

TRAINING NEEDS ASSESSMENT TOOL

DRAFT

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Guideline: How to complete the Training Needs Assessment Tool

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Introduction

The *Training Needs Assessment Tool* is a vehicle for analyzing and documenting an individual's training requirements as compared to his or her present knowledge or skill level for performing a specific job¹. In addition, JICA defines that the *training needs assessment* is a method of determining what training is required to fill the gap². The gap is the difference between desired and current capability of participants³. Moreover, a study⁴ states that most training and development systems follow a step-by-step approach which includes analysis of training needs, training design, and development of training methods, conduction and evaluation of training. The analysis phase is the building block of a training program and includes four main sections including the basis for who must be trained, what must be trained.

The ESCAP Committee on Statistics decided to establish a Network for the coordination of statistical training in the Asia-Pacific region, with the Statistical Institute for Asia and the Pacific (SIAP) as its secretariat. During its meeting in February 2016 in Chiba, Japan, the network developed its work programme as per its terms of reference. One key delivery of the Network is developing a tool for training needs to design and deliver various training programs in official statistics including the SDG indicators. Therefore the training needs assessment tool (TNAT) is developed to assess the needs in statistical training for core or professional staff (Level 2, 3, 4) of the official statistics and it is tested in Lao PDR and Mongolia and will be considered for adoption at the next meeting of the Network. The suggested TNAT is applicable for both centralized and decentralized statistical system.

Mid-level managers (head or deputy or senior statistician of the department, division chief, and core technical staff) will undertake the assessment, and the officials of the training or administrative department will compile the assessment and aggregate it at the national level.

The first part presents the approaches that been used to develop TNAT. The stepwise guideline of completing the TNAT (excel template) is outlined in the second part, while next part describes the results of the TNAT pilot test in Lao PDR and Mongolia. Annex 1 contains the TNAT and Annex 2 lists criteria to be used to fill in the TNAT.

1. Approaches used to develop Training Needs Assessment Tool

The TNAT consists of 1) excel template; 2) list of criteria to be used to fill in the Excel template; 3) guideline to complete Excel template.

Overall statistical measuring system (OSMS) is defined prior to the development of the TNAT, and it is enriched on the basis of Generic Statistical Business Process Model⁵ (GSBPM) and includes the following **core** elements/functions of statistics. These are:

1. Methodology development

¹ Travis McCann and James Tashima "Training needs assessment tool",

² JICA "Manual on Training Needs Assessment"

³ Institute National, "Terms of reference for training needs analysis, Quebec, 2008

⁴ Docent Gozdana Miglič, Ph.D "Professional training needs analysis procedure (Manual)", Belgrade (Serbia),

⁵ <https://statswiki.unece.org/display/GSBPM/GSBPM+v5.0>

2. Data collection
3. Data processing
4. Database creation or storage and its management
5. Tracking progress (only for SDGs)
6. Analysis/Initial report writing
7. Dissemination

The elements of the overall statistical measuring system are determined on the basis of Fundamental Principles of Official Statistics⁶, in particular the principle 1, 2, 3, 5 and 9. Moreover, the Statistical Law⁷ and NSDS⁸ of Mongolia are utilized to establish the elements of the overall statistical measuring system.

The African Center for Statistics developed “Statistical training needs and capacity assessment” manual and it indicates that the training target group consists of the personnel who are involved in each statistics activity, including the use of statistics. The manual has attempted to analyze statistical training needs on the basis of staff grades, namely management, professional statisticians, mid-level statisticians, professionals other than statisticians (e.g. information technology staff, graphic designers and others) and others⁹. While, the current proposal on statistical training needs assessment has utilized the SIAP’s Core Skills Framework¹⁰ (CSF). The present TNAT is targeting the official statisticians of Level 2, 3 and 4 who are considered to be core or professional statisticians and who are primarily responsible for compiling statistical data, developing methodologies, analyzing the collected data and communicating with users.

A matrix (Annex 2) is developed and it cross tabulates the elements of the overall statistical measuring system by core skills levels. Moreover, the requirements of the contemporary statistical development were the foundations for the development of the list of criteria to be used to fill in the excel template.

