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## **SDG Index for Pakistan at Provincial Level**

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# Sustainable Development Goal (SDG) Index for Pakistan at Provincial Level

Maida Umar, Zahid Asghar<sup>1</sup>

## Abstract

Accomplishing Sustainable Development Goals (SDGs) an innovative global agenda of inclusive development, how much progress has been made in some areas and how large an effort is needed to meet the SDGs is the main spirit. This collective journey has at its heart a promise to “**leave no one behind**”. If current trends persist and the cost of missing this opportunity is losing millions of lives that could have been saved. Are we likely to have enough and proper data to conduct an assessment in a meaningful way? To answer this question, we need to evaluate the current state of progress towards each SDG. To take stock of progress at the national and provincial level, SDG Index is incorporated and ranked to evaluate the best and worst performers. Furthermore, they are analyzed against each SDG and highlights from acute to mild challenges. The resulting SDG scorecard depicts that through business as usual, it is hard to achieve SDGs for Pakistan by 2030. Baluchistan rural is at the bottom while Urban Punjab and Urban KP are have done reasonably well though these regions are also behind the target. There is need to do a lot in the domain of health, education, poverty, water and sanitation and no hunger for all regions. The SDG heatmap makes clear that every province faces major challenges in health, education and gender equality that needs to cope with. A call to governments and stakeholders to recognize the gaps that have been identified in implementation, financing and political will to fulfil this vision and keep this promise. SDG Index can draw attention to the SDGs and their role as a tool for guiding national policies and long-term strategies for inclusive development.

Keywords: SDGs, Disaggregated Data, Data Revolution, Evidence Based Decision Making, Leave No One Behind, SDG Index, Health, Education, Inclusive Development, Governance.

## 1. Introduction

In September 2015, heads of states and governments consented to set the world on a way towards “sustainable development” through the selection of the 2030 agenda named as Sustainable Development Goals (SDGs). This motivation incorporates **17** goals, **169** targets and **231** indicators; which incorporated over the three dimensions comprising of social, economic and environmental sustainability and they are time bounded to achieve by 2030. The 17 goals

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shape a cohesive and integrated package of worldwide desires the world focus on accomplishing by 2030. The SDGs expanded upon the achievement of the 8 Millennium Development Goals (MDGs), settled upon in 2000 to half the extreme poverty by 2015 as a midpoint towards eliminating poverty in every one of its structures. The MDGs concentrated on the many measurements of outrageous destitution, including poverty, hunger, gender disparity, the absence of access to education and healthcare, and hardship of clean water and sanitation among others (SDSN, 2015).

The Bertelsmann Foundation with support from the UN Sustainable Development Solutions Network (SDSN) issued a report (Kroll, 2015), which was the first to suggest SDG Index for OECD countries to track SDG achievement and examining priorities for implementation. MDGs utilized 60 internationally agreed indicators, albeit even this set number of indicators was not completely executed in all nations starting at 2015. Information for most of the MDG indicators still lacks missing information focuses, and a few indicators have been accounted for only with a lag of five years or more (Cassidy, 2014).

The incentive for making SDG Index at national and provincial level by regional disaggregation is to signify the assessment regarding initial status, over 8 goals and 33 indicators in the domain of poverty, education, health, water and sanitation, gender equality, clean energy and peace. The best and worst performers are evaluated by SDG rankings. Secondly, each SDG is evaluated individually across the indicators and colored as red, yellow and green to figure out acute to mild challenges. SDGs are integrated into each other and progress cannot be made by accomplishing just one goal. It is about accomplishing them all together for everyone living anywhere in Pakistan. The data utilized for making SDG Index is available for the most recent year. The data sources are Pakistan Social & Living Measurement Survey (PSLM), Labor Force Survey (LFS), Pakistan Demographic Health Survey (PDHS) and United Nations Development Programme (UNDP). Achievement relies on Pakistan's own sustainable development strategies, plans and implementations.

The idea of composite Index has become famous among researchers and development organizations now-a-days. Initially, a composite measure can compress complex or multi-dimensional issues in basic ways making it feasible for policymakers to get a tractable and eye-opening of the circumstance of a nation and comparing with others. Secondly, since they give a solitary estimate, composite Index has the significant simplicity of elucidation over the

utilization of numerous benchmarks. While evaluation of an idea gains it conceivable to survey ground after some time and to highlight situations where intercession might be required. Thirdly, the responsibility regarding routinely create and refresh quantitative evaluations encourages correspondence with customary residents, incorporating stakeholders, demonstrating both the dedication of an association to a specific set of challenges (Foa & Tanner, 2012).

For policy analysis, these measures are useful in recognizing trends and to notify towards the urgent issues. To assess the progress by the most urgent priorities relative to the peers to intervene, the composite Index can be beneficial (Brand et al., 2007). Composite indicators are increasingly recognized to indicate the acceleration of a country's progress and a beneficial tool to compare the performance across the countries and regions. They illustrate the necessity of policy interventions and public communication. They are increasing in number every year in all over the world (Bandura, 2008). Moreover, if they are misconstrued or misjudged so it can lead to the ambiguous policies. In fact, the snapshot infers to draw the naive diagnostic or policy decisions. Such composite indicators initiate the dialogue and motivate public interest (Saltelli, 2007).

