

DEVELOPING A STATISTICAL BUSINESS REGISTER (SBR) IN MYANMAR 2019

Documentation of process
and results



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This is a replication study of the development of a Statistical Business Register in Myanmar as part of the Regional Programme of Economics Statistics in Asia and the Pacific run by UN ESCAP supported by DFID. This document was developed in collaboration between the CSO and UN ESCAP. It is one of five replication studies documenting progress in the development of statistics in Asia.

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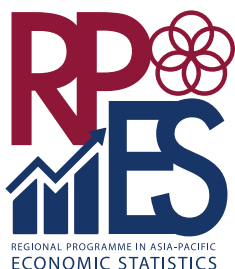
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Acronyms

ADB	Asian Development Bank
CDC	City Development Committee
CSO	Central Statistical Organization
CSV	Comma Separated Value
DAO	Development Affairs Organization
DDG	Deputy Director General
DG	Director General
DICA	Directorate of Investment and Company Administration
DISI	Directorate of Industrial Supervision and Inspection Department
EC	Economic Census
GAD	General Administration Department
IDs	Identifications
IRD	Internal Revenue Department
ISIC	International Standard Industrial Classification
JSON	JavaScript Object Notation
MBS	Myanmar Business Survey
MCDC	Mandalay City Development Committee
MIMU	Myanmar Information Management Unit
MOLIP	Ministry of Labour, Immigration and Population
MOPF	Ministry of Planning and Finance
MSIC	Myanmar Standard Industrial Classification
MSMEs	Micro, Small and Medium-Sized Enterprises
NPTDC	Nay Pyi Taw Development Committee
NRC	National Registration Card
NSDS	National Strategy for the Development of Statistics
SBR	Statistical Business Register
SSID	Small Scale Industries Department
UN ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNDP	United Nations Development Programme
USD	United States Dollar
VPN	Virtual Private Network
YCDC	Yangon City Development Committee

I. BACKGROUND AND CONTEXT

1. In 2015, the first Myanmar Business Survey (MBS) was conducted by the Central Statistical Organization (CSO) to better understand businesses and industry in Myanmar.¹ A list of all employing businesses in Myanmar is maintained by the Department of Labour, under the Ministry of Labour, Immigration and Population (MOLIP), which provided the survey frame for the MBS. The MBS was the first step in a plan to develop capacity in conducting economic surveys and establishing an effective economic survey program.

2. There was a major issue with the survey frame used. Almost a quarter (23%) of the units selected were either unable to be located or had ceased activity - a substantially higher loss rate than for similar surveys in other countries. Such loss increases the cost of running surveys and lowers the quality of estimates. There was a clear need to develop a new source for economic surveys.

3. Myanmar has a decentralized statistical system. Business statistics come from a range of different ministries and sources. Many ministries maintain their own list of businesses and business registration processes. Many of these ministries, including the CSO, conduct regular business surveys, but they only represent a small

area or small subset of the Myanmar economy. There was also a clear need to coordinate different survey programs and make them coherent.

4. An effective way to address these data quality issues was to establish a Statistical Business Register (SBR) and have all data producing agencies use it as the source for economic survey frames. An SBR is a database that attempts to maintain a comprehensive list of businesses from administrative and other data sources. It is maintained by a dedicated team in the CSO who collect, clean, process and integrate data sources and provide survey frames to the producers of statistics.

5. Political will and demand for an SBR was clear. In the statistical law passed on the 22nd of January 2018 the CSO was identified as the main statistical authority for Myanmar. They are mandated to organize and collaborate between data producing agencies to deliver coherent data with effective coverage of the economy. Development of an SBR was included in the National Strategy for Development of Statistics (NSDS) – a substantial exercise that involved all stakeholders in the Myanmar statistical system and designated the CSO to develop the SBR.

¹ Myanmar Central Statistical Organization and United Nations Development Programme (UNDP) Myanmar. 2016. Myanmar Business Survey 2015, Data Report.
https://www.mm.undp.org/content/myanmar/en/home/library/democratic_governance/MyanmarBusinessSurvey.html

6. An economic census (EC) would deliver the highest quality result to tackle data issues and is best practice for the region. This was not a realistic option for the CSO due to a lack of resources. Depending on the methodology chosen, the cost for an economic census in Myanmar could range from twenty to fifty million US dollars.

A. First phase: review of administrative data sources

7. The SBR development project started with a review of existing administrative data sources, assessing their suitability as the basis for an SBR. The government authorities responsible for registering and licensing businesses and maintaining a form of business register were:

- The **Directorate of Investment and Company Administration (DICA)** is responsible for registering enterprises. Only larger businesses are required to register at DICA, such as businesses that need to get an export or import license or are above the turnover threshold for tax purposes (subjective to industry, employment and businesses size). Non-compulsory registration is possible, but unlikely due to registration fees. As of February 2019, there were 59,297 businesses registered with DICA using the newly developed Myanmar Companies (MyCo) online platform.
- The **Directorate of Industrial Supervision and Inspection Department (DISI)** is under the Ministry of Industry. Any industrial enterprise using any type of electric power is required to register. This registration source is biased toward the manufacturing sector and does not include many service sector industries.

- **Small-Scale Industries Department (SSID)** as the name reveals, covers only registration of small-scale industries. These are focused on weaving enterprises and handicrafts including ten specific Myanmar traditional arts and crafts.
- The **General Administration Department (GAD)** has a constitutional mandate regarding collecting excise taxes and issuing licenses for things like liquor, beer and yeast. As such, their register is biased towards certain industries.
- The **Internal Revenue Department (IRD)** is the central tax authority of Myanmar. It is responsible for the collection of business income tax and commercial tax (a turnover tax with many exemptions). The data, while highly useful for economic statistics, has fewer units than the DICA registration source and does not capture most Myanmar businesses.

8. **Development Affairs Organization (DAO) / City Development Committee (CDC)**: all business establishments in Myanmar are required to pay an annual business license fee to the local township. These are paid to the local DAO or CDC once a year. The fees are low, the licenses must be on display, and the townships have staff checking and registering businesses that do not have licenses. This was identified as the most promising administrative data source. This was supported by the results from the MBS, which included questions on where businesses were registered.

Figure 1. MBS respondents; where are they registered?

9. Figure 1 shows the count of businesses in the MBS sample (14,331 were sampled out of a population of 167,777) that said they were registered with that agency. The highest registration coverage is 77.8% by the township DAOs followed by any Union ministry (which in the survey refers to many different organizations including DISI, IRD, SSID etc). Most businesses registered with other sources were registered with the townships as well, indicating less bias in township data and, importantly, that combining other data sources would risk double

counting in the SBR. It was decided to focus on building the SBR with the township business licenses, while continuing to investigate other data sources to identify further opportunities.

II. ESTABLISHING THE STATISTICAL BUSINESS REGISTER

10. There have been four major organizations involved in the development of Myanmar's SBR, which began in 2016 after completion of the MBS. The organisations and their roles are listed below.

11. The CSO in 2018, created a dedicated team was created to implement and maintain the SBR. Many of the initial team members had been working on the previous stages of development, including the MBS. The team has been responsible for the bulk of the work with support from international development partners.

12. The establishment and development of the CSO SBR team has been crucial in the development of the register and is key to its sustainability. The team attended three weeks of training abroad and four weeks of training in country. The in-country training focused on working with the Myanmar data sets rather than the more conceptual focus of the international training.

