

# **TWINNING CONTRACT**

**AZ/16/ENI/ST/01/19 (AZ/53)**

**Support to the State Statistical Committee and the State Tax Service under  
the Ministry of Economy to  
strengthen collection, harmonization, analysis, publishing and  
dissemination of business statistics**



## **MISSION REPORT**

**Activity 1.4.B**

**Activity Title: Capacity of the staff of the State Tax Service under the Ministry of Economy  
enhanced in the use of the R-programing language for statistical production**

Mission carried out by

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**28 March-1 April 2022**

Onsite Mission

Version: FINAL

**Twinning Project: AZ/16/ENI/ST/01/19 (AZ/53)**

**“Support to the State Statistical Committee and the State Tax Service under the Ministry of Economy to strengthen collection, harmonization, analysis, publishing and dissemination of business statistics”**

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## List of Abbreviations

AZ	Azerbaijan
BC	Beneficiary Country
EBS	European Business Statistics
EC	European Commission
EU	European Union
MS	Member State
NACE	Nomenclature générale des Activités économiques dans le Communautés européennes NACE is the industrial classification of units dealing in economic activities
RS	Remote Sessions
RTA	Resident Twining Adviser
SRSU	State Register of Statistical Units
SSC	State Statistical Committee
STS	State Tax Service under the Ministry of Economy
ToR	Terms of Reference

## 1. General comments

This mission report was prepared within the EU Twinning Project “Support to the State Statistical Committee and the State Tax Service under the Ministry of Economy to strengthen collection, harmonization, analysis, publishing and dissemination of business statistics”. It was the first mission to be devoted to use of R in official statistics within Component 1, Result 1 within Activity 1.4 of the project.

The purposes of the mission were:

- Installing the R-programming language and R-Studio
- Introduction to R and its basic functions
- Data entry into R, data wrangling, exporting results with R
- GSBPM and R
- Available R libraries and functions.
- R for processing, analyzing and disseminating official statistics.
- Mission report

The consultant would like to express his/her thanks to all officials and individuals met for the kind support and valuable information which he/she received during the stay in Azerbaijan.

This views and observations stated in this report are those of the consultant and do not necessarily correspond to the views of EU, SSC, STS, SME-Agency, Statistics Finland, Statistics Lithuania, Statistics Netherlands, Statistics Denmark and HAUS.

## 2. Status at the beginning of the mission

*Activity Capacity of the staff of the State Statistical Committee, State Tax Service under the Ministry of Economy and SME Development Agency enhanced in the use of the R-programing language for statistical production* was carried out on five on-site workshop sessions. The last session summarized some main aspects of what was learned, introduced other experiences and tips on the use of R, and proposed next steps in learning R as recommendations.

The use of R had been minimal, and none of the participants had much prior exposure to R. Some participants were familiar with programming concepts, however. The course started from the basic steps of installing R and R-Studio and went from very simple functionalities to more complex ones. The hands-on exercises were done together with the experts.

## 3. Status of mission results

The R-program and R-Studio were installed. The main functionalities introduced, possibilities of R in statistics production with the GSBPM model was discussed, the main functionalities of tidyverse for data wrangling, processing and analysis, plotting, and spent time on producing automated rmarkdown reports were introduced. During the week, hands-on exercises were done so that the participants will have performed at least one example of a full statistics production process going from obtaining data, reading them into R, processing and manipulating, analysis and visualisations and production of an automated report and exporting the output. This was a quite intensive and extensive material, and most introductory courses in R would have a narrower focus. But, the participants were delivered all the codes and data, so that they will have plenty of examples that can be adopted and modified as needed. The goals of the activity were met as stated in section 1.

Participants had initially some expectations that were out-of-scope, but those could be treated to some degree at the final session (e.g on time series analysis).



The pace during the training sessions was too slow for some participants and too fast for others. This is because we had a relatively large group and wanted to respond to all problems arising while doing the exercises. As a remedy in the future activities, we might distribute the example codes beforehand, so that the participants could advance on their own.

#### **4. Sustainability of the achievements**

All parties agreed on the Activity analysis. The achievements are sustainable, since the code and materials are distributed to the participants. In the actual work, when R is used at the office, more complex problems are likely to arise, and more learning is required by the individuals. This is why we spent time on explaining the different websites, courses, and help functionalities of R where more information can be obtained.

#### **5. Recommendations for the future (short and long term)**

##### **In short term**

R should be installed to each computer, and the production processes of statistics should be done in R as applicable. This will require some time and coding efforts, but will simplify things in the future.

##### **In long term**

A team or a network of R-users should be established at the office. This would be a way to ensure that there is a sustained capacity in R programming, and help would be available in-house. The network could develop office-wide best practices on coding and developing R programs. They would be responsible for the best practises on how should the code be documented, and would know what packages are found to be useful.

#### **6. Identification of needs for additional support**

These recommendations can be implemented without additional support.

#### **7. Outstanding issues**

There were a few issues. First one is setting up connections to the databases. We have shown a code to do it. However, there needs to be best practices, versioning of the databases and sufficient administration on the rights of updating and altering those databases if access is granted to a larger number of people.

Second one worth mentioning is the large number of questions about specific packages or methodologies that should or should not be applied. For example: how do you impute in business demography, or do we have special packages for business demography. We typically did not provide clear recommendations on what to do exactly, since answering those questions require research on the specific problems the participants are facing. This is best left for a focused consulting mission with clearly defined objectives.