It is important to assess Pakistan position with respect to different goals and execute strategies accordingly to achieve these goals by utilizing its maximum energies. Our objectives of this study: to discuss data challenges for SDGs, assess current state of progress and rank Pakistan and its provinces to determine aspects in which the fastest acceleration of progress is essential. Secondly, SDG heatmap presents SDG data for each province and goal. The goals are highlighted in red, yellow or green, highlighting from acute challenges to mild ones. Heatmap is helpful to recognize the urgent priorities. This is a unique study in its nature which has utilized the data over numerous indicators extracted from nationally conducted surveys to make SDG Index at the provincial level. We have highlighted that why disaggregate data is the need of the hour.

Rest of the paper is organized as follows. Section 2 is about the motivation for making SDG Index. Section 3 is about the selection of indicators and data sources. Section 4 is about methodology utilized for constructing SDG Index at the provincial level and they are ranked by SDG score and highlighted the most prioritized provinces and regions by SDG heatmap in the results section. Finally, we conclude our findings with some policy recommendation to achieve SDGs for all.

## 2. Motivation for making SDG Index

The incentive of making the SDG Index is to track the progress on the SDGs by assessing the performance and to determine the weaker parts of implementation and notify the priorities for urgent interventions for Pakistan and its provinces at regional level over time. The SDG Index ranked across the SDGs to evaluate the present state of advancement relative to peers (i.e. Pakistan and its provinces by regional disaggregation). The spirit of the work will help out the policymakers for key implementations, closing the gap by identifying the acute challenges in order to stay on track for these goals. To compare the acceleration towards progress in order to strike SDGs by 2030 and highlighting the best and worst performers in the aspects of health, education, poverty, hunger, water and sanitation and gender equality. To endorse policy for sustainable development by analyzing the progress against each indicator and goal to identify where faster acceleration is required.

Secondly, the goals are highlighted in red, green, or yellow to bring out the areas with most intense difficulties. Along these lines, it can help decision makers to distinguish where the greatest intervention is desirable. Heatmap indicates that Punjab urban which is ranked very high on many indicators also confront real difficulties for many other goals. It presents the ranking by the SDG scorecard anticipating patterns across the SDGs reveals to decide regions in which the policy need to amend at urgent priorities. SDG scorecard demonstrates that business as usual has to be changed to hit the SDGs by 2030. The incentive is on recognizing appropriate metrics for data that enable Pakistan to take stock of progress where they stand today with respect to SDGs and to distinguish needs for early call of action. Strong information systems and administration frameworks are required to follow the 17 SDGs.

The reason for this SDGs assessment is to help the country in beginning with actualizing the new SDGs. Rising disparity and drowsy development along with feeble occupation prospects desperately request political activity in numerous nations. The SDGs are surely not achievable though business as usual.

The construction of composite Index comprises of different stages when it is needed to make subjective decisions like selection of appropriate indicators, the treatment for missing values, the selection of aggregation method and the weights for the indicators to be included. Therefore, the subjective selections are the fundamentals of the Composite Index (Nardo et al., 2005a).

### 3. Selection of Indicators and data sources

The appropriate metrics are defined for including the technically sound indicators to make the SDG Index across the SDGs. The data utilized available for the most recent year at sub-national level for each goal. Moreover, the insufficient data available for most of the indicators across the SDGs at disaggregated level. The indicators are qualified to meet the criteria as followed:

#### 3.1 Appropriateness of wide scope and relevance at national settings

The Indicators are significant for analyzing the SDGs and has the global relevance as well. They should be nationally applicable and allow comparison at national, subnational level and global level. The strengths and weaknesses of composite Index depend on the quality of input variables. Ideally, the selection of variables should be based on of their significance, analytical reliability and timeliness etc. The selection of indicators must be led by the theoretical background. The lack of availability of required data is one of the serious challenges to build sound indices. There may be some inaccuracies in the SDG index due to non-availability of exact indicators.

#### 3.2 Statistical adequacy

The data processing and collection is considered with appropriate statistical standards.

#### 3.3 Data credibility

The vintages and transparency of data utilized by official sources (e.g. national representative organizations) are assured.

#### 3.4 Timeliness

The data availability and access for the most recent time can lessen the need for missing data and revisions of recently published data.

#### 3.5 Coverage

Data must be covered for at least 80% of the areas included at sub-national level across the SDGs.

