Development of methodologies for the collection of data on international labour migration: A Strategy paper

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Contents

1. **Introduction**

In October 2018, the 20th International Conference of Labour statisticians (ICLS) endorsed guidelines concerning statistics of international labour migration.[1] The guidelines recognize three concepts of international labour migration, namely: (a) International migrant workers; (a) For-work international migrants; and (c) Return international migrant workers without excluding others. The guidelines provide definitions of these concepts, relevant classifications and core indicators of stocks and flows of international labour migration. The guidelines also deal with items of data collection and tabulation, data sources and measurement issues.

Paragraph 59 of the guidelines, dealing with future actions, calls the ILO for continuing methodological work, "in particular, on appropriate methodologies for capturing and collecting data on the main categories and subcategories of international migrant workers, for-work international migrants, and return international migrant workers."

Paragraph 15 of the guidelines also introduces the concepts of "citizens working abroad" and "native-born persons working abroad", but does not provide statistical definitions for the terms. "Citizens working abroad" in the country of measurement are regarded as "non-resident foreign workers" in the country of labour attachment. Similarly, "native-born persons working abroad" in the country of measurement are regarded as "non-resident foreign workers" in the country of labour attachment. Given the importance of these categories of international migrant workers in the country of origin, the ILO would like to extent its developmental work to cover "citizens working abroad" and "native-born persons working abroad" alongside the main categories and sub-categories of international migrant workers defined by the 20th ICLS.

Working toward this broader goal, the ILO is formulating a strategy for the development of appropriate methodologies for data collection with a detailed time-table on:

(a) International migrant workers;
   o Usual residents
   o Non-resident foreign workers
(b) For-work international migrants;
(c) Return international migrant workers;
(d) Citizens or native-born persons working abroad.

The present paper describes such a strategy involving five major steps: the review of national sources and country practices concerning statistics of international labour migration (described in Section 2 below); the development of viable methodologies for each of the main categories and sub-categories of international labour migration (listed above and elaborated in Section 3 below); discussion of the outcomes with a Working Group of experts especially established for the purpose as well as soliciting views of others through regional workshops and on-line platforms (Section 4); country studies to pilot and field test the agreed

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[1] ILO, *Guidelines concerning statistics of international labour migration*, 20th International Conference of Labour statisticians, Geneva, 2018.

methodologies in selected countries representing the different regions of the world (Section 5); and the preparation of a progress report for presentation at the 21th ICLS, envisaged to be held in 2023 and a time-table of activities (Section 6). It should be mentioned that this strategy paper is a living document. The measurement issues and the testing countries named in the document may change as work progresses.

2.   Review of national data sources and country practices

The development of international standard methodologies on the measurement of internal labour migration should take into account the existing national data sources and current country practices. It should build on the strengths of cost-effective data sources and successful country practices. The 20th ICLS guidelines on statistics of international labour migration distinguish the sources of stocks and flows as follows:

(a) *sources generating stock statistics*: population censuses; household surveys, in particular labour force surveys (especially relevant for certain groups, e.g. category 14(a) (usual residents) of international migrant workers); specialized migration and demographic surveys; surveys limited to, or focused on, particular populations or domains (such as surveys near international borders, surveys of refugee camps); and establishment census and sample surveys;

(b) *sources generating flow statistics*: border registrations; statistics of residence permits issued; statistics of work permits issued, statistics of visas issued; departure registrations; and household surveys;

(c) *sources that can generate both flow and stock statistics*: population registers; household surveys, registers of foreigners; tax and social security registrations; and registrations for use of utilities (e.g. phone, electricity);

(d) *other sources*: certain groups of international migrant workers who are in need of international protection may require special surveys with targeted samples due to their particular characteristics and circumstances. Appropriate administrative sources of data, where available, may supplement targeted sample surveys or may even serve as an alternative to such surveys.

- The ILO Country Survey on International Migrant Workers

In 2015, the ILO undertook a massive survey to obtain information on national data sources on international labour migration. Seven questionnaires designed to obtain detailed information on migration and work items on seven major types of data source were sent to the 229 ILO member states. A total of 480 filled questionnaires were received from 128 countries. The results were compiled in country files stored in separate folders organized by ILO broad regions (Africa, Americas, Arab States, Asia and the Pacific, and Europe and Central Asia). The global numbers by type of data source are shown in Table 1 below.

The table identifies labour force surveys separately from household surveys, and hence the reason that the table lists eight types of data source, the seven questionnaires sent out by the ILO. "Household surveys" as data source on international labour migration include general multi-purpose or integrated household surveys on living conditions, specialized

surveys on household income and expenditure or demographic characteristics of the population, as well as dedicated surveys on international labour migration. The "border and admission statistics" as data source on international labour migration include statistics of trans-border movements, overseas arrivals and departures, flows of visitors across the country's borders, issuance of visas, issuance of passports, international travel tickets, and visa-based travel history. The source-type "administrative sources" is very heterogeneous including central population and employment registers, work permits and residence permits, registration of foreign workers, registration of nationals working abroad, social security and social assistance records, payroll taxation files, asylum applications, and statistics of non-resident workers.

1. Number of countries by type of data source on international labour migration

	Type of data source	Number of countries	Percent
	ILO member states	229	-
	Responding countries	**128**	**100%**
1	Population censuses	122	95%
2	Household surveys	86	67%
3	Labour force surveys	47	37%
4	Border and admission statistics	48	38%
5	Establishment censuses	18	14%
6	Establishment surveys	16	13%
7	Administration sources	72	56%
8	Estimates of international migrant workers	25	20%

Source: Compiled from "The Analysis of the ILO Country Survey on International Migrant Workers," ILO Department of Statistics with collaboration of Meltem Dayıoğlu, ILO Consultant, undated.

