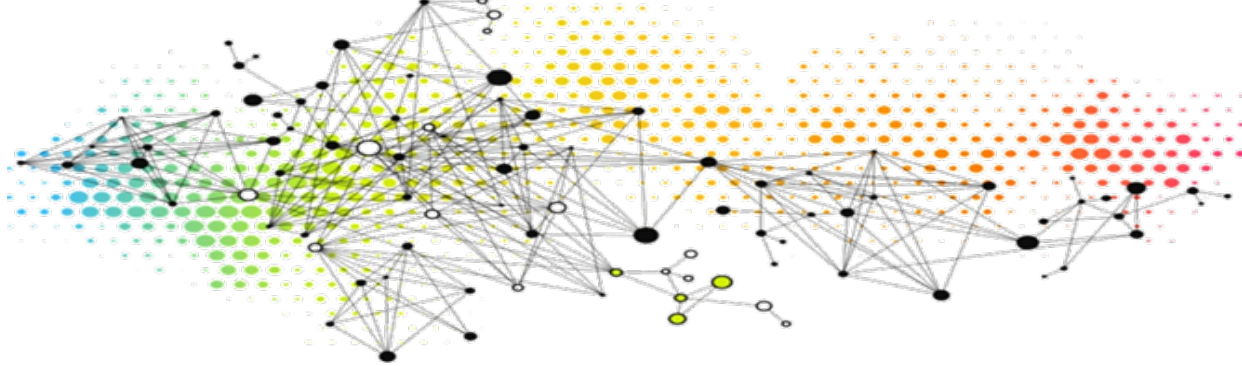
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# MOLDOVA

JUNE 2022

## REPORT ON NATIONAL ACCOUNTS STATISTICS MISSION (JANUARY 17–28, 2022)

**Prepared by Velitchka Petrova**

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## Glossary

<i>2008 SNA</i>	<i>System of National Accounts 2008</i>
COICOP	Classification of individual consumption by purpose
CPA	Classification of products by activity
CPI	Consumer price index
<i>ESA 2010</i>	<i>European System of Accounts 2010</i>
EU	European Union
FISIM	Financial intermediation services indirectly measured
GDP	Gross domestic product
GFCE	Government final consumption expenditure
GFCF	Gross fixed capital formation
HFCE	Household final consumption expenditure
IPI	Industrial production index
LFS	Labor force survey
MFI	Micro financial institutions
NA	National accounts
NACE	Statistical classification of economic activities in the European Community
NCFM	National commission of financial markets
NOE	Non-observed economy
NPISH	Non-profit institution serving households
PPI	Producer price index
R&D	Research and development
SBS	Structural business survey
SUT	Supply and use tables
TA	Technical assistance
UVI	Unit value index
VAT	Value added tax

## SUMMARY OF MISSION OUTCOMES AND PRIORITY RECOMMENDATIONS

1. **A national accounts statistics mission provided remote technical assistance (TA) in national accounts (NA) to the National Bureau of Statistics of Moldova (NBS) during January 17–28, 2022.** The mission assisted in improving the annual GDP estimates for the period 2014–2020, due to the recent changes in the population data.
2. **The NBS has received extensive TA in recent years and has made good progress in improving the NA compilation.** The historical time series of annual GDP are available according to the *System of National Accounts 2008 (2008 SNA)* recommendations. Recent TA missions have assisted the NBS in implementing the new version of the *Statistical Classification of Economic Activities in the European Community (NACE rev.2)*, improving the quarterly compilation of GDP estimates by production and expenditure, applying the commodity flow method, applying the user cost approach to obtain output of dwelling services, and implementing the chain linked volume measures.
3. **The mission assisted the NBS in compiling GDP estimates for the period 2014–2020.** The estimates of GDP by production were compiled, and the components of the GDP by expenditure were reviewed and improved. Both GDP estimates were balanced at current prices and in volume terms. Estimates of GDP at prices of the previous year were compiled by production and expenditure components, using the methods and indicators applied in the previous estimates.
4. **A new compilation system for deriving estimates of GDP by production was developed.** It includes all data sources used for compiling the production accounts aggregates: output, intermediate consumption and value added by activity. Data are presented separately for each component and data source. The estimates were compiled at the section level of NACE, rev. 2 for seven years. Methodological improvements were made in recording the trade margin, consumption of non-profit institutions serving households (NPISH), and current transfers to the general government from abroad.
5. **The mission reviewed the new estimates for the non-observed economy (NOE) that were compiled using the updated data on labor force survey (LFS).** New estimates were compiled for NOE construction activity, mainly major repairs. Estimates of production of agriculture for own consumption were also compiled and included in the estimates.
6. **The mission assessed the new data on micro financial institutions (MFI) registered in the National Commission of Financial Markets (NCFM).** The data was used to improve financial intermediate services. The supply and use framework were used to allocate these services among institutional sectors and to derive estimates for household consumption.
7. **Data from the structural business survey was crosschecked against the financial**