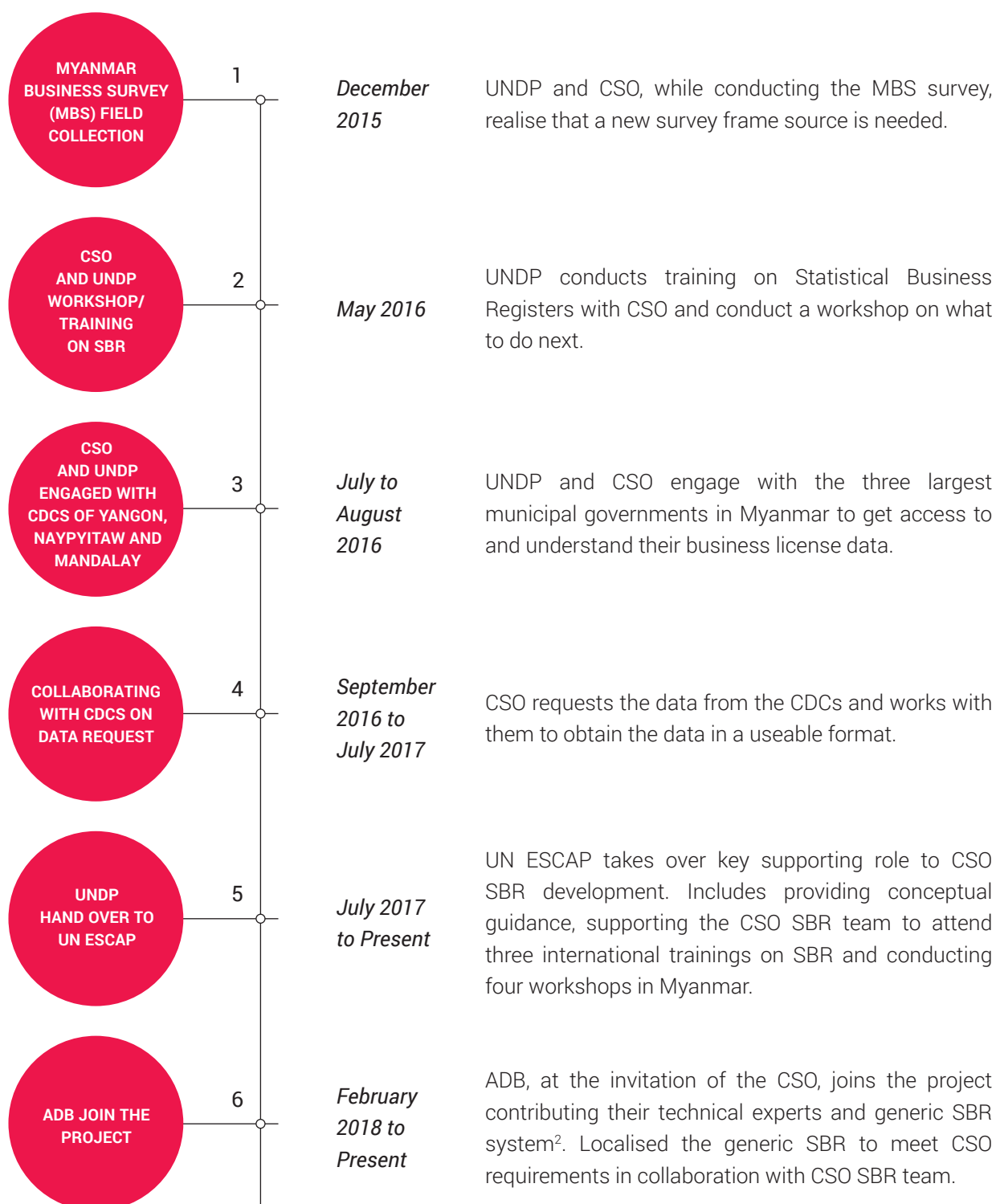
13. The United Nations Development Programme (UNDP), under Felix Schmieding, assisted the CSO in the MBS and then the initial work in identifying administrative data suitable for the CSO SBR. UNDP hired a consultant who worked closely with the CSO in engaging with a few townships under CDCs and provided training on key concepts to both CDCs and the CSO.

14. United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP), under Michael Biddington, provided training on SBR concepts, strategic advice on SBR structure and, with the support of consultants (Ziad Elgendy and Jiayi He), worked closely with the SBR team to process the 2018 data collection.

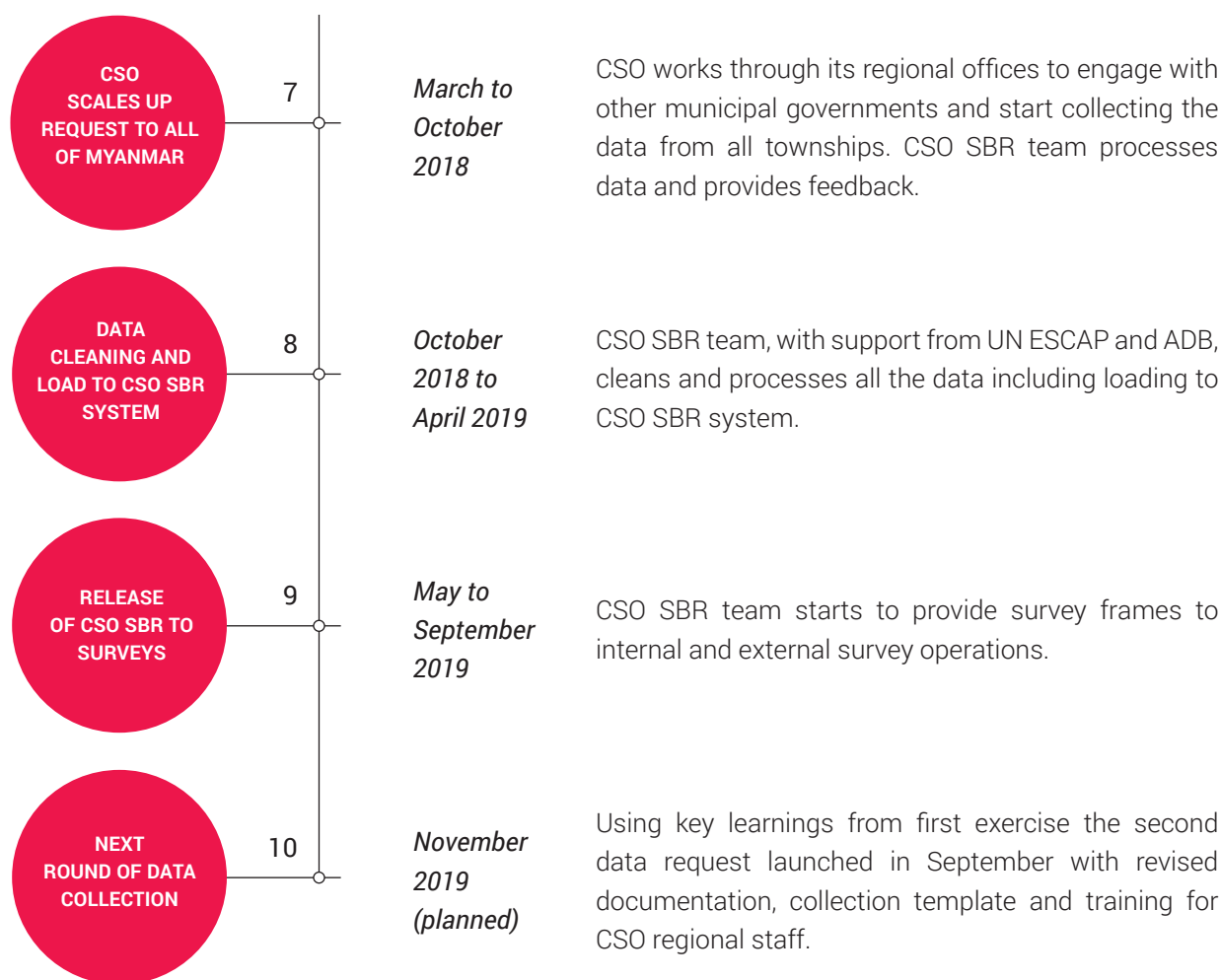
15. The Asian Development Bank (ADB) provided its generic SBR system, operational in many countries the region, and a team (Albert San Juan & Nikko Angelo Antonio) localised the system to meet CSO needs under the leadership of Joseph Mariasingham and Kaushal Joshi.