The excel template (Annex 1) is the main part of the TNAT and it composes of template for SDG indicators and template for other statistics excluding SDGs. The excel template for SDGs lists Global SDG indicators¹¹ and this list can be modified if countries have nationalized SDG indicators framework which was approved by the countries’ highest legislation body. The national SDG indicators framework will be based on the global SDG indicator framework as well as on the assessment results of the policy documents. Once the national SDG indicators framework is approved, it has to be followed by an assessment of indicators. The present TNAT may assist member countries to undertake the assessment of the national SDG indicators framework, further to identify the needs for capacity building for each element of the OSMS and to set up master plan of action for capacity building.

2. Guideline to fill in the Training Needs Assessment Tool

⁶ <https://unstats.un.org/unsd/dnss/gp/FP-New-E.pdf>

⁷ http://www.nso.mn/uploads/laws_file/993ca85a8ba7b719e2296c02047967e5ca1dabb6.pdf

⁸ NSO of Mongolia “National Statistical Development System for 2017-2020”, 2017

⁹ African Center for Statistics, “Statistical training needs and assessment”, 2011

¹⁰ <http://unsiap.or.jp/tnetwork/CSF.pdf>

¹¹ <https://unstats.un.org/sdgs/indicators/indicators-list/>

The stepwise guideline to fill in the TNAT (excel template) is provided for two types of excel worksheets: 1) for SDG indicators and 2) for statistics other than SDGs. The excel template is built in a matrix format to assess the training needs by elements of the OSMS and Core Skills levels.

The worksheet for SDGs is developed for each of the Core Skills Levels (2, 3, and 4) and to fill in those three worksheets for SDGs, it is required to follow or use the list of criteria classified by elements of the OSMS and Core Skills Levels in Annex 2.

The worksheets for statistics other than SDG indicators are developed based on UN Statistics Division's website¹² and statistical law and NSDS of Mongolia. The general statistics topics are used to label the worksheets and each worksheet contains the list of sub-topics or functions that belong to particular general statistics topic. Capacity assessment will be done only for sub-topics of general statistics.

2.1 Worksheet: Sustainable Development Indicators

- 1.1 Identify whether the SDG indicators are of official and administrative statistics. If official then record as "O" and if administrative record as "A" in **column 2** for each of the SDG indicator. If the indicator is recorded as official statistics with code of "O" then the rest of the columns will be filled in. If the indicator is coded as administrative statistics "A" then leave "blank" for the remaining columns.
- 1.2 Record the current status of the **data availability** in **column 3** using the coding system described in the column.
 - 1.2.1 If data are collected and methods of estimation are in existence then code that indicator as "Data available - 1".
 - 1.2.2 If data are collected partially (e.g. some data are available for the estimation of poverty rate but some data are missing or methodology of poverty estimation is in place but data yet to be collected etc.) or the methods of estimation is not available or vs then code the indicator as "Data partially available – 2".
 - 1.2.3 If data are not available (both are missing: data and methodology of estimation) then code that indicator as "Data not available – 3".
 - 1.2.4 Some indicators could be not clear whether they are available or not available then code that indicator as "Not clear/Don't know – 4".
- 1.3 If indicators are coded as "Data available – 1" in column 3 then enter the actual baseline figure for 2015 or 2016 in **column 5** and its corresponding measurement unit should be placed in in **column 4**.
- 1.4 The actual assessment of capacity to undertake the functions of the OSMS of the official statistics will be assessed in **columns 6-12 (See instruction on how to score elements of the OSMS in 2.3)**.
 - 1.4.1 If indicator is rated with code "Data available – 1" in column 3 then all cells in column 6-12 will be coded as "Capacity available - 1".
 - 1.4.2 If indicator is rated with code "Data partially available – 2" in column 3 then specify the status of the capacity for each of the elements of the OSMS in column 6-12 with different codes of capacity. There could be a case that the indicator is coded as "Data partially

¹² <https://unstats.un.org/home/>

available – 2” in column 3 but the capacity to develop the methodology of estimation is available (coded as “Capacity available – 1”) but there is no capacity to collect data or no capacity to process data then the capacity for data collection (column 6) and data processing (column 8) will be coded as “Capacity not available – 0”.