**statement data at the two-digit level of NACE.** The differences between both data sources were used to adjust the production account aggregates – output, intermediate consumption, and value added for exhaustiveness.

**8. Data on components of GDP by expenditure were assessed.** The estimates from the household budget survey were updated to account for the population changes.

**9. Data of gross fixed capital formation (GFCF) were reviewed and were separated by type.** These were grouped into assets from construction, machinery and equipment, software and databases, research and development, and changes in stocks of livestock and trees. Data on imports and exports of goods and services were updated due the changes of the balance of payment data.

**Table 1. Priority Recommendations**

Target Date	Priority Recommendation	Responsible Institutions
<b>June 2022</b>	Obtain benchmarked quarterly data for 2014-2021 in current value and in volume.	<b>NBS</b>
<b>December 2023</b>	Develop a compilation system for Supply and Use Tables (SUT).	<b>NBS</b>

# DETAILED TECHNICAL ASSESSMENT AND RECOMMENDATIONS

Priority	Action/Milestone	Target Completion Date
H	Compile quarterly GDP for 2021 and 2022 using the new compilation system.	June 2022
H	Obtain benchmarked quarterly data for 2014–2021 in current value and in volume.	June 2022
H	Develop action plan for SUT implementation.	December 2022
H	Develop further data sources for SUT – Intermediate consumption at two digits of NACE.	December 2022
H	Develop a compilation system for SUT.	December 2023

## A. Annual GDP by Production

**10. The mission worked on the annual GDP compilation for 2014–2020 by production at current prices and in volume measures.** The initial purpose was to update the recent changes of the population. In addition, during the mission new data sources were available, and methodological improvements were implemented.