16. The timeline of the project's development is shown in Figure 2.

Figure 2. Timeline of SBR development



2 <https://www.adb.org/projects/47108-001/main>



A. Township Engagement and 2017 Collection

17. Using the township business license registers as a data source needed a detailed understanding of the township business license processes, the information being collected and its suitability for an SBR. Townships are municipal level independent authorities that raise their own funding through excises, business licenses, property and other local taxes. There is a Development Affairs Organization (DAO) in each township. The DAOs are responsible for providing the licenses, permits, and other

approvals required for the basic functioning of local businesses; notably micro, small and medium-sized enterprises (MSMEs).

18. Each township has a DAO to carry out municipal functions. There are also three City Development Committees (CDC) responsible for the management of whole cities and thus many townships: Yangon City Development Committee (YCDC, 33 townships); Mandalay City Development Committee (MCDC, 6 townships); and Nay Pyi Taw Development Committee (NPTDC 8 townships). With these three organizations accounting for 47 of 330 (14%) of the townships in Myanmar, the CSO started with them.

19. Engagement started at the highest levels with the Director General (DG) or Deputy Director General (DDG) of the CSO initiating meetings with high-level officials in the CDCs. This established mutual understanding and aided the CSOs understanding of the business license process.

20. Workshops led by the CSO to educate the CDC's administrative and business license staff about the purpose of the SBR, the data collection, and how to apply the Myanmar Standard Industrial Classification (MSIC) to classify and code each business unit.

21. Following these workshops, the CSO sent requests to MCDC, YCDC, and NPTDC with an Excel template for them to populate with the details of their registered businesses. This included business name, owner name, address, business activity description, licence fee (tax), phone number, licence type etc. Their responses enabled the CSO to gauge how much work was going to be required to process the data. YCDC provided the data in format that was easy to process, but the MCDC used an antiquated font that made processing difficult and the NPTDC provided the data in hard copy (filled in the template, printed it out then sent that printed out template to the CSO and the CSO manually typed up the 1,647 records). Processing the NPTDC and MCDC data was time consuming.

22. Analysis of the resulting records supported the assumption that township business license was the best source of information. However, many issues were identified that needed to be addressed when considering how to scale collection to the rest of Myanmar and ensure its sustainability.

23. A key issue was a lack of any unique identifiers for the businesses. The DAO registration processes did not use unique identifications (IDs) to identify businesses between financial years. This impacted plans that the DAO staff would classify and code the units. With a lack of unique IDs, it would be impossible to maintain the MSIC code between periods and it would need to be done each year, dramatically increasing the burden on DAOs and reducing their willingness to provide the data. Also, initial analysis of the records showed the quality of MSIC coding to be poor; an issue which would only escalate as attempting to train people for all the remaining townships in Myanmar and ensuring that these skills were maintained would be a logistical and planning nightmare. A new solution needed to be found.

24. The data provided required substantial cleaning beyond the manual typing and text formatting issue. There were many data items in incorrect columns, fields populated with different types of values (some in USD, Kyats or in 1,000 of Kyats) and many fields lacking completeness; notably the business address.

25. The most substantial issue identified was a lack of sizing variables. Only very few of the records provided data on number of employees or capital invested. The only proxy for size available for all records was the license fee paid. This is problematic as the license fee is dependent on a range of factors; many not related to the size of the business. Only after a major survey has been conducted using this data set will there it be possible to know the effectiveness and accuracy of using the business license fee values as a proxy for size (and an effective way to derive classifications like small, medium and large businesses from the license fee paid).

26. To identify what data is available from other townships in Myanmar, the CSO collected blank license application forms from townships throughout Myanmar. The reasoning being that we will be only able to collect data that is on the registration form; that we can't ask the townships to provide information that they don't have/collect. An analysis of these forms showed that while they were different from state/region to state/region they were effectively the same within a state/region. This is probably due to the licensing of businesses previously being a responsibility of the state/region level governments.

27. The table below shows the counts of states and regions for which the license form includes the data item in question and the proportion of population that those states and regions contain. As shown in the Table 1, only four state and region license forms, were 38.1% of the total population reside, included a question on number of employees. This was even lower for capital investment with only four states and regions collecting this data. This indicated a lack of sizing variables was a key issue for this data source; with the license fees the only commonly available sizing variable and this variable being of questionable value as a sizing proxy.

Table 1. Data Items on License Form

IS DATA ITEM INCLUDED ON FORM?	COUNT OF STATE / REGION	POPULATION SHARE %
Name of business	11	85.2%
License Number	15	100.0%
Date business registered for the first time	1	14.6%
Status of registration (New or Extension)	4	32.4%
Calendar year of commencement of actual activities/ operations	3	38.5%
Address of business	15	100.0%
Phone number	12	83.0%
Name of owner	15	100.0%
Description of the type of activity	15	100.0%
Total number of workers in the business	4	38.1%
Amount of capital invested (Kyats)	1	14.6%
Type of license	11	75.2%
License fees	15	100.0%
National Registration Card (NRC) No.	14	96.7%

28. This exercise confirmed that all townships in Myanmar conduct a similar registration exercise and that the key data items needed for the SBR - owner names, business names (11/15), business activity descriptions (15/15) and license fees (15/15) - are collected every year for all businesses. As such the township level business licences was the most suitable data source for the CSO SBR.

