

TWINNING CONTRACT

AM/14/ENP/ST/15

Strengthening of the National Statistical System of Armenia – Phase II



MISSION REPORT

on

Innovation Statistics

Activity 5.6: Follow-up on achievements and recommendations for the future

Mission carried out by

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List of Abbreviations

EU	European Union
EACU	Eurasian Customs Union
NSSRA	National Statistical Service of the Republic of Armenia
BC	Beneficiary Country
MS	Member State
ToR	Terms of Reference
STI	Science, Technology and Innovation

1. General comments

This mission report was prepared within the Twinning Project ” Strengthening of the National Statistical System of Armenia – Phase II”.

It is the final mission to be completed within Component 5 of the project.

The purposes of the mission were:

- To discuss the status regarding the component at the beginning of the project
- To discuss the status of the project results
- To prepare recommendations regarding the sustainability of the achievements
- To prepare recommendations for future work of NSSRA after the project finishes
- To identify outstanding issues and needs for further support, if any

The work under component 5 has provided NSSRA with capabilities to carry out the innovation survey for the business enterprise sector. Production systems, for example for data collection, error checks and tabulations, were developed for the pilot survey – or actually for the first-time full-scale survey – and is supposed to be updated and reused for the forthcoming, regular surveys.

The work done within the component is based on the EU legislation and the EU guidelines. The sampling frame should follow the EU regulation (to obtain comparable results between countries), but taking the Armenian business demography and national needs into account.

In general, it is recommended to develop the more regular questionnaire only after the implementation of the upcoming new version of the Oslo Manual, and to use the first survey years to establish a base and a time series of the core indicators.

The MS Experts would like to express their thanks to all officials and individuals met for the kind support and valuable information which was received during the stay in Armenia and which highly facilitated the work of the MS Experts.

The views and observations stated in this report are those of the consultant and do not necessarily correspond to the views of EU, NSSRA, Statistics Finland, Statistics Lithuania or Statistics Denmark.

2. Status at the beginning of the project

Measurement of R&D, that is part of innovation activity by definition, has traditionally been well developed in Armenia, but only for government and higher education sectors. Based on approaches and concepts for the measurement of innovation in enterprises by Eurostat and OECD, similar applied also by UNESCO, innovation statistics reflecting the main features of innovation activity in business enterprise sector will be developed for the first time during the Twinning project by setting up a system for data collection and analysis.

3. Status of project results

All the planned activities for the component 5 were carried out according to the project plan and all the main outputs expressed as a target for the project were achieved.

The questionnaire for the first survey on innovation data was prepared. In order to be able to provide internationally comparable data the questionnaire was based on the EU model questionnaire. Concerning EU statistics, the main Innovation statistics indicators are identified in The Commission Regulation (EU) No 995/2012, implementing Decision No 1608/2003/EC of the European Parliament and of the Council concerning the production and development of Community statistics on science and technology (in the brackets are stated the relation with the relevant question in the NSSRA pilot questionnaire):

1. Innovative enterprises (question 3.1, 4.1, 5.1, 9.1 and 10.1)
2. Innovative enterprises that introduced new or significantly improved products, new to the market (question 3.3.1)
3. Turnover from innovation, related to new or significantly improved products, new to the market (question 3.3.3)
4. Turnover from innovation, related to new or significantly improved products, new to the firm, but not new to the market (question 3.3.4)
5. Innovative enterprises involved in innovation cooperation (question 8.1)
6. Innovation expenditures (question 6.2)
7. Innovative enterprises that indicated highly important effects of innovation
8. Innovative enterprises that indicated highly important sources of information for innovation
9. Enterprises facing important hampering factors (question 11)
10. Enterprises that developed the innovations itself or together with the other enterprises/institution (question 3.2.1, 3.2.2, 4.2.1. and 4.2.2)

The questions related to indicator 7 and 8 were presented to NSSRA but were excluded because of the length of the pilot questionnaire. The questionnaire already covers several questions and multiple aspects of innovation and thus cause heavy response burden to respondents. The questions relating to effects of innovation and sources of information for innovation can however be incorporated in the future surveys. The work on developing the questionnaire was mainly done during winter 2015–2016.

The pilot survey on innovation – a full-scale survey in fact – was carried out in spring 2016 after which the data was edited according to the rules applied for the European innovation survey. Data was weighted and aggregated during 2016. For tabulations, NSSRA adopted rules applied within the EU. For publishing data, NSSRA uses both international examples (like examples from EU member states) and its own NSSRA practices.

