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Framework for establishing data gaps: A case for sustainable development goal 3

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Sustainable Development Goals (SDGs) were adopted by members states of the United Nations in September 2015. One of the major principles of the SDGs is "Leave No One Behind". As such SDG monitoring requires data from all population groups, particularly the most vulnerable and most unreachable. This poses a challenge to governments in terms of collecting data from such groups to monitor status of SDGs. There are a number of challenges to collecting data from such populations, particularly in low income countries. One such challenge is lack of a framework to assess data gaps. Using SDG Goal 3 as a Case Study, this paper proposes a framework which governments, policy makers, academicians, students and development agencies can use to assess data gaps. The framework requires identifying attributes related to Enabling Environment-Supply-Demand-Quality for specific human development programme areas (examples in SDG Goal 3 are maternal health, child health, immunization, health systems strengthening, and others). With the principle of leave no one behind, each attribute is disaggregated as much as is possible in relation to drivers of inequity such as geography, religion, disability, ethnicity, wealth and education levels among others. Apart from a number of papers that have articulated lack of data for SDG monitoring, this is the first time that a framework for systematically identifying data gaps has been established.

Key words: Dat gaps, SDGs.

INTRODUCTION

An efficient and effective programme should be developed based on solid evidence. There is always a paucity of data/evidence on which to design programmes. In many cases, however, even with abundance of data and evidence, it is difficult to assess what data gaps need to be addressed to ensure as much required data as possible is available and has been used to develop an evidence based programme (United Nations Development Programme, 2015). In development programmes, closing the gender gap has been linked with closing data gaps (Hendriks, 2017) and lack of data linked with a denial of

human rights (Independent Experts Advisory Group on a Data Revolution for Sustainable Development, 2014). This paper uses SDG 3 to propose a frame work for establishing data gaps in any human development area.

Justification and rationale

The SDG target under "*data, monitoring and accountability*" states that "By *2020, enhance capacity-building support to developing countries, including for*

least developed countries and small island developing states, to increase significantly the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts" (Economic Commission for Africa, 2018).

To achieve this target, there is a need for sustainable investments in data. A recent Economic Commission for Africa meeting noted that there is already a "global consensus that investments in the generation and gathering of statistics are fundamental to achieving the 2030 Agenda (Economic Commission for Africa, 2018). A number of countries will need to establish baselines for SDGs as was done with the Millennium Development Goals based on data from large surveys (Kalanda, 2007). By using data from large surveys such as national population and household censuses; Multiple Indicator Cluster Survey (MICS); or the Demographic and Health Surveys (DHS); Governments will be able to assess progress towards achievement of SDGs. Broadly, governments will also be able to assess where there are gaps in data that is used to measure progress at aggregate level, for instance data such as on maternal mortality ratio (MMR).

These large surveys however do not provide data for hard to reach areas because of cost, and lack of frameworks to establish where data gap exist. This is not in the spirit of "leave no one behind". This also does not enable governments to disaggregate by "*income, gender, age, race, ethnicity, migratory status, disability, geographic location*" as per SDG Goal 17. In particular, there are no frameworks to establish programme areas that have data gaps.

Limitations of existing data frameworks

Most existing data frameworks are not designed, and are not able to alert policy makers and responsible government entities where there are data gaps. Data, like all supplies are determined by the supplier. For example, agencies like UNICEF that focus on children and women will mostly support data collection (e.g. through the UNICEF MICS) on child health and not in areas such as chronic diseases that affect the elderly. The level of disaggregation (e.g. location, wealth quintile) is also determined by the needs of those that fund data collection.

The comprehensive disaggregation (as proposed under SDG Goal 17) into "*income; gender; age; race; ethnicity; migratory status; disability; geographic location; and other characteristics relevant in national contexts*" requires that governments should invest more to get sufficient timely data to allow disaggregation and analysis in areas that normally do not have data. Prior to that investment, governments need assistance to know in which areas, which populations have no data so that they can make informed decisions on where to invest to get optimal data for SDG monitoring.

This paper proposes a framework to support governments to identity data gaps that would impinge proper assessment of progress and reporting towards Goal 17. We use data needs for SDG 3 monitoring to propose such a framework.

METHODOLOGY

This framework was developed in August 2018. The need to develop the framework was realized during the conceptualization of an analytical framework for conducting an assessment of the situation of women and children in Iraq. At that point it was noted that there is no known framework for establishing data gaps.

The framework was developed based on consultations with data experts, an extensive literature review and comments from experts that were not involved in the initial consultations. Literature review was based on a search from bibliographic databases, bibliographies of included articles and grey literature sources using several key-word combinations (and truncations).

Constructing a framework for identifying data gap

The framework is developed in four stages.

Stage one: The framework proposed in this paper was developed by identifying a comprehensive set of variables that are required to monitor SDG 3. The major variable, or the anchor variable is the programme area (Table 1).

