Proposed National Indicator Framework for SDG 4: The Case of Pakistan

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Abstract

Education plays an important role in reducing vulnerability to economic, social and environmental dislocation and in developing more resilient systems. In 2030 global sustainable development agenda, goal 4 covers wide ranging aspects of education and learning including literacy assessment and childhood development. The SDG document proposes 7 main targets and 11 indicators to monitor the progress for this goal.

However, the necessary data required for effective follow-up and review of the progress towards the implementation of many of the UN suggested indicators is not available in the context of Pakistan. The data gap analysis reveals that only 3 out of 11 indicators of SDG-4 may be estimated with the readily available data. Thus some initiatives in terms of policy formulation and new surveys are proposed for tracking the progress in implementing SDG-4. However, besides political will, these initiatives require lot of financial and human resources. The paper thus recommends to start the process of tracking SDG-4 with the mix of global and complementary national indicators for which reliable and national representative data is quickly available.

This research note proposes implementable indicators of educational attainment and inequality and also provides baseline scenario for the year 2015. Overall, it is revealed that Pakistan is 61 percent of the way toward the targets (100%) in terms of proposed indicators related to SDG-4.

JEL Classification: I2, Q01
Keywords: Education, Sustainable Development, SDGs, Pakistan

1. Preamble

At the beginning of 2016, The United Nations (UN) Sustainable Development Goals (SDGs) replaced the Millennium Development Goals (MDGs) which had been in place since the turn of the century. Although both sets of goals describe an aspirational road map for global development, they came out through intensely different processes. MDGs were adopted, in the spirit of Millennium Declaration (UN, 2000)[1] as the framework for international development cooperation. It is argued that MDGs were not, strictly speaking, a formal intergovernmental mechanism, but rather an initiative driven by the UN Secretariat. Contrary to the MDGs, the SDGs came about not through the distillation of policy agreements from previous UN conferences but through intensive intergovernmental negotiations.

It is widely recognized that effective follow-up and review of the 2030 Agenda requires not only a robust institutional framework but also the collection, processing, analysis and dissemination of an unprecedented amount of reliable, timely, accessible, and sufficiently disaggregated data. In the context of developing countries however, the availability of data, particularly disaggregated data for tracking the progress towards the implementation of global agenda, is a serious concern and consequently a major hurdle in tracking the progress towards the achievement of SDG Goals.

Another concern regarding the global 2030 development agenda is that targets acting as a benchmark of progress are proposed for developed and developing countries alike. In an empirical research, Scott (2015) compares existing policy commitments and targets at the national level with corresponding SDG targets to assess the gap between national and global ambitions. The exercise was carried out for selected 13 indicators across eight goal areas. Unsurprisingly, the analysis found that the stretch required for low-income countries to achieve SDG targets is significantly greater than for middle-income and high-income countries. According to Scott (2015), "Although SDG ambition will be realized at the national level, during their formulation little consideration has been given to how governments set targets and what existing national targets tell us about levels of political ambition". Key recommendations of the study by Scott (2015) include, "The post-2015 development agenda should be aligned with national policy-making and planning processes and include interim targets to help bring the SDGs into national use".

Thus, national ownership at all levels of the SDG framework is critical and national reporting of the implementation status of SDGs must respond to national priorities and needs. Perhaps due to this reason, SDSN (2015) suggested that "each country may pursue its own set of national indicators. Such a set of indicators may consist of the Global Reporting Indicators used to support the global monitoring framework and Complementary National Indicators that address each country's specific challenges, priorities, and preferences". Thus it is recommended that towards the full implementation of global SDGs, each country should pick the number and range of Complementary National Indicators that best suit its capacity to collect and analyze data.

With this backdrop, this study evaluates the education dimension of global SDGs in terms of data availability and also proposes a set of preliminary national indictors for SDG 4.

[1] The declaration committed nations to reduce extreme poverty by 2015. The UN Secretariat published the final set of eight MDGs in August 2001.

2. Evaluating SDG 4 in the Context of Pakistan

The global indicator framework was developed by the Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGs) and agreed upon, including refinements on several indicators, at the 49th session of the United Nations Statistical Commission held in March 2018. The list includes overall 232 indicators for 17 goals of sustainable development in which general agreement has been reached.

To facilitate the monitoring and tracking the progress in implementation of the global indicator framework, all indicators are classified by the IAEG-SDGs into three tiers on the basis of their level of methodological development and the availability of data at the global level. According to the SDG document (United Nations, 2018a), the criteria for defining tiers with respect to SDG indicators are depicted in the Exhibit 2.1.

Exhibit – 2.1
Tier Classification Criteria/Definitions

Tier – 1
Indicator is conceptually clear, has an internationally established methodology and standards are available, and data are regularly produced by countries for at least 50 per cent of countries and of the population in every region where the indicator is relevant.
Tier – 2
Indicator is conceptually clear, has an internationally established methodology and standards are available, but data are not regularly produced by countries.
Tier – 3
No internationally established methodology or standards are yet available for the indicator, but methodology/standards are being (or will be) developed or tested.
Source: Tier Classification of SDG Indicators, United Nations, (2018a)

The updated (as of February 13, 2019) tier classification contains 101 (43 percent) Tier I indicators, 84 (36 percent) Tier II indicators and 41 (18 percent) Tier III indicators. In addition to these, there are 6 indicators that have multiple tiers (different components of the indicators are classified into different tiers).