The results of the ILO Country Survey have been analyzed in a separate paper where for each type of source, the individual data items concerning international labour migration are examined and the presence and absence of variables on in and out-migration are counted.[2] A main conclusion of the analysis is that the "population census is the most likely source to be relied upon in describing both the magnitude and the basic characteristics of international labour migrants." Given the infrequent periodicity of population censuses, the analysis suggests that household surveys, in particular, regular labour force surveys, may be considered as "potential sources of timely data due to their near complete coverage of basic labour market and demographic characteristics." The analysis goes on, however, to warn on the "possible under-coverage of migrant populations that may reside in irregular housing units … outside of the sampling frame of labour force surveys."

On data sources regarding flow statistics, the report concludes that in general "household surveys are not likely to be good sources of information neither for *for-work migrants* nor flows of immigrants, emigrants or return migrants." The analysis further notes that "countries are more likely to gather data on individuals who arrive at the country than those who depart." Also, it is "more likely for the administrative records and border statistics to gather data on the employment status of persons in the country than their status abroad."

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[2] ILO Department of Statistics with collaboration of Dayıoğlu, Meltem, ILO Consultant, "The Analysis of the ILO Country Survey on International Migrant Workers," undated.

The ILO Country Survey was conducted prior to the formulation of the 20th ICLS guidelines on statistics of international labour migration. It is, therefore, proposed that the results of the survey be re-analyzed in light of the 20th ICLS guidelines and some of the measurement issues be quantified for the main types of data sources and a selected set countries. An attempt in this direction is made below with respect to the measurement of international migrant workers in the labour force survey of Brunei Darussalam.

- The case of Brunei Darussalam: An illustration

Brunei Darussalam is a country with a significant number of international migrant workers and a developing statistical system. Six main data sources on international migrant workers in Brunei Darussalam are briefly reviewed below:[3]

- Population and Housing Census. The last population and housing census in Brunei Darussalam was conducted in 2011 and an update in May 2016. The 2016 census update covered "all persons according to their usual place of residence who have stayed or intended to stay as usual members of the household for a period of 6 months or more in 2016." The census questionnaire includes two questions to identify the residency (B6) and nationality (B7) of the population, but no question on place of birth. On employment, there are questions on current activity status (B12), occupation (B12i), main duties and nature of work (B12ii) and department/company/employer name (B12iii). The question on current activity status (B12) provides six mutually exclusive and exhaustive answer categories: (1) Working (at least one (1) hour for profit or pay; (2) Not working but actively seeking for work; (3) Full-time student; (4) Retired; (5) Homemaker; and (6) Other (please specify).

- Labour force survey (LFS). The labour force survey is designed to provide annual data on the economic activity of the household population of Brunei Darussalam, in particular, employment, unemployment and other components of labour underutilization, status in employment, branch of economic activity, occupation, informal sector and informal employment, working time and income from employment. The LFS questionnaire is designed in line with the concepts and definitions of the ILO standards concerning statistics of work, employment and labour underutilization adopted by the 19th International Conference of Labour Statisticians (2013). The labour force survey, by its nature, does not represent the entire population of the country, but the population living in residential dwellings, excluding the population living long-term in institutional and non-residential dwellings, such as army barracks, prisons, hospitals, school dormitories, workplaces and construction sites. In practice, this means in the present context that persons living in living quarters such as shophouse and shop flat are not covered by the LFS.

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[3] One of these sources, namely, the administrative data of the Department of Immigration and National Registration is not included in the ILO Country Survey on International Migrant workers. Also, the Annual Census of Employers and Employees conducted by the Department of Labour is amalgamated with the separate Annual Census of Enterprises conducted by the Department of Statistics, JPKE. Mehran, Farhad, ILO Consultant, "Coherence of Brunei Darussalam LFS data with other data sources and Calibration of sampling weights," 4 July 2019 [Revised 10 July 2019].

- Annual Census of Enterprises (ACE). The Annual Census of Enterprises (ACE) covers all active companies and businesses in the country, whether in the form of proprietorship, partnership, public limited company, private limited company, branch of a foreign company and co-operatives. The reporting unit is the 'enterprise' based on the legal registration with the Registrar of Companies and Business Names (ROCBN). The ACE questionnaire records the ROCBN registration number, the company name and address, the activity status, the principal activity and other business activities of the enterprise, if any, and then collects information on the number of employees (Q1), revenue from business activities (Q2), and expenditure (Q3). The employment data refer to the number of employees of the reporting unit at mid-year (30 June), with breakdown by sex (male and female) and local (Brunei citizens and permanent residents) and non-local (foreign nationals). The definition of "employees" in ACE in fact includes: working proprietors/active business partners, full-time and part-time paid employees, and contributing family workers in proprietorships and partnerships.

- Annual Census of Employers and Employees. The Annual Census of Employers and Employees is conducted by the Department of Labour, Ministry of Home Affairs. The results are said to grossly overestimate non-local employment as employers tend to report the number of non-local workers approved in the clearance letter, rather than the actual number of non-local workers engaged in the business unit in order to preserve the right of hiring non-local workers approved in the clearance letter.

