Methodology for Computation of Ranks

This note provides details about data capture from various sources of data and the process followed for calculating sector and indicator-wise scores for final ranking of the Districts. The District Good Governance Index (DGGI) of Maharashtra (DGGI-MH) consists of a set of relevant indicators categorised in ten sectors. The process of ranking is completed by following the below mentioned four steps:

• Step I: Compilation of Necessary Data/Information:

Calculation of the 161 indicators under ten sectors selected as part of DGGI-MH framework requires data on a large number of facets covering various aspects of governance at District-level. To begin with, the index implementing agency needs to fix the reference year for ranking the Districts for data compilation purpose. Particularly, for Growth-based indicators, data has to be compiled for three (at least) or five years (to be decided based on the data availability) preceding the reference year. However, the index implementing agency has to keep scope for making exceptions as far as reference year is concerned for some indicators due to unavailability of latest data-sets. Criteria of selection of indicators, inter-alia, is the availability of time-series data (invariably necessary for Growth-based indicators) with the line Departments of Govt. of Maharashtra. These secondary sources include annual reports, statistical reports, MIS, factsheets, etc. For indicators which are based on population (or total number of households), it needs to be decided to use the latest data available through recent estimation / survey / study with the line Departments concerned. Otherwise, data from Census of India 2011 should be considered. There is a possibility that such centralised data may not be available for some indicators from these sources, in such cases data also needs to be compiled from District-level reports, Gazettes, etc., published by the Districts which are already available in public domain. However, such data will be validated by the line Departments concerned. The Department of Economics and Statistics (DES), Govt. of Maharashtra has demonstrated exemplary efficiency in collating data for all 161 indicators through seamless coordination with relevant line departments within the State Government.

• Step II: Normalisation of Indicator Values:

Statistically, there is no sanity in comparing variables which are expressed in different units. Therefore, it is required to convert the variables with mixed scales into dimensionless entities, so that they can be compared and used for ranking purpose easily. This way of conversion is known as "normalisation". It helps in measuring and comparing composite indicators with ease. It also makes the aggregation of indicators meaningful. There are various methods available to normalise variables and attain scores for the Districts based on their performance on the 161 indicators and compiling them sector-wise. For the purpose of ranking the Districts as part of DGGI-MH, the Dimensional Index Methodology is used. Dimensional Index Method is most commonly used for normalisation of values and subsequent ranking. In this method,

the normalised value of each indicator is obtained by subtracting the minimum value among the set from the raw value of indicators and then dividing it by the data range (maximum – minimum value). The maximum and minimum values for each indicator are ascertained based on the raw values for that indicator across the Districts – combining all Districts. The following two equations is used to normalise the indicator values:

Dimensional Score for Positive Indicators:

Score = (Indicator Value – Minimum Value) ÷ (Maximum Value – Minimum Value)

Dimensional Score for Negative Indicators:

Score = (Maximum Value – Indicator Value) ÷ (Maximum Value – Minimum Value)

Where:
Positive Indicator = for which Higher Value is better
Negative Indicator = for which Lower Value is better
Indicator Value = Made Available by DES, Govt. of Maharashtra
Maximum Value = Highest Indicator Value among the Districts
Minimum Value = Lowest Indicator Value among the Districts

The above-mentioned equations would be directly used by taking the values of indicators for reference year. In case of the Growth-based indicators, this exercise would be undertaken after calculating Compound Annual Growth Rate (CAGR) over base year to reference year for each indicator. The following equation be used for calculating CAGR:

CAGR = (Value of Reference Year / Value of Base Year) (1 / n) – 1 X 100

Where:
n = number of periods

• Step III: Assigning Weightages:

• **Equal Weightage to Sectors:** While conceptualising DGGI-MH, various aspects of governance, which are critical for growth, development and inclusiveness, have been clustered under ten Sectors. All the identified ten Sectors are facets of equal importance from the point of view of citizen-centric approach for such Comprehensive Index at District-level. Therefore, it is decided to give equal weightage to all sectors.

• **Differential Weightages for Indicators:** Being an result-oriented and outcome / output-based index, the outcome / output-based indicators are assigned higher weightage whereas proxy indicators (input/process-based) are assigned lower weightage. Assigning higher weightages to outcome/output-based indicators brings the focus on performance and achievements of the Districts. While assigning weightages citizen-centricity is remained at the core, however, still assigning weightages is a highly subjective and debatable. In arriving at the weights, care is taken to be rational and the weights are derived from extensive reading/study of the available research in the sectors. In addition, attempts have been made to arrive at a consensus on assigned weightages during consultative meetings.

By no means the assigned/suggested weights are final. At any given point of implementation, Govt. of Maharashtra in consultation with DARPG, Govt. of India or the respective line Departments could intervene to change the weights as per the need/requirement/focus. Revising the assigned weightage would certainly become necessity, whenever the index implementing agency decides to include additional indicators or exclusion of indicators from the existing list.

• Step IV: Computation of Scores and Ranking:

After completing data normalisation process, the normalised value of each indicator needs to be multiplied with weightage assigned to the indicator in order to obtain the final indicator score. These final individual indicator scores are aggregated to obtain a value for the sector. These aggregated values after multiplication with sector weight becomes the score for the sector and once sector-wise scores are aggregated, it becomes District's DGGI score to be used for ranking purpose. It should be noted that if the data is missing for a District for a particular indicator, that indicator is dropped from calculation of the District and the indicator weight is redistributed among the other indicators within the same sector for that District. By following the above-mentioned methodology, the index implementing agency can rank all the Districts to assess the standing of a District in comparison to other Districts (as explained in Step II).