

# Tonga Education Management Information System

## Data Quality and Improvement Plan

### Introduction and Background

The Government of Tonga accepted a joint offer by the Pacific Community (SPC) and the UNESCO Institute for Statistics (UIS) to participate in a capacity building project focusing on the assessment of education data quality in Pacific countries, a project supported by the Australian Department of Foreign Affairs and Trade (DFAT) and UNESCO office in Apia. It was then agreed that a joint UIS-SPC mission would undertake a Data Quality Assessment of Tonga's education statistical system, expecting the resulting assessment would lead to UIS and SPC providing better support to Tonga in the various areas where needs have been identified.

The mission took place from 11 to 15 April 2016 to assess whether the education statistics production processes are properly controlled and managed for changes, and how close the actual statistical outputs could be to the international recommendations; recommendations to be included in an improvement plan would then be derived from the assessment, assuming that actions will be then taken to make the necessary changes.

The team examined relevant documentation available on websites or otherwise provided and used the Education Data Quality Assessments Framework (Ed-DQAF) that has been developed and successfully implemented by the UIS in Samoa; the first country in the Pacific region to have a UIS data quality assessment. The Ed-DQAF is a diagnosis tool aimed at identifying education data quality issues that need to be addressed. The framework examines the processes leading to official statistics rather than technical solutions only, and focuses on the strategic management of the whole production chain. The Ed-DQAF has six dimensions grouped into three major components: Institutional Environment, Statistical Processes, Statistical Outputs.

#### **Institutional Environment**

The enabling environment refers to the institutional context in which the statistical processes exist and which is essential to the other data quality assessment dimensions, as well as the institutional arrangements that ensure professionalism in statistical policies and practices, transparency, and ethical standards.

The mission found that there is a need for clarity and formal definition of roles and responsibilities with regard to the production of education statistics. The leading role of the MET

EMIS unit is mentioned in several documents, e.g. “EMIS was established to coordinate data collection and give some coherency to the educational information of the Ministry” (TELPF). Some of the critical issues identified were the high turnover of staff and management; the disruptive role of development partners; the technical infrastructure doesn’t allow optimal use of staff time; and the fragmentation of data sources.

### **Statistical Processes**

The methodological basis for the production of statistics follows standards, guidelines, or good practices. These standards include concepts and definitions, scope, classification and sectorization, and the basis for recording of education events, such as enrolment, attendance, attainment etc. The data produced should give an accurate picture of the reality of the education sector. That is, the statistical data and techniques need to be based on valid and reliable assessment and validation of source data.

The mission found that data collection processes need to be documented (especially in light of the high staff turnover). Additional data validation and verification procedures and data quality control processes could be put in place to ensure quality of the data produced. There is a need to engage the various MET divisions in cross-verification exercises, especially where the statistics are produced from different data sources. Several data users and producers would like to receive training in data validation and verification techniques. Safe storage and archiving procedures and data management also should be put in place.

### **Statistical Outputs**

Statistics are useful for planning or policy purposes when they are disseminated with regular periodicity, timeliness and consistency. Data and metadata should be presented in a clear and understandable way and should be easily available to users.

The mission found that data are disseminated publicly only in the format of the MET Annual Report; the most recent report available for 2013. Some delays in data collection were observed due to private providers not sending data to the EMIS unit. There was no dissemination to stakeholders, no feedback to schools or data providers either through website or other means. The reporting of education statistics to users could be improved with the regular production of an education digest which included graphics and explanations with regard to the data presented.

## Proposal and Approach

The DQAF assessment has identified a range of activities that would lead to significant enhancements to the EMIS in the short, medium and longer term. While the DQAF recommendations are for all stakeholders to consider in how they support the EMIS, UIS and SPC have identified a range of these recommendations to partner with MET to support. The following EMIS improvement work plan identifies these suggested activities and timeframes. UIS and SPC will support this work by utilising their respective strengths: SPC with its Pacific regional knowledge and experience with EMIS solutions and UIS with its global perspective and statistical experience therefore ensuring that the activities represent the best practice for the region.