- Identity card and pass statistics. As part of its mandate of issuing identity card to the resident population and work permits to the foreign residents, the Department of Immigration and National Registration (DINR) compiles data from its administrative records on total population and foreign employment in the country. The identity card statistics are stock data on the number of residents at any given time. The data are available by main demographic characteristics and geographic locations, separately, for Brunei citizens, permanent residents and temporary residents. Permanent residents are foreign nationals married to Brunei citizens who have residing in Brunei Darussalam for a long period of time (20 years or more under the previous regulations, and 10 years or more under the recent regulations). Permanent residents also include foreign nationals who have contributed to the country through investment of assets worth more than specified amount. Temporary residents are other non-permanent residents.

  The data on temporary residents refer to persons 12 years old or above. The data distinguish between those with Non-local with Identity Card and those with Non-local renewed Identity Card. The distinction provides flow data on the renewal process of the foreign population. The data are tabulated in terms of work status into four categories: Domestic helper; Others working; Visiting and others not working. The statistics of pass applications distinguish between work pass if the intended stay in Brunei Darussalam is 3 months or more and visitor pass if the intended stay is less than 3 months more. The data provide information on the number of new applications; renewals; cancellations; transfers of employer; and cancellation (out). The data are classified by category: (1) Domestic helper; (2) Government; (3) Private companies; (4) Dependent; (5) Professional; (6) Business; and (7) Student.

‒ Mid-year population estimates. The Department of Statistics, JPKE, produces mid-year population estimates by sex, age group, district and local/non-local population. The estimates rely on vital statistics and demographic analyses to complement the DINR administrative data on the resident population. In particular, additional estimates are made for the age group below 12 years old, not covered by the DINR data.

• Labour force survey as a source of data on international migrant workers

A more detailed review of the Brunei Darussalam labour force survey (LFS) provides an illustration of the complementary nature of different data sources. The review is conducted below under two headings: data items of relevance and sample representation.

‒ Data items of relevance

The 20th ICLS guidelines concerning statistics of international labour migration suggest in its paragraph 46 various items of data collection on the main socio-demographic characteristics and the migrant status and work status of international migrant workers, for-work international migrants and return international migrant workers. Work status or labour force status refers to the current situation of international migrant workers and for-work international migrants and to the last situation of return international migrant workers in the country of previous labour attachment. Similarly, the main work characteristics refer to the current main job of employed international migrant workers and for-work international migrants and to the last job of return international migrant workers in the country of previous labour attachment.

The items are listed in Table 1 below and checked against the Brunei Darussalam LFS questionnaire. The box is marked with the colour green if the item is found in the questionnaire and red if not found. It can be observed that most of the boxes are green indicating the majority of the items of data collection are covered by the Brunei Darussalam LFS. The missing items concern country of birth of parents, type of living quarters, proficiency in language of country of labour attachment and all the items on migration characteristics and the item on any restrictions of the right to employment (e.g. undertaking or seeking work, changing employer or work performed).

2. Items of data collection specified in the 20th ICLS Guidelines concerning statistics of international labour migration (para. 46) in relation to Brunei Darussalam Labour Force Survey

	Main socio-demographic characteristics	Brunei Darussalam LFS
1	Sex	
2	Age or date of birth	
3	Marital status	
4	Level of education attained	
5	Type of living quarters	
6	Country of birth	
7	Country of birth of parent(s)	
8	Country of citizenship	
9	Country of usual residence	
10	Country of last usual residence (or country of previous labour attachment for return international migrant workers)	

11	Proficiency (speaking, reading, writing) in a language of country of labour attachment	
	Main migration characteristics	**Brunei Darussalam LFS**
1	Purpose of migration	
2	Type of visa, resident permit, work permit	
3	Duration of stay	
4	Any restrictions in the rights to residence in country of actual or intended labour attachment	
	Main work characteristics	**Brunei Darussalam LFS**
1	Labour force status	
2	Branch of economic activity	
3	Occupation	
4	Status in employment	
5	Working time	
6	Duration of employment in months or years	
7	Employment-related income	
8	Social security entitlements in country of labour attachment	
9	Any restrictions of the right to employment (e.g. undertaking or seeking work, changing employer or work performed)	

Note: Green colour box = Yes, in LFS; Red colour box = No, not in LFS.
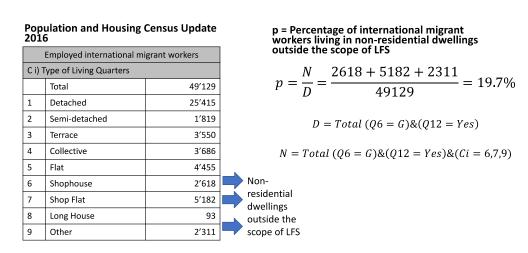
− Sample representation

The last LFS conducted in Brunei Darussalam was in October 2018. The sample consisted of 3200 households drawn according to a two-stage stratified sample design, where at the first stage, 246 geographic areas (segments or sub-segments) were selected with probabilities proportional to size, measured in terms of the number of households according to the 2016 census update; and at the second stage, a fixed number of households (13) were selected in each sample geographic area with equal probabilities. The sampling frame was stratified by district and urban/rural area, forming a total 8 strata. The non-response rate representing refusals and temporary absent eligible households was about 3 percent. The non-coverage rate representing vacant or demolished living quarters and transformations of living quarters to working places was about 10 percent.

Two issues require special attention: (1) How many international migrant workers are outside the scope of the labour force survey? and (2) To what extent the LFS sample adequately represents the within-scope international migrant workers?

