

ANNEX 2 – TECHNICAL NOTES

Asia and the Pacific SDG Progress assessment is based on the global indicator framework for the 2030 Agenda for Sustainable Development as adopted by the General Assembly on 6 July 2017. Subregional and regional indicator values were compiled from the ESCAP Statistical Online Database¹³. When sufficient data on a defined SDG indicator is not available, the report uses additional indicators from internationally recognized sources. Information on country groupings and definitions of indicators are available on the ESCAP website¹⁴.

Median value of indicators at the regional and subregional levels is used instead of weighted aggregates to avoid bias towards bigger countries/economies¹⁵.

Selection of indicators

Indicators are selected based on three criteria:

1. **Availability of data:** there should be two or more data points for more than 50 per cent of the countries in the corresponding region or subregion
2. **Ability to set a target value:** it should be possible to set a target value transparently
3. **The metadata is clear:** it should be supported by well-explained metadata.

Progress assessment methods

This section provides basic information on the methods used for SDG progress assessment. More detailed discussions are provided in two working papers: *Tracking progress towards the SDGs: measuring the otherwise ambiguous progress*¹⁶; and *A weighted extrapolation method for measuring SDG progress*¹⁷.

Measures for tracking progress

Two principal measures: Current Status Index and Anticipated Progress Index are used to assess regional and subregional progress towards the SDGs. The two indices answer two different questions:

1. Current status: How much progress has been made since 2000?
2. Anticipated progress: How likely will the targets be achieved by 2030?

The Current Status Index measures progress towards achieving a specific SDG target since 2000, while the anticipated progress measures the gap between predicted value of the indicator and specified target value. Both indices are constructed at the level of sub-indicator (a series, disaggregation, or subcomponent of an indicator) and can be aggregated at indicator, target, and goal levels as desirable. In this analysis, the Current Status Index is presented at the goal level (snapshot) and anticipated progress at target and indicator levels (dashboard and progress gap).

13 http://data.unescap.org/escap_stat/

14 http://data.unescap.org/escap_stat/#methodDefinition

15 Bidarbakht-Nia, A., 2018; "Regional aggregates: Masking change in regional disparities?", UNESCAP, Working Paper Series (<https://www.unescap.org/resources/working-paper-series-sdwp06march-2018-regional-aggregates-masking-regional-disparities>)

16 Bidarbakht-Nia, A., 2017; "Tracking progress towards the SDGs: measuring the otherwise ambiguous progress", UNESCAP, Working Paper Series (<http://www.unescap.org/resources/working-paper-series-sdwp05may-2017-tracking-progress-towards-sdgs-measuring-otherwise>)

17 Bidarbakht-Nia, A., 2017; "A weighted extrapolation method for measuring the SDGs progress", UNESCAP, Working Paper Series (<http://www.unescap.org/resources/working-paper-series-sdwp04march-2017-weighted-extrapolation-method-measuring-sdgs>)

Current Status Index

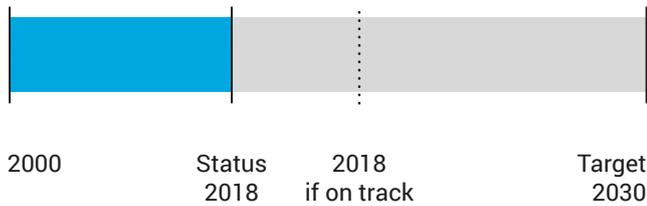


Figure 43 – Current status index bar

Given a specified SDG target value for each indicator, the indicator values for current year and 2000 can be used to construct a metric that measures the progress made since 2000, in relation to the progress needed for the SDG target by 2030.

The Current Status Index is constructed in two steps:

Step 1 - A metric is developed for each indicator to measure the progress made (blue bar in Figure 31) which can be compared with the entire progress needed from 2000 to 2030.

Step 2 - To see how much progress has been made – and still needs to be made – to achieve the goal, the metrics computed in step 1 are combined into one index that indicates the “average progress made” and the “average progress required” on a fixed scale.

Denoting indicator values for 2000 and the current year by I_0 and I_{cv} and the target value for 2030 by “TV”, and setting the normalized values of the indicator at 2000 and 2030 at 0 and 10, respectively, the normalized value for the indicator at the current year on the scale of 0 to 10 can be calculated as:

$$I_{cv}^N = \frac{I_{cv} - I_0}{|TV - I_0|} \times D \quad \text{in which}$$

$$D = \begin{cases} 10 & \text{increasing is desirable} \\ -10 & \text{decreasing is desirable} \end{cases}$$

when desirable direction is clear.