**Table 1: Indicators included in the SDG Index for Pakistan and Sub-National level.**

SDGs	Description/Label	Year(s)	Data Source	
1	Multidimensional Poverty Index (MPI)	2014-15	UNDP	
2	Prevalence of undernourishment (% of population)	2012-13	PDHS	
	Prevalence of stunting among children under-5 years of age (%)	2012-13	PDHS	
	Prevalence of wasting among children under-5 years of age (%)	2012-13	PDHS	
	Maternal mortality ratio (per 100,000 live births)	2012-13	PDHS	
	Percentage of births assisted by skilled health staff (%)	2006-07	PDHS	
	Under-five mortality rate (per 1,000 live births)	2014-15	PSLM	
	Neonatal mortality rate (per 1,000 live births)	2012-13	PDHS	
	Infant mortality rate (per 1,000 live births)	2012-13	PDHS	
	Unmet need (% of women married, ages 15-49)	2012-13	PDHS	
	3	Adolescent birth rate per 1,000 women	2012-13	PDHS
3	Tobacco users (% of population aged 15 and above)	2012-13	PDHS	
	Contraceptive prevalence rate (% of women married, ages 15-49)	2012-13	PDHS	
	Prenatal care (% of married women gave birth, ages 15-49)	2013-14	PSLM	
	Post-natal care (% of married women gave birth, ages 15-49)	2014-15	PSLM	
	Full Immunization rate among children (12-23) months (%)	2014-15	PSLM	
	Prevalence of Diarrhea in last 30 days	2014-15	PSLM	
	Percentage of children completed primary or higher	2014-15	PSLM	
	Net Enrollment ratio for primary (%)	2014-15	PSLM	
	4	Net Enrollment ratio for secondary (%)	2014-15	PSLM
	4	Net Enrollment ratio for matric (%)	2014-15	PSLM
Literacy rate aged 10+ (%)		2014-15	PSLM	
Percentage of women subjected to physical violence by husband in the previous 12 months (%)		2014-15	PSLM	
5		Proportion of seats of women in national parliaments and local governments (%)	2012-13	PDHS
5		Proportion of women aged 15-49 years participated in decision-making related to own health care (%)	2010-11	National Assembly Secretariat
			2012-13	PDHS
6		Percentage of People have access to water (%)	2014-15	PSLM
		Percentage of people have access to sanitation services (%)	2014-15	PSLM
7		Access to electricity (% of population)	2014-15	PSLM
8		Share of women in wage employment in non-agricultural sector (%)	2010-11	LFS
	Unemployment rate (%)	2013-14	LFS	
	Labor force participation rates (%)	2013-14	LFS	
16	Proportion of the population satisfied with their last experience of public services (%)	2014-15	PSLM	

The data is utilized available for the most recent time and described by the online available metadata<sup>2</sup> for the SDGs. The indicators incorporated into the SDG Index (Table 1), 33 indicators are incorporated into the SDG Index national and at provincial level. The main focused domain of this SDG Index is economic development and social inclusion while the environmental sustainability is not included due to non-availability of data at sub-national level.

## 4. Methodology

The methodology adopted for making SDG Index is drawn from a handbook on constructing composite indicators (Nardo et al., 2005b) and the global report named as “SDG Index and Dashboard” (Sachs et al., 2016). The technically sound SDG indicators are included with sufficient up to date data available for Pakistan and its provinces by regional disaggregation. There are 33 indicators included in the SDG Index<sup>3</sup>, between one to twelve variables per goal. As the SDG data will improve over time, many more indicators can also be included in the SDG Index at the district level. All the potential indicators are examined according to the data available at the provincial level. SDG Index includes only Pakistan and its provinces for which data is available for most of the indicators. Insufficient data available at district level to make SDG Index

To make the SDG Index, Pakistan and its provinces are given the percentile rankings<sup>4</sup> on each indicator across the goals. A percentile rank of 100 is the maximum score and a percentile rank of  $1/N_i$  signifies the least score, where  $N_i$  is the number candidate areas for which the data is available for the  $i^{\text{th}}$  indicator. The percentile rank for every indicator is addressed for ties in the standard way.

To accumulate the percentile rank for every indicator within an SDG, we have aggregated the percentile ranks for each SDG  $j$  and the State/Province  $k$  into  $I_{jk}$  to construct the SDG Index  $I_k$  over the SDG goals. As indicated by Rickels et al. (2014), for instance, Ocean Health Index, the technique for accumulating different indicators into a composite can have significant implications on the general results. To take into account that greatest adaptability in accumulating the

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<sup>2</sup> <https://unstats.un.org/sdgs/metadata/>

<sup>3</sup> See Table 1

information over each SDG  $j$ , we have utilized the constant-elasticity-of-substitution (CES) work (Arrow et al., 1961; Blackorby & Donaldson, 1982) to construct the SDG Index  $I_k$ .

$$I_k(N_k, I_{jk}, \rho) = \left[ \sum_{j=1}^{N_k} 1/N_k (I_{jk})^{-\rho} \right]^{-1/\rho}$$

Where  $N_k$  signifies the number of SDGs for which  $k$  (i.e. Punjab) has the data accessible and for country  $k$ ,  $I_{jk}$  is the percentile score for SDG  $j$ . The substitution parameter  $\rho$  depicts the substitutability crosswise over parts of the indicators with an allowable range of  $-1 \leq \rho \leq \infty$  (Arrow et al. 1961). It yields the flexibility of substitution  $\sigma$  crosswise over parts of the SDG Index.

$$\sigma = \frac{1}{1+\rho}$$

With  $0 \leq \sigma \leq \infty$  and

$$\rho = \frac{1-\sigma}{\sigma}$$

There are the three cases of the CES function mostly used. The first case considers when the Composite Index is the perfect substitute ( $\sigma = \infty, \rho = -1$ ) *then regress on one variable (e.g. Gini Index) can be offset by a gain on another variable (e.g. infant mortality rate)*. This is often stated as “weak sustainability”. The CES function weighing equal for each indicator within each SDG and then accumulated in the form of arithmetic mean;

$$I_k(N_k, I_{jk}) = \sum_{j=1}^{N_k} 1/N_k (I_{jk})$$

when the variables of the SDG Index are not substitutable, strong sustainability happens ( $\sigma = 0, \rho = \infty$ ). CES function goes into a Leontief production function for this case with orthogonal isoquants where the composite Index  $I_k$  is demonstrated by the lowest-ranking component  $I_{jk}$ ;

$$I_k(jk) = \text{Min} \{ I_{jk} \}$$

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<sup>4</sup> The percentile rank is computed as  $P_i = 100 \cdot (R_i + 1) / N_i$ , with  $R$  the rank of areas (top to bottom) and  $R_i$  the reverse rank (bottom to top). A percentile correction factor  $PCF_i = 100 \cdot (N_i + 1 - R_i - R) / (2 \cdot N_i)$  for adjustment of ties is subtracted from  $P_i$ .