International migrant workers that are outside the scope of the LFS may be grouped in two categories: (1-i) Foreign non-resident workers such as cross-border workers and workers entering the country and working in a Brunei enterprise in-land or off-shore for very short time; and (1-ii) international migrant workers living in non-residential dwellings outside the scope of the LFS. The administrative data on work permits (work pass) from the Department of Immigration and National Registration do not categorize the work permits by residency status and therefore cannot be used to obtain information on (1-i). On (1-ii), however, data from the population and housing census may be used to obtain the proportion of international migrant workers living in non-regular living quarters outside the scope of the LFS as shown in the table below.

The nine types of living quarters distinguished in the population and housing census update 2016 are: (1) Detached; (2) Semi-detached; (3) Terrace (Houses built in rows of three or more with common walls); (4) Collective (Houses built in clusters attached to each other); (5) Flat; (6) Shophouse (House in shop building sharing common access with the shop); (7) Shop flat (Flat in shop building sharing common access with the shop); (8) Long house (Officially recognized long house with its own headman - tuai rumah); and (9) Other (please specify) including barracks, construction sites, and makeshift/improvised areas. Living quarters of types 6, 7 and 9 are outside of the scope of the LFS. This means that the LFS, which covers by its nature only the populations living in residential dwellings, excludes about 20 percent of the international migrant workers living in non-residential dwellings.

3. Proportion of international migrant workers living in non-residential dwellings outside the scope of LFS

Population and Housing Census Update 2016

Employed international migrant workers	
C i) Type of Living Quarters	
	Total	49'129
1	Detached	25'415
2	Semi-detached	1'819
3	Terrace	3'550
4	Collective	3'686
5	Flat	4'455
6	Shophouse	2'618
7	Shop Flat	5'182
8	Long House	93
9	Other	2'311

p = Percentage of international migrant workers living in non-residential dwellings outside the scope of LFS

$$p = \frac{N}{D} = \frac{2618 + 5182 + 2311}{49129} = 19.7\%$$

$$D = Total \ (Q6 = G)\&(Q12 = Yes)$$

$$N = Total \ (Q6 = G)\&(Q12 = Yes)\&(Ci = 6,7,9)$$

Non-residential dwellings outside the scope of LFS

Regarding issue (2) on sample representation of within scope international migrant workers, two approaches may be considered, one based on comparison and reconciliation of the LFS data with the corresponding establishment-based data of the Annual Census of Enterprises (ACE) as shown in Table 4 and the other based on comparison with the corresponding administrative-based data of the Department of Immigration and National Registration (DIRN) as shown in Table 5.

In Table 4, the reconciliation process attempts to match the scope of the ACE which covers jobs in active companies and businesses in the country, whether in the form of proprietorship, partnership, public limited company, private limited company, branch of a foreign company and co-operatives. The calculations on the LFS side of the reconciliation table are based on the design weights which reflect the sample design excluding non-response and other survey imperfections.

4. Reconciliation table: International migrant workers Brunei Darussalam LFS 2018 and ACE 2017

	LFS (Design weights) October 2018		Annual Census of Enterprises (ACE) June 2017	
1	Total non-local workers	37'533	Total non-local workers	60'882
2	Public	1'808	Public	-
3	- Government agency	1'516	Private + Public limited company	60'882
4	- Government-owned enterprise	291	-- Workers living at place of work (19.7%)	-11'994
5	Private	35'725	+ Unreported non-local workers	(?)
6	- Formal sector	23'244	- Foreign non-resident workers	(?)
7	- Informal sector	12'481		
8	International organizations, …	165	Unreconciled gap	
9	(4)+(6)-(8)	23'370	= (13'082-48'888)/48'888	
10	+ Multiple jobholders	70	=-73.2%	
11	- Domestic workers	-10'358		
12	Reconciled estimate	13'082	Reconciled estimate	48'888

5. Comparison of LFS estimate of International migrant workers and corresponding administrative data from DINR

Brunei Darussalam LFS (Design weights) October 2018		Department of Immigration and National Registration June 2018	
Total non-local population (15+ years)	44'727	Total non-local population (15+ years)	75'374
Working	37'533	Working	68'370
- Domestic helpers	12'096	- Domestic helpers	8'764
- Others	25'437	- Others	59'606
Not working	7'194	Not working	7'004
		- Visiting	201
		- Others	6'803

(37'533-68'370)/68'370 = -45.1%

The results obtained from both approaches show considerable underestimation of within scope international migrant workers by the LFS (-73 percent according to Table 4 and -45 percent according to Table 5).

3. Development of appropriate methodologies

In this chapter, the measurement issues specifically identified in the 20th ICLS guidelines are described and possible methodologies to address two of them are suggested for illustration purposes.

- 20th ICLS measurement issues

The 20th ICLS called on the ILO to develop appropriate methodologies for capturing and collection data on the main categories and sub-categories of international migrant workers, for-work international migrants, and return international migrant workers. The 20th guidelines specifically mention five particular measurement issues for which special methodologies should be developed. These are presented in tabular form in Table 6 below, where the first column specifies the target population, the second column the potential data source, and the last column the measurement issue.

These measurement issues are, of course, not exhaustive and, as described later in the present paper, the ILO is intending to establish a Working Group to draw a more comprehensive list of the main measurement issues concerning the statistics of international labour migration and to oversee the development of appropriate methodologies to address them. For illustration purposes, two particular measurement issues are examined here (namely, sampling non-resident foreign workers and sampling frontier and itinerant workers).