**Table 2. An Example of the Compilation System**

Sec.NACE R.2	Old/New	Total/Detail	PA Aggregate	2014	2015	2016	2017	2018	2019	2020
R	old	total	Output	1,853,523	2,119,691	2,240,034	2,195,180	2,319,968	2,761,671	2,481,980
R	old	total	Int. cons.	1,018,146	1,155,344	1,202,719	1,163,364	1,221,986	1,305,270	1,147,999
R	old	total	Val. add.	835,377	964,347	1,037,315	1,031,816	1,097,981	1,456,402	1,333,980
R	new	total	Output	1,710,745	2,133,073	1,866,453	1,544,482	1,946,475	3,015,220	2,479,368
R	new	total	Int. cons.	1,002,833	1,195,255	784,327	637,094	844,953	757,380	659,956
R	new	total	Val. add.	707,912	937,819	1,082,126	907,389	1,101,522	2,257,840	1,819,412
R	new	SBS	Output	857,357	940,265	828,707	326,744	605,024	1,423,899	1,084,967
R	new	SBS	Int. cons.	696,827	710,116	450,524	162,160	317,774	326,166	342,572
R	new	SBS	Val. add.	160,530	230,148	378,182	164,584	287,250	1,097,734	742,394
R	new	NOE	Output	253,378	306,445	238,984	306,432	371,820	401,697	369,453
R	new	NOE	Int. cons.	62,374	72,752	35,694	117,318	146,784	112,928	95,728
R	new	NOE	Val. add.	191,004	233,693	203,290	189,114	225,036	288,770	273,726
R	new	fisim	Output							
R	new	fisim	Int. cons.	2,202	1,254	2,200	2,425	5,115	1,324	2,076
R	new	fisim	Val. add.	-2,202	-1,254	-2,200	-2,425	-5,115	-1,324	-2,076
R	new	R&D	Output							
R	new	R&D	Int. cons.							
R	new	R&D	Val. add.	0	0	0	0	0	0	0
R	new	budget	Output	594,086	655,310	665,130	726,295	780,596	1,022,318	1,041,689
R	new	budget	Int. cons.	236,615	236,634	223,259	263,371	275,994	278,639	224,866
R	new	budget	Val. add.	357,471	418,676	441,871	462,924	504,602	743,679	816,822
R	new	exhaust	Output	5,925	231,053	133,633	185,012	189,035	167,305	-16,741
R	new	exhaust	Int. cons.	4,815	174,498	72,649	91,820	99,286	38,324	-5,286
R	new	exhaust	Val. add.	1,109	56,555	60,984	93,192	89,749	128,981	-11,455

**11. The GDP estimates by production approach were compiled at the section level of the NACE, rev.2 for all seven years (2014–2020).** To facilitate the process of compilation, a new system was established by the mission. Table 2 shows a template of the system by its



components at current prices for one section of NACE, rev2.

**12. The system includes all data sources used for compiling the production account components:** structural business survey (SBS) data, non-observed economy estimates, FISIM allocation, research and development capitalization, general government data, corrections for balancing, and corrections for exhaustiveness of the SBS and financial statement.

**13. This database format facilitates analysis at all levels of data sources and annual trends.** It also helps to detect inconsistencies and address them during compilation. The detailed data are a basis for developing an inventory of the data and methods used for NA. The NA staff intend to expand it to two-digit level of NACE and use it to compile quarterly and annual GDP estimates by production.

**14. For production account estimates of the non-financial sector, three data sources are in place.** The first one, "5C" is used for quarterly GDP estimates. It is a sample survey covering 7,000 companies. The second one, the SBS, includes 14,000 companies and is used for annual GDP estimates. The third one, the financial statement, includes all companies in the economy.

**15. The mission assessed data from the "5C", SBS and financial statement at two digits level of NACE.** Using the "Sales" indicator, a comparable table was developed for all seven years (2014–2020). There were differences in the interval of 0-10 percent between the SBS and financial statement. The differences were seen also between 5C and financial statement.

**16. The correction coefficients were calculated, and adjustments of annual estimates were made for exhaustiveness of the SBS data.** Since the annual data from the financial statement will be available in the year T+1, the mission recommended compiling quarterly estimates for year T, using the 5C financial statement an average ratio for the previous two years.

**17. The practice in construction of dwellings by business companies in the country is to sell them unfinished internally.** The prices of such flats are cheaper than those that are fully completed. The owner of the uncompleted flat should organize the process of finishing (purchase materials, find specialists for different type of work, installation, tiling, and so forth). The value of finished work for newly built flats in average amounts around 20 percent of the price of the flat. To make some estimates of this output the number of square meters is needed. If the new flats build in the year are taken, the estimation may be wrong, because there are new flats which are not sold, or finished internally, due to the lack of financial resources of the owner.

**18. The mission developed a methodology for estimating finished work using the supply of goods used for major repairs and the cost of labor.** Usually, the price of materials is equal to the price of labor. Additional estimates were done for painting as the price of labor is related to the square meters. Information was found on quantity of latex per square meter.

**19. As almost of all materials for finishing of flats are imported, a list of materials by Combined nomenclature (CN) and value of imports were used to derive the supply.** Using

the estimated labor input by categories of materials the estimates of finished work were obtained and are presented in the Table 3.