B. 2018 Collection - Scaling up the CSO SBR for national coverage

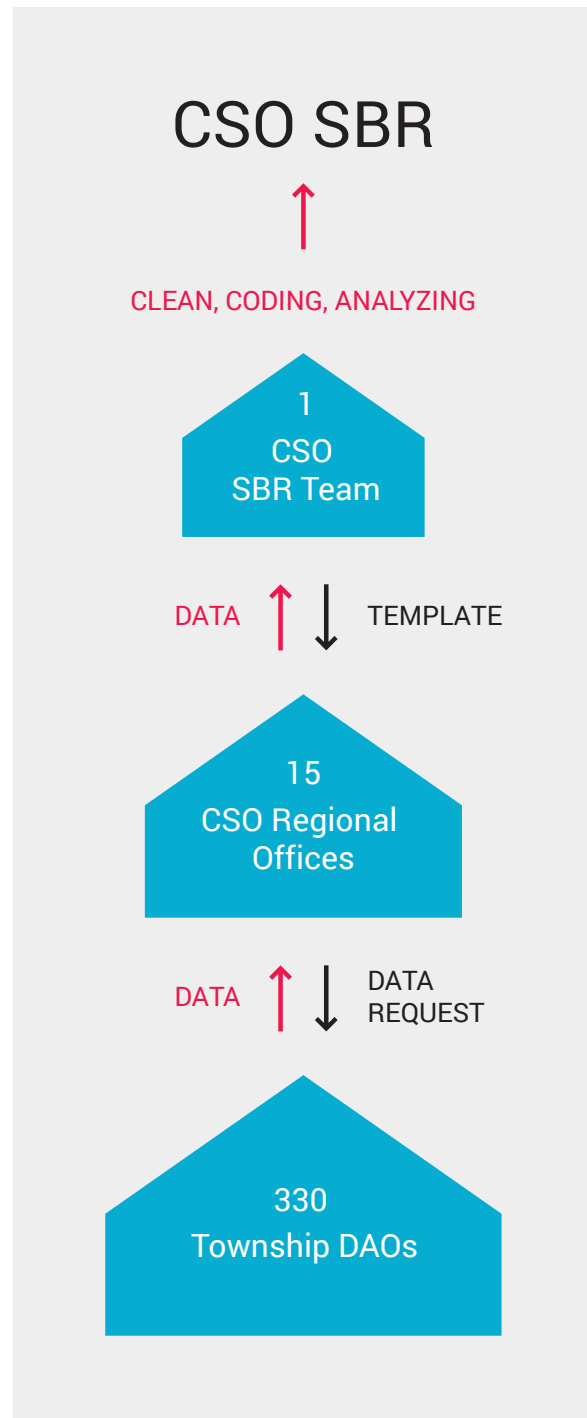
29. The analysis conducted in 2017 showed that it was possible to develop an SBR from the business licenses. The CSO scaled up the collection process to include all townships in Myanmar. This was a substantial undertaking as it involved collecting that data from an additional 283 townships which involved involving the CSO regional offices to scale up the process as shown in Figure 3.

30. The CSO regional offices sent official request letters to each relevant state/region DAOs to collect the licensed business information along with the excel template to harmonise the collection. Most townships did not provide the data using the excel template provided, either creating their own or modifying the sheet substantially. Some township DAOs provided hard copies (of the actual licenses) of their own forms, sending them via public transportation, with the CSO regional staff collecting the forms at highway bus terminals.

31. There were also issues with township returns that did use the electronic template. Most had different title headings and other issues including using antiqued fonts; transcription errors; switching between Myanmar and Arabic numbers; data in incorrect columns; and a high proportion

of missing data fields. The most common missing or invalid variables were; Business Name, License Fee, Assets, Number of Employees, National Registration Card (NRC) No., Calendar and Date of Business Registered.

Figure 3. Data Collection Process of CSO SBR



32. These data quality issues substantially increased the workload of the CSO regional staff; as they often had to type up records manually when hard copies were provided or had to clean unit records line by line. Some of the CSO regional staff did not have time to complete the due to other work commitments and could only forward partially complete information to the CSO SBR team.

33. Once a sufficient sample of the data was collected, ESCAP and the CSO SBR team conducted a detailed review. This was done through the first of three workshops conducted in 2018 on assessing, cleaning and quality checking the data. The most notable issue found was the major variation in the number of businesses relative to the population of the townships (true after adjusting for the urban / rural shares of populations and other factors). This was documented and passed onto the CSO regional offices, which were able to use information showing the township in question had substantially fewer businesses per capita than other townships in Myanmar in their follow up discussions with the DAOs. Feedback from the CSO regional offices indicated that this information was especially useful in getting the DAOs to provide additional units in their updates.

34. CSO regional offices, armed with detailed feedback on the various issues, engaged further with the township DAOs. This was exceptionally time consuming, but as the months passed, the data being collected was of increasingly higher quality.

35. As of 28 of February 2019 the CSO had received data from 309 of the 330 townships in Myanmar (93.6% of townships or townships that covered 97.8% of the population of Myanmar). Compiled into a single database this set contained 227,903 businesses and is the largest list of businesses in Myanmar.

36. With the data now mostly complete and compiled, it was now possible to contrast this with other data including the MOLIP business licence which was used for the MBS survey frame. For 305 of townships the Township DAOs had a higher count of businesses than the MOLIP. The few townships where MOLIP had more than the Township register was due to the MOLIP data including of a large number of agriculture businesses. This was surprising given that agriculture business (farms and aquaculture) were not included in any other townships in the MOLIP data and are not included in the Township DAO data. Excluding these agricultural businesses, the Township DAO business licences has the highest count of businesses for all Townships (where there is data) in Myanmar.

37. The 2018 data collection and processing came at an annual cost to the CSO of 13 full-time equivalent workers (6 full time CSO SBR team and 30 CSO regional office staff working for various amounts of time). While there is an aim is to improve the collection in 2019, lowering respondent burden and reducing collection costs, the benefits the CSO and Myanmar get outweigh the costs making this approach sustainable until a superior option is identified (such as the new tax data and registration systems being developed).

C. New method of MSIC coding

38. The initial plan for the CSO SBR required the townships to MSIC code their own units. The CSO was to provide training to the township DAOs to make this possible. As explained above, this was deemed unfeasible due to logistical challenges and ongoing burden that would reduce data quality.

39. Investigations of the business license process found that the business description field for a registrant was usually filled in by the DAO staff (while the registrant was present) and not the registrant themselves. This is important as having the field populated by township administrative staff results in higher quality data than if self-stated. DAO staff are exposed to many businesses and as such they describe them in a more consistent manner and know how to describe different businesses more effectively.

40. This finding led to the idea that the CSO SBR team could code the units themselves. However, with over 200,000 units to code, doing this manually was not viable. Once the CSO SBR team had collected a majority of the records, it was possible to code using text matching. The CSO SBR team identified the most common terms and descriptions for which an MSIC could be correctly assigned. This enabled more than half the data set to be MSIC coded in a short period as there were 50 different descriptions accounting for half of all businesses registered. The remaining units took much longer but it enabled a consistent approach to be applied to the industry classification.

41. This aside, the business description field did have issues. Many businesses were described in general terms (retail shop, wholesale business, service business, trade business and machinery etc.) and or using local terms/ language. While

this field did improve with the rounds of feedback and updates from the CSO regional office, further investigation of the MSIC coding is needed; ideally from the first surveys conducted using the CSO SBR in order to ground test the new results.

42. The use of batch updating for a majority of records with the CSO SBR team manually coding the remainder using the business name and license type fields as well the business description was successful. Over 99% of the records on the CSO SBR have been MSIC coded. This entire MSIC coding process took less time than it would have taken to conduct a few training workshops; let alone what would have been required to develop and maintain MSIC coding skills in all 330 townships in Myanmar.

D. CSO SBR System

43. A database management system is needed to maintain an SBR. These can be costly to develop and maintaining the data with an ad-hoc solution, such as on Excel spreadsheets, is a substantial risk which becomes exponentially more difficult as the size of the register and CSO SBR team grows. The CSO became aware of the ADB Generic Business Register system (Project 47108-001: Statistical Business Registers for Improved Information on Small, Medium-Sized, and Large Enterprises) and requested access to the system.

44. The ADB developed a generic business register system designed to be deployed to and operated by select national statistics organizations in the region. The system was designed to cater to National Statistical Offices (NSOs) that are looking to develop an SBR with data sourced from administrative data or economic censuses.

45. The specialists at the ADB have held several rounds of consultations with the participating NSOs in order to guide its in-house development team in developing a single platform that will cater to the different requirements. While meeting the common requirements, the system features provisions for simple configuration of country-specific customizations.