The most difficult issues during the data collection were defining innovations and innovation activity, but also defining innovation expenditure for which – for respondents – it was often possible to give only a proxy instead of exact figures. There exist no exact follow up information on innovation expenditure usually in enterprises bookkeeping or in accounting systems more generally which is why estimates are often needed. Defining innovation and innovation activity and measuring innovation expenditure are the most challenging issues and most typical difficulties in innovation surveys in general.

The methodology relevant for innovation statistics was developed covering the whole part of work in the project period. Regarding NSSRA's wish to develop 1) a sort of handbook for data providers, and 2) a comprehensive overview of the whole survey process (which steps to be covered), it was decided that the project could provide a compact summary for innovation survey including a description of the survey procedure. The document was named '*Methodological notes for Innovation Statistics*'. The methodology was thus gathered into one document which is an extra product of the project as

compared to the original project plan. The Notes was considered helpful for both NSSRA and respondents in the future, and was thus drafted.

The content of the draft Notes is as follows:

0. Description of the survey
 1. Main concepts and definitions
 2. Planning the survey
 3. Data collection
 4. Data editing
 5. Imputations
 6. Data validation
 7. Weighting
 8. Tabulations and analysis
 9. Metadata & quality description
 10. Dissemination
 11. Filing and documentation

These Notes may be helpful during the data collection and some of the text could be combined with more specific instructions for the questionnaire. For technical parts, the Notes would work like a checklist for the survey personnel. The Notes should be able to pick up the most relevant elements of the survey and survey process – especially those specific for the innovation survey, and they need to be in line with international recommendations. Certain parts of the Notes should be filled in mainly by NSSRA according to the national practice (for example weighting, dissemination etc.).

As a result of this component, NSSRA has now the first innovation data for the business enterprise sector in Armenia. Although the data is pilot data, the data is actually a full-scale survey data. Data is collected according to relevant international guidelines and is thus comparable to data produced for example in the EU. NSSRA is now able to provide benchmark information on innovation activity in enterprises. Innovation data and statistics indicators produced from the survey data are essential to advice national policy making.

NSSRA has now experience with the whole statistical process for innovation survey and for collecting innovation data. Like mentioned, this first-time survey was carried out with full coverage and thus gives a good starting point for carrying out future surveys in this area. The survey has increased knowledge (of statisticians and of data users, but also of respondents) on the definition and measuring of innovation. All this knowledge is applicable in the future. The concept of innovation is complex, changing and subjective. The cooperation with respondents during the data collection indicated and concretised challenges relating to defining and measuring innovation (some of respondents for example re-evaluated their status as an innovator after seeing the definition, and some clearly innovative enterprises evaluated themselves as non-innovators etc.). In future surveys, these challenges need special attention in order to increase the quality of the data.

The importance of documentation and provision of metadata was underlined many times by MS Experts during the project.

The work was done in close cooperation with national stakeholders. For example, when defining the content of the survey questionnaire the national data needs were clarified together with stakeholders.

During the project, NSSRA expressed their interest to cover also the public sector by an innovation survey. However, according to international standards and guidelines the focus of the project was only on the business enterprise sector. At the moment, there exist no international guidelines for compiling statistics on innovation in the public sector.

Innovation data can also be used to develop the main indicator on R&D statistics (R&D expenditures). By EU regulation, R&D statistics are more concentrated on human and financial resources for the implementation of R&D activities and cannot fully be covered without combining Innovation and R&D surveys (different indicators are surveyed). MS experts do not recommend, however, to join these statistics into one survey because the questionnaire will be very long and too complicated to respondents.

Within the component the following benchmarks were set to be achieved:

Component 5: Innovation Statistics				
MR6: Innovation statistics introduced by 8th project quarter				
Questionnaire for gathering innovation statistics is drafted	2Q	ACHIEVED	☺	<u>The benchmark is fully achieved.</u> A questionnaire with 13 modules of questions related to innovation in private enterprises has been developed and used in the pilot survey which took place in spring 2016.
Pilot survey conducted	6Q	ACHIEVED	☺	<u>The benchmark is fully achieved.</u> The pilot survey has successfully been conducted on 1,700 small, medium and large private enterprises in Armenia.
Test results analysed	6Q	ACHIEVED	☺	<u>The benchmark is fully achieved.</u> The pilot data has been finalized and weighted, and the first basic tabulations have been developed based on MS Experts instructions.
Methodology on innovation statistics introduced	7Q	ACHIEVED	☺	<u>The benchmark is fully achieved.</u> The methodology is developed together with a process document for the future production of innovation statistics in Armenia: " <i>Methodological notes for Innovation Statistics</i> ".
Plan for regular production and publication developed	7Q	ACHIEVED	☺	<u>The benchmark is fully achieved.</u> The whole process and main tabulations for publishing were covered during the project, and are documented in the " <i>Methodological notes for Innovation Statistics</i> ". NSSRA have to develop the final version of the questionnaire for the regular production of innovation statistics in cooperation with national stakeholders.