**Table 3. Estimation of Finished Works for New Build Flats**

	Output	IC	VA
2020	6,327,482	3,311,559	3,015,923
2019	6,066,297	3,174,402	2,891,895
2018	5,292,631	2,766,453	2,526,178
2017	4,910,397	2,567,771	2,342,626
2016	4,912,914	2,581,224	2,331,689
2015	4,463,336	2,332,235	2,131,101
2014	4,444,476	2,305,967	2,138,509

**20. These estimations were incorporated within the NOE of the construction activity.** All calculations were made by the NA staff.

**21. The mission and the NA staff had a meeting with the Agriculture Department staff of the NBS.** The purpose was to assess the impact of the change in population to the statistical data of agriculture. We were informed that there is a survey on the basis of population data, but its data are used as a productivity indicator by products.

**22. The used arable land by products is collected by the municipalities. Using the productivity indicator by hectare, the output is obtained.** The same procedure is applying for animal production.

**23. The agriculture department staff is aware that for animal production should use data from the survey.** They work now with the sample unit staff and assess the results of the survey extrapolated to the total target population.

**24. During the mission, estimates of own production for own consumption of the agricultural households were compiled.** These estimates are based on the product balances compiled by the NA staff and the purpose is to derive data for household consumption. The estimation of own production for own consumption covers the following products – bread, meat and its products, milk and milk products, and wine. They are shown in the Table 4. The own production was recorded as value added and output within the agriculture activity.

**Table 4. Household Own Production of Agriculture Households – Current Prices**

	2014	2015	2016	2017	2018	2019	2020
<b>Total</b>	<b>3,782,194</b>	<b>3,495,403</b>	<b>3,683,599</b>	<b>3,366,626</b>	<b>2,929,153</b>	<b>2,675,986</b>	<b>2,537,840</b>
Bread products	1,292,424	1,247,626	1,538,250	1,399,528	1,342,556	1,285,850	1,326,512
Meat products	641,197	617,135	444,652	338,462	52,240	167,469	228,644
Milk products	1,238,157	1,122,378	1,045,719	1,095,142	873,289	759,613	625,745
Wine	610,415	508,264	654,979	533,494	661,068	463,055	356,938

**25. The mission assessed the estimates of the financial services. FISIM is calculated in compliance with the 2008 SNA requirements, separately for national and foreign currency.**

It is allocated by institutional sectors and by final consumption and intermediate consumption. FISIM for intermediate consumption is allocated by activity at two digits level of NACE, rev.2.

**26. Data on output and intermediate consumption of the bank institutions were reviewed.** Output of the central bank is allocated to the intermediate consumption of banks.

**27. New data sources were available for the non-bank financial intermediates, so called micro financial institutions (MFI).** They are included in the sample of the 5C survey and in financial statement data. New data were found on the website of the National commission of financial markets (NCFM) for 2020.

**28. Income approach was used to derive the output of the MFI for 2020 using all available data sources.** There were data for the profit before taxes from financial statement crosschecked against the data from NCFM, compensation of employees and administrative expenses from the NCFM data, intermediate consumption, and consumption of fixed capital from 5C. These data for 2020 and financial statement data were used as a benchmark to derive data for the whole period (2014–2020).

**29. The NA staff would be able to calculate the FISIM of MFI, when the detailed data from NCFM for MFI are available for loans, interest rates, and institutional sectors.**

**30. Using the supply use framework, the output of banking services less FISIM was allocated by institutional sectors.** Data on bank expenses, included in intermediate consumption for financial, non-financial sectors and general government were available. Data for households' sector were derived as a residual (output plus import minus export minus intermediate consumption) and were included in the private household consumption.

**31. The imputed rent had been calculated by the NA staff in 2018 based on the 2014 census results of occupied dwellings.** The user cost approach is applied to derive the output of dwelling services. It means that the output is equal to the sum of net operating surplus, consumption of fixed capital, other taxes on production, and intermediate consumption.