Figure 4. Screenshot of CSO SBR system's login screen

46. ADB supported the CSO SBR to implement the system and in providing training to the CSO SBR team to maintain it. The ADB specialists deployed the system to the CSO head office, including the necessary server hardware. They collaborated with the CSO in customizing the system with Myanmar-specific parameters and provided both end-user system training and system administrator training.

Figure 5. Localized web interface to Myanmar language

Figure 6. Master data file with 227,903 records uploaded to CSO SBR system

SBR Myanmar		ALL RECORDS	CREATE	IMPORT	Classifications	Help	Phyu Pyar Aung	
Records List		DISPLAYING 227,903 RECORDS						
All Records		Actions	Business Name	EIN	Location	Year	Status	Last updated
FILTER BY STATUS For Approval (All) Approved Records New (for Approval) Updated (for Approval) Flagged Entries Disapproved Entries Recalled Entries Deleted Entries								
FILTER BY YEAR All Years								
FILTER BY LOCATION [Empty Field]								
FILTER BY EIN [Empty Field]								
CREATED/EDITED BY All								
			ထူးထူး	MMR0000227903	ဒဂုံမြို့သစ်မြောက်ပိုင်း	2018	Approved	12-Mar-2019
			ရသေ့ထူး	MMR0000227902	ဒဂုံမြို့သစ်မြောက်ပိုင်း	2018	Approved	12-Mar-2019
			တံခွန်စိုင်း	MMR0000227901	ဒဂုံမြို့သစ်မြောက်ပိုင်း	2018	Approved	12-Mar-2019
			ရွှေစည်းစိမ်	MMR0000227900	ဒဂုံမြို့သစ်မြောက်ပိုင်း	2018	Approved	12-Mar-2019
			I'am Lao	MMR0000227899	ဒဂုံမြို့သစ်မြောက်ပိုင်း	2018	Approved	12-Mar-2019
			ရွှေဆိပ်တော်	MMR0000227898	ဒဂုံမြို့သစ်မြောက်ပိုင်း	2018	Approved	12-Mar-2019
			ရွှမ်းတင်	MMR0000227897	ဒဂုံမြို့သစ်မြောက်ပိုင်း	2018	Approved	12-Mar-2019
			ပြင်ဦး	MMR0000227896	ဒဂုံမြို့သစ်မြောက်ပိုင်း	2018	Approved	12-Mar-2019
			ရွှေပန်းခိုင်း၊ ရွှေပန်းခိုင်း	MMR0000227895	ဒဂုံမြို့သစ်မြောက်ပိုင်း	2018	Approved	12-Mar-2019
			မင်းမဟာ	MMR0000227894	ဒဂုံမြို့သစ်မြောက်ပိုင်း	2018	Approved	12-Mar-2019
				MMR0000227893	ဒဂုံမြို့သစ်မြောက်ပိုင်း	2018	Approved	12-Mar-2019
				MMR0000227892	ဒဂုံမြို့သစ်မြောက်ပိုင်း	2018	Approved	12-Mar-2019
			Pixel	MMR0000227891	ဒဂုံမြို့သစ်မြောက်ပိုင်း	2018	Approved	12-Mar-2019
			g&g	MMR0000227890	ဒဂုံမြို့သစ်မြောက်ပိုင်း	2018	Approved	12-Mar-2019

E. Localising the SBR System

47. The ADB generic SBR system was built to support country-specific configurations (e.g. languages, currencies, classification systems) without rewriting the application. Localising the ADB SBR System to fit the CSO's requirements involved three main areas of work: (1) defining the SBR variables; (2) defining and preparing the classification systems for geographic location, economic activity, and products; and (3) translating the system's user interface to the Myanmar language.

48. ADB and the CSO SBR team worked together to define the set of SBR variables that will be stored in the system. These corresponded to the available data fields consolidated by the CSO SBR team from the township DAOs. Variables that were not always filled out were defined to be optional, and unnecessary variables were removed from the prototype system. This included defining the format of the variable, including the conversion to standard classification codes and cleaning of unnecessary symbols, units, and characters. The SBR system supports storing data that uses Myanmar characters in Unicode (UTF-8 encoding), so actual business information did not require any translation to English. For uniformity, conversion to Hindu-Arabic numerals is used for all metric variables, classification codes, and contact information, while only the Myanmar numerals used in address information are retained. This ensures compatibility with software or systems used to analyse data extracted from the SBR.

49. Classification wise, the CSO SBR uses the Myanmar Place Codes (MIMU Pcodes Release VII) for geographic classification and MSIC (Myanmar Standard Industrial Classification)

for the economic activity classification. These classification systems are stored in both English and Myanmar language; The CSO SBR system can be searched using either both languages.

50. The CSO SBR team provided translations for all aspects of the user interface which the ADB implemented into the CSO SBR system. The translation work also included the terms for each of the variables that the system collects, as well as the descriptions of each of the codes of the three classification systems.

51. The CSO SBR team received training from five separate workshops conducted by ADB specialists. The training focused on two main areas: use of the SBR system and general database management and analysis. Use of the CSO SBR system training included importing records from existing datasets and mapping them to SBR variables, editing and updating records, supervising the entry of new and updated records, exporting data for analytical uses, creating and approving user accounts and other system-specific administrative tasks. The general database management and analysis training focused on systematic data cleaning and formatting, best practices for data importing and basic SQL database training.

III. CSO SBR BUSINESS POPULATION – THE FINAL RESULT

A. Analysis of Business by Population

52. The CSO now has the best list of businesses in Myanmar currently available for conducting surveys and economic analysis. In 2018, the CSO managed to collect business license / registration / fee data from 309 of 330 townships. These townships represent 97.8% of the Myanmar population (according to the 2014 population census). There were 227,903 units collected.

53. Table 2 provides an overview of the business license data collected from township DAOs, the MOLIP data, with comparison to the Cambodian and Lao PDR economic censuses. The Myanmar population data is estimated by

the Department of Population, and the numbers for Cambodia and Laos were collected in 2011 and 2013 respectively.

54. The CSO SBR has substantially more businesses than the MOLIP source used for previous surveys. However, relative to population size, both the township DAOs and MOLIP source both have far fewer businesses per thousand of population than Cambodia and Lao PDR. This is partially explained by the different collection processes (economic censuses versus administrative registration). An economic census will capture all businesses - formal and informal - while administrative data sets typically cover the formal sector. Regardless, the result suggests substantial undercounting and or an extremely large informal sector in Myanmar and will need to be investigated further.