This phenomenon clearly highlights the problems and challenges in monitoring the progress in the implementation of the global agenda, especially in developing countries. It is not surprising that almost four years down the road, no report has been produced by countries or international agencies covering all UN suggested indicators. For instance, in a recent publication of Sustainable Development Solutions Network (SDSN), only 37 SDG indicators with exact match are used to develop SDG index and country dashboard for 193 UN member states (Sachs et al, 2018).

As the scope of this report is limited to the SDG 4, following sections present a consolidated review in terms of data availability, problems and issues of tracking and monitoring the implementation of SDG-4.

The goal 4 of SDGs aims to "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" so as to achieve substantial adult literacy and numeracy. It also aims to build and upgrade education facilities that are child, disability and gender sensitive and ensure that all earners acquire knowledge and skills needed to promote sustainable development. The goal

covers wide ranging aspects of education and learning including quality of teachers, technical and vocational training, facilities available in schools and more importantly literacy assessment and childhood development. The SGD document proposes 7 main targets and 11 indicators to monitor the progress for the goal related to education. The Exhibit 2.2 summarizes the targets and indicators associated with this SDG.

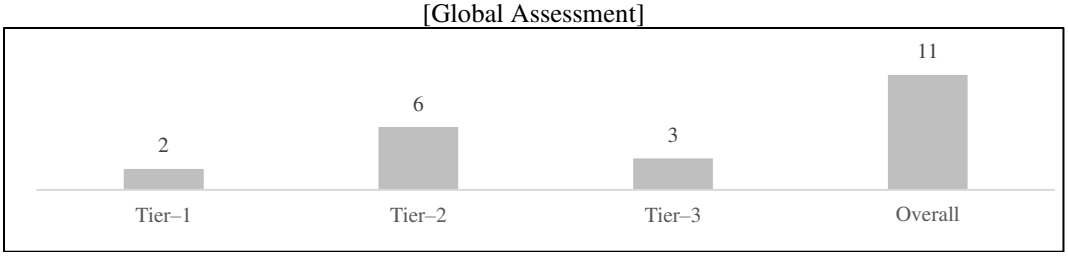
Exhibit – 2.2
SDG Goal 4 – Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Targets		***Indictors***	
4.1	By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes	4.1.1	Proportion of children and young people: (a) in grades 2/3; (b) at the end of primary; and (c) at the end of lower secondary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex
4.2	By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education	4.2.1 4.2.2	Proportion of children under 5 years of age who are developmentally on track in health, learning and psychosocial well-being, by sex Participation rate in organized learning (one year before the official primary entry age), by sex
4.3	By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university	4.3.1	Participation rate of youth and adults in formal and non-formal education and training in the previous 12 months, by sex
4.4	By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship	4.4.1	Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill
4.5	By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations	4.5.1	Parity indices (female/male, rural/urban, bottom/top wealth quintile and others such as disability status, indigenous peoples and conflict affected, as data become available) for all education indicators on this list that can be disaggregated
4.6	By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy	4.6.1	Proportion of population in a given age group achieving at least a fixed level of proficiency in functional (a) literacy and (b) numeracy skills, by sex
4.7	By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development	4.7.1	Extent to which (i) global citizenship education and (ii) education for sustainable development, including gender equality and human rights, are mainstreamed at all levels in: (a) national education policies; (b) curricula; (c) teacher education; and(d) student assessment
4.a	Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all	4.a.1	Proportion of schools with access to: (a) electricity; (b) the Internet for pedagogical purposes; (c) computers for pedagogical purposes; (d) adapted infrastructure and materials for students with disabilities; (e) basic drinking water; (f) single sex basic sanitation facilities; and (g) basic hand-washing facilities (as per the WASH indicator definitions)
4.b	By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programs, in developed countries and other developing countries	4.b.1	Volume of official development assistance flows for scholarships by sector and type of study
4.c	By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States	4.c.1	Proportion of teachers in: (a) pre-primary; (b) primary; (c) lower secondary; and (d) upper secondary education who have received at least the minimum organized teacher training (e.g. pedagogical training) pre-service or in-service required for teaching at the relevant level in a given country

Source: United Nations (2018)

The global exercise of summarizing tier-classification of indicators related to education dimension is furnished in Exhibit 2.3. The exhibit clearly reveals considerable data gaps in monitoring the implementation of the SDGs as the significant (9 out of 11) number of indicators belong to either Tier-2 (data problems) or Tier-3 (problems in definitions and methodology) categories.