The third case of linear substitutability is specified by the Cobb-Douglas production function where  $\sigma = 1$  and  $\rho = 1$ . Then, composite Index  $I_k$  converts into the geometric mean of the SDGs  $I_{jk}$ ;

$$I_k(N_j, I_{jk}) = \prod_{j=1}^{N_k} \sqrt[N_k]{I_{jk}}$$

To aggregate the heterogeneous indicators with least substitutability and the case when the determination is of relative changes rather than the absolute changes. There is an evident example of Human Development Index (HDI), who alternated its method of accumulation from arithmetic mean to geometric mean (Jahan et al., 2015).

There are three aggregation methods considered which includes arithmetic mean, geometric mean and Leontief function for accumulating the indicators within each SDG. The arithmetic mean is preferred to the alternatives for two reasons. Firstly, it has the ease of interpretation. Secondly, from a policy perspective, every goal defines with a reasonable level of substitutability. Every indicator inside each SDG is given the equivalent weight.

Geometric aggregations are more appropriate when the degree of non-compensability is desirable among individual indicators or dimensions. Additionally, linear aggregations signify variables proportionally to the weights, whereas geometric aggregations signify the high scored countries. There is a trade-off between geometric and linear aggregations. A decrease in one indicator can be offset rewarded by a surplus in another (Munda & Nardo, 2005).

This percentile ranking gives the high scores to those, who perform better (i.e. lower value in undernourished children and a high proportion of the population have access to water). The scoring is based on the performance of every indicator corresponding to the benchmarks.

The SDGs are an incorporated and indivisible plan necessitate progress towards all objectives, one can't expect perfect substitutability crosswise over SDGs, as needed for utilizing the arithmetic mean. Then again, the Leontief minimized function give unreasonable weight to the single SDG where a nation performs most exceedingly awful.

The percentile ranked variables are consolidated for each SDG before being aggregated crosswise over goals. The percentile rankings for each indicator from worst to best are computed. For instance, the highest numerical value on infant mortality rate is worse and ranked as lowest one while for the case of skilled birth staff, the highest numerical value is best.

Additionally, after taking averages of the scores for all indicators across the SDGs. The final step is to take the average (i.e. arithmetic mean and geometric mean) across the SDGs for national and sub-national level by regional disaggregation. There are distinctive choices for averaging. The arithmetic mean has the benefit of simplicity. Moreover, the geometric average has the benefit of illustrating an implicit “penalty” of being worst on any specific SDG goal and illustrating the details that being best on one goal will not fully substitute for being bad on another, an idea known in economics as “*limited substitutability*”. The results are compared across the methods in the next section.

Each SDG has the same weight included in the Index and the heatmap, which is in accordance with the soul of the SDGs embraced. Moreover, it infers that a country requires seeking after to each of the 17 goals through incorporated systems. Leverage of this approach is that the new variables can be further added effortlessly to individual SDG without changing the relative weighting of the objectives. Most of the composite indices use the equal weights for all variables. This signifies that all variables are of equal worth in the composite and it does not imply the absence of any statistical or empirical foundation. Thusly, the SDG Index and Dashboards can advance after some time as each epistemic group creates better data.

The SDG heatmap is constructed using data mentioned in Table 3. The indicators are colored as red, yellow or green to identify the most prioritized aspects to on track progress. The SDG Index compares the performance on average but the SDG heatmap identifies the policy areas across the SDGs. Scores are aggregated for each goal and province using arithmetic mean. To this end 0 is assigned to red, 1 is to yellow and 2 to green. Results are rounded to nearest integer.