- 1.4.3 If indicator is rated with code “Data not available – 2” in column 3 then all cells in columns 6-12 will be coded as “Capacity not available – 0”.
- 1.4.4 If indicator is rated with code “Not clear/Don’t know – 4” in column 3 then it may happen that the status of the capacity for each of the elements of the OSMS in column 6-12 with different codes of capacity.

2.2 Worksheet: Statistics other than SDGs

The assessment format is the same for all general topics however each worksheet contains sub-topics or functions that take place within each general topic. The general and sub-topics are coded. It may happen that for a sub-topic or function the elements of the OSMS could be rated with different codes. For instance, for gender statistics capacity is available for data collection and processing, methodology development but the capacity is not available or partially available for database creation and analysis.

2.3 How to score elements of the OSMS in excel template

Scoring of the elements of the OSMS will be improved by introducing the following ranking:

- a) 1=if the proportion of core skills acquired is equal to or more than 70 percent;
- b) 2= if the proportion of core skills acquired is between 50 and 70 percent;
- c) 0= if the proportion of core skills acquired is less than 50 percent.

In each cell of the matrix (elements of the OSMS by core skills level) the scoring formula or guideline is added.

If estimations are done by experts or international organizations and data are available then it will not be considered that the capacity is available. It rather would be considered that the capacity is missing.

3. Results of the TNAT pilot test in Lao PDR and Mongolia

The piloting of the TNAT was done in Lao PDR from 23 to 27 October at the Lao Statistics Bureau LSB. Ms.Phetsamone Sone, Deputy of the LSB chaired the meeting with heads of departments and I briefed the purpose of the visit. The heads of departments agreed to nominate three professionals from each department (economic, social and administrative statistics) to work on piloting the TNAT. In addition, I had official meeting with officials of statistical units of the Ministry of Agriculture and the Ministry of Health of the country to understand the issues they may face in undertaking statistical activities and explore their needs in statistical training. The staff of the Ministry of Agriculture indicated that they need to train young statisticians in sample survey design including the grossing

up the survey results to the population. At the end of the mission I presented the preliminary results of the pilot test to the staff of the LSB including the representatives of the two ministries.

The testing of the TNAT was undertaken in Mongolia during 16-17 October and then it continued from 30th October to 3 November. Ms. Bayanchimeg chaired the meeting with heads of departments of the Mongolian NSO on 16th of October and I introduced and explained the tool. There has not been official meeting with the line ministries of Mongolia but I exchanged views with staff of monitoring and auditing department of the Ministry of Energy on their needs in statistical training. During the pilot test in Mongolia it was agreed with the heads of the Mongolian NSO that the initial testing will be carried out myself as I am interacting and was interacting with all professional staff to implement project activities in economic, social and environmental statistics and then to approach those fields in which I need their help (e.g. IT). It is required to present the results of the pilot test to NSO of Mongolia.

The pilot test results show that the following issues needed to be addressed to improve the TNAT. These are:

1. The assessors faced a problem in scoring the OSMS elements by core skill levels. They didn't know how to score the excel cells using the matrix in Annex 2. The solution was that we decided to develop mutually exhaustive interval scaling system for each cell of Annex 2 (see Annex2). Introduced the following scoring/scaling:
 - d) 1=if the proportion of core skills acquired is equal to or more than 70 percent;
 - e) 2= if the proportion of core skills acquired is between 50 and 70 percent;
 - f) 0= if the proportion of core skills acquired is less than 50 percent).

In the each cell of the matrix (OSMS elements by core skills levels) the scoring formula or guideline is added.

2. It was not clear who will be doing the assessment using TNAT. To solve this issue the following statement is added in the introduction section of the guideline.
"Mid-level managers (head or deputy or senior statistician of the department, division chief, core technical staff) will undertake the assessment and the officials of the training or administrative department will compile the assessment and aggregate it at the national level'.
3. Data are available but estimation is done by international organizations. Should we consider it that we have capacity? It is explained in section 2.3 of the guideline that if estimations are done by international organizations and data are available then it will not be considered that the capacity is available. It rather would be considered that the capacity is missing.
4. The meeting or interview with line ministries' (LMs) staff illustrate that the TNAT may include subject-based template on training needs. For instance, LMs underlined the importance of acquiring knowledge in sample survey design including survey instruments.