Exhibit – 2.3
SDG 4 – Distribution of Education Indicators according to Tier Classification
[Global Assessment]



Source: Tier Classification of SDG Indicators, United Nations, (2018a)

The distribution of indicators in various tiers in terms of methodology and data availability was carried out globally considering the data situation prevailing in all UN member states. However, enormous differences are expected across countries due to the level of development, political priorities, governance and capacity of statistical institutions. Thus it is imperative to review the set of SDG's indicators in the national context to determine the data gaps and problems in tracking and monitoring the implementation of global initiative for sustainable development.

Thus, a preliminary exercise is carried out for this research which aligns SDG's indicators into three categories; indicator is readily available or may be estimated with the available data, partial data is available to estimate the global indicator and the data is not generated at all by federal and/or provincial governments or statistical bodies. It is worth mentioning that the nationally and provincially representative data which is regularly produced by the authentic and reliable sources is considered for this exercise.

According to the Exhibit 2.4 which furnishes the summary results of this classification scheme, the data for 5 indicators is not available at all in the context of Pakistan; while 3 indicators might be estimated partially with the available data. Only 3 out of 11 indicators of SDG-4 may be estimated with the readily available data.

Exhibit – 2.4
Data Availability Status for Indicators Related to SDG 4 – [Pakistan Scenario]

Sustainable Development Goal 4:	Availability Status of Nationally Representative Data		
	Available	**Partially available**	**Not Available**
Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	4.2.2, 4.3.1, 4.5.1	4.1.1, 4.4.1, 4.a.1	4.2.1, 4.6.1, 4.7.1, 4.b.1, 4.c.1

Source: Compiled by author.

Having an overall scenario of data availability, an indicator-wise review would be useful to grasp difficulties in monitoring the implementation of SDGs agenda in the context of Pakistan. Following subsections briefly highlights data gaps, problems in measurement and the capacity to collect reliable data at national and provincial levels for indicators related to SDG 4.

***SDG Target 4.1*:**
This target suggests ensuring "all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes". However, the indicator which is suggested to monitor this target is ambiguous and difficult to measure, especially in the context of developing countries. It is proposed to estimate "Proportion of children and young people: (a) in grades 2/3; (b) at the end of primary; and (c) at the end of lower secondary achieving at least a minimum proficiency level in reading and (ii) mathematics, by sex".

According to SDSN (http://indicators.report/indicators/i-34/), this indicator is designed to measure the proportion of children who are proficient in reading and comprehending text in their primary language of instruction and those that are able to, at the very least, count and understand core mathematical operations and concepts, as a proportion of total children at the end of the primary schooling cycle in the country. Proficiency will need to be defined at the national level, but should over the ability to read, decode, comprehend and analyze text in their primary language of instruction.

Grade-wise participation rates are available; however, for estimating minimum proficiency level in reading and mathematics, *special national representative Literacy Assessment Surveys (LAS) of children who have completed primary education will have to be conducted to monitor this SDG target.*

***SDG Target 4.2*:**
To "ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education", SDG documents proposes to estimate "Proportion of children under 5 years of age who are developmentally on track in health, learning and psychosocial wellbeing, by sex" and "Participation rate in organized learning (one year before the official primary entry age), by sex"

The first indicator is very much demanding and assess childhood development in terms of health, learning and psychosocial wellbeing. *To estimate this indicator, national representative household surveys will have to be conducted to assess children aged 36-59 months in four domains: language/literacy, numeracy, physical, socio-emotional, and cognitive development.* Each of these four domains is measured through instruments based on real-time observation (SDSN, http://indicators.report/indicators/i-32/). *Theses information are used to calculate Early Childhood Development Index (ECDI) which describes the percentage of children aged 36-59 months who are on track.*

The second indicator measures the percentage of children in the 36-59 month's age cohort that are enrolled in an early childhood program. Programs can be defined fairly broadly ranging from private or community care to formal pre-school programs. In the context of Pakistan, pre-primary

participation rates disaggregated by sex are easily available in household surveys (PSLM, MICS or DHS).

***SDG Target 4.3*:**
This target proposes to "ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education. To monitor this target, it is suggested to estimate "Participation rate of youth and adults in formal and non-formal education and training in the previous 12 months, by sex".

Tertiary enrollment rates are indicative of the quality of the labor force in the country, and a wide gap between the tertiary enrollment rates and unemployment rates indicate either an inability of the economy to absorb its trained graduates, or the "employability" of the graduates which indicates a mismatch between the skills being imparted through the tertiary education system and the skills demanded by the market.

This indicator measures the total enrollment in tertiary education regardless of age. The International Standard Classification of Education (1997) recommends tertiary education with educational contents at SCED levels 5 (first stage of tertiary education) and SCED level 6 (second stage leading to advance research qualification). Share of enrollment at tertiary level by sex, urban/rural and by field of study (Science, Engineering, Madison etc.) are available in household surveys (PSLM, DHS, MICS).

***SDG Target 4.4*:**
Specifically, this target proposes to "substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship". Besides tertiary enrollment ratio (Target 4.3), the indicator for this target estimates "Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill". In the context of Pakistan, partial information regarding labor force having ICT skills are available in household survey (PSLM, MICS, LFS); however, these survey don't gather detailed information about type of skills.