For parity indicators, the value is:

$$I_{cv}^N = \begin{cases} 10 - \frac{|TV - I_{cv}|}{|TV - I_0|} \times 10 & \text{if } |TV - I_{cv}| \leq |TV - I_0| \\ \frac{|I_{cv} - I_0|}{|TV - I_0|} \times (-10) & \text{Otherwise} \end{cases}$$

If the region (or subregion) has progressed since 2000, the average over all normalized values under each goal provides an index that is between 0 and 10. But if the region has regressed, the value is negative, indicating the size of the regression.

Indicators for which the current value has already reached or exceeded the target value, the Current Status Index does not need to be calculated and is automatically set to 10.

In an ideal situation, when data are available for all indicators associated with each goal, the index should provide a robust measure comparable across all 17 goals. However, based on the ESCAP database, regional data are available for less than 35 per cent of the defined SDG indicators, and coverage is uneven across the 17 goals. Since the assessment is sensitive to the addition of new indicators, the results must be interpreted with caution. The number of indicators and availability of data substantially increased since last year, thus results of this analysis should not be compared with those of previous years.

Anticipated Progress Index

This index compares the predicted (anticipated) progress with the targeted progress. By predicting the indicator value for the target year and benchmarking the predicted value against the target value, we can identify how close we can get to the target by the end of the target year (2030), assuming the previous pace of progress.

Denoting the predicted value of indicator I for the target year by I_t and value in the base year by I_b , one can approximate the progress gap by P when no regression has occurred, and by $100 - P$ when indicator value has regressed since the base year. If desirable direction is clear from the target, the value of P is defined as:

$$P = \frac{|TV - I_t|}{|TV - I_b|} \times 100$$

In the case of parity indicators, we consider no regression has occurred if $|TV - I_t| \leq |TV - I_b|$.

Anticipated Progress Index only needs to be calculated for indicators that are not expected to achieve the target. Indicators for which the predicted value has already reached or is expected to reach the target by 2030,

or exceeded the achievement level, are automatically classified as “will be achieved” and Anticipated Progress Index is set to 0.

Based on expected progress, the value of P ranges from 0 to 100. If there is a predicted regression from the current level, P will be greater than 100.

P may be interpreted as the extra effort or acceleration needed to meet the target when the value is less than or equal to 100, and $100 - P$ is the size of regression when it is greater than 100. Indicators are classified into three predefined achievement levels:

$0 \leq P \leq 10$	<i>(Will meet the target with current rate or minor extra effort)</i>
$10 < P \leq 100$	<i>(Need to accelerate the current rate of progress to achieve the target)</i>
$P > 100$	<i>(Regression or no progress expected)</i>

Aggregation

In total, 105 indicators are used to compute the Current Status Index for SDG progress assessment in this report. Of these, however, two indicators did not provide sufficient data for 2030 predictions and were not used for Anticipated Progress Index calculations. When more than one variation for an indicator exist (for example health worker density), all variants are used in calculations. Each variant of indicator is weighted such that the sum of the weights under each indicator is 1. Finally, a weighted average of the progress indices is computed as progress index for that indicator.

Disaggregated statistics

For the first time, the analysis has considered disaggregated statistics. Disaggregation by sex, location or combination of age and sex was available for 21 indicators (spreading across Goals 1, 3, 4, 6 and 8). To take disaggregated statistics into account, a vulnerable group for each indicator was identified as the group that had made slower progress than the entire reference population. For instance, if the unemployment rate has decreased by 3 per cent since 2000 among an entire labour force population and this rate is 4 per cent among males and 2.5 per cent among females, then the female group is considered vulnerable. Under each indicator, the series for vulnerable groups and other series (the series for total population or other types of the indicator) are weighted so the sum of weights is 1 for each indicator.

By counting for vulnerable groups, progress on each indicator is penalized for slow progress on one or more sub-populations.

In applying both measures of tracking progress, an acceptance threshold of minimum 2 per cent change was considered for progress/regression at indicator level. In other words, only if overall change over the period was more than a 2 per cent increase or decrease (depending on the actual and desired direction of change), the change was accepted.

Extrapolation methods

Producing the two above-mentioned measures of progress requires a set of values for 2000, 2015, and 2018 as well as an estimate for the target year (2030). These values, when not available, were estimated using a weighted regression method based on time-related weights. This approach assumes that the importance attached to the indicator values should be proportional to how recent their data are.

Suppose that n data points are available on indicator I for a given region over a period of T years, and we are interested in estimating the indicator value for the year $t_{(n+a)}$ ($a=1, 2, \dots$).