Table 2. Counts of Business by Population

SOURCE	TOWNSHIP DAO	MOLIP	CAMBODIA ECONOMIC CESUS	LAOS ECONOMIC CESUS
No. of Townships	309/330	320/330		
No. of Businesses	227,903	167,868	505,134	124,823
Population	54,100,000	52,400,000	14,593,099	6,579,985
Business per Thousand Population	4.2	3.2	34.6	19.0

Table 3. Counts of Business by State and Region

STATE/REGION NAME	POPULATION (2014 CENSUS)	BUSINESS COUNT	BUSINESS PER THOU- SAND POPULATION	URBAN POPULA- TION SHARE	NUMBER OF TOWN- SHIPS COLLECTED
Kachin	1,642,841	9,604	5.9	36.1%	12/18
Kayah	286,627	2,664	9.3	25.3%	7/7
Kayin	1,504,326	6,490	4.3	21.9%	7/7
Chin	478,801	2,133	4.5	20.9%	9/9
Sagaing	5,325,347	21,312	4.0	17.1%	33/37
Tanintharyi	1,408,401	5,600	4.0	24.0%	10/10
Bago	4,867,373	8,954	1.8	22.0%	28/28
Magway	3,917,055	13,097	3.3	15.0%	25/25
Mandalay	6,165,723	43,002	7.0	34.8%	28/28
Mon	2,054,393	13,765	6.7	27.9%	10/10
Rakhine	2,098,807	5,052	2.4	16.9%	17/17
Yangon	7,360,703	56,530	7.7	70.1%	44/45
Shan	5,824,432	18,865	3.2	24.0%	45/55
Ayeyarwady	6,184,829	16,644	2.7	14.1%	26/26
Nay Pyi Taw	1,160,242	4,191	3.6	32.3%	8/8
TOTAL	50,279,900	227,903	4.5	29.6%	309/330

55. Table 3 aggregates the data collected by state and region, along with urban population share (from Myanmar 2014 population census) and the numbers of townships collected from which business license data was collected.

56. There is substantial variation in the number of business per thousand population between the states and regions with Kayah the highest (9.3) and Bago (1.8) the lowest. Again, further investigation is needed to identify the cause of this disparity.

57. One interesting example was the relationship between urban population share and the number of businesses. As states or regions that have greater urban population share had higher business counts per thousand populations (as shown in Figure 7), Nay Pyi Taw is a notable outlier; understandable given that a majority of the residents there work for the government and government units, such as ministries, are not included in this collection / counts.

Figure 7. Business counts per thousand populations by state/region



B. Industrial classification and the comparison to Laos PDR, Cambodia EC and MOLIP

58. One of the most important classification variables is the industry classification or MSIC for Myanmar. There were concerns with data quality of the other major data sources used for economic surveys in Myanmar from MOLIP. The MOLIP frame is in theory an on-the-ground

listing operation carried out every year by MOLIP in all townships of Myanmar. It records all formal and informal businesses with at least one hired worker. In practice, it is updated infrequently, depending on the region, and has a strong bias towards units involved in manufacturing.

59. Table 4 compares proportion of business units by MSIC or ISIC divisions for the Township DAO, the MOLIP data, Cambodia economic census and the Lao PDR economic census.

Table 4. MSIC Distribution compared to Laos PDR, Cambodia EC and MOLIP (share)

DIVISION	DIVISION DESCRIPTION	TOWNSHIP DATA	MOLIP	CAMBODIA ECONOMIC CENSUS	LAOS ECONOMIC CENSUS
G	Wholesale and retail trade	49.1%	18.2%	57.9%	62.8%
C	Manufacturing	20.5%	33.2%	14.1%	12.5%
I	Accommodation	17.7%	15.7%	13.8%	11.7%
S	Other service activities	4.9%	8.6%	6.5%	3.9%
H	Transportation and storage	1.6%	3.6%	0.3%	2.8%
N	Administrative	1.5%	0.6%	1.2%	0.7%
Q	Human health	1.4%	0.7%	1.0%	0.3%
P	Education	0.9%	0.2%	2.0%	0.3%
M	Professional activities	0.8%	0.2%	0.2%	0.3%
A	Agriculture	0.3%	5.9%	0.0%	1.8%
O	Public administration	0.0%	9.4%	0.0%	0.0%
Others	Information and real estate, etc.	1.3%	3.7%	3.0%	2.9%
TOTAL		100.0%	100.0%	100.0%	100.0%

60. The Township DAO has a distribution of MSIC that is much more alike to Cambodia and Laos than the MOLIP distribution. This is most notable in the Wholesale/Retail and Manufacturing industries. The Township DAO has 49.1% of its business in the wholesale and retail trade – close to Cambodia (57.9%) and Laos (62.8%) compared to the low proportion of 18.2% for MOLIP.

61. The MOLIP data appears to have a strong bias towards manufacturing businesses; either due to coding issues or biases in population selection. Either way, an economic survey based on this source would overestimate the size of the manufacturing sector in Myanmar and underestimate the retail/wholesale sector of Myanmar.

C. Lack of sizing variable

62. A weakness of the CSO SBR is the poor coverage of sizing variables. More than half (55.0%) of records have no value for any sizing variable and the most common is license fee paid, which is the least accurate proxy for measuring business size (compared to number of employees and capital).

63. Table 5 shows the counts of three sizing variables (employment, license fee and capital) of the township DAOs data by state and region. It shows the count of units in each state or region with none, one, two or three of the sizing variables.

Table 5. Counts of Sizing Variables by State and Region

STATE REGION	NONE	ONE SIZING VARIABLE	TWO SIZING VARIABLES	THREE SIZING VARIABLES	TOTAL	EMPLOYMENT	LICENSE FEE	CAPITAL
Kachin	9,486	118	0	0	9,604	118	0	0
Kayah	2,664	0	0	0	2,664	0	0	0
Kayin	6,490	0	0	0	6,490	0	0	0
Chin	2,133	0	0	0	2,133	0	0	0
Sagaing	20,072	795	445	0	21,312	1,076	0	609
Tanintharyi	5,600	0	0	0	5,600	0	0	0
Bago	6,656	1,041	1,257	0	8,954	2,050	0	1,505
Magway	11,594	1,503	0	0	13,097	0	1,503	0
Mandalay	16,591	26,267	144	0	43,002	2,252	24,086	217
Mon	10,577	0	3,188	0	13,765	3,188	0	3,188
Rakhine	4,919	110	23	0	5,052	126	0	30
Yangon	5,673	31,062	19,566	229	56,530	230	50,841	19,810
Shan	18,769	96	0	0	18,865	0	96	0
Ayarwaddy	24	16,620	0	0	16,644	0	16,620	0
Nay Pyi Taw	4,191	0	0	0	4,191	0	0	0
TOTAL	125,439	77,612	24,623	229	227,903	9,040	93,146	25,359

64. All registered businesses pay an annual license fee/tax, however collecting this data has been challenging. Many of the DAOs were uncomfortable providing this data or don't record the information on a unit record level. It is also known that there are more townships collecting details of the number of employees and that this has not been provided to the CSO. Additional work engaging with the Township DAOs is required to address these issues.

D. Analysis of a 500-record random sample

65. To check the reliability of the business license data collected by townships and improve the data quality for next year, a sample of 500 random unique records was selected from the CSO SBR.

Table 6. Sample status of MSIC, address, business name and owner name

STATUS	MSIC	ADDRESS	BUSINESS NAME	OWNER
Correct	457	304	174	478
Possible	39	165	4	0
Incorrect	4	31	322	22
TOTAL	500	500	500	500

The quality of four data fields (MSIC, address, business name and owner name) of the sample was checked and recorded as shown in Table 6.

66. For each variable there were different rules to determine whether it was correct, possible or incorrect.

a. MSIC: Correct meant that the assigned MSIC code is accurate based on the description of the activity provided and other details such as business name. "Possible" means there is not sufficient detail to rule the MSIC as being correct or incorrect. "Incorrect" means the MSIC code was incorrect based on the description provided. Please note as these are dependent on the descriptions provided and thus have not been independently verified by going back to investigate the actual businesses.

b. Address: For address the test is; can a survey enumerator find this business? "Correct" is when the description is detailed enough for the CSO staff to find the business on a map. "Possible" means address is uncertain, as only street or ward names were described but that it still may be possible for an enumerator who is there to find the business within a reasonable time. "Incorrect" means it cannot be expected an enumerator to find the location of the business based on

information captured (such as blank or only includes name of township).

c. Business and Owner Name: For Name the test is – can the enumerator use this data item to find the business and would it recognise its own name if asked? There were many blank business names, which is common for SBRs or small businesses in both developing and developed countries. It is standard, in this situation to use the owner name to address the business.