## 5. Results

**Figure 1: SDG Index scorecard for national and sub-national level**

### SDG indices obtained by arithmetic mean and geometric mean across SDG scores

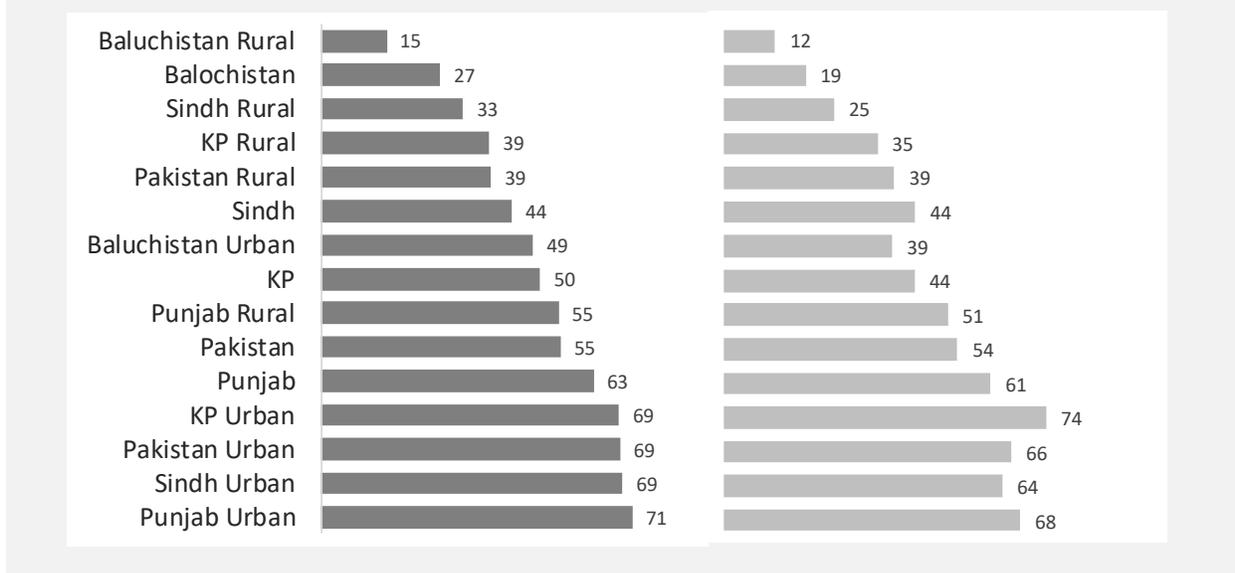
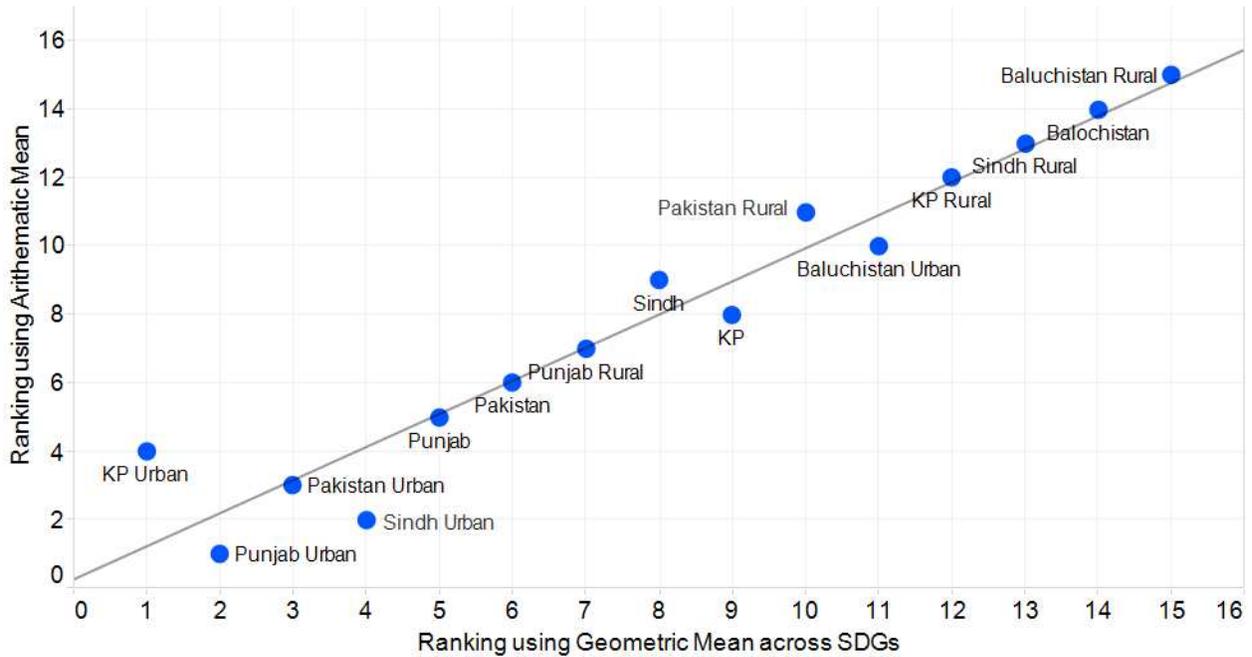


Fig.1 is the scorecard for provinces of Pakistan by regional disaggregation. Punjab urban is the top scorer with 71% score based on data, which means that on average Punjab urban is 71% of the way towards best possible result over the 8 goals. While Khyber Pakhtunkhwa (KP) has the high SDG score (i.e. 74%) by geometric aggregation. Moreover, all the urban areas possess the good scores relative to rural areas. While Baluchistan has the lowest score among all and demands an urgent priority for action in policy by leaving no one behind. Even the high scorers face the challenges for accomplishing SDGs mainly for the two pillars; economic development and social inclusion. Pakistan has overall SDG score of 55%, far away from achieving this global commitment by 2030. SDG Index gives the snapshot that we need to gear up progress for sustainable development. [The information is useful in identifying high-performing and low-performing provinces for informed policy decisions, guide resource allocation and to monitor progress towards achieving SDGs on time.](#)

**Figure 2: Comparison of SDG Indices using arithmetic and geometric mean**



Both the arithmetic and geometric mean in Fig. 2, as two conceivable methodologies considered. The correlation coefficient shows both have strong association and verifies the fact, the two methodologies come with the high degree of the correlation coefficient of 0.94 (Zwillinger & Kokoska, 2000).