Critical to the success of UIS and SPC's involvement will be a strong partnership with the MET EMIS Unit. This will be able to help shape the work to maximise effectiveness and ensure that the activities are building on planned activities and strategic opportunities. A partnership-approach is also invaluable for MET buy-in and capacity building. Regular engagement with MET will be important for ensuring their work to advise on overall system design is aligned with technical EMIS capability, and activities are synergised in both design and delivery.

The recommendations of the Tonga DQA report were developed based on the key findings identified in the DQAF assessment. The proposed list of activities aim to improve the quality of education statistics in Kiribati by strengthening the regulatory environment and human resource capacity, the data production chain, and the use and dissemination of education data and statistics.

### Short term recommendations

The mission identifies actions that could be implemented without much delay:

1. Support EMIS team to improve EMIS data entry, data processing and data validation procedures (current excel db and tools).
2. Enhance the dissemination by providing tools for data visualization (Tableau)
3. Production of an Education Digest.
4. Training on the collection, processing, analysis and reporting of EMIS data, the management and quality assessment of data in EMIS databases.

### Medium term recommendations

The mission identifies actions that could be discussed then launched within the next 12 months:

5. Stakeholder Engagement Strategy for Education Statistics and EMIS users and

producers (refer appendix).

6. Work with SPC to redevelop Ministry wide Website and use as a data dissemination tool for the Ministry and EMIS unit.
7. Review and improve data collection instruments.
8. Leverage upcoming census to produce a wider set of education data and indicators, education module accepted for use across countries by PIC Government Statisticians.
9. Development of a centralised Education Management Information System.

### Long term recommendations

The mission identifies issues that could be discussed and decisions made over the next three years:

10. Development of a national strategy for development of Education Statistics and closer relationship between MET and Department of Statistics
11. Establishment of national led coordination structure for Education Statistics Improvement Plan
12. Enhance country ownership and regional and national collaboration for education statistics

## Education Management Information System Development Plan

The following EMIS Improvement Plan details activities for consideration by the Ministry of Education and Training (MET) to improve the quality of data collected and used by the education sector in Kiribati. The goal is to further develop the EMIS and the capacity of EMIS Unit and stakeholder groups (MET staff, schools and other stakeholders such as NGOs and donors) to fully utilize data for planning and policy, M&E and operational tasks in the education sector. UIS and SPC aim to support the development of an EMIS Development Plan, our strategy is to develop a work plan that aims to:

- *improve data quality*
- *develop EMIS software tools*
- *engage stakeholders in utilizing EMIS data.*

The proposed activities detailed below are, therefore, designed around achieving these aims based on the recommendations of the Tonga Data Quality Assessment Report. The MET has reviewed these activities and made suggestions on how to prioritize this work. The final draft of this work plan is provisionally agreed with MET. Once finalised, identified technical support can be provided by UIS and SPC or other donors in the delivery of the Plan.

## Proposed Activities for the MET EMIS Development Plan

## Institutional Environment

Activity 1	<b>Stakeholder Engagement Strategy for Education Statistics/EMIS users and producers (MT Rec 5)</b>	Priority Cost	1 US\$4000
Description: Hold three annual stakeholder workshops to promote the use of EMIS data in decision-making. The objectives for stakeholder engagement are to assess and increase stakeholder awareness of EMIS, increase participation by stakeholders in EMIS activities, increase the use of EMIS data by stakeholders, and put in place a process of continuous improvement to sustain the gains. A stakeholder engagement strategy document has been prepared and included in the annexes of the DQAF report.			
EMIS Unit role	Coordination of education stakeholder workshops		
Target group	Key education stakeholders, including MET, other government agencies, NGOs, schools and communities.		
Output	Key stakeholders aware of, participate in and use EMIS data for policy and planning purposes		

Activity 2	<b>Develop a strategy for the development of education statistics (LT Rec 10)</b>	Priority Cost	3 US\$7000
Description: Develop a strategy for development of education statistics to be included in the National Strategy for the Development of Statistics, including a joint planned activities between MET and Department of Statistics. The strategy should provides a roadmap for the long-term development of the education statistical system within Tonga, including all statistical activities conducted by government, NGOs, schools and communities.			
EMIS Unit role	Develop the strategy in consultation with the education sector assisted by UIS		
Target group	Education Sector Key Stakeholders		
Output	Endorsed National Strategy for the Development of Education Statistics		