Information and communication technologies (ICT) and other advanced technologies are critical for economic development and achieving the other SDGs. At country level, SDSN proposes (SDSN, http://indicators.report/indicators/i-60/) to develop an index at country level to track the quality, performance, and affordability of countries' ICT infrastructure (Broadband quality, international bandwidth capacity and mobile broadband affordability).

***SDG Target 4.5*:**
This target addresses gender disparities in education and recommends to "ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations". To monitor the progress in this target, parity indices for all education indicators that can be disaggregated are proposed which may be computed easily using information from household surveys (preferably PSLM).

***SDG Target 4.6*:**
This target suggests to "ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy" through estimating "Proportion of population in given age group achieving at least a fixed level of proficiency in functional (a) literacy and (b) numeracy skills, by sex".

Literacy rates for the population 10 years and above are available in national household surveys; however, to monitor this target, LAS for adult population is necessary.

***SDG Target 4.7*:**
This SDG target recommends promoting sustainable development through education for sustainable development (ESD) programs. The SDG document narrates "By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development". For monitoring this target, it is suggested to evaluate "Extent to which (i) global citizenship education and (ii) education for sustainable development, including gender equality and human rights, are mainstreamed at all levels in: (a) national education policies; (b) curricula; (c) teacher education; and(d) student assessment".

Currently, no information is available for benchmarking this target. *National and provincial education policies should be amended and revised to include the subject of sustainable development at tertiary level. Focus should be on issues such as sustainable development, sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development.*

2.1 Summarizing New Initiatives for SDG Implementation

The preceding section evaluates the global indicators for education in terms of data gaps and problems in monitoring the implementation. This section provides a summarized view of proposals required for tracking the progress in indicators of SDG-4 in the context of Pakistan. Following two exhibits collate vital initiatives in terms of formulation of policy and new primary surveys. Federal and provincial Bureau of Statistics and Planning and Developments Departments should take the prime responsibility of the proposed primary surveys, while federal and provincial and Higher Education Commissions should act as lead agency for development of curricula to learn Sustainable Development at tertiary level of education.

Exhibit – 2.5
Proposed New Policy for Tracking SDG 4

Policy Formulation:	SDG Target
Curricula Development for Learning Sustainable Development ***National and provincial education policies should be amended and revised to include the subject of sustainable development in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment at tertiary level of education.*** *Focus should be on issues such as sustainable development, sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development*	4.7

Exhibit – 2.6
Proposed New Primary Surveys for Tracking SDG 4

Proposed Primary Surveys:	SDG Targets
Special Literacy Assessment Surveys (Primary passed Children) ***LAS for children who have completed primary education will have to be conducted to monitor this SDG target***	4.1
Special Literacy Assessment Surveys (Children 36-59 months) **To estimate this indicator, national representative household surveys will have to be conducted to assess children aged 36-59 months in four domains: language/literacy, numeracy, physical, socio-emotional and cognitive development**	4.2
Special Literacy Assessment Surveys (Adult Population 15 plus) ***Literacy rates for the population 10 years and above are available in national household surveys; however to monitor this target, special LAS for adult population is required***	4.6

3. Global Initiative for Tracking SDGs

The UN Sustainable Development Solutions Network[2] (SDSN) and Bertelsmann Stiftung produces annual reviews of countries' performance on the 17 Sustainable Development Goals. The third annual report "2018 global unofficial SDG Index and Dashboards" (Sachs et al., 2018) synthesizes metrics with available data – based whenever possible on the official SDG indicators – to enable countries to take stock of where they stood with regards to fulfilling the SDGs. The SDG Index and Dashboards summarize countries' SDG baselines and compare performances across countries and over time.

However, the report describes that the SDG Index and Dashboards are not official SDG monitoring tools and they are subject to many important limitations and caveats. Nonetheless, they are based on the most comprehensive set of country-level data assembled to-date for the SDGs and thus findings of the report will help countries in setting priorities for early action.

The SDG Index and Dashboards describe countries' progress towards achieving the SDGs and indicate areas requiring faster progress. The global SDG Index score and scores by goal can be interpreted as the percentage of achievement. The difference between 100 and countries' scores is therefore the distance in percentage that needs to be completed to achieving the SDGs and goals. The same basket of indicators is used for all countries to generate comparable scores and rankings.

The findings of this international exercise highlight a depressing picture of Pakistan as the country secured a score of 54.9 against a far better regional average of 64.1 for all 17 SDGs. Pakistan's score is even lower than regional peers Bangladesh's 59.3 and India's 59.1. As a result, the country ranked 126 on the SDG index of 193 nations compared to Bangladesh and India (111 and 112 respectively).

[2] SDSN has been operating since 2012 under the auspices of the UN Secretary-General. SDSN mobilizes global scientific and technological expertise to promote practical solutions for sustainable development, including the implementation of the SDGs and the Paris Climate Agreement.