## **Twinning Project: AZ/16/ENI/ST/01/19 (AZ/53)**

**“Support to the State Statistical Committee and the State Tax Service under the Ministry of Economy to strengthen collection, harmonization, analysis, publishing and dissemination of business statistics”**

### **Annex 1. Terms of Reference**

#### **Terms of Reference**

**EU Twinning Project: AZ/16/ENI/ST/01/19 (AZ/53)**

**Support to the State Statistical Committee and the State Tax Service under the Ministry of Economy to strengthen collection, harmonization, analysis, publishing and dissemination of business statistics**

**Component 1: A unified approach for improved quality of information exchange with the State Tax Service under the Ministry of Economy databases is implemented  
28.3 – 1.4 2022 - Hosting institution: On-site training workshop**

#### **Activity 1.4.B: Capacity of the staff of the State Tax Service under the Ministry of Economy enhanced in the use of the R-programming language for statistical production**

**Result 1:** Data quality management standards applied in the source databases of the State Tax Service under the Ministry of Economy are improved for maintaining and update of the SRSU

##### **Indicators of achievement**

1.1.3 Enhanced capacity of the staff of the State Tax Service under the Ministry of Economy and the SSC provided.

##### **Prerequisite: -**

**This activity will be carried out in a 5 Working Day’s mission.**

##### **Purpose of the activity**

Enhance the capacity of the staff of the State Tax Service under the Ministry of Economy for AD delivery

##### **Expected Outputs of the Activity**

- Installing the R-programming language and R-Studio
- Introduction to R and its basic functions
- Data entry into R, data wrangling, exporting results with R
- GSBPM and R
- Available R libraries and functions.
- R for processing, analyzing and disseminating official statistics.
- Mission report

##### **Resources**

##### **State Statistical Committee (SSC)**

- Mr. Toghrul Ajalov-Head of sector for work with registers of statistical units and administrative information sources, Deputy Head of Department
- Mr. Ramin Mammadkhanov, Advisor, Information and Public relations department
- Ms. Sevinj Fattahova, Head of sector, Department of National Accounts and Macroeconomic Indicators Statistics
- Ms. Parvin Huseynova, Chief Advisor, Department of National Accounts and Macroeconomic Indicators Statistics
- Mr. Turgut Shahmarli, Leading Adviser, National Accounts Statistics Department
- Mr. Shamil Garagozov, Leading economist, Research and Innovations department
- Ms. Khayala Guliyeva, Leading advisor of welfare Statistics sector
- Ms. Kanan Mammadrzazada, Chief advisor, Pricing Statistics
- Ms. Ilhama Eyvazova, Chief Advisor, Population Statistics department
- Mr. Nijat Hasanov, Chief advisor of Labour Statistics Department
- Mr. Farid Hasanov, Leading advisor of Labour Statistics Department



## Twining Project: AZ/16/ENI/ST/01/19 (AZ/53)

### “Support to the State Statistical Committee and the State Tax Service under the Ministry of Economy to strengthen collection, harmonization, analysis, publishing and dissemination of business statistics”

- Mr. Zahid Mehdiyev, Chief advisor of Labour Statistics Department
- Ms. Aynur Sultanova, Advisor of Quality control and metadata department
- Mr. Parviz Mehdiyev, Leading Advisor, Agriculture Statistics Department
- Ms. Tarana Shahbalayeva, Leading Advisor, Energetics Statistics department
- Mr. Rashad Bannayev, Leading advisor, Trade Statistics department
- Mr. Mikayil Nabiyeu, advisor, Industry and Construction statistics department
- Mr. Gabil Bayramov, Chief Advisor, Service Statistics department
- Ms. Goncha Bayramli, Advisor, Advisor, Sustainable Development department
- Ms. Gulnar Huseynova, Chief Advisor, IT department

#### State Tax Service under the Ministry of Economy (STS)

- Mr. Telman Mammadov, Chief State Tax Inspector of Economic Analysis Main Department
- Mr. Seymour Asadov, State Tax Inspector of Economic Analysis Main Department
- Ms. Aytan Shahmarova, Chief State Tax Inspector, International Relations Main Department
- Ms. Rahimova Nazlı, State Tax Inspector, Main Department of Economic Analysis and Control of Accounting

#### Small and Medium-Sized Enterprises Development Agency

- Mr. Salman Humbatov, Leading Advisor, Secretariat
- Mr. Hamid Asgarov, Advisor, SME Friend department

#### MS Experts

- Mr. (Dr.) Henri Luomaranta, *Head of Statistics (Methodology and Quality)*, Statistics Finland
- Mr. Tomas Rudys, Head of Data Tech. Development Group, Statistics Lithuania

#### Twining Project Administration

- Mr. Ville-Matti Pilviö, RTA
- Ms. Gultakin Babayeva, RTAA
- Mr. Tarlan Arzumanov, Language Assistant

#### Agenda - 28.03 – 1.4.2022

Day/Time	Place	Event	Purpose / Details
Monday 10:00-17:00	Baku SSC	Session 1	Opening, Introductions, Mission Agenda and Schedule, the working methodology Goals of this Activity Installing Base R and R-Studio and CRAN Introduction to R / R-Studio GSBPM and available R modules and libraries Getting data into R and outputting results
Tuesday 10:00-17:00	Baku SSC	Session 2	Data wrangling (imputation&editing) eg “tidyverse” Producing graphs eg “ggplot”
Wednesday 10:00-17:00	Baku SSC	Session 3	Using R for processing, analyzing and disseminating official statistics Writing reports with RMarkdown and RSummary
Thursday 10:00-17:00	Baku SSC	Session 4	A sample statistical publication using R
Friday 10:00-17:00	Baku SSC	Session 5	Using other statistical R Modules Presentation of MS experts’ findings Agreement on summary mission report