6. Measurement issues in 20th ICLS Guidelines concerning statistics of international labour migration (para. 55)

	Target population	Data source	Measurement issue
(a)	International migrant workers category 14(a) (usual residents)	Household surveys, such as labour force surveys	Data on migrant status and work status matching at the level of individuals
(b)	Return international migrant workers	Household surveys, such as labour force surveys	Data on past or last migrant status and corresponding past or last work status matching at the level of individuals
(c)	International migrant workers category 14(b) (not usual residents or non-resident foreign workers)	Administrative records or survey data at the place of work	Avoiding double-counting of individuals (e.g. counting all admissions rather than first-time entries during the reference period)
			Taking into account situations in which the worker has multiple employers or is engaged in more than one establishment
			Comparison with corresponding data obtained from household surveys, such as labour force surveys conducted in country of usual residence
(d)	Inflow of for-work international migrants or outflow of international migrant workers	Administrative sources	Special care to strengthen these sources to ensure, to the extent possible, the accuracy of the information to adequately identify target populations
(e)	Subcategories of international migrant workers such as undocumented workers or externally displaced workers living and working in camps	Surveys	Development of special sampling procedures capable of capturing significant and representative samples of these elusive populations, which are often covered partly or not at all in conventional censuses and sample surveys

- Indirect sampling of non-resident foreign workers

In line with the definition given in sub-paragraph 14(b) of the 20th ICLS *Guidelines concerning statistics of international labour migration*, "non-resident foreign workers" are persons who, during a specified reference period, were not usual residents of the country but were present in the country and had labour attachment to the country of measurement, i.e., were either in employment supplying labour to resident producer units of that country or were seeking employment in that country.

Non-resident foreign workers are, therefore, by definition outside the scope of conventional household surveys such as labour force surveys which cover household members with usual residence in the country. Non-resident foreign workers, however, may be captured through their place work with appropriately designed establishment surveys. In principle, establishment surveys may also cover non-resident foreign workers seeking employment in resident establishments in the country of measurement.

A possible approach to collect data on non-resident foreign workers is the use of indirect sampling where the sampling population (A) is the resident establishments and the target population (B) is the non-resident foreign workers. The framework is schematically presented in table 7 below. The rows represent the sampling units, i.e. the resident establishments, i=1,2,…,N, and the columns the target units, i.e., the non-resident foreign workers, j=1,2,…M. The cell L_{ij} of the matrix represent the link between the sample unit I and the target unit j: L_{ij} =1 if establishment i employs, non-resident foreign work j; and L_{ij}=0, otherwise. The row sum L_{i+} represents the number of non-resident foreign workers employed by establishment i and the column sum L_{+j} denotes the number of resident establishments that employ non-resident foreign worker j.

7. Indirect sampling of non-resident foreign workers

Sampling population (A)		Target population (B)									
		Non-resident foreign workers [International migrant workers 14(b)]									
		1	2	.	.	.	J	.	.	.	M	Total
Establishments in country of measurement	1											
	2											
	.											
	.											
	.											
	i		$L_{ij} = \begin{cases} 1 & \textit{If establishment i employs worker j} \\ 0 & \textit{Otherwise} \end{cases}$									L_{i+}
	.											
	.											
	.											
	N											
	Total						L_{+j}					

Under indirect sampling, a sample s_A is first drawn from the sampling population A according to some probability scheme p_A. The resulting sample s_A then gives rise to an indirect sample s_B of non-resident foreign workers through the links L_{ij}. The sampling weights of the sample establishments are given by

$$w_A(i) = \frac{1}{p_i}, \quad i \in s_A$$

where p_i is the probability of selection of establishment i, $p_i>0$. Based on the weight share method,[4] the corresponding sampling weights of the indirect sample non-resident foreign workers are calculated as follows,

$$w_B(j) = \sum_{i \in s_A} \frac{L_{ij}}{L_{+j}} w_A(i), \quad j \in s_B$$

The estimate of the number of non-resident foreign workers is then obtained by simply adding the weights $w_B(j)$ for all sample elements in s_B. It can be shown that the weight share method provides unbiased estimates of linear functions of variables of interest with standard errors that can be calculated based on the sample observations. The implementation of the proposed approach requires information on L_{+j} for the sample elements. In practice, this means adding a question in the questionnaire asking the non-resident foreign workers in the sample about the number of establishments in which they are employed during the specified reference period. The procedure takes into account L_{+j} in the denominator of the weight $w_B(j)$ and thus ensures that there is no double-counting of non-resident foreign workers with multiple employers or employed in more than one establishment.

Estimates of variables of interest about the non-resident foreign workers such as sex, age group, branch of economic activity can be obtained in a straightforward manner by $\sum_{j \in s_B} w_B(j) y_j$ where y_j denotes the given variable of interest. In particular, $\sum_{j \in s_B} w_B(j) L_{+j}$ Gives the estimate of the number of jobs occupied by non-resident foreign workers in the country of measurement. It is clear that the proposed approach cannot cover non-resident foreign workers not employed by resident establishments in the sampling frame A. For these workers $L_{+j}=0$, and an alternative approach, described in the next section in the context of frontier workers and itinerant workers, may be considered.

- Time-location sampling of frontier workers and itinerant workers

Frontier workers and itinerant workers are particular sub-categories of non-resident foreign workers. The 20th ICLS guidelines do not give specific definitions of these sub-categories but describe them as follows:

Frontier workers: not usual residents of the country of measurement who have been granted permission to be employed on a continuous basis in that country provided they depart at regular and short intervals (daily or weekly) from the country.

Itinerant workers: not usual residents of the country of measurement who travel to the country for short periods for work-related reasons.

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[4] Deville, Jean-Claude and Lavallée, Pierre, "Indirect Sampling: The Foundations of the Generalized Weight Share Method," *Survey Methodology*, Vol. 32, No. 2, December 2006, pp. 165-176.