4. Sustainability of the achievements

It is recommended to disseminate the survey results. It is important to disseminate as much material and data, and indicators, as possible because it is an essential way of making the results of the project visible for data users. Publishing gives data users a possibility to get familiar with new indicators on Armenia. Getting access to first results – if regarded useful – and being able to analyse the economy from a new angle commit the data users, and especially central stakeholders, to support the further production of innovation statistics. This will also promote continuity of access to innovation data in order to measure the development of this type of activity.

Internationally comparable data makes it possible to compare activities in Armenia with the situation in other countries. This provides valuable information for example for helping to strengthen the innovation environment in Armenia. Innovation data can help establishing an understanding on how innovation happens in enterprises and thus boost a more effective environment for development within this sector. Innovation indicators may be valuable tools in many kinds of assessments.

Good and efficient cooperation with stakeholders is necessary for the production of important national data on innovation. Defining the content of survey and utilising the data together with stakeholders makes the data more valuable for its users.

The success of first-time survey is based on a lot of work done by the personnel in NSSRA. In order to continue with a similar production, it is important to maintain the knowledge gathered during the first-time survey and guarantee the resources needed. This is why documenting all the experience gathered is extremely important.

Innovation survey in business enterprises is quite extensive and requires significant man-power in data collection, data treatment, analysis and publishing. Also, if a responding enterprise has difficulties in filling the questionnaire, assistance should be provided. Sufficient human resources also for future surveys should therefore be guaranteed in order to maintain the level of quality of surveying.

Suitable software is also needed for flexible and less time-consuming working.

The data now provided in Armenia is well in line with international data from other countries but innovation modes and environment, like guidelines for measurement, are constant changing. In order to maintain international comparability on innovation data, NSSRA needs to follow the international development in this area.

5. Recommendations for the future

Like mentioned, measurement framework are constantly changing. The Oslo Manual is under revision during 2017 and it is foreseen that the new version of the Manual (OM4) will change the measurement framework, at least to some extent. NSSRA is recommended to closely follow this international development and not to adopt the innovation survey as a state statistical form until a new version of the Manual is in place. It is sensible to update the regular production of innovation statistics (incl. a new version of the questionnaire) only after the new international guidelines, and especially those of the EU, are available. Also, the Notes needs to be updated according to the revised guidelines.

NSSRA should maintain close cooperation in-house as well as with stakeholders and respondents. The advantages from cooperation are already mentioned above.

NSSRA should develop an online questionnaire in order to save resources. Developing online questionnaires may temporarily increase costs but in a longer run may save resources and increase cost efficiency (savings in data collection and in editing of data).

R&D statistics for Armenia are at the moment provided only for government and higher education sectors, but in the future it would be worth considering also measuring the business enterprise R&D. This would be in line with international recommendations and practices and would provide help for having a comprehensive view of development activities in Armenia.

6. Identification of needs for additional support

The concept of innovation is still new for respondents in Armenia and some extra resources may still be needed for data collection in order to increase data quality in the near future. Giving advice and assistance to respondents during data collection and contacting them for correcting data during data editing require a lot of work and, thus, needs sufficient human resources.

Some financial support may be needed for creating an online questionnaire.

Implementing the new Oslo Manual (OM4) and the EU model questionnaire with new guidelines in the forthcoming years may require extra input in which external help (finance and expertise) may be valuable. Implementation of a new framework requires time for studying material and training, and

resources for updating survey tools among other things. Participating in and following closely international activities in this area help and intensify adopting of new framework.

7. Outstanding issues

As regards the EU framework and original project plan there exist no outstanding issues within component 5, but the new upcoming Oslo Manual (OM4) may change many of the measurement issues. The final content of the new manual is not known yet, and this is why further recommendations or guidelines cannot be given here.

Along with changes in international guidelines, the specific EU guidelines for measuring innovation will be changed and updated accordingly. More detailed information on these will be available only later.

