HUMAN DEVELOPMENT INDICES

There are several ways of measuring human development and quality of life. Two of the three methods named below have been used in this first version of the report.

1. The human development index (HDI)

The HDI is a summary measure of human development, as used by (inter alia) the United Nations Development Programme (UNDP). It measures the average achievements in a country (region) in three basic dimensions of human development:

• A long and healthy life, as measured by life expectancy at birth.
• Knowledge, as measured by the adult literacy rate (with two thirds weight) and the combined gross enrolment ratio (with one third weight).
• A decent standard of living, as measured by GDP per Capita

Before the HDI itself is calculated, an index needs to be created for each of these dimensions. To calculate these dimensional indices, minimum and maximum values (goal posts) are chosen for each indicator.

Performance in each dimension is expressed as a value between 0 and 1 by applying the following formula:

$$\text{Dimension Index} = \frac{\text{Actual value} - \text{Minimum value}}{\text{Maximum value} - \text{Minimum value}}$$

The Minimum and Maximum values for each of the dimensions are given by the UNDP – which also facilitates international comparisons.

The HDI gives an internationally accepted measure of the wellness (quality of life) of the population of the area under consideration.

Goalposts for calculating the HDI (as used by the United Nations Development Programme and internationally accepted for national comparison)

Indicator	Maximum	Minimum
Life expectancy at birth (years)	85	25
Adult literacy (%)	100	0
Combined Gross Enrolment Ratio	100	0
GDP per Capita (Household Income)	R240,000	R500

When calculating the GDP Index, income is adjusted because achieving a respectable level of human development does not require unlimited income. Accordingly the logarithm of the income is used.

For example in a region with a GDP per Capita of R3271 - the GDP Index is given by:

$$\text{GDP Index} = \frac{\log(3271) - \log(500)}{\log(240000) - \log(500)}$$

$$= \frac{3.5147 - 2.7000}{5.3802 - 2.7000}$$

$$= \frac{0.8147}{2.6802}$$

$$= 0.3040$$

NOTE: Due to the difficulty of obtaining data for GDP per capita, particularly for municipalities, an accepted proxy for the GDP per capita is the Mean Household Income (obtained from Census 2001 – STATSSA) with a maximum value of R240,000 and a minimum value of R500.

The reason that the internationally accepted measure for this "standard of living" index is GDP per Capita, is that the GDP includes regional spending on (inter alia) Health, Roads, Education, Security, etc – and as such gives a far better indicator of standard of living than simply that of household income.

2. The city development index (CDI)

The CDI is a measure of human development, similar to the HDI – but with additional dimensions particularly relevant to urban populations. The dimensions used to calculate the CDI are given below, resulting in five indices;

• mean gross household income (as used in HDI)
• proportion of dwellings with piped water on property
• proportion of dwellings with connection to sewerage system
• proportion of dwellings with telephone in dwelling
• proportion of dwellings with electricity supplied
• proportion of dwellings with solid waste removal
• life expectancy at birth
• infant mortality
• gross enrolment ratio
• adult literacy

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Thus the indices for calculating the CDI are derived from the data above:

• Education Index – a weighted mean of adult literacy and gross enrolment
• Infrastructure Index – the mean of water connection, sewerage, electricity and telephone
• Health Index – a weighted mean of life expectancy and infant mortality
• Income Index – proxy used is mean household income calculated as for the HDI
• Waste Index – solid waste removal per household

Gender-related development index (GDI)

While the HDI measures average achievement, the GDI adjusts the average achievement to reflect the inequalities between men and women. Gender specific data must still be generated by Stats SA.