67. From the sample, 91.4% of the units were MSIC coded correctly. However, field tests are needed to truly confirm the accuracy. The address data is a key concern with 33.0% of the sample only possibly right. This again needs field testing but the collection of higher quality address data needs to be a priority for the 2019 data collection. This issue should be addressed during the next collection process to improve the quality of data.

68. From the sample analysis, the business and owner name fields appear to be sufficient for purpose. However, field testing is needed to verify again.

IV. NEXT STAGES OF CSO SBR DEVELOPMENT

69. The collection and processing of the business license records is a substantial achievement for the CSO. The CSO SBR is now the best source for conducting economic surveys in Myanmar, but issues remain:

- a. The address data needs to be tested in a real-world environment and improved in the next collection. An estimated 33% of addresses were only deemed possibly accurate enough for the enumerator to find the business. Lack of detail increases the amount of time it takes an enumerator to find a business and could substantially increase the cost of running a survey.
- b. The lack of sizing variables collected limits how much analysis is possible and increases the cost of running surveys; as larger sample sizes are required to collect the data than otherwise would be needed if stratification by business size was possible.
- c. There were substantial data processing costs for the CSO SBR team and the CSO regional staff. Some townships required four rounds of edits before the data was of the quality needed for the CSO SBR system. For this process to be sustainable this needs to be made more efficient.
- d. The CSO SBR has more businesses identified than any other data source in Myanmar. However, the number of businesses per capita, compared to neighbouring countries, is low. Under-coverage is a concern and investigations into the size

of the non-registered size of the Myanmar economy is needed.

70. The focus for the 2019 data collection will be in addressing as many of these issues as possible. This will be achieved by revising the data collection template and instruction notes, enhanced engagement with the townships, and additional training for the CSO regional staff.

71. The CSO SBR team is developing a revised data collection template and briefing note that will provide much more detailed guidance to the townships. This guidance will incorporate key learnings of reporting issues from the last collection.

72. The CSO will enhance its engagement with the townships; including testing the revised collection template on a subset of them in a workshop in 2019. This will increase understanding by the townships of the importance and purpose of the data collection.

73. The CSO regional office staff will be provided additional training on the purpose of the collections, share examples and discuss best practices in how to collect the data from the different townships.

74. For 2020 and beyond, there will be a focus on including other administrative data sources in the CSO SBR. The Internal Revenue Department of Myanmar has a substantial project to transform its tax collection processes, which when completed, should provide an excellent base for the CSO SBR and substantially enhance its capabilities.

V. APPENDIX

Figure 8. Localized web interface to Myanmar language

```
"auth.login": "",
"Log in to SBR": "SBR စနစ်သို့ဝင်ပါ ",
"Contact Support": "ဆက်သွယ်ရန်လိုအပ်ပါသည်",
"Forgot Password": "လျှို့ဝှက်စာလုံးမသိပါ",
"Back to login page": "စနစ်အသုံးဝင်ရောက်ရှိရန် စာမျက်နှာသို့",
"Logout": "ထွက်ခွာပါ",
"Email address or username": "အီးမေးလ်လိပ်စာ (သို့) အသုံးပြုသူအမည် (သို့) အီးမေးလ်",
"Password": "လျှို့ဝှက်စာလုံး",
"Language": "ဘာသာစကား:",
"login.failed": "အသုံးပြုသူအမည် (သို့) လျှို့ဝှက်စာလုံးမှားနေပါသည်",
"login.verification.invalid": "အီးမေးလ်",
"locale.set": "ဘာသာစကား သတ်မှတ်ပါ",
"common.tooltips.and.buttons": "",
"generic.add": "အသစ်",
"generic.empty": "သတ်မှတ်ထားသော အချက်အလက်မရှိ",
"View": "ကြည့်ရန်",
"Edit": "ပြင်ဆင်ရန်",
"Create": "အသစ်ပြုလုပ်ရန်",
>Delete": "ဖျက်ရန်",
"Save": "သိမ်းရန်",
"Submit": "တင်ပြရန်",
"Update": "ပြင်ဆင်ရန်",
"Upload": "တင်သွင်းပါ",
"Confirm": "အတည်ပြုပါ",
"Cancel": "မလိုအပ်ပါ",
"Download": "ဒေါင်းလုဒ်ပြုလုပ်ပါ",
"Settings": "စနစ်သတ်မှတ်ချက်များ",
>Description": "ဖော်ပြချက်များ",
"Code": "ကုဒ်",
"Refresh": "Refresh",
"Created at": "ဖန်တီးခဲ့သည့်",
>Last updated at": "နောက်ဆုံးပြင်ဆင်ခဲ့သည့်",
>Select Language": "ဘာသာစကား ရွေးပါ",
"auth.register": "",
```

75. Images of the different development stages of the CSO SBR system development is included in this section.

Figure 9. English to Myanmar language translation

Myanmar SBR System Interface Translation ☆		
File Edit View Insert Format Data Tools Add-ons Help Last edit was made 10 days ago		
100% \$ % .0 .00 123 Calibri 10 B I A		
fx	Code	
	A	B C
1	Code	English Burmese
2	auth.login	
3	Log in to SBR	SBR စနစ်သို့ဝင်ပါ
4	Contact Support	ဆက်သွယ်ရန်လိပ်စာ
5	Forgot Password	လျှို့ဝှက်စာလုံးမေ့သည်
6	Back to login page	စနစ်အတွင်းဝင်ရောက်ရန် စာမျက်နှာသို့
7	Logout	ထွက်သည်
8	Email address or username	အသုံးပြုသူအမည် (သို့) အီးမေးလ်
9	Password	လျှို့ဝှက်စာလုံး
10	Language	ဘာသာစကား
11	login.failed	အသုံးပြုသူအမည် (သို့) လျှို့ဝှက်စာလုံးမှားနေသည်
12	login.verification.invalid	အီးမေးလ်
13	locale.set	ဘာသာစကားသတ်မှတ်သည်
14	common.tooltips.and.buttons	
15	generic.add	အသစ်
16	generic.empty	သတ်မှတ်ထားသောအချက်အလက်မရှိ
17	View	ကြည့်ရန်
18	Edit	ပြင်ဆင်ရန်
19	Create	အသစ်ပြုလုပ်ရန်
20	Delete	ဖျက်ရန်
21	Save	သိမ်းရန်

Figure 10. Converting CSV file to JSON programming file

Upload a CSV file

+ Select a file...