Relevant with the scope of this research paper, Exhibit 3.1 furnishes the indicators related to goals 4 included for developing international SDG index, while Pakistan's relative position among SAARC countries in terms of education dimension is highlighted in the Exhibit 3.2.

Exhibit – 3. 1
Indicators Used in 2018 Global SDG Index and Dashboard for Goal 4

	Net primary enrolment rate (%)
	Mean years of schooling (years)
	Literacy rate of 15-24 year olds, both sexes (%)
	Population age 25-64 with tertiary education (%)
	PISA[3] score (0-600)
	Percentage of variation in science performance explained by students' socio-economic status
	Students performing below level 2 in science (%)
	Resilient students (%)
Source: Sachs et al., 2018, For definitions and data sources of indicators, see Table-10	

The Exhibit 3.2 displays international SGD index scores and ranking of SAARC countries related to education (SDG 4) dimension for the year 2018[4]. The index score signifies a country's position between the worst (0) and best (100) outcomes. So Sri Lanka's index score of 90.9 in SAARC countries on goals 4, suggests that the country is on average 91 percent of the way to the best possible outcome. It is discouraging that Pakistan possesses second last position with respect to Goal 4; its score is lower than Bhutan and Nepal. It is worth noting that in terms of all 17 SDGs, Bhutan's and Nepal's ranks are 83 and 102 respectively as compared with Pakistan's 126.

Exhibit – 3.2
Pakistan's Relative Position for SDG 4 in SAARC Countries - 2018

	Score	Rank
Pakistan	42.5	6
India	64.8	2
Bangladesh	63.9	3
Sri Lanka	90.9	1
Bhutan	47.6	5
Afghanistan	6.9	7
Nepal	59.0	4
Source: (Sachs et al., 2018)		

4. Pakistan Official National Indicators Framework

The government of Pakistan adopted the Sustainable Development Goals as part of the national development agenda in February 2016, as a major policy shift. It is now being implemented with the technical support of United Nations Development Programme (UNDP) to prioritize, localize and mainstream them in policies, planning and procedures. SDG support units have been

[3] PISA (Program for International Student Assessment) is a worldwide study by the Organization for Economic Co-operation and Development (OECD) in member and non-member nations of 15-year-old school pupils' scholastic performance on mathematics, science, and reading. Interestingly this indicator is not included and recommended in the UN global indicator framework.

[4] Although values and ranking of global index for 2017 is available from the same source, the intertemporal comparison is not recommended due to significant changes in the numbers and definition of indictors.

established at federal and provincial levels to provide coordination and support to respective miniseries and departments. These units are supposed to undertake coordination, reporting, and monitoring progress towards SDGs, and to provide policy, research, and knowledge management support for the Goals. A five-year project 'National Initiative for Sustainable Development Goals – SDGs' has also been launched jointly by the Ministry of Planning, Development & Reform, Government of Pakistan and UNDP Pakistan (https://www.sdgpakistan.pk).

A summary of national framework for the SDGs has been prepared by the Planning Commission and approved by the National Economic Council. The official document (Pakistan, 2018), narrates that "Planning Commission after extensive analysis of data and deliberations with provincial and local governments has evolved with a national framework for the SDGs". The framework provides baseline and 2030 target values for few indicators. It is argued that the findings of "Data Gap Analysis Report" by the Federal SDG Support Unit have been used in setting baseline against national indicators.

Unfortunately, the framework suggested by the Planning Commission is not useful for monitoring and tracking specific SDG goals. Baseline and target values are provided for only few indicators. However, the serious concern is that these values have been set without redefining, rephrasing or modifying global indicators according to the availability of national data. Following example is sufficient to highlight the indistinctness and lack of clarity in the proposed official national framework.

SDG indicator 4.1.1 has been designated as 'National Priority SDG Indicator'. The indicator attempts to estimate proportion of children and youth who have achieved a minimum proficiency level in reading and mathematics. Surprisingly, simple enrollment rates by sex are taken as national baseline. Similarly, in the absence of any national representative data on Literacy Assessment for adult population, baseline and target are set for SDG indicator 4.6.1 without providing the exact definition and source of information. High achievements levels as baseline cast doubts on the authenticity and accuracy of the designated indicator.

Exhibit – 4.1
Examples Extracted from National SDG Framework

National Priority SDG Indicator	National Baseline 2014-15	Target 2030
4.1.1 **Proportion of children and young people:** **(a) in grades 2/ 3; (b) at the end of primary; and (c) at the end of lower secondary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex**	Total=57% Girls=53.0% Boys=60.0%	Total=100% Girls=100.0% Boys=100.0%
4.6.1 **Percentage of population in a given age group achieving at least a fixed level of proficiency in functional (a) literacy and (b) numeracy skills, by sex**	Total = 60.0%, Female=49.0% Male=70.0%,	Total = 80.0%, Female=69.0% Male=90.0%,

Source: Pakistan (2018)

5. Proposed Indicator Framework in the National Context

The literature on the implementation of global agenda suggests that there is no standard stepwise method being adopted thus far by countries to ensure that data mapping is done within the spirit of the "national ownership" of the SDGs. According to the background note, prepared for UN sponsored Asia-Pacific Conference on SDGs (UN-ESCAP, 2017), "The national ownership requires that the data ecosystem is mapped to the national indicator framework rather than a global framework. Of course, the proposed global indicators should ultimately find place in the national indicator framework, provided the corresponding targets and indicators are relevant for the countries".