Activity 3	<b>Establish nationally led coordination structure for Education Statistics Improvement Plan (LT Rec 11)</b>	Priority Cost	1 Nil
Description: Develop a coordination structure, such as an education statistics taskforce, to implement an education statistics improvement plan. The taskforce should be led by MET and include key government stakeholders, including Department of Statistics, and educational institutions, such as private TVET providers and USP.			
EMIS Unit role	Participate in education statistics taskforce		
Target group	MET and key education stakeholders		
Output	Establishment of an Education Statistics Coordinating Committee		

<b>Activity 4</b>	<b>Enhance national ownership and regional collaboration for education statistics (LT Rec 12)</b>	<b>Priority Cost</b>	<b>1 Nil</b>
<b>Description:</b> Developing monitoring mechanism for tracking the implementation of the Education Statistics Improvement Plan and ensuring national ownership. MET maintains collaboration with regional development partners, such as SPC and UIS. MET reports to education sector on regular basis to inform progress with implementation of the plan.			
<b>EMIS Unit role</b>	Maintain communications with development partners to ensure regional collaboration where required		
<b>Target group</b>	MET CEO and EMIS Unit		
<b>Output</b>	MET takes ownership of Education Statistics Improvement Plan and collaborates with regional development partners, including SPC and UIS		

### Statistical Processes

<b>Activity 5</b>	<b>Review and improve data collection instruments. (MT Rec 7)</b>	<b>Priority Cost</b>	<b>2 Nil</b>
<b>Description:</b> The school census form and data collection instruments need to be reviewed and improved to ensure that they meet national, regional and international reporting requirements. This is especially important given the additional data needed to monitor the SDGs and the education 2030 agenda. Also it is important that forms are designed to facilitate data entry and verification in the EMIS system. The forms should be pilot tested before implementation.			
<b>EMIS Unit role</b>	Review and suggest improvements to existing data collection forms		
<b>Target group</b>	EMIS Unit		
<b>Output</b>	Updated data collection forms and documentation		

<b>Activity 6</b>	<b>Improve EMIS data entry, data processing and data validation procedures (ST Rec 1)</b>	<b>Priority Cost</b>	<b>2 US\$7000</b>
<b>Description:</b> Develop data processing guidelines for operation of EMIS system, including data entry, data processing and data validation/verification procedures. The guidelines will describe procedures for a registering receipt of school census data, manual checking of completed census forms, the entry of data within the system, the validation and verification processes, and data quality assurance procedures.			
<b>EMIS Unit role</b>	Review documentation of existing EMIS system and assist with improvements to data processing procedures based on best practice		
<b>Target group</b>	MET EMIS Unit staff assisted by UIS Statistics Adviser		
<b>Output</b>	EMIS Data Processing Guidelines		

<b>Activity 7</b>	<b>Develop a centralised Education Management Information System. (MT Rec 9)</b>	<b>Priority Cost</b>	<b>1 US\$14,000</b>
<p><b>Description:</b> A centralized EMIS system that integrates all data from across the education system enables sector-wide reporting of comprehensive education statistics, including data on enrolments, teachers, facilities, finance and examinations and assessment. The separate MET databases need to be integrated into a central data warehouse (EMIS) that can be used for statistical reporting.</p>			
<b>EMIS Unit role</b>	Liaise with ICT services		
<b>Target group</b>	EMIS Unit supported by contracted systems developer		
<b>Output</b>	Centralised EMIS database system		

<b>Activity 8</b>	<b>Training on the collection, processing, analysis and reporting of EMIS data (ST Rec 4)</b>	<b>Priority Cost</b>	<b>2 US\$7,000</b>
<p><b>Description:</b> Conduct training on the production of education statistics, including the collection, processing, analysis and reporting of EMIS data. The training should cover both the management and quality assessment of data in EMIS databases. The training should follow the UNESCO recommended training modules for the monitoring of EFA goals, updated for the SDG Goal 4 and Education 2030 agenda.</p>			
<b>EMIS Unit role</b>	Coordination of training workshop facilitated by UIS Statistics Adviser		
<b>Target group</b>	MET EMIS Unit, School Operations Unit		
<b>Output</b>	Capacity built in the management and quality assessment of EMIS data		