Stage Two: A comprehensive approach to human development programming requires attention to attributes related to Enabling Environment-Supply-Demand-Quality (United Nations Children's Fund, 2011). These attributes are also applied in sexual and reproductive health programmes by Engender Health (2011) (Table 2).

Stage Three: Each of the 4 categories in stage two is assigned subcategories or determinants. To make the framework manageable, a maximum of 10 subcategories are established based on the MoRES Framework of UNICEF (United Nations Children's Fund, 2011) (Table 3).

Stage Four: The last stage, in the spirit of the SDG principle of "Leave No One Behind" is an equity category for each determinant (Table 4).

RESULTS

Application of the framework: The case of SDG3

The Health SDG, SDG 3 states "Ensure healthy lives and promote wellbeing for all at all ages". It has 13 targets and 26 indicators (World Health Organization, 2017). Each target can be linked to a programme area.

Table 1 is a list of possible programme areas. Each of these programme areas has data needs related to (i) enabling environment; (ii) supply; (iii) demand and (iv) quality perspectives. These four perspectives are further

Table 1. SDG 3 Programme areas.

S/N	Programme Area	Programme Area
1.	Maternal health)	Sexual and reproductive health
2.	New born	Health Systems strengthening
3.	Child health	Health in emergencies
4.	Polio	HIV and AIDS
5.	Immunization	Others as per programme(s) under implementation.
6.	Non-Communicable diseases	

Adapted from UNICEF Strategic Plan (2014- 2017) and SDGs (WHO, 2017).

Table 2. Categories and ten determinants.

Category	Determinant	Description
Enabling Environment	Social norms	Widely followed social rules of behaviour
	Legislation/Policy	Adequacy of laws and policies
	Budget/Expenditure	Allocation & disbursement of required resources
	Management/coordination	Roles and Accountability/ Coordination/ Partnership Supply
Supply	Availability of essential materials/inputs	Essential commodities/ inputs required to deliver a service or adopt a practice
	Access to adequately staff services, facilities and information	Physical access (services, facilities/information)
Demand	Financial access	Direct and indirect costs for services/ practices
	Cultural practices and beliefs	Individual/ community beliefs, awareness, behaviours, practices, attitudes
	Continuity of use	Completion/ continuity in service, practice
Quality	Quality	Adherence to required quality standards

Adapted from UNICEF (2011).

Table 3. Disaggregation.

Geography	Gender
Race	Ethnicity
Wealth quintile	Education
Religion	Disability
Migratory status	Age
Others as per national context	

Adapted from SDG Goal 17 (UNDP, 2016).

subcategorized into ten determinants. Each determinant is disaggregated into 10 equity considerations, namely (i) geography; (ii) gender; (iii) race; (iv) ethnicity; (v) wealth quintile; (vi) disability; (vii) migratory status; (viii) age; (ix) education; (x) religion.

Based on a (i) programme areas; (ii) the four categories; (iii) the ten determinants and (iv) the nine areas of disaggregation; Table 4 is a framework that could be used to assess where there are data gaps to monitor SDG 3.

DISCUSSION

Serious data gaps for monitoring SDGs have been identified. This has been made worse by not considering data availability in the choice of indicators and targets for the SDGs (Dunning and Kalow, 2017). From our literature search, there are no established frameworks for establishing data gaps other than those based on modelling (AbouZahr et al., 2017). The limitation of models is that one needs some data to input into the model. Modelling is therefore of limited use. Other programme such as those in gender (Buvinic et al., 2014) are ensuring that there is data in all social sectors that affect the programme. However, this does not address equity or the "leave no one behind" principle of SDGs.

The data deficit in developing countries has been recognized by others (Chandy and Zhang, 2015). Cost has been identified as being not one of the limitations, with an estimate of $23 million a year to close the deficit (Chandy and Zhang, 2015) in developing countries. Therefore, other factors, such as frameworks for assessing data gaps, other than finance, could be the reasons why there is a paucity of data for SDGs monitoring at decentralised levels.

This paper has proposed, for the first time, a comprehensive framework for establishing data gaps in a systematic way. This framework can be used to establish data gaps in any human development area. In this paper, SDG 3 has been used to illustrate how the framework can be put to use.

To use this framework, policy makers and researchers will first have to specify programme areas. They will then link the programme areas to the 4 perspectives; the ten

Table 4. Framework for identifying data gaps to monitor SDG 3.

Programme areas	Category	Determinants of Bottlenecks and Barriers	Description	Equity focus	Data gaps
Maternal health *{Each of the programme areas in Table I would have to be assessed using this framework to determine what data gaps exist in that area}*	Enabling Environment	Social Norms	Widely followed social rules of behaviour	Geography Race Ethnicity Gender Age Disability Wealth quintile Migratory status Education Religion Other disaggregation as relevant	
		Legislation/Policy	Adequacy of laws and policies	Geography Race Ethnicity Gender Age Disability Wealth quintile Migratory status Education Religion Other disaggregation as relevant	
		Budget/expenditure	Allocation & disbursement of required resources	Geography Race Ethnicity Gender Age Disability Wealth quintile Migratory status Education Religion Other disaggregation as relevant	

Table 4. Contd.