Location sampling and more generally time location sampling (TLS) is used to sample a population for which a sampling frame is not available or cannot be readily constructed, but locations are known at which the population of interest can be found, or for which it is more efficient to sample at those locations.[5] Time location sampling may be formulated within the framework of indirect sampling as shown in Table 8. In the present context, the sampling population A is the border locations at different days or time of the day and the target population B is the frontier workers or itinerant workers crossing those locations at those times. The link function expressed as L_{ijt} provides a convenient means of keeping track of the different situations occurring in such type of sampling. L_{ijt} equals to 1 if worker j crosses border i on day t, and 0 otherwise. The total number of crossings at border i on day t is recorded in the row margin of the matrix (L_{i+t}) and the total number of crossings of worker j during the reference period is recorded on the column margin L_{+j+}.

Consider the set of all workers crossing the border locations for work during a specified reference period. We draw a sample, s_A, of border locations and observation days and time, and collect information on the workers crossing the border locations at those times, say one in every five of them, or more generally every m of them, which could be 1 if all workers crossing the sample border are drawn for data collection. We denote by p_{it} the probability of drawing border location i in the sample at time t. The random variable $\delta_{j|it}$ indicates whether or not worker j crossed the sample border i, at time t.

8. Time-location sampling of frontier workers and itinerant workers

Sampling population (A)		Target population (B) Frontier workers and itinerant workers [International migrant workers 20(a) and 20(c)]										
		1	2	.	.	.	J	.	.	.	M	Total
Day 1	1											
	.											
	i											
	.											
Day t	1											
	.											
	i	$L_{ijt} = \begin{cases} 1 & \text{If at location } i \text{ on day } t, \text{worker } j \text{ crosses border for work} \\ 0 & \text{Otherwise} \end{cases}$										L_{i+t}
	.											
Day .	1											
	.											
	i											
	.											
	Total					L_{+j+}						

Based on the weight share method of indirect sampling, the sampling weight of worker j in the indirect sample s^B may be derived as follows,

[5] Verma, Vijay, *Sampling Elusive Populations: Applications to studies of child labour*, ILO, FPRW/International Programme on the Elimination of Child Labour and Department of Statistics, Geneva, 2013.

$$w_B(j) = \sum_{i,t \in s_A} \frac{\delta_{j|it}}{1/m} \frac{L_{ijt}}{L_{+j+}} w_A(i,t), \quad j \in s_B$$

where m is the interval in the systematic selection of workers and $w_A(i,t)=1/p_{it}$. The sum of the weights $w_B(j)$ for all workers j in the sample s_B gives an unbiased estimate of the total number of frontier workers and itinerant workers crossing all border locations during the reference period. As in the case of non-resident foreign workers employed by resident establishments described in the previous section, the procedure requires adding a question in the worker's questionnaire asking the total number of border locations the worker has crossed over the reference period. The information gives the value of L_{+j+} and is necessary to avoid double counting of workers at border locations and days and time not in the sample.

4. Institutional arrangements

The development of appropriate methodologies for submission to a future session the International Conference of Labour Statisticians needs a solid institutional arrangement to guide the agenda and oversee the activities. The set up may consist of diverse components such as a Working Group, regional and national workshops with major stake holders, or on-line platforms to exchange ideas with interested individuals and organizations.

- Working Group

The ILO may consider reviving the Working Group on Labour Migration Statistics established in 2016 to assist the ILO to develop guidelines on international labour migration leading to the 20th ICLS in 2018. The revived Working Group may be entrusted the new task of assisting the ILO in developing appropriate methodologies for capturing and collecting data on the major categories and sub-categories of international migrant workers, for-work international migrants, return international migrant workers as well as citizens or native-born persons working abroad.

The composition of the Working Group may be maintained or modified to ensure the inclusion of recognized experts on statistics of international labour migration, selected officials of national statistical offices and statistical units of concerned ministries involve in managing and analyzing administrative records on international labour migration in their countries, as well as of representatives of international organizations dealing with the subject such as the United Nations Statistical Division (UNSD), the United Nations Population Division, the International Organization for Migration (IOM), the World Bank, the Statistical Office of the European Union (EUROSTAT) and other regional organizations such as UN ECA, ECE, ESCAP, ESCWA, and CEPAL. The ILO may act as Secretariat of the Working Group.

The terms of reference of the Working Group may include the following tasks:

1. Build on the measurement issues identified in the 20th ICLS Guidelines concerning statistics of international labour migration (para. 55) and advise on other major issues that need to be examined and for which appropriate methodologies should be developed.
2. Oversee the developmental work emanating from (1) including any pilot studies or field testing that may need to be carried out.

3. Assess the resulting methodologies with respect to their theoretical soundness and practical feasibility.
4. Facilitate the coordination with similar activities carried out at the international and regional levels such as the revision of the international concepts and definitions of international migration, the measurement of the SDG indicator 10.7.1 on recruitment cost of international migrant workers, the implementation of the international standards on statistics on child labour and forced labour, and the future rounds of the ILO global estimates of international labour migration.
5. Assist the ILO in specifying the scope and contents of its report on methodologies for capturing and collecting data on the main categories and sub-categories of international migrant workers, for-work international migrants and return international migrant workers, and, if possible, citizens and native-born persons working abroad.
6. Review and comment on the ILO draft report before submission to the 21th International Conference of Labour Statisticians, tentatively planned for 2023.

The Committee may meet at several milestones such as at the start of (1), (3) and (5). The meetings could be held in person in Geneva or another convenient location, or remotely through teleconferencing or other electronic media.