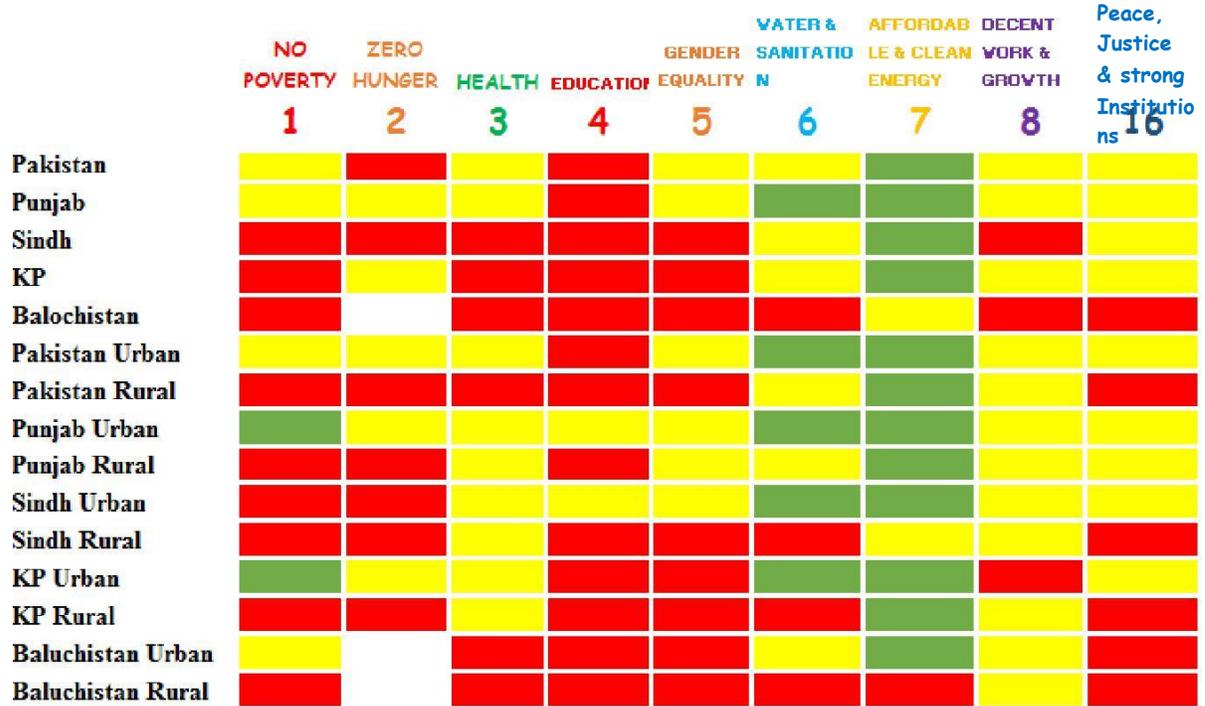
**Table 2: SDG Index summary statistics for indicators**

SDGs	Description	N	Mean	SD	Min	Max	
1	Multidimensional Poverty Index (MPI)	15	0.24	0.16	0.03	0.55	
	Prevalence of undernourishment (% of population)	12	29.83	8.35	19.1	47.7	
2	Prevalence of stunting in children under-5 years (%)	12	44.07	9.15	31.4	63.3	
	Prevalence of wasting in children under-5 years (%)	12	10.47	2.71	5	14	
	Maternal mortality ratio (per 100,000 live births)	7	338.71	203.08	175	785	
	Percentage of births assisted by skilled health staff (%)	15	54.93	15.41	29	81	
	Under-five mortality rate (per 1,000 live births)	15	90.80	19.21	58	115	
	Neonatal mortality rate (per 1,000 live births)	15	54.20	10.92	34	68	
	Infant mortality rate (per 1,000 live births)	15	76.67	16.46	53	98	
	Unmet need (% of women married, ages 15-49)	15	37.29	12.55	17.7	55	
	Adolescent birth rate per 1,000 women	5	47.60	8.44	41	62	
	3	Tobacco users (% of population aged 15 and above)	7	59.70	14.77	44.3	91
		Contraceptive prevalence rate (% of women married, ages 15-49)	15	24.95	7.76	13	38
		Prenatal care (% of married women gave birth, ages 15-49)	15	69.47	13.82	41	87
Post-natal care (% of married women gave birth, ages 15-49)		15	29.00	6.55	17	40	
Full Immunization rate among children (12-23) months (%)		15	76.53	13.75	45	90	
Prevalence of Diarrhea in last 30 days		15	9.80	3.17	5	19	
Percentage of children completed primary or higher		15	49.53	12.73	30	70	
Net Enrollment ratio for primary (%)		15	67.00	9.29	49	80	
4		Net Enrollment ratio for secondary (%)	15	36.73	9.11	21	50
		Net Enrollment ratio for matric (%)	15	25.73	8.48	12	41
		Literacy rate aged 10+ (%)	15	58.00	12.48	38	77
		Percentage of women subjected to physical violence by husband in the previous 12 months (%)	15	22.55	7.75	10.8	34.4
	5	Percentage of seats of women in national parliaments and local governments	5	18.93	1.87	17	21.6
		Proportion of women aged 15-49 years participated in decision-making related to own health care (%)	15	45.35	14.10	22.5	67.1
	6	Proportion of populace have access to water (%)	15	80.47	12.96	49	94
		Proportion of populace have access to sanitation (%)	15	69.27	25.97	14	98
	7	Access to electricity (% of population)	15	92.32	7.53	74.4	99.2
	8	Share of women in wage employment in non-agricultural sector (%)	5	7.98	4.14	2.32	13.3
		Unemployment rate (%)	15	6.21	2.40	2.4	11.7
		Labor force participation rates (%)	15	42.23	5.76	36	53.9
16	Proportion of the population satisfied with their last experience of public services (%)	15	70.91	9.24	50.2	83	