Annex 1: Terms of Reference

<p style="text-align: center;">Terms of Reference</p> <p style="text-align: center;">EU Twinning Project AM/14/ENP/ST/15</p> <p style="text-align: center;">25-28 April 2017</p>

Component 5: Innovation Statistics

Activity 5.6: Follow-up on achievements and recommendations for the future

0. Mandatory results and benchmarks for the component

Mandatory results:

- Innovation statistics introduced (July 2017)

Benchmarks:

- Questionnaire for gathering innovation statistics is drafted (February 2016)
- Pilot survey conducted (January 2017)
- Test results analyzed (January 2017)
- Methodology on innovation statistics introduced (April 2017)
- Plan for regular production and publication developed (April 2017)
- Staff of NSSRA trained on issues related to innovation statistics (July 2017)

1. Purpose of the activity

- To discuss the status regarding the component at the beginning of the project
- To discuss the status of the project results
- To prepare recommendations regarding the sustainability of the achievements
- To prepare recommendations for future work of NSSRA after the project finishes
- To identify outstanding issues and needs for further support, if any

2. Expected output of the activity

Innovation Statistics component follow up (for each topic in the component):

- Status at the beginning of the project
- Status of the project results
- Sustainability of the achievements
- Recommendations for the future (short and long term)
- Clarification of outstanding issues

3. Participants

NSSRA

Component leaders

- Mr. Gagik Gevorgyan
- Ms. Nelly Baghdasaryan

Other staff

- Ms. Anna Hakobyan
- Ms. Alina Grigoryan

MS experts

- Ms. Mervi Niemi, Expert, Statistics Finland
- Mr. Gediminas Samuolis, Expert, Statistics Lithuania

Other stakeholders taking part in the activity

Representatives from:

- Ministry of Economy of RA
- Ministry of Education and Science of RA, State Committee of Science
- National Academy of Sciences of RA

will also be invited.

Annex 2. Programme for the mission

Time	Place	Event	Purpose / detail
Tuesday, morning (25/4)	NSSRA	Meeting with RTA	To discuss the programme of the week
	NSSRA	Meeting with BC Component Leader and BC Experts	Assessment of situation and presentation by BC of the work conducted since last mission
Tuesday, afternoon (25/4)	NSSRA	Meeting with BC Component Leader and BC Experts	Follow-up on outstanding issues Identification of needs for additional support
Wednesday, morning (26/4)	NSSRA	Meeting with BC Component Leader and BC Experts	Discussion of status of project results Discussion on how to ensure sustainability of the achievements
Wednesday, afternoon (26/4)	NSSRA	Meeting with stakeholders	Meeting with stakeholders
Thursday, morning (27/4)	NSSRA	Meeting with BC Component Leader and BC Experts	Discussions of the way forward after the Twinning project and what to be recommended for the future (short and long term)
Thursday, afternoon (27/4)	NSSRA	Meeting with BC Component Leader	Preparation of final conclusions, recommendations and Mission Report
		Ad-hoc meetings	
Friday, morning (28/4)	NSSRA	Debriefing with BC Project Leader	Discussion of MS Experts' findings and agreement on the reached conclusions De-briefing and presentation for BC Project Leader

Annex 3: Persons met

NSSRA:

- Stepan Mnatsakanyan, President of the NSSRA
- Anahit Safyan, Member of the State Council of Statistics, NSSRA
- Nelly Baghdasaryan, Head of Social Sphere and Nature Protection Division, NSSRA
- Alina Grigoryan, Social Sphere and Nature Protection Division, NSSRA
- Sirarpi Hovsepyan, Social Sphere and Nature Protection Division, NSSRA
- Asya Podpomogova, Social Sphere and Nature Protection Division, NSSRA
- Naira Mandalyan, Social Sphere and Nature Protection Division, NSSRA
- Ani Hambardzumyan, Social Sphere and Nature Protection Division, NSSRA
- Yelena Gevorgyan, Social Sphere and Nature Protection Division, NSSRA
- Emma Isakhanyan, Social Sphere and Nature Protection Division, NSSRA
- Vanush Davtyan, Member of the State Council of Statistics, NSSRA
- Aida Martirosyan, Head of Information Resources Management and Technologies Department, NSSRA
- Narine Musheghyan, Head of Statistical Information Dissemination and Public Relations Division, NSSRA
- Karine Kuyumjyan, Head of Population Census and Demography Division, NSSRA
- Ruzanna Shaboyan, Head of Quality Management Division, NSSRA
- Lusine Markosyan, Head of Household Survey division, NSSRA
- Hasmik Yeghiazaryan, International Statistical Co-operation Division, NSSRA
- Lusine Kalantaryan, Head of Labor Statistics division, NSSRA

External stakeholders:

- Arevik Khnkoyan, State Committee of Science, RA Ministry of Education
- Aida Khachatryan, State Committee of Science, RA Ministry of Education
- Hrachya Astsatryan, RA National Academy of Sciences
- Aram Grigoryan, ARSAT Center

RTA Team:

- Peter Bohnstedt Anan Hansen, Resident Twinning Adviser
- Liana Atoyan, RTA Assistant
- Anush Poghosyan, RTA Language Assistant