Supply	Management /Coordination	Roles and Accountability/ Coordination/ Partnership Supply	Geography Race Ethnicity Gender Age Disability Wealth quintile Migratory status Education Religion Other disaggregation as relevant
	Availability of essential commodities/inputs	Essential commodities/ inputs required to deliver a service or adopt a practice	Geography Race Ethnicity Gender Age Disability Wealth quintile Migratory status Education Religion Other disaggregation as relevant
	Access to adequately staffed services, facilities and information	Physical access (services, facilities/information)	Geography Race Ethnicity Gender Age Disability Wealth quintile Migratory status Education Religion Other disaggregation as relevant

Table 4. Contd.

Demand	Financial access	Direct and indirect costs for services/ practices	Geography Race Ethnicity Gender Age Disability Wealth quintile Migratory status Education Religion Other disaggregation as relevant
	Social and cultural practices and beliefs	Individual/ community beliefs, awareness, behaviours, practices, attitudes	Geography Race Ethnicity Gender Age Disability Wealth quintile Migratory status Education Religion Other disaggregation as relevant
	Continuity of use	Completion/ continuity in service, practice	Geography Race Ethnicity Gender Age Disability Wealth quintile Migratory status Education Religion Other disaggregation as relevant
Quality	Quality	Adherence to required quality standards	Geography Race

Table 4. Contd.

Programme areas	Category	Determinants of Bottlenecks and Barriers	Description	Equity focus	Data gaps
				Ethnicity	
				Gender	
				Age	
				Disability	
				Wealth quintile	
				Migratory status	
				Education	
				Religion	
				Other disaggregation as relevant	
Maternal health	Enabling Environment	Social Norms	Widely followed social rules of behaviour	Geography	
				Race	
				Ethnicity	
				Gender	
				Age	
				Disability	
				Wealth quintile	
				Migratory status	
				Education	
				Religion	
				Other disaggregation as relevant	
		Legislation/Policy	Adequacy of laws and policies	Geography	
				Race	
				Ethnicity	
				Gender	
				Age	
				Disability	
				Wealth quintile	
				Migratory status	
				Education	
				Religion	
				Other disaggregation as relevant	
		Budget/expenditure	Allocation & disbursement of required resources	Geography	
				Race	

Table 4. Contd.

			Ethnicity Gender Age Disability Wealth quintile Migratory status Education Religion Other disaggregation as relevant
	Management /Coordination	Roles and Accountability/ Coordination/ Partnership Supply	Geography Race Ethnicity Gender Age Disability Wealth quintile Migratory status Other disaggregation as relevant
Supply	Availability of essential commodities/inputs	Essential commodities/ inputs required to deliver a service or adopt a practice	Geography Race Ethnicity Gender Age Disability Wealth quintile Migratory status Education Religion Other disaggregation as relevant
	Access to adequately staffed services, facilities and information	Physical access (services, facilities/information) Demand	Geography Race Ethnicity Gender Age

Table 4. Contd.

			Disability Wealth quintile Migratory status Education Religion Other disaggregation as relevant
Demand	Financial access	Direct and indirect costs for services/ practices	Geography Race Ethnicity Gender Age Disability Wealth quintile Migratory status Education Religion Other disaggregation as relevant
	Social and cultural practices and beliefs	Individual/ community beliefs, awareness, behaviours, practices, attitudes	Geography Race Ethnicity Gender Age Disability Wealth quintile Migratory status Education Religion Other disaggregation as relevant
	Continuity of use	Completion/ continuity in service, practice	Geography Race Ethnicity Gender Age Disability

Table 4. Contd.

			Wealth quintile
			Migratory status
			Education
			Religion
			Other disaggregation as relevant
Quality	Quality	Adherence to required quality standards	Geography
			Race
			Ethnicity
			Gender
			Age
			Disability
			Wealth quintile
			Migratory status
			Education
			Religion
			Other disaggregation as relevant

determinants and the ten equity considerations. Any SDG monitoring exercise, particularly at local level, is bound to have data gaps.

This is mostly so in resource poor contexts. Based on indicators of interest, by specifying data available in this framework, data gaps will be clearly identified.

With the "*leave no one behind*" principle of the SDGs, development interventions have to be equity focused. This means governments have to ensure that there is data to assess progress towards achieving SDGs even for disadvantaged groups.

There are generally no frameworks for assessing data daps in national statistical systems, particularly in developing contexts. As such, statistical systems are mostly able to provide data at national level but hardly for hard to reach areas. This also masks data gaps.

While there is quite a lot of literature on lack of data, quality of data, data financing and other aspects of data, other than modelling and its limitations, we have not come across frameworks that support holistic identification of data gaps for SDGs monitoring.

Using the framework illustrated in this paper, governments and their partners should be able to systematically assess areas where there are data gaps. Based on such as assessment, appropriate data investments would then be made.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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