Or paste your CSV here

Save, သိမ်းဆွဲရန်
Submit, တင်ပြရန်
Update, ပြုပြင်ရန်
Upload, တင်သည်
Confirm, အတည်ပြုသည်
Cancel, မလုပ်သေးပါ
Download, ဒေါင်းလုတ်ပြုလုပ်မည်
Settings, စနစ်သတ်မှတ်ချက်များ
Description, ဖော်ပြချက်များ
Code, ကုတ်
Refresh, Refresh
Created at, ဖန်တီးခဲ့သည်
Last updated at, နောက်ဆုံးပြုပြင်ခဲ့သည်
Select Language, ဘာသာစကားရွေးပါ
auth.register,
Create a new account, အကောင့်အသစ်ပြုလုပ်မည်
Create Account, အကောင့်အသစ်ပြုလုပ်မည်
First Name, နာမည် (အရှေ့စာလုံး)
Last Name, နာမည် (နောက်ဆုံးစာလုံး)
Position/Designation, ရာထူး
Contact Number, ဖုန်းနံပါတ်
Email Address, အီးမေးလ်
Department, ဌာနအမည်
Office/Section, ရုံးအမည်
Username, အသုံးပြုသူအမည်
Confirm Password, လျှို့ဝှက်နံပါတ်အတည်ပြုခြင်း
Unknown error, အမျိုးအမည်မသိသော အမှား
Not authorized., ခွင့်ပြုမထားပါ
Please try logging in again., ပြန်လည်ဝင်ရန်ထပ်ကြိုးစားပါ
register.password.hint, လျှို့ဝှက်စာလုံးသည် စာလုံးများဂဏန်းများ၊
အထူးစကားလုံးများပါဝင်သော စာလုံး ၈ လုံးအနည်းဆုံးရှိရမည်။
account.registered.title, မှတ်ပုံတင်ခြင်းအောင်မြင်သည်
account.registered.message, သင့်အီးမေးလ်သို့ ညွှန်ကြားချက်များ ပေးပို့
အီးမေးလ်မှ

Options Hover on option for help

Separator Auto-detect Parse numbers Parse JSON Transpose Output: Array Hash

☐ Minify

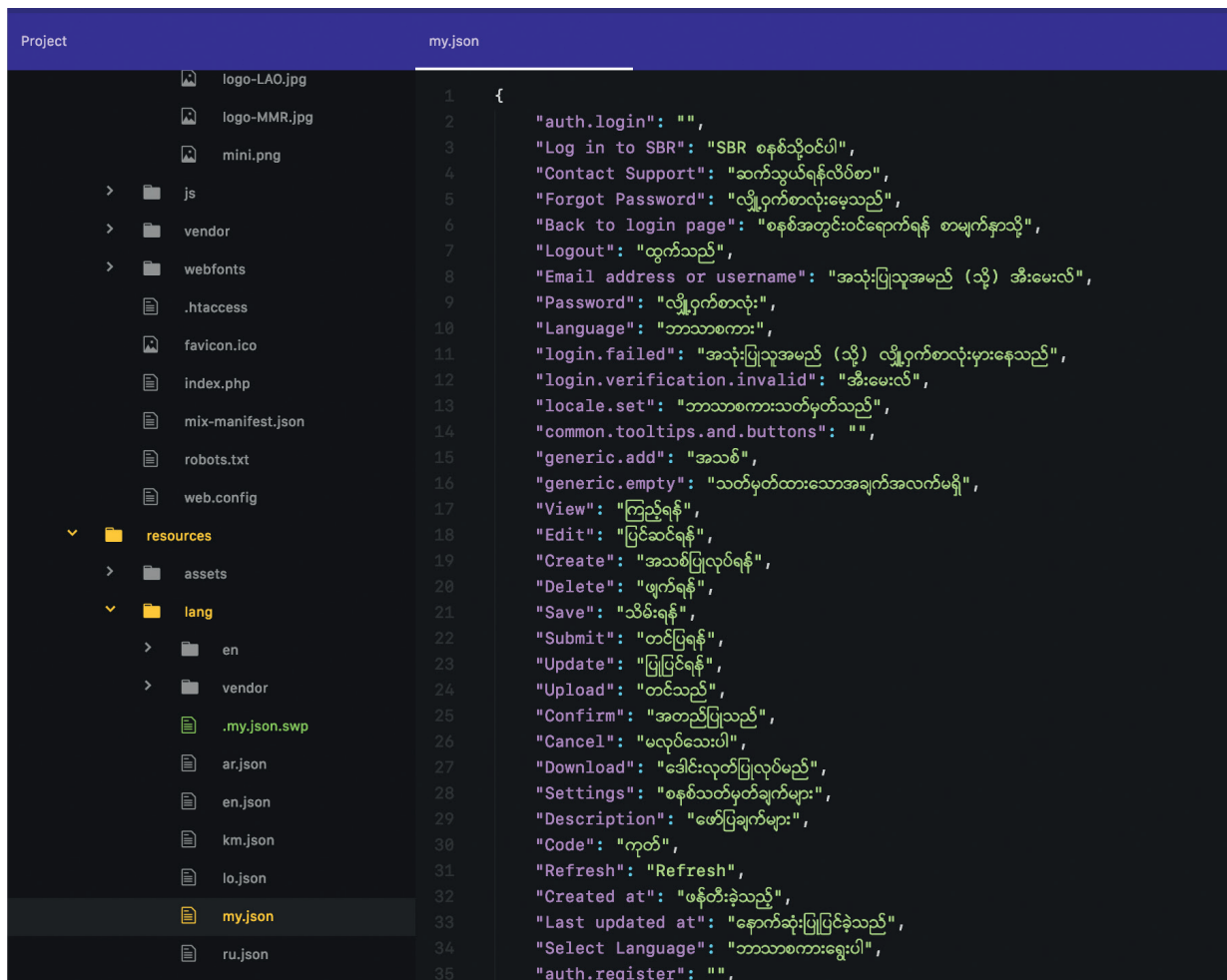
JSON

"Save": "သိမ်းဆွဲရန်",
"Submit": "တင်ပြရန်",
"Update": "ပြုပြင်ရန်",
"Upload": "တင်သည်",
"Confirm": "အတည်ပြုသည်",
"Cancel": "မလုပ်သေးပါ",
"Download": "ဒေါင်းလုတ်ပြုလုပ်မည်",
"Settings": "စနစ်သတ်မှတ်ချက်များ",
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"Last updated at": "နောက်ဆုံးပြုပြင်ခဲ့သည်",
"Select Language": "ဘာသာစကားရွေးပါ",
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"Create a new account": "အကောင့်အသစ်ပြုလုပ်မည်",
"Create Account": "အကောင့်အသစ်ပြုလုပ်မည်",
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"Last Name": "နာမည် (နောက်ဆုံးစာလုံး)",
"Position/Designation": "ရာထူး",
"Contact Number": "ဖုန်းနံပါတ်",
"Email Address": "အီးမေးလ်",
"Department": "ဌာနအမည်",
"Office/Section": "ရုံးအမည်",
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"Unknown error": "အမျိုးအမည်မသိသော အမှား",
"Not authorized.": "ခွင့်ပြုမထားပါ",
"Please try logging in again.": "ပြန်လည်ဝင်ရန်ထပ်ကြိုးစားပါ",
"register.password.hint": "လျှို့ဝှက်စာလုံးသည် စာလုံးများဂဏန်းများ၊ အထူးစကားလုံးများပါဝင်သော
စာလုံး ၈ လုံးအနည်းဆုံးရှိရမည်။",
"account.registered.title": "မှတ်ပုံတင်ခြင်းအောင်မြင်သည်",
"account.registered.message": "သင့်အီးမေးလ်သို့ ညွှန်ကြားချက်များ ပေးပို့ထားသည်။ အီးမေးလ်မှ

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Figure 11. Importing JSON file into SBR system root folder



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For anyone who wants further detailed information regarding, or rules about accessing the CSO SBR for statistical purposes, please contact the CSO SBR. Their contact details are below;

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