Solution: Subjects included in "Cross-cutting" worksheet of the excel file. For instance, sample survey design etc.

5. Countries suggested to add a skill for dissemination for level 2 “be able to explain statistics in simple way to non-statisticians”. It is added.
6. Countries suggested to add a skill for analysis/initial report writing for level 4 “be able to export and import data from one software to another software”. It is added.
7. Countries suggested to provide a description of who will be covered under each of the Core Skills Level. Solution: A general description of who will be covered under each of the levels is provided on the basis of years of experiences in Annex 2.
8. Countries suggested to add the following skills for Database creation/Storage of data for level 4:
 - a. Availability of linkage and integrate the database system between NSO and stakeholders, regions (accessibility)
 - b. Securing the database/server (including backup of data, hacking issues, etc.)
 - c. Maintaining and updating the data exchanging system
 - d. Separate the database/server system i.e. for producer and user (publication/dissemination)
 Solution: These skills are added in Annex 2.
9. The LSB suggested to add Labour Force Survey (LFS).
Solution: It is added in “Social Statistics” worksheet.
10. Countries suggested to add Lao Social Indicator Survey (LSIS)/HSES (Mongolia).
Solution: It is added in “Social Statistics” worksheet
11. The LSB suggested to add a statement that this TNAT is applicable for both centralized and decentralized statistical system.
Solution: A statement is added in introduction section of the guideline.
12. The LSB suggested to add “...management” in database element title.
Solution: It is added.
13. The LSB suggested to add “...able to test” to methodology element for level 3
Solution: It is added
14. The LSB suggested to add “..do basic data collection” to data collection element for level 2
Solution: It is added
15. The LSB suggested to add “...documentation and metadata” to database element for level 2
Solution: It is added

The LSB suggested to add “basics knowledge of analysis, basic tabulation...” to analysis element for level 2. Solution: It is added
16. The LSB suggested to add “...web-based data collection” to data collection element for level 3
Solution: It is added

17. The LSB suggested to add "...web-based..." to dissemination element for level 3
Solution: It is added

Some proposed changes are not accepted and explained the reasons behind rejecting their suggestions. Examples are: to explain the official statistics in the guideline, add one more column where the countries need to specify the responsibility of line ministries and agencies, add a skill for analysis/initial report writing for level 2 "have skills in math" and add a word "...independently.." to skill 1 of the methodology element for level 4 " etc.

Conclusion

The proposed TNAT is aligned with 2030 Agenda giving high priority to reporting SDG indicators. It also may assist the countries to develop SDG indicator framework and to set the monitoring system of the Agenda which in turn includes the institutional setting within the country.

The TNAT deviated from the traditional way of identifying training needs by introducing simple excel sheet and matrix instead of huge survey questionnaires. The collected data will be processed faster than the processing of data collected using survey questionnaires.

The pilot testing undertaken in both with centralized (Mongolia) and decentralized (Loa PDR) statistical system and no difficulties were observed. It may work even better in decentralized statistical system as it can be utilized independently at the provincial level as well as at the line ministries' level. In the centralized statistical system it may require more efforts to collect and aggregate the collected data at the national level. However, there could be a room for adjustment for these countries. The tool may assist the countries to develop needs based training plan of action as part of the NSS.

The tool is generic tool and subject to modifications depending on country context and country's requirements or needs. Even the tool can be adjusted in accordance to country's national SDG indicator framework. However, would advise to use global SDG indicator coding should be used along with national SDG indicator coding.

Annex 1

This Annex is provided in a separate file.