$T=t_n-t_1$ where t_n and t_1 are the latest and the earliest years, respectively, for which data on indicator I are available. The time-related weights work as a multiplier that inflates/deflates the rate of change in each period in proportion to its temporal distance to the target year (t_{n+a}). The time-related weight for the i^{th} observation for a given region is:

$$w_i = \frac{(t_{n+a} - t_1)}{(t_{n+a} - t_i)} \quad (i = 1, 2, \dots, n)$$

for estimating values of 2015 and above, and

$$w_i = \frac{(t_n - 2000)}{(t_i - 2000)} \quad (i = 1, 2, \dots, n)$$

for estimating 2000 values.

Weights are then incorporated into a regression model used for different indicators. In a few exceptional cases where indicator is time-independent, time-related weights were not used (e.g., disaster-related indicators, ODA and other financial aids).

Setting regional target values

Of 169 SDG targets, only 30 per cent have specific (implicit or explicit) target values. For the rest, this report sets target values using a “champion area” approach. This is based on what has been proven feasible in the past and optimizes the use of available data. The idea is to identify the region’s outstanding countries (top performers) and set their average rate of change as the region’s target rate. Imagine the top performers as belonging to one hypothetical area, labelled as the region’s champion area whose rate of change equals the average for the top performers for one specific indicator. This can then be considered the target rate for the region. In other words, if the region as a whole can perform as well as its champion area over the 15 years (SDGs era), we should expect to achieve the target value by 2030. Consequently, the universal target value for the region can be derived by applying the rate of change in the champion area to the regional value in the base year. In this report, the regional value is the median value of the indicator over all countries for which data is available.

The main challenge with the champion area approach arises when dealing with two types of indicators:

Type i: indicators for which there are insufficient data to estimate the rate of change at the country level

Type ii: indicators for which most the countries started from a very low level and made such rapid progress over the past 15 years that the observed growth rate cannot reasonably be applied to the future. For instance, the proportion of parliamentary seats held by women; the proportion of marine areas protected; and the percentage of the population using the internet. These rapid changes may have been due to technological advances, exploitation of untapped resources, or a paradigm shift brought about by a development agenda such as the Millennium Development Goals (MDGs).

For these two types of indicators, an alternative approach is taken. Rather than using the rate of change, the top five performers are identified based on the latest available data. The region’s target value for the champion area is then taken to be the average value for the five best performing countries – using the largest or smallest values depending on whether the desirable direction of change is an increase or a decrease. Before identifying the top five performers, outliers were dropped to avoid bias.

Assume we are setting a target value for indicator I:

Case 1. At least two data points are available since 2000 for a number of countries that show a diverse range of changes. In this case, the earliest and latest available data for the five countries with the highest rates of change are used to calculate , the average annual rate of change over the five highest rates of increase/decrease.

r is calculated in two steps. The first step is to estimate the geometric mean of average annual growth rate for each country based on the earliest and the latest indicator values. The second step is to take a geometric mean over the top five rates of change. It is often the case that one or few countries experienced exceptional growth. These outlier countries are dropped from calculations in order to ensure the average of the top five performers is a realistic and achievable, yet aspirational target for the rest of the countries.

Case 2. For indicators for which there are insufficient data to estimate country-level rates of change, the latest data for each country are used to calculate the target value:

Target value: Average over indicator values for the five countries with the largest or smallest values depending on whether the desirable change is an increase or a decrease, respectively (after dropping outliers as in Case 1).

Finally, the target value for the indicator is calculated as:

$$TV = \begin{cases} tv & \text{Indicators of type (i) and (ii)} \\ (1+r)^{15} \times I_{2015} & \text{other indicators} \end{cases}$$

When unavailable, the indicator value for the base year (I_{2015}) can be estimated by applying an appropriate extrapolation method (as described above).

Confidence of results at the Goal level

Due to limitations on the availability of indicators, discussed in more depth in Part III, the results aggregated at the Goal level are based on a percentage of the total Global SDG indicators along with indicators from internationally recognized sources. While the latter are not intended to substitute the former, they shed light on targets where otherwise no analysis would have been possible. Therefore, they are taken into consideration when assessing the completeness of the evidence at the Goal level. The strength of the evidence is thus defined as the following ratio:

$$\text{Evidence Strength factor} = \frac{T_{Used} + P_{Used}}{T_{Global} + P_{Used}}$$

Where T_{Global} , T_{Used} and P_{Used} represent, respectively, the total number of indicators in the Global SDG framework, the number of Global indicators used in the calculations, and the number of indicators from widely recognized international data sources used.

For ease of analysis, a strength symbol denotes the evidence strength factor according to the table below.

Symbol	Evidence strength factor	Interpretation
	0	No data available
	Between 0 and $\frac{1}{3}$ (including $\frac{1}{3}$)	Insufficient data
	Between $\frac{1}{3}$ and $\frac{2}{3}$ (including $\frac{2}{3}$)	Moderate availability
	Between $\frac{2}{3}$ and 1	High availability
	1	Full availability