Indicators for measuring EFA

Access and participation in education
ECCE Experience

- First component of basic education: early childhood care and education (ECCE):
  - Embraces the full range of purposeful and organized activities intended to provide for the healthy growth and developmental needs of children from birth to eight years of age
  - Includes activities provided under the supervision of several areas of state responsibility, such as education, health, nutrition, social welfare, etc.

Gross Enrolment Ratio (GER) in ECCE

- **Definition**: Gross enrolment in ECCE programmes, including public, private, and community programmes, expressed as a percentage of the official age-group concerned, if any, otherwise the age-group 3 to 5.
- **Purpose**: Measures the general level of participation of young children in early childhood development programmes. It also indicates a country's capacity to prepare young children for primary education.
Gross Enrolment Ratio (GER) in ECCE

- Divide the number of children enrolled in early childhood development programmes, regardless of age, by the population in the relevant official age-group (otherwise the age-group 3 to 5) in a given school-year, and multiply by 100.

\[
\text{GER}_{\text{ECCE}} = \frac{\text{Total Enrolment in ECCE programmes}}{\text{Total Population of official age-group for ECCE}} \times 100
\]

Interpretation

- A high GER in ECCE programmes indicates adequate capacity for this type of programme within the country.
- A GER approaching or surpassing 100% indicates that a country is, in principle, able to accommodate all children in the official age-group concerned by ECCE.
- Countries may differ widely in their approaches to ECCE.
Limitation

- Only countries that require official registration of any ECCE provision are likely to have official data for this indicator;
- Countries that have data only for public or state supervised pre-school educational programmes will need to supplement these data with information on enrolment in other types of ECCE programmes, possibly through case studies and/or sample surveys.

Gross Enrolment Ratio (GER) in ECCE

Definition:

\[
\text{New entrants with ECCE experience} = \frac{\text{New entrants with ECCE experience}}{\text{Total number of new entrants}} \times 100
\]
New Entrants with ECCE experience

- **Interpretation**: A high percentage indicates that a large proportion of these children have participated in organized learning activities prior to entering primary school.

- **Limitations**: Obtaining data for this indicator will be a problem in many countries. Useful data may exist in school registration records, and school census instruments may also be geared to collecting this information. Otherwise, the data could be gathered through a sample survey of schools or through household surveys.

Why ECCE

- Progress in schooling is often associated with cognitive abilities acquired at young ages.
- Commonly recognized that prior participation in ECCE programmes can play an important role in a child's future education.
- However, this indicator may give an exaggerated picture of access to ECCE, since children with access to ECCE programmes are also more likely to have access to primary schools.
### Doorway to Education

- The door to formal education for most people is the admission to the first grade of primary education.
  - Main gateway of access to educational opportunities
  - Accessibility is of great concern to parents, teachers as well as education policy-makers
- Indicators that measure the extent to which children have access to education rely mainly on admission rates to grade one.

### Admission Age

- Many countries officially define the admission age but it is not strictly applied. In practice, there are new entrants who are under or over the official admission age.
- In Vietnam, the official school admission age is 6.
Accessibility

• Policy makers and education planners like to know:
  ➔ What percentage of children of official school age have access to schools?
  ➔ What proportion of the admitted children are early starters and what proportion are late starters?

Intake Rates

• Intake rate indicates accessibility as the proportion of children, out of all children of admission age, who are coming to school for the first time.
• Two indicators are used in this regards,
  ➔ Apparent intake rate
  ➔ Net intake rate
    ➔ What is the difference?
    ➔ In what way is the difference important to planners and decision makers?
**Definition**: Total number of new entrants in the first grade of primary education, regardless of age, expressed as a percentage of the population at the official primary school entrance age.

**Purpose**: AIR indicates the general level of access to primary education. Also indicates the capacity of the education system to provide access to grade 1 for the official school-entrance age population. Used as a substitute to Net Intake Rate (NIR) in the absence of data on new entrants by single years of age.

\[
\text{AIR} = \frac{\text{Total number of new entrants to Grade 1 (All ages)}}{\text{Total number of official primary school entrance age population}} \times 100
\]

The above formula assumes that data on new entrants is available. If data on new entrants is not available, the new entrants to Grade 1 can be estimated by subtracting the number of Grade 1 repeaters from the total enrolment in Grade 1. This is shown below:

\[
\text{AIR} = \frac{\text{Pupils in Grade 1} - \text{Repeaters in Grade 1}}{\text{Total number of official primary school entrance age population}} \times 100
\]
Apparent Intake Rate (AIR)

- In the example below, divide the third column (New entrants All Ages) by the second (Population Age 6) to get the Apparent Intake Rate. The Apparent Intake Rate is given in percentages (last column). Note that these rates are calculated separately for boys and girls.