**32. The compilation process includes estimations of stock of dwellings by regions, average age, service life by construction type, land under dwellings, new build dwellings, and a price for construction of one square meter for individual and business construction.**

**33. The mission with the staff assessed the census result for the population and dwellings and average square meters per person.** Using demographic data, estimates were made for migration and change for occupied dwellings for each year (due to migration). The NA staff updated the stock of the occupied dwellings to obtain new estimates for the imputed rent. The results are shown in the Table 5.

**Table 5. Imputed Rent**

	2014	2015	2016	2017	2018	2019	2020
new	11,295,300	12,209,937	12,607,806	12,895,660	13,169,118	13,413,236	13,850,957
old	11,295,300	12,296,898	12,749,065	13,097,131	13,753,189	14,018,336	13,786,177

**34. The mission provided the NA staff methodological assistance for recording of R&D, transfers to general government from the Balance of payment, and trade margin compilation.** Updated data were available for consumption of fixed capital for general government sector.

**35. The new GDP estimates by production components were compiled and a comparable table is presented below in a table 6.**

**Table 6. GDP Estimates for 2014–2020**

	2014	2015	2016	2017	2018	2019	2020
GDP - new	131,964,258	146,740,205	159,010,419	176,007,293	189,062,627	206,256,239	199,733,683
Diff(new/old)-%	-1.1	0.7	-1.1	-1.6	-1.8	-2.0	-2.8
GDP - old	133,481,634	145,753,642	160,814,564	178,880,890	192,508,553	210,378,059	205,432,298

**36. NA staff with the mission compiled GDP components by production at prices of the previous year.** Historic volume indices and deflators by activity were used to obtain the output and value added in volume measures.

## **B. Annual GDP by Expenditure**

**37. Annual estimates of GDP by expenditure components for the period 2014–2020 were reviewed and improved during the mission.** Data on household budget survey (HBS), personal services, and imputed rent were updated due to the population's changes. Due to the new data sources, estimates of household consumption of other financial services were compiled. Imports/exports of goods and services were updated, due to changes in the Balance of payments data.

### **Household final consumption expenditure (HFCE)**

**38. The estimates of HFCE are compiled at four digits level of classification of individual consumption by purpose (COICOP) according to the domestic concept.** To obtain the national concept, the estimates of non-residents consumption on national territory are deducted from domestic concept and consumption of residents abroad is added.

**39. HFCE is recorded at purchasers' prices, including trade and transport margins, non-deductible VAT, and import duties.** The main compilation method is the commodity flow approach. The estimates of HFCE are derived as from the supply of goods and services (including imports plus domestic production) the export is deducted. In the Table 7 is shown a commodity flow aggregated table at two digits of COICOP.

**Table 7. An example of Commodity Flow Table for HFCE**

Code	COICOP	HBS	HFCE	Imports	Exports	Domestic Production
	TOTAL	69,476	125,211	43,845	14,689	96,056
01.	Food and non-alcoholic beverages	28,851	40,050	10,581	7,738	37,208
02.	Alcoholic beverages, tobacco and narcotics	1,020	7,813	3,669	3,023	7,167
03.	Clothing and footwear	8,029	5,696	3,137	518	3,077
04.	Housing, water, electricity, gas and other fuels	12,295	21,100	2,725	2	18,376
05.	Furnishings, household equipment and routine household maintenance	2,711	12,094	6,867	1,352	6,579
06.	Health	4,312	5,232	4,290	1,461	2,404
07.	Transport	3,298	11,084	7,952	138	3,270
08.	Communication	3,053	6,452	663	11	5,800
09.	Recreation and culture	968	3,819	2,315	82	1,587
10.	Education	495	1,398	0	0	1,398
11.	Education	1,282	3,769	0	0	3,769
12.	Miscellaneous goods and services	3,162	6,704	1,645	364	5,423

**40. Balances of products are applying for white, flour, bread, meat and meat products, milk, and milk products, and grape and wine.** As a half of these products are produced within the agricultural households, this method is used to derive the estimates of produced goods for own consumption and the overall data on household consumption.