Annex 2

The list of criteria to be used to fill in the TNAT, by elements of the statistical measuring system and core skills level

Elements of the statistical measuring system	Core Skills Level 2 (minimum 3-5 years of working experience)	Core Skills Level 3 (minimum 5-10 years of working experience)	Core Skills Level 4 (minimum 10-15 years of working experience)
Methodology development	<ol style="list-style-type: none"> Can explain the basic calculation methods of statistics they work on <p>Scoring: 1=1; other=0</p>	<ol style="list-style-type: none"> Contributing to the development of methodologies, manuals and guidelines Contributing to researching conceptual & methodological issues of newly developed development indicators Contributing to questionnaire Has a working knowledge of sampling principles (e.g. populations, sampling frames, representative samples etc.) Is able to estimate population statistics using sample statistics and test the results Is able to evaluate the strengths and weaknesses of comparable statistics produced in other countries Is able to contribute to identification of needs for statistical data <p>Scoring: 5+=1; 4=2; <4=0</p>	<ol style="list-style-type: none"> Is able to develop methodologies, manuals and guidelines Researching conceptual & methodological issues of newly developed development indicators Is able to design survey and census questionnaire (e.g. question structure, wording, sequencing of questions etc.) Has a working knowledge of complex survey designs Is able to test survey results Is able to estimate population statistics using the sample statistics Is able to evaluate the strengths and weaknesses of comparable statistics produced in other countries Is able to identify the needs for statistical data by using policy assessment tools (e.g. EquiFrame) Is able to consult with policy makers or users and counterparts on the needs for statistical data <p>Scoring: 6+=1; 4 or 5=2; <4=0</p>
Data collection	<ol style="list-style-type: none"> Can handle and supervise operations for enumeration and collection in the field Is able to use advanced IT techniques (e.g. Tablet) for data collection Is able to edit data Answering questions from respondents 	<ol style="list-style-type: none"> Is able to identify what data is already available and advise on how gaps can be filled Has a working knowledge of data collection instruments Developing new data collection methods such as CAPI, CATI and web-based data collection etc. 	<ol style="list-style-type: none"> Is able to generate and validate a sample Is able to evaluate response burden and compliance cost. <p>Scoring: 2=1; 1=2; 0=0</p>

	<ol style="list-style-type: none"> 5. Dealing with routine requests for statistical information 6. Answering questions from respondents 7. Can explain the differences between a census, a survey and administrative data 8. Doing basic data collection <p>Scoring: 6+=1; 4 or 5=2; <4=0</p>	<ol style="list-style-type: none"> 4. Has a working knowledge of the effects of the collection mode on response rates and data quality <p>Scoring: 3+=1; 2=2; <2=0</p>	
Data Processing	<ol style="list-style-type: none"> 1. Is able to add, subtract, multiply, divide 2. Is able to calculate and apply percentages, ratios, proportions, fractions 3. Is able to do simple rounding 4. Is able to use a calculator and do simple mental arithmetic 5. Process collected data using at least MS Excel 6. Is able to enter data into the system using data entry software <p>Scoring: 4+=1; 3=2; <3=0</p>	<ol style="list-style-type: none"> 1. Has a working knowledge of statistical data processing stages 2. Undertaking the operational and technical aspects of processing information 3. Is able to develop tabulation plans for collected survey and census data 4. Is able to develop data processing program based on tabulation plans 5. Is able to use suitable software for data entry (e.g. CSPPro) 6. Process collected data using advanced IT techniques and software (e.g. STATA, SPSS etc.) 7. Has a working knowledge of the principles and practices of coding, classification, data integration, editing, imputation and estimation 8. Familiar with web-based data collection techniques and is able to implement it <p>Scoring: 6+=1; 4 or 5=2; <4=0</p>	<ol style="list-style-type: none"> 1. Is able to develop procedures to impute missing data, and calculate, and apply weights to datasets 2. Has working knowledge of data integration techniques <p>Scoring: 2=1; 1=2; 0=0</p>
Database creation/Storage of data and its management	<ol style="list-style-type: none"> 1. Is able to use the database/storage software 2. Is able to upload statistical data into database 3. Is able to make inputs in documentation and metadata creation <p>Scoring: 2+=1; 1=2; 0=0</p>	<ol style="list-style-type: none"> 1. Is able to design the structure of the database 2. Is able to carry out studies on database software and select the most efficient and easy to handle software 3. Is able to develop a guideline on accessing and using the database 4. Is able to develop database with microdata of the census and survey <p>Scoring: 3+=1; 2=2; <2=0</p>	<ol style="list-style-type: none"> 1. Is able to link and integrate the database system between NSO and stakeholders, regions (accessibility) 2. Is able to secure the database/server (including backup of data, hacking issues, etc.) 3. Is able to maintain and update the data exchanging system 4. Is able to separate the database/server system i.e. for producers and users (publication/dissemination)