- Regional and national workshops

The ILO may also seize the occasion of diverse regional and national workshops to present its work and solicit the views of different audiences concerned with statistics of international labour migration. The workshops may be on related subjects or specifically addressing issues of international labour migration. They may also be held as part of specific ILO projects or ILO country missions with explicit or implicit relevance to statistics of international labour migration.

It is important that the identify the list of such potential workshops in advance and integrate them with the work plan of the ILO project on methodologies for international labour migration data. To be effective, the outcomes of the workshops should be documented and presented to the proposed Working Group.

- On-line platform

The ILO may establish an on-line platform for exchange of information and experience among interested individuals and organizations. The platform may also be a vehicle for the ILO to obtain comments on its work from a wider range of audiences than those of the Working Group and the Regional and National Workshops.

5. Tentative country studies

The developmental work on international labour migration data may lead to methodologies that need piloting and field testing in several countries in different regions. Overseeing such country studies are included as part of the terms of reference of the proposed Working Group. A set of tentative country studies is listed below:

- Bangladesh and Iran

The ILO is in the process of arranging for a baseline study on labour migration in Bangladesh and Iran with their respective National Statistical Offices as part of a larger project covering more countries with time horizon of 2021. A specific purpose of the baseline study is to: "test the new Guidelines concerning Statistics on International Labour Migration, endorsed by the 20th International Conference of Labour Statisticians (ICLS) in Geneva (October 2018), which will assess the magnitude of labour migration." The project specifically aims at the following activities:

Establish an effective baseline on labour migration in two target Silk Routes countries (Bangladesh and Iran). This activity will have various components:

(a) To review the existing data sources on each element of international labour migration;
(b) To identify, in collaboration with the national statistical office and relevant national stake-holders, the main categories of international labour migration of particular interest in the country according to the ICLS Guidelines concerning Statistics on International Labour Migration (2018);
(c) To use existing data sources, including administrative records along with the existing sources, preferably the labour force survey or another suitable national household survey, to make preliminary estimates of the three elements of international labour migration specified under (a) and the main categories of international labour migration identified under (b);
(d) To develop appropriate methodologies to improve the accuracy of the preliminary estimates, and to develop new data sources/ new methodologies where preliminary estimates could not be made with those in existence;
(e) Test the new data sources and new methodologies on small-scale and experimental conditions and assess their effectiveness and accuracies;
(f) Analyse the data and produce a country report for each target country.
(g) Prepare items of data collection specified in the paragraph 46 of the Guidelines, in relation to the relevant data collection data sources identified under (a) above.

A tentative special topic under (b) for the Bangladesh study could be the measurement of "return international migrant workers" based on household surveys. Bangladesh is an origin country of many workers working or having worked in Arab countries around the Persian Gulf and beyond. Bangladesh is also conducting a regular labour force survey which could be used as the base for measuring return international migrant workers in line with the 20th ICLS concepts and definitions. The country study could also be used to identify the main measurement issues in household-based measurement of return international migrant workers, quantify the magnitude of the gaps, and to find feasible solutions to overcome the shortcomings.

Regarding the country study in Iran, the special topic under (b) may tentatively be the measurement of "non-resident foreign workers", i.e. category 14(b) of the definition of "international migrant workers" of the 20th ICLS guidelines. Substantial flows of daily or seasonal workers crossing borders from the neighbouring countries to work in Iran are regularly reported in the media and other public fora. Iran is also conducting a quarterly

labour force survey with a sample size of more than 60'000 households per quarter. The survey can perhaps be used as base for adding a supplement addressing in particular the measurement of frontier workers and itinerant workers using, for example, a form of the time-location sampling design described earlier in this paper.

- Jordan, Kuwait and Turkey

    The ILO is also considering country studies in Jordan, Kuwait and Turkey.

- In Jordan, a tentative issue for examination may be the measurement of the first category of international migrant workers defined under the sub-paragraph 14(a) of the 20th ICLS guidelines using household-based surveys. The Department of Statistics of Jordan conducts a quarterly labour force survey which can provide the base for the pilot survey. Jordan hosts a large number of migrants and refugees, many living in especially constructed camps away from the main cities, but also many living in residential dwellings throughout the country.

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    A specific issue to examine is the extent to which the LFS can measure the resident international migrant workers [category 14(a)]and how the survey design and field operations can be improved to increase the coverage of this category of international migrant workers. A related issue is to examine the existing administrative records to find ways to complement the LFS measurement with statistics on international migrant workers [14(a)] outside the scope of the LFS.

- In Kuwait, a tentative issue for examination is the use of administrative sources, in particular, resident permits and work permits, to measure the flow of for-work international migrants in line with the definition given by the 20th ICLS guidelines (para. 22). The country study may also consider the development of appropriate methodologies for converting the flow statistics of work permits and renewals to obtain stock estimates of international migrant workers, categories 14(a) and 14(b), of the 20th ICLS guidelines. A particular category for separate measurement may be "migrant domestic workers."

- For the Turkey country study, the specific topic for examination may be the estimation of the number of working refugees identified in sub-paragraph 20(l) of the 20th ICLS guidelines, using all available sources including administrative records, household surveys and population censuses, as well as establishment surveys and censuses. The study may also consider the possibility of using new data sources and innovative estimation methods based on combination of sources of data such as the method of multiple systems estimation (MSE), originally developed in the context of estimation of modern slavery[6] but also considered for estimation of other hard to count populations.