### Statistical Outputs

<b>Activity 9</b>	<b>Produce an education statistics digest (ST Rec 3)</b>	<b>Priority Cost</b>	<b>1 US\$14000</b>
<p><b>Description:</b> Plan and prepare a draft education statistics digest, that includes basic education indicators, and standard tables and graphs for key stakeholders (Government, NGOs, Schools, Communities). The digest should include basic statistics for the whole education sector, from ECCE to Tertiary education and be presented in a clear and concise manner. The standard tables for inclusion in the digest should be generated by the EMIS system.</p>			
<b>EMIS Unit role</b>	Production of standard tables from EMIS system supported by UIS Statistics Adviser		
<b>Target group</b>	MET EMIS Unit		
<b>Output</b>	Statistical digest for most recent data available and including time-series		

<b>Activity 10</b>	<b>Enhance the dissemination of statistical reports by producing outputs using tools for data visualization (ST Rec 2)</b>	<b>Priority Cost</b>	<b>2 US\$7000</b>
<b>Description:</b> Conduct training in data visualization for statistical reporting using Tableau and Power-point. The training will focus on developing statistical reports that are visually appealing and informative, such as digests, brochures, school profiles etc. The workshop will build on already existing capacity to produce basic tables and graphs as well as developed a dashboard of education indicators.			
<b>EMIS Unit role</b>	Coordination of training workshop facilitated by UIS Statistics Adviser		
<b>Target group</b>	MET EMIS Unit and Policy and Planning Staff		
<b>Output</b>	Statistical reports on most recent data available		

<b>Activity 11</b>	<b>Redevelop MET website and use as a data dissemination tool for the Ministry (MT Rec 6)</b>	<b>Priority Cost</b>	<b>3 US\$7000</b>
<b>Description:</b> The MET website needs to include the latest available education statistics that can be disseminated electronically (preferably in Excel format) for data users in the Ministry and to the public generally. The website should also contain the latest education statistics report. The existing website needs to be updated and maintained by ICT services.			
<b>EMIS Unit role</b>	Production of education tables and report		
<b>Target group</b>	ICT services supported by SPC web developer		
<b>Output</b>	Education reports and data are loaded onto the website which is both internally and publically accessible		

<b>Activity 12</b>	<b>Use population census data to produce a wider set of education data and indicators (MT Rec 8)</b>	<b>Priority Cost</b>	<b>3 Nil</b>
<b>Description:</b> The population census can provide useful information for the population on education attainment and school attendance. This data can be used to produce education indicators for the attendance of students at different levels of the education system as well as the highest qualifications/education levels attained by youth and adults.			
<b>EMIS Unit role</b>	Liaise with Government Statistician		
<b>Target group</b>	Department of Statistics		
<b>Output</b>	Population education tables		



**Implementation Costs**

<b>Type of Costs</b>	<b>Priority 1</b>	<b>Priority 2</b>	<b>Priority 3</b>	<b>Total</b>
Consultant fees	\$14,000	\$10,000	\$6,000	\$30,000
Travel costs	\$6,000	\$9,000	\$6,000	\$21,000
Workshops	\$10,000			\$10,000
Software license	\$3,000	\$2,000	\$1,000	\$6,000
<b>Total</b>	<b>\$33,000</b>	<b>\$21,000</b>	<b>\$13,000</b>	<b>\$67,000</b>

**Implementation Timeframe**

<b>Activity</b>	<b>Year 1 (weeks)</b>	<b>Year 2 (weeks)</b>	<b>Year 3 (weeks)</b>	<b>Total (weeks)</b>
1. Stakeholder engagement	1	1	1	3
2. Education statistics strategy			1	1
3. National plan coordination	1			1
4. National monitoring mechanism	1			1
5. Data collection instruments		1		1
6. Data processing procedures		1		1
7. EMIS development	2			2
8. EMIS data analysis training		1		1
9. Education statistics digest	2			2
10. Data visualization training		1		1
11. Website development			1	1
12. Population census analysis			1	1
<b>Total duration</b>	<b>7</b>	<b>5</b>	<b>4</b>	<b>16</b>