**Table 3: Thresholds for indicators included in SDG Index for Pakistan and sub-national level**

SDGs	Description/Label	Green	Yellow	Red
1	Multidimensional Poverty Index (MPI)	< 5%	5% - 20%	> 20%
	Prevalence of undernourishment (% of population)	< 10%	10% - 25%	> 25%
2	Prevalence of stunting in children under-5 years (%)	< 10%	10% - 25%	> 25%
	Prevalence of wasting in children under-5 years (%)	< 7.5%	7.5% - 15%	> 15%
	Maternal mortality ratio (per 100,000 live births)	< 70	70 - 140	> 140
	Proportion of births assisted by skilled health staff (%)	>90%	70%-90%	<70%
	Under-five mortality rate (per 1,000 live births)	< 25	25 - 50	> 50
	Neonatal mortality rate (per 1,000 live births)	< 12	12 - 18	> 18
	Infant mortality rate (per 1,000 live births)	< 40	40 - 50	> 50
	Unmet need (% of women married, ages 15-49)	< 20%	20% - 50%	> 50%
3	Adolescent birth rate per 1,000 women	< 25	25 - 50	> 50
	Tobacco users (% of population aged 15 and above)	< 20%	20% - 25%	> 25%
	Contraceptive prevalence rate (% of women married, ages 15-49)	< 20%	20% - 50%	> 50%
	Prenatal care (% of married women gave birth, ages 15-49)	> 90%	80% - 90%	< 80%
	Post-natal care (% of married women gave birth, ages 15-49)	> 90%	50% - 70%	< 50%
	Full Immunization rate among children (12-23) months (%)	> 90%	80% - 90%	< 80%
	Prevalence of Diarrhea in last 30 days	<10	10 - 15	> 15%
	Percentage of children completed primary or higher	> 90%	70% - 90%	< 70%
	Net Enrollment ratio for primary (%)	> 85%	70% - 85%	< 70%
	4	Net Enrollment ratio for secondary (%)	> 85%	70% - 85%
Net Enrollment ratio for matric (%)		> 85%	70% - 85%	< 70%
Literacy rate aged 10+ (%)		> 90%	70% - 90%	< 70%
Percentage of women subjected to physical violence by husband in the previous 12 months (%)		< 5%	5% - 10%	> 10%
5	Proportion of seats of women in national parliaments and local governments (%)	> 40%	20% - 40%	< 20%
	Proportion of women aged 15-49 years participated in decision-making related to own health care (%)	> 80%	50% - 80%	< 50%
6	Proportion of population have access to water (%)	> 90%	80% - 90%	< 80%
	Proportion of population have access to sanitation services (%)	> 85%	75% - 85%	< 75%
7	Access to electricity (% of population)	> 90%	80%- 90%	< 80%
8	Share of women in wage employment in non-agricultural sector (%)	> 20%	14% - 20%	< 14%
	Unemployment rate (%)	< 5%	5% - 10%	> 10%
	Labor force participation rates (%)	> 70%	50% - 70%	< 50%
16	Proportion of the population satisfied with their last experience of public services (%)	> 85%	70% - 85%	< 70%

**Figure 3: SDG Index heatmap for Pakistan and Provincial level**



As Fig.3 gives the detail picture for each SDG comprising of health, education, water and sanitation etc. It depicts that where Pakistan and its provinces stand today with reference to achieve SDGs. This signifies that progress towards every goal is needed. The quantitative absolute thresholds are defined to figure out the policy areas highlighting the intense issues in the aspects of health, education and gender equality. The SDGs are colored as “green” if Pakistan or its provinces have already achieved the goal with regards to the specified thresholds. It is colored as “red” when they are far away to achieve the goal by business as usual. The greatest challenges exist in the domain of health, education, gender equality and eradicating poverty and it signifies important room for improvement. The SDG is colored as “yellow” if the country needs the significant efforts to hit the goal. When data is not available for all indicators in a goal so it is not colored. It is helpful to benchmark their progress and to devise better policies. It is clear from the analysis that Sindh and Baluchistan will face major challenges in achieving SDGs. They need considerable assistance to achieve these goals by 2030. On average, provinces are colored as “red” on more than two third of the goals, indicating that they are red on at least two of underlying indicators. Despite of data availability challenges, the SDG Index can be very helpful

for the sub-national assessment. The color coding is based on the thresholds specified in Table 3. Additionally, 0 is assigned to green, 1 for yellow ones and 2 for red and the outcomes are rounded. The scores are accumulated for every goal and then across the SDGs using the arithmetic mean and geometric mean. As illustrated in the Fig. 3, that everyone is facing the challenges as marked as red. The greatest challenges exist for health (SDG 3), education (SDG 4) and gender equality (SDG 5).

## 6. Conclusion

Extensive efforts are desirable at national and provincial level. The SDG Index suffers from the limited data available for most of the SDGs, especially at the sub-national level. So, it has become impossible to track all the SDGs for Pakistan and its provinces<sup>5</sup>. The colour-coded as “red” signifies an urgent call to overcome the serious challenges. It is evident that Baluchistan is far away in achieving the SDGs relative to the other provinces. Although Pakistan as a whole does not depict a rosy picture and has great challenges to achieve the SDGs. Besides these challenges and to move for sustainable development, data gaps also need to be addressed. There is dire need to increase the investments for expanding the statistical capacity and strengthening data collection for data-driven policy and track the progress for reaching the benchmarks.

Numerous indicators, particularly related to poverty and economic development are officially gathered at the national level but they are rarely dis-aggregated at provincial and district level. Evaluation of the SDGs requires a wide range of data. Taken together, they will empower data revolution transformation for advancement and official statistics got from surveys and other administrative data will play a basic, superior part. They will be supplemented by unofficial data and other execution measurements including business metrics, surveying information will be desirable. To line up with national planning and budgetary procedures, SDGs evaluation ought to work on a yearly basis.