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[6] https://www.gov.uk/government/publications/modern-slavery-an-application-of-multiple-systems-estimation

- Other countries

     The ILO is also considering other country studies, for example, in Brunei Darussalam, Moldova and Switzerland. In Brunei Darussalam and Switzerland, the special issue under consideration is the measurement of "non-resident foreign workers", i.e. category 14(b) of the 20th ICLS guidelines based on combination of data sources, including establishment surveys and administrative records. In Moldova, the tentative issue for examination is the measurement of return international migrant workers based on administrative records.

     Still other countries are under considerations: The Philippines for the development of operational definitions and test of methodologies for measuring "citizens or native-born persons working abroad" based on labour force surveys; Morocco and Tunisia for a similar test of measuring "citizens or native-born persons working abroad" based on administrative records in combination with other data sources; South Africa for the measurement of for-work international migrants, Colombia for measuring for-work international migrants, Venezuela for measuring citizens or native-born persons working abroad and Mexico for the measurement of return international migrant workers based on a combination of data sources.

- Overall framework

     The main objectives of the country studies are to test the feasibility of using the existing data sources to measure the main elements of international labour migration, and where it is not feasible to examine the possibility of developing new data sources and new methodologies to combine multiple sources of data to implement the desired measurements.

     Each country study would include the following activities:

(a) To review the existing data sources on each element of international labour migration, i.e., international migrant workers, for-work international migrant workers, and return international migrant workers, including "citizens or native-born persons working abroad";
(b) To identify, in collaboration with the national statistical office and relevant national stake-holders, the main categories of international labour migration of particular interest in the country;
(c) To use the existing data sources, one of them preferably the labour force survey or another suitable national household survey, to make preliminary estimates of the elements of international labour migration specified under (a) and the main categories of international migrant workers identified under (b);
(d) Where multiple estimates of the main categories of international labour migration may be developed, the different estimates may be reconciled using appropriate procedures, for example, reconciliation tables similar to those developed on estimates of international migrant workers in Brunei Darussalam in the present document;
(e) To develop appropriate methodologies to improve the accuracy of the preliminary estimates, and to develop new data sources or new methodologies where preliminary estimates could not be made with existing data sources and methodologies;

(f) Test the new data sources and new methodologies on small-scale and experimental conditions and assess their effectiveness and accuracies.

(g) Prepare items of data collection specified in the paragraph 46 of the Guidelines, in relation to the relevant data collection data sources identified under (a) above.

The idea is to develop and test methodologies to cover as many cells of the following grid with as much as possible refinements in its columns and rows. For example, how to use population censuses to measure international migrant workers, usual residents living in residential dwellings and usual residents living in non-residential dwellings. Or how to use household surveys in the country of residence to measure non-usual residents working in resident production units of another country. Or, how to use establishment surveys to measure non-usual residents working in resident production units in the country of measurement. Or, how to use administrative sources to measure consistently the inflow of for-work international migrants or the outflow of international migrant workers. Or, how to combine sources to measure particular subcategories of international migrant workers, such as undocumented workers or externally displaced workers living and working in camps. Still other examples are: how can administrative records on work permits and renewals can be used to estimate the stock of international migrant workers; how to use household surveys to measure international migrant domestic workers; how to use special surveys at international borders or special surveys of refugee camps can be used to measure frontier workers or working refugees and asylum seekers.

The following guiding principles will be taken account on implementing the above-mentioned activities:

(a) <u>Distinguishing between data sources on stocks and flows</u>. The listing and description of national data sources should respect the categorization of stocks and flows specified the *ILO Guidelines concerning statistics of international labour migration* (para. 36).

(b) <u>Distinguishing between data sources with wide and limited coverage</u>. Data sources with wide coverage may be used as base for obtaining statistics on the main elements of the statistics of international labour migration. Data sources with limited coverage may be used for improving the coverage of the broad statistics or max be used for sub-diving those broad statistics.

(c) <u>Quantification</u>. The listing and description of each national data source should be accompanied with quantification so as to indicate the order of magnitude of the coverage of the data source.

(d) <u>Reconciliation</u>. The listing and description of the national data sources should be preferably completed with reconciliation of the main data sources, so as to indicate how the data sources can be combined to obtain as close as possible the required statistics of international labour migration specified in the *ILO Guidelines*.

9. Grid of sources and elements of international labour migration

Data source	International migrant workers			For-work international migrants	Return international migrant workers	Citizens or Native-born persons working abroad
	Usual residents living in residential dwellings	Usual residents living in non-residential dwellings	Non-resident foreign workers			
20 ICLS para.	14(a)	14(a)	14(b)	22	23	15
Population census		Jordan (LFS)	Brunei Darussalam and Switzerland		Bangladesh (LFS)	Philippines (LFS)
Household survey	Lebanon (LFHLCS)					
Establishment survey						
Administrative records	Kuwait			Kuwait	Moldova	Tunisia, Morocco, Venezuela
Combination of sources	Turkey Refugees sub. para. 22(l)		Iran (LFS/TLS)	Colombia South Africa	Mexico	

For illustration purposes, the proposed country studies mentioned in the previous section are placed in the grid according to their tentative measurement issue and source of data.

6. 21st ICLS

- Draft methodological guidelines

The experience gained from the country studies and deskwork on national data sources and country practices should provide the necessary information for formulating draft guidelines on the measurement of the main categories and sub-categories of international migrant workers, for-work international migrants and return international migrants. The draft guidelines after review by the working group may be revised to take into account of the comments of the working group. The revised draft guidelines may further be examined by a tripartite Working Group that could be held in summer 2023, ahead of the 21st session of International Conference of Labour Statisticians, tentatively planned to be held in fall 2023. The draft methodological guidelines would be part of the progress report to be submitted at the 21st ICLS.