The Physical Quality of life index and the Human Development Index
The Physical Quality of Life Index (PQLI) and the Human Development Index (HDI) are used as an alternative to use of the GNP per capita as a measure of development. Some authors have criticized both Index as not able to totally supplant the GNI per capita but rather supplement it. We will look at these and how to construct them.
• PHYSICAL QUALITY OF LIFE INDEX (PQLI)

• The Physical Quality of Life Index was as an alternative to use of the GNP per capita as a measure of development. It was invented by M.D. Morris in 1979.

• The PQLI shows improvement in the quality of life when people enjoy the fruits of economic progress, with increase in life expectancy (LE), fall in infant mortality rate (IMR) and rise in basic literacy rate (BLR). That is where individuals have good nutrition, proper sanitation, access to clean water and basic needs their quality of life will be higher reflected in better learning ability, increase in life expectancy and fall in infant mortality, Hence to calculate the PQLI these variables are key.
• Each indicator of the three components is placed on a scale of zero to 100 where zero represents an absolutely defined worst performance and 100 represents an absolutely defined best performance.

• The PQLI index is calculated by averaging the three indicators giving equal weight to each and the index is also scaled from 0 to 100.

• The indicators of life expectancy and basic literacy rate are positive, the best performance is shown as the maximum and the worst as the minimum.

• Infant mortality rate being a negative indicator, for this the best indicator is shown as the minimum and the worst as the maximum.
Achievement level for a positive indicator

\[
\text{Achievement Level} = \frac{\text{Actual Value} - \text{Minimum Value}}{\text{Max. Value} - \text{Min. Value}}
\]

Achievement level for a negative indicator

\[
\text{Achievement Level} = \frac{\text{Max. Value} - \text{Actual Value}}{\text{Max. Value} - \text{Min. Value}}
\]
Table 1: Maximum and Minimum Values of Component Indicators

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant Mortality Rate</td>
<td>229</td>
<td>9</td>
<td>220</td>
</tr>
<tr>
<td>Life Expectancy at Age One</td>
<td>77</td>
<td>38</td>
<td>39</td>
</tr>
<tr>
<td>Basic Literacy Rate</td>
<td>180</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>

One this basis, Morris presents the following correlation:

<table>
<thead>
<tr>
<th>(N = 150)</th>
<th>Infant Mortality Rate</th>
<th>Life Expectancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Expectancy at Age One</td>
<td>−0.919</td>
<td>− +</td>
</tr>
<tr>
<td>Literacy Rate</td>
<td>−0.919</td>
<td>0.897</td>
</tr>
</tbody>
</table>
CONSTRUCTION OF PQLI

On the basis of the values of the component indicators given in Table 1, we can construct the PQLI on the basis of the three indices in the following manner:

\[
\text{IMRI} = \frac{229 - \text{Actual IMR}}{220} \\
\text{LEI} = \frac{\text{Actual Life Expectancy} - 38}{39} \\
\text{BLI} = \frac{\text{Actual Literacy Level} - 0}{100}
\]

We calculate the PQLI for India on the basis of 2001 Census data for these variables: IMR = 67, LE = 65 years, and BL = 65%.

\[
\text{PQLI} = \frac{\text{IMRI} + \text{LEI} + \text{BLI}}{3} = \frac{0.74 + 0.69 + 0.65}{3} = \frac{2.08}{3} = 0.69
\]

Thus the Physical Quality of Life Index for India in 2001 was 0.69.
• **Its Limitations.** The PQLI tries to measure “quality of life” directly rather than indirectly. But it has its limitations.

1. Morris admits that PQLI is a limited measure of basic needs.
2. It supplements but does not supplant the GNP. It fails to dislodge GNP from its lofty perch.
3. It does not explain the changing structure of economic and social organization. It, therefore, does not measure economic development. Economic development is increase in output plus changes in the structural processes of production as well as improvement in institutional quality. PQLI does not show this.
4. Similarly, it does not measure total welfare.
5. Morris has been criticized for using equal weights for the three variables of his PQLI which undermine the value of the index in a comparative analysis of different countries.

According to Meier, “Non-income factors captured by the PQLI are important, but so are income and consumption statistics and distribution-sensitive methods of aggregation that are ignored by it.”

**Conclusion.** Despite these limitations, the PQLI can be used to identify particular regions of underdevelopment and groups of society suffering from the neglect or failure of social policy. It points towards that indicator where immediate action is required. The state can take up such policies which increase the PQLI rapidly along with economic growth.
• **2. HUMAN DEVELOPMENT INDEX (HDI)**

• Lord Meghnad Desai and Nobel Laureate Amartya Sen invented the Human Development Index and UNDP incorporated it into its first Human Development Report in 1990.