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<sup>5</sup> especially related to climate action, resilient cities and reduced inequalities.

The hard grading has done by using the tough thresholds at this stage neither punitive nor vindictive and still less to be negative. The hard reviewing based on data is basically to highlight the urgent priorities that must be tended to, as to accomplish the SDG objectives and targets by leaving no one behind. Pakistan has to painstakingly concentrate for some achievable goals and their sub-indicators to distinguish the areas where more noteworthy intervention is required.

The resulting scorecard depicted that unless noteworthy changes are made, it seems difficult that the SDGs will be met. But the motivation of sustainable development for everyone relies on early action and prioritizing the challenges with effective policy incorporating academia, think tanks and decision makers. This is far from a prediction of failure; however, as goals by their nature should stretch beyond the current trends, with far-reaching and ambitious targets that inspire action.

Assessment of baselines is a significant tool for strategy making as they give governments a snapshot of where they stand in connection to different aspects of development at a given time. It is the initial move to understand where it stands as far as the SDGs plan. Furthermore, governments ought to examine related policy structures, which are for the most part slower to change and to analyze their utility against international principles. Healthy Pakistan can lead to a healthy economy, educated and less violent society and a peaceful environment.

SDG Index requires yearly revealing of high-quality data at the sub-national level. This requires substantially more noteworthy interests in building free, fair national statistical capacities and enhancing the statistical quality. Actualizing the progressions laid out information for the SDGs will require expanded assets, SDG indicators will be the foundation of checking advancement towards the SDGs by SDG Index at the national and sub-national levels. In building up the goals, and then going with checking design the best measurable contribution from business, academia, science and common society ought to be looked for progress.

## References

- Arrow, K. J., Chenery, H.B., Minhas, B.C. & Solow, R.M. (1961). Capital-labor substitution and economic efficiency. *The Review of Economics and Statistics*, 43(3), 225-250.
- Bandura, R. (2008). *A survey of composite indices measuring country performance: 2008 update*. Technical report, United Nations Development Programme - Office of Development Studies, New York. Retrieved from [http://www.thenewpublicfinance.org/background/Measuring%20country%20performance\\_nov2006%20update.pdf](http://www.thenewpublicfinance.org/background/Measuring%20country%20performance_nov2006%20update.pdf)
- Blackorby, C. & Donaldson, D. (1982). Ratio-Scale and Translation-Scale full interpersonal comparability without domain restrictions: Admissible social-evaluation functions. *International Economic Review*, 23(2), 249-268.
- Brand D. A., Saisana M., Rynn L. A., Pennoni F., & Lowenfels A. B. (2007). Comparative analysis of alcohol control policies in 30 countries, *PLoS Medicine*, 4(4), 0752 - 0759.
- Cassidy, M. (2014). *Assessing gaps in indicator availability and coverage*. SDSN Working Paper. New York: Sustainable Development Solutions Network
- Foa, R, & Tanner, J.C. (2012). *Methodology of the indices of social development (No. 2012-04)*. ISD Working Paper Series. Retrieved from <http://hdl.handle.net/1765/50510>
- Jahan, S., Jespersen, E., Mukherjee, S., Kovacevic, M., Bonini, A., Calderon, C., & Lucic, S. (2015). *Human development report 2015: Work for human development*. UNDP. Retrieved from [http://hdr.undp.org/sites/default/files/2015\\_human\\_development\\_report.pdf](http://hdr.undp.org/sites/default/files/2015_human_development_report.pdf)

- Kroll, C. (2015). *Sustainable development goals: Are the rich countries ready*. Guetersloh: Bertelsmann Stiftung. Retrieved from [www.sgi-network.org/docs/studies/SDGs\\_Are-the-rich-countries-ready\\_2015.pdf](http://www.sgi-network.org/docs/studies/SDGs_Are-the-rich-countries-ready_2015.pdf)
- Munda, G., Nardo, M. (2005). *Constructing consistent composite indicators: The issue of weights*. EUR 21834EN, Institute for the Protection and Security of the Citizen.
- Nardo M., Saisana, M., Saltelli, A., Tarantola, S. (2005a). *Tools for composite indicators building*. Ispra: Joint Research Centre.
- Nardo, M., Saisana, M., Saltelli, A., Tarantola, S., Hoffman, A., & Giovannini, E. (2005b). *Handbook on Constructing Composite Indicators: Methodology and User Guide*. OECD Publishing: France.
- Rickels, W., Quaas, M. F., Visbeck, M. (2014). How healthy is the human-ocean system?. *Environmental Research Letters*, 9(4). 1-15. doi:10.1088/1748-9326/9/4/044013
- Sachs, J., Schmidt-Traub, G., Kroll, C. Durand-Delacre, D., & Teksoz, K. (2016). *SDG index and dashboards – Global report*. New York: Bertelsmann Stiftung and Sustainable Development Solutions Network (SDSN).
- Saltelli, A. (2007). Composite indicators between analysis and advocacy. *Social Indicators Research*, 81(1), 65-77.
- SDSN. (2015). *Indicators and a monitoring framework for sustainable development goals: Launching a data revolution for the SDGS.* Retrieved from <https://unsdsn.org/wp-content/uploads/2015/05/FINAL-SDSN-Indicator-Report-WEB.pdf>

Zwillinger, D. & Kokoska, S. (2000). *CRC Standard Probability and Statistics Tables and Formulae*. Florida: Chapman & Hall/CRC Press