The data gap analysis and the specific initiatives or proposals, in terms of formulation of policy and new primary surveys for monitoring the implementation of the global 2030 agenda have been presented in the preceding section. Apparently execution of these initiatives require plenty of time and lot of financial and human resources, besides political will. It is therefore recommended to start the process of tracking SDGs with the mix of global and complementary national indicators for which reliable and national representative data is quickly available. Keeping the relevant considerations[5] in mind, a set of national indicators in the context of SDG 4 are proposed subsequently.

The accessibility matrix in terms of goal 4 indicators reveal that for full compliance, data is only available only for two global indicators, while special literacy assessment and other primary surveys for children and adult population are required for most of the suggested global indicators. After considering the educational priorities, policies and data availability, 7 indicators are proposed (Exhibit 5.1) for monitoring development in education sector.

In terms of access to schooling two indicators are proposed; pre-primary enrollment and out of school children in the age cohorts 5-16 years. Barriers to primary education are recommended to monitor through survival rate[6] to grade 5 and effective transition rate[7] for primary to secondary schooling. To monitor educational achievement, literacy rates (10+ years and 15-24 years) and proportion of population with tertiary education are recommended.

[5] According to SDSN (2015), robust indicators should be; (1) globally harmonized, (2) simple, single-variable indicator, with straightforward policy implications, (3) allow for high frequency monitoring, (4) consensus based and system-based information, (5) constructed from well-established data sources, (6) disaggregated, (7) universal, (8) mainly outcome-focused, (9) science-based and forward-looking and (10) a proxy for broader issues or conditions.

[6] The percentage of a cohort of pupils enrolled in the first grade of a given level or cycle of education in a given school year who are expected to reach a given grade, regardless of repetition.

[7] Number of new entrants to the first grade of the higher level of education in the following year expressed as a percentage of the students enrolled in the last grade of the given level of education in the given year who do not repeat that grade the following year.

Exhibit – 5.1
Proposed National Indicators for Monitoring Educational Development
[SDG Goal – 4]

	Indicators:	**Data Sources:**
E.1	Pre-Primary Enrollment Rate – (3-5 Years)	Pakistan Social and Living Standard Measurement Survey
E.2	Enrollment Rate for age cohort 5-16 Years	Pakistan Social and Living Standard Measurement Survey
E.3	Survival Rate to Grade 5	Pakistan Education Statistics
E.4	Effective Transition Rate Primary to Middle	Pakistan Education Statistics
E.5	Population with Tertiary Education– (24 plus)	Pakistan Social and Living Standard Measurement Survey
E.6	Literacy Rate – (10 Years and Older)	Pakistan Social and Living Standard Measurement Survey
E.7	Youth Literacy Rate – (15-24 Years)	Pakistan Social and Living Standard Measurement Survey

One of the key principles of the 2030 global agenda is to address the notion "leaving no one behind". Thus to realize the commitment of inclusive development, data disaggregation with respect to vulnerable and left-behind population is essential.

Given the importance of disaggregated data, the SDSN (2015) recommends that relevant SDG indicators be disaggregated according the following broad dimensions: Gender, Age, Income quintiles/deciles, disability, ethnicity and indigenous status, economic activity, location or spatial disaggregation (e.g. by metropolitan areas, urban/rural, districts) and migrant status. However, besides gender and to some extent spatial disaggregation, currently it is not feasible to estimate proposed indicators in such details or required level of disaggregation in the context of Pakistan.

Therefore, to capture the inequality in the access to education, gender and locational (rural-urban) parity indices are recommended to develop for tracking the progress in educational attainment.

While portfolio or dashboard of individual indicators are informative and necessary, there is also a need for a summary measure that combines indicators into a single number which can be quickly grasped. However, one of the issues in the construction of composite indices is the substitutability among component indicators. High achievement for instance, in primary education may be fully compensated or counterweighted with the low level of tertiary education. This situation is not suitable in most cases where a minimum of all components are required for a combined index. The issue of substitutability may be resolved to some extent by taking geometric mean of component indicators instead of combining indicators using simple average (arithmetic mean). The geometric average has the benefit of imposing an implicit "penalty" of being worst on any specific indicator and assures that being best on one component will not fully substitute for being bad on another. It is worth mentioning that UNDP Human Development Index (HDI) is also constructed by averaging component indicators though geometric mean.

The baseline (2015) values[8] of all proposed indicators and parity indices are collated in the Exhibit 5.2, while the composite values (geometric averages) are furnished in the Exhibit 5.3, separately for proposed indicators and parity indices. Moreover, an inter-temporal comparison is also provided (Exhibit 5.4) to assess the trend in the progress since 2005.