• Since then, the UNDP has been presenting the measurement of human development.

• The HDI is a composite index of three social indicators: life expectancy, adult literacy and years of schooling and real GDP per capita.

• Thus, the HDI is a composite index of achievements in three fundamental dimensions: living a long and healthy life, being educated and having decent standard of living.
The HDI value of a country is calculated by taking three indicators:

1. *Longevity*, as measured by life expectancy at birth.

2. *Educational attainment*, as measured by a combination of adult literacy (two-thirds weight) and combined primary, secondary and tertiary enrolment ratio (one-third weight).

3. *Decent standard of living*, as measured by real GDP per capita based on purchasing power parity in terms of dollar (PPP$).

Before the HDI is calculated, an index is created for each of these dimensions:

*Life Expectancy Index*, *Education Index* and *GDP Index*.

To calculate these indices, minimum and maximum values or goal posts are chosen for each indicator as shown in Table 3.
Table 3: Goalposts for Calculating the HDI

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Max. Value</th>
<th>Min. Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Expectancy at Birth (yrs)</td>
<td>85</td>
<td>25</td>
</tr>
<tr>
<td>Adult Literary Rate (%)</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Combined Gross Enrolment Ratio (%)</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>GDP Per Capita (PPP US$)</td>
<td>40,000</td>
<td>100</td>
</tr>
</tbody>
</table>

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

\[
\text{Dimension Index} = \frac{\text{Actual Value} - \text{Minimum Value}}{\text{Max. Value} - \text{Min. Value}}
\]

The HDI is then calculated as a simple average of the three dimension indices.
For any component of the HDI, individual indices can be computed by applying the formula:

\[
\text{Dimension Index} = \frac{\text{Actual Value} - \text{Minimum Value}}{\text{Max. Value} - \text{Min. Value}}
\]

1. **Life Expectancy Index.** If the life expectancy at birth of a country is 78 years, then the life expectancy index for that country would be

\[
\text{Life Expectancy Index} = \frac{78 - 25}{85 - 25} = \frac{53}{60} = 0.884
\]

2. **Education Index.** The education Index is the combination of adult literacy index and gross enrolment index. If the adult literacy rate of this country is 92, then its adult literacy index would be

\[
\text{Adult Literacy Index} = \frac{92 - 0}{100 - 0} = 0.920
\]
If the combined gross enrolment in this country is 60, then its gross enrolment index would be

\[
\text{Gross Enrolment Index} = \frac{60 - 0}{100 - 0} = 0.600
\]

\[
\text{Education Index} = \frac{2}{3} \times \text{(Adult Literacy Index)} + \frac{1}{3} \times \text{(Gross Enrolment Index)}
\]

\[
= \frac{2}{3} \times (0.920) + \frac{1}{3} \times (0.600) = 0.813
\]

3. **GDP Index.** The GDP per capita (PPPUS$) of this country is $8,840, then the GDP index would be

\[
\text{GDP Index} = \frac{\log(8,840) - \log(100)}{\log(40,000) - \log(100)} = \frac{\log 8740}{\log 39,900} = 0.748
\]

4. **Human Development Index.** The HDI is a simple average of the Life Expectancy Index, Education Index and adjusted GDP per capita (PPP$) Index. It is derived by dividing the sum of these three indices by 3,

\[
\text{HDI} = \frac{1}{3} \times (0.884) + \frac{1}{3} \times (0.813) + \frac{1}{3} \times (0.784)
\]

\[
= 0.295 + 0.271 + 0.249 = 0.815
\]

This country comes under the category of high human development.
• **Its Limitations.** The HDI is not free from certain limitations.

1. It is a *crude index* which attempts to catch in one simple number a complex reality about human development and deprivation, according to Prof. Amartya Sen.

2. The three indicators are not the only indicators of human development. There can be others like infant mortality, nutrition, etc.

3. The HDI measures relative rather than absolute human development so that if all countries improve their HDI value at the same weighted rate. The low human countries will not get recognition for their improvement.

4. The weighting scheme for calculating the four components of HDI seems arbitrary.

5. Even giving equal (1/3rd) weight to each of the very different three indices for calculating the HDI is arbitrary. To the extent one component index has a different variance than another, equal weights seem unsatisfactory and unjustify.

6. A country having high HDI may shift the focus from the high inequality, unemployment and poverty found within it.

• **Conclusion.** Despite these weaknesses, by measuring average achievements in health, education and income, the HDI provides a better picture of the state of a country’s development than its income alone. The category of high human development.