			Scoring: 3+=1; 2=2; <2=0
Tracking progress of the SDG indicators	<ol style="list-style-type: none"> 1. Is able to record statistical data as a time series data using at least MS Excel <p>Scoring: 1=1; other=0</p>	<ol style="list-style-type: none"> 1. Is able to apply newly developed methodologies to track the progress of development indicators <p>Scoring: 1=1; other=0</p>	<ol style="list-style-type: none"> 1. Explore newly developed methods to track the progress 2. Develop methods to track the progress of development indicators <p>Scoring: 2=1; 1=2; 0=0</p>
Analysis/Initial report writing	<ol style="list-style-type: none"> 1. Be able to undertake: data manipulation, queries & exploratory data analysis (group data, gather frequency counts) using an appropriate analytical tool 2. Has a working knowledge of methods used to describe data (e.g. simple graphs, averages, percentage changes etc.) 3. Has basic knowledge of analysis and able to do basic tabulation <p>Scoring: 2+=1; 1=2; 0=0</p>	<ol style="list-style-type: none"> 1. Is able to translate the developed conceptual analytical framework into statistical measures 2. Is able to carry out data manipulation, queries and exploratory data analysis (group data, gather frequency counts, display and interpret outliers) using an appropriate analytical tool 3. Is able to obtain and present background information from a wide range of sources to validate statistical data 4. Is able to obtain and manipulate data and identify data issues 5. Is able to produce statistics and seasonally adjusted data 6. Is able to check the quality of statistics (e.g. response rates, detect and interpret outliers, calculate and interpret measures of dispersion, macro edit.) 7. Is able to interpret, design visual presentation content and explain statistics (e.g. time series, indices) <p>Scoring: 5+=1; 4=2; <4=0</p>	<ol style="list-style-type: none"> 1. Is able to formulate research questions 2. Develop conceptual analytical framework in response to developed research questions 3. Is proficient at applying advanced analytical tools (e.g. regression, modeling techniques, multi-variate analysis, multilevel modelling etc.). 4. Is able to use advanced analytical software (e.g. STATA, SAS, SPSS, and R etc.) 5. Is able to export and import data from one software to another software 6. Understands the linkages, & interdependencies between all phases of the statistical process 7. Is able to prepare statistics for dissemination 8. Is able to identify, justify, and develop process/systems/output improvement 9. Is able to design the content of survey and census reports <p>Scoring: 6+=1; 4 or 5=2; <4=0</p>
Dissemination	<ol style="list-style-type: none"> 1. Preparing data for publication 2. Can describe and prepare materials for the different channels used by the NSO to disseminate data (e.g. press releases, web sites, statistical publications.) 	<ol style="list-style-type: none"> 1. Understanding the requirements of all users of data from the work area and where applicable, liaise, communicate & provide assistance 2. Can explain to non-statisticians why the statistics from their work area are being 	<ol style="list-style-type: none"> 1. Communicates research reports, statistical output and concepts to a wide range of statistical literacy to prevent misuse of statistics (e.g. statisticians, policy makers, media, the general public)

	<p>3. Be able to explain statistics in simple way to non-statisticians</p> <p>Scoring: 2=1; 1=2; 0=0</p>	<p>produced, who they are used by, and how they use them</p> <p>3. Is able to liaise with key users to establish need or network</p> <p>4. Is able to describe statistical information to experienced users of statistics</p> <p>5. Has a working knowledge of data repositories, releases, and dissemination channels.</p> <p>6. Is able to communicate the story of the statistics and relay the right message within the context</p> <p>7. Is able to develop advanced techniques of statistical data dissemination such as development of statistical mobile application, messaging, development of portal which provides access to statistical data etc.</p> <p>8. Familiar with web-based data dissemination techniques and is able to implement it</p> <p>Scoring: 6+=1; 4 or 5=2; <4=0</p>	<p>2. Is able to present survey and research findings at external seminars</p> <p>Scoring: 2=1; 1=2; 0=0</p>
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