**41. Data sources used for estimates of HFCE are agriculture and industrial production, services, imports and exports of services, tax data, HBS data, and other administrative data.** The mission with the NA staff improved the estimates of imputed rent impacted of the new census data for population and dwellings. Current demographic data also were used to assess the number and square meters of the occupied dwellings for the period 2014–2020.

**42. During the mission new data sources were available for financial services.** Based on supply/use framework, consumption of other financial services from households was compiled. The same procedure was established for household consumption of communication services.

**43. The estimates of balances were assessed from the mission and improved.** The estimate of bread and bread products were accordingly updated for the population changes.

**44. The HFCE estimates were compiled in the average prices of the previous year.** The CPI at four digits level of COICOP was used to deflate the current annual data.

#### **Non-Profit Institution Serving Households (NPISHs) Final Consumption Expenditures**

**45. NPISHs sector includes legal entities that provide goods and services to households that are not sold at market prices.**

**46. There is a special annual questionnaire which is used to derive estimates for**

**production account and for NPISH consumption.** The mission assessed the data included in these data and assisted the staff to obtain estimates on NPISH for the period 2014–2020.

**47. Final consumption of NPISH was obtained from the production account component – output less the revenues obtained from production.**

### **Gross Fixed Capital Formation (GFCF)**

**48. Produced fixed assets include machinery and equipment, buildings, R&D, software, and cultivated assets. Major repairs to buildings are also included.**

**49. The mission reviewed the compiled estimates of GFCF using data from the investment survey, and the estimates from the commodity flow method.**

**50. The commodity flow method is used to derive estimates on machinery and equipments.** A list of capital goods by codes of combined nomenclature (CN) is used to obtain data on imports and exports. Trade and transport margins are added to the data on imports, exports, and domestic production at basic prices.

**51. The same approach is used to derive estimates of build assets and major repairs in construction.** A list of construction materials and other goods used in construction of dwellings/buildings is used to collect data on imports, exports, and local production. The construction materials for current repairs are subtracted. From these data, estimates of materials supply at basic prices are compiled. They are converted to purchasers' prices adding non-deductible VAT, trade, and transport margins. Using the ratio of the materials to the output of construction companies and private construction, the estimate of output is obtained.

**52. Data from investment survey were used for compiling estimates of** cultivated biological resources, mineral exploration and evaluation, and computer software and databases. The NA staffs compile estimates of R&D using data on import, export, general government data and data from Frascati survey.

**53. Volume measures of GFCF were obtained using composite deflators of domestic producer price index (PPI) and EU PPI for non-domestic market at two and three digits of classification of products by activity for imported goods, adjusted for currency exchange rate.**

### **Government Final Consumption Expenditure (GFCE)**

**54. Estimates of government final consumption expenditure were reviewed by the mission.** The NA staffs compile the estimates of intermediate consumption and value added using detailed data for government expenses by economic categories and functions. Using the functions, the output is split to collective and individual services. GFCE is compiled by adding to the output social transfers in kind and deducting sales.

**55. The mission reviewed the estimates compiled by the staff.** New data were available

for consumption of fixed capital and were integrated in the production account and GFCE.

**56. Import and export of services are compiled by the Central bank.** Data on import and export of goods and services were updated due the changes of the Balance of payment data.

**57. Detailed data for import and export of services are used to compile composite deflators.** The NA staff calculates export unit value index (UVI) and hybrid import price index which consists of import UVI for homogenous goods and for capital goods EU PPI for non-domestic market.

**58. The mission assisted the NA staff in balancing GDP estimates by production and expenditure approaches.** It was done simultaneously for current value and in prices of the previous year.

### C. Officials Met During the Mission

Name	Institution
Oleg Cara	Director General of NBS
Iurie Mocanu	Deputy Director General of NBS
Andrian Tataru	Head of General Division for Macroeconomic Statistics
Irina Cemirtan	Head of National Accounts Division