[8] It is imperative to note the structural differences in the main date sources in terms of authenticity, scope and coverage, sampling and non-sampling error, data creditability etc. PSLM collects information from households (demand side surveys), while Pakistan Education Statistics collects information from the management of public and private schools (supply side census).

Exhibit – 5.2
National and Provincial Values for Proposed Indicators – 2015

Indicators	Pakistan	Punjab	Sindh	KPK	Balochistan
Pre-Primary Enrollment Rate - (3-5 Years)	29.2	36.4	20.4	25.5	14.7
Enrollment - (5-16 Years)	69.9	74.6	61.2	72.9	56.6
Survival Rate to Grade 5	66.8	72.6	59.5	65.2	40.7
Effective Transition Rate Primary to Middle	84.1	88.4	73.3	85.1	70.2
Population with Tertiary Education - (24 plus)	9.3	8.8	11.7	8.0	5.0
Literacy Rate - (10 Years and Older)	59.8	62.8	59.7	52.8	44.4
Youth Literacy Rate - (15-24 Years)	71.9	75.6	69.2	67.0	54.2
Parity Indices – Gender [Female to Male Ratio]					
Pre-Primary Enrollment Rate - (3-5 Years)	87.0	93.3	70.8	78.8	83.5
Enrollment - (5-16 Years)	76.6	87.4	70.9	60.0	51.0
Survival Rate to Grade 5	100.0	104.1	96.8	79.8	114.4
Effective Transition Rate Primary to Middle	99.9	100.8	99.5	95.4	98.4
Population with Tertiary Education - (24 plus)	67.5	92.4	51.8	35.7	22.2
Literacy Rate - (10 Years and Older)	70.2	77.0	69.8	49.1	40.3
Youth Literacy Rate - (15-24 Years)	81.9	89.1	80.9	58.3	51.9
Parity Indices – Regional [Rural to Urban Ratio]					
Pre-Primary Enrollment Rate - (3-5 Years)	65.8	70.7	42.6	74.1	62.5
Enrollment - (5-16 Years)	77.7	80.9	61.0	83.2	67.7
Population with Tertiary Education - (24 plus)	27.9	28.2	22.9	36.8	31.2
Literacy Rate - (10 Years and Older)	66.9	71.2	53.0	74.9	61.9
Youth Literacy Rate - (15-24 Years)	74.5	79.3	57.6	82.4	63.4
Sources: Pakistan Social and Living-Standard Measurement Survey (PSLM) 2014-15 Pakistan Education Statistics, 2016-17					

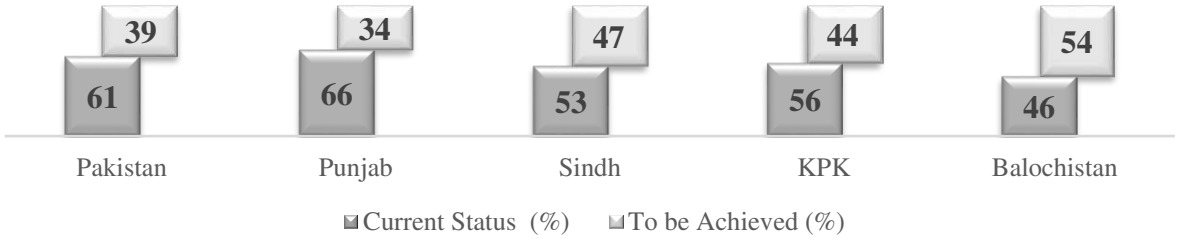
Few observations emerge from the baseline scenario of proposed indicators of educational access and inequalities. The Exhibit 5.2 reveals low pre-primary enrollment rates and little access to tertiary education; however provincial differences exist. Barring Balochistan, close to 70 percent youth is literate, while the national literacy rate for 10 years and above is 60. Very low magnitude of survival rate to grade 5 and pre-primary enrollments in Balochistan are also observed.

Unsurprisingly, the data reveals a depressing pictures regarding the gender parity indices in KPK and Balochistan, especially in tertiary education and youth literacy rates. In contrast, it is also noted that the magnitudes of regional (rural to urban ratio) parity indices are relatively high in KPK and Balochistan as compared with Punjab and Sindh provinces. The phenomenon is however due to comparatively lower proportion of urban population.

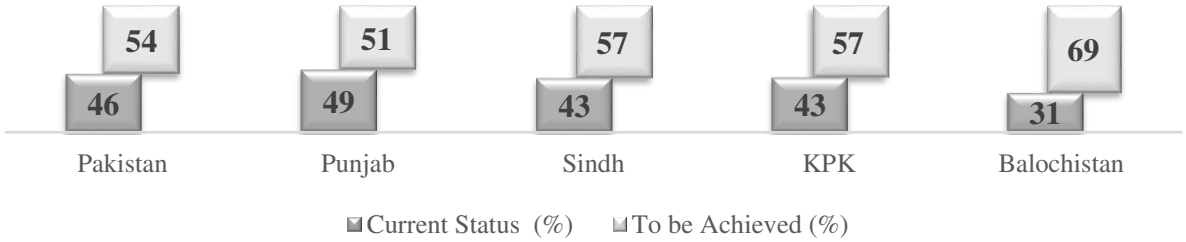
The composite values (geometric averages) of the proposed indicators and parity indices are furnished in the Exhibit 5.3 which allows to evaluate the comparative performance in terms of summary of proposed educational indicators. Overall, the Exhibit reveals that Pakistan is 61 percent of the way toward the targets (100%). Unsurprisingly Punjab province has the highest score (66%) while Balochistan possesses the lowest (46%) geometric average. The important point however is to observe the similar performance of KPK and Sindh provinces. Both provinces scored 43% according to the geometric average of proposed indicators of access to education. However, in terms of all indicators composite score of KPK province is relatively high as compared with the Sindh province.

Exhibit – 5.3
Composite Values for Proposed Indicators and Parity Indices
[Geometric Mean, Year=2015]

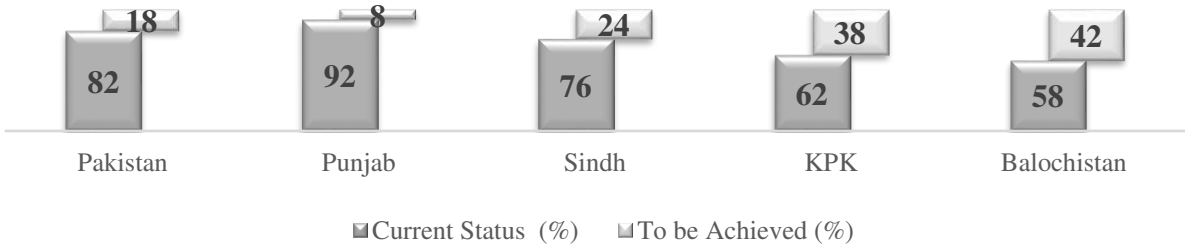
All Proposed Indicators:



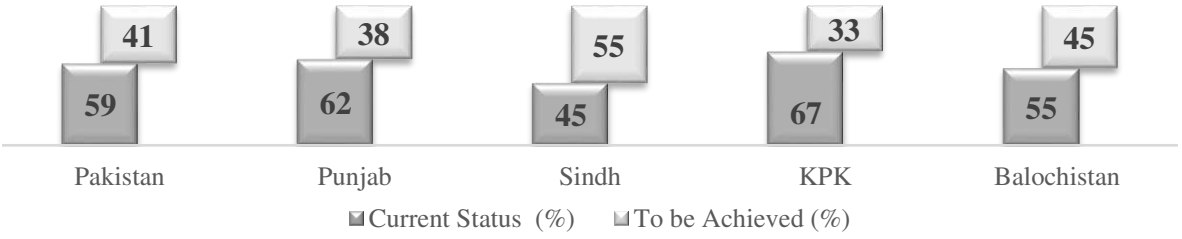
Indicators of Access to Education:



Indicators of Gender Disparity:



Indicators of Regional Disparity:



The Exhibit also reveals that Pakistan is 82 percent on the way to achieve gender parity in terms of proposed indicators. However, realization of parity in KPK and Balochistan would take a relatively longer period. In contrast, urban rural disparities[9] are significantly low with overall achievement of 59%. As expected, the lowest value (45%) is observed in Sindh province which has a highest share of urban population.

The Exhibit 5.4 furnishes the progress in the magnitudes of composite indices of proposed indicators since 2005. Two observations are important to highlight. The growth rates in the composite values during the period 2005-10 are significantly high as compared with the period 2010-15. It is worth mentioning that in 2010, the 18th Amendment devolved responsibility for education to the provinces with significant legislative, fiscal and administrative autonomy. Thus comparatively low performance during 2010-15 period in three provinces (Punjab, Sindh and Balochistan) raises questions and doubts regarding the effectiveness and usefulness of devolved education system. The KPK is the only province which is showing highest annual growth rates of close to 9 percent in both periods.

Exhibit – 5.4
Trend in Composite Indices of Proposed Indicators

	Composite Value of Proposed Indicators			Annual Growth Rate (%)	
	2005	2010	2015	2005-2010	2010-2015
Pakistan	25	35	46	8.5	6.3
Punjab	25	37	49	9.1	6.7
Sindh	26	35	43	7.6	4.2
KPK	21	30	43	8.5	8.8
Balochistan	16	23	31	8.2	7.4

The lowest (4.2 %) growth rate during the period 2010-15 is observed in Sindh with a significant drop (7.6). Similarly, the declining trend in Punjab is also noticeable; from 9.1 to 6.7 percent annual growth during the periods 2005-10 and 2010-15.

[9] The urban-rural disaggregated data of two indicators (Survival Rate to Grade 5 and Effective Transition Rate Primary to Middle) were not available in the Pakistan Education Statistics, 2016-17.

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