**Apparent Intake Rate by Sex, Red River Delta Region - 1998-99**

<table>
<thead>
<tr>
<th>Sex</th>
<th>Population at school entrance age (6)</th>
<th>New entrants at all ages</th>
<th>AIR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys</td>
<td>149,252</td>
<td>150,172</td>
<td>101%</td>
</tr>
<tr>
<td>Girls</td>
<td>152,631</td>
<td>141,588</td>
<td>93%</td>
</tr>
<tr>
<td>Total</td>
<td>301,883</td>
<td>291,750</td>
<td>97%</td>
</tr>
</tbody>
</table>

**Data required:** New entrants in the first grade of primary education (or enrolment minus repeaters in the first grade); population of the official primary school-entrance age.

**Data source:** School register, school survey or census for data on new entrants by age. Population census or estimates for primary school-entrance age population.

**Type of disaggregation:** The Apparent Intake Rate is to be disaggregated by sex and by geographical location (region, rural/urban), as well as others social classification (e.g. children with disabilities, ethnic groups, etc.).
**Interpretation**: A high Apparent Intake Rate indicates a high degree of access to primary education. As this calculation includes all new entrants to first grade (regardless of age), the Apparent Intake Rate can be more than 100%, due to over-aged and under-aged children entering primary school for the first time.

**Limitations**: A high Apparent Intake Rate may be the effect of a backlog of over-aged children who have not entered school when they were at the official primary school-entrance age.

**Apparent Intake Rate (AIR)**

- The apparent intake rate in itself is useful for matching the school capacity and the demand for entry into the first grade;
- AIR is also useful when used in combination with net intake rate;
  - The difference between these two ratios indicates the amount of deviation from the official age intake;
- Continued or increasing deviation may imply that the policy of official admission age may need to be changed to accommodate the real demographic structure of demand for education.
Net Intake Rate (NIR)

- **Definition:** Net intake rate is the percentage of all children of the official entrance age who are new entrants in grade 1.

- **Purpose:**
  - Key parameter used for projecting school enrolment
  - Measures the extent of access of the population of the school admission age

\[
\text{Net Intake Rate (NIR)} = \frac{\text{Total number of Grade 1 pupil of the official school entrance age}}{\text{Total number of official primary school entrance age population}} \times 100
\]
What are the percentages of boys and girls who are in age 6 but did not enter school?

<table>
<thead>
<tr>
<th>Sex</th>
<th>Population at school entrance age (0)</th>
<th>New entrants at Age 6</th>
<th>NIR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys</td>
<td>149,262</td>
<td>132,172</td>
<td>89%</td>
</tr>
<tr>
<td>Girls</td>
<td>152,831</td>
<td>122,555</td>
<td>81%</td>
</tr>
<tr>
<td>Total</td>
<td>302,093</td>
<td>254,727</td>
<td>85%</td>
</tr>
</tbody>
</table>

11% for boys and 20% girls

- **Data required:** New entrants in first grade of primary education by single years of age; population of official primary school entrance age.
- **Data source:** School register, school survey or census for data on new entrants by age. Population census or estimates for school entrance age population.
- **Type of disaggregation:** The Net Intake Rate is to be disaggregated by gender and by geographical location (region, rural/urban).
### Net Intake Rate (NIR)

- **Interpretation**: A high Net Intake Rate indicates a high degree of access to primary education for the official primary school-entrance age children. For countries which have subscribed to the policy goal of universal primary education, a NIR of 100% will be a necessary condition.

- **Limitations**: This indicator can be distorted by an incorrect distinction between new entrants and repeaters in the first grade. This can be the case especially for under-aged pupils who may repeat the first grade at the official-entrance age.

### New Entrants to Grade 1 by Age

- In the absence of the breakdown of data on new entrants by age, this figure can be estimated indirectly by using the percentage of repeaters in Grade 1.

- Can be calculated by subtracting the number of repeaters from the grade 1 enrolment figures.

- You can calculate the apparent intake rate even if you do not have new entrants by age.
Population of Official School Entrance Age

- This data is usually available from the National Statistical Office (NSO)
- The data is usually given in five-year age-groups
- Using the Sprague multipliers method, single-age breakdown can be estimated.
  → See details in the section – “Estimating school age population”

Indicators of Coverage and Participation

- Coverage and participation are measured by comparing the children enrolled in school with the total school age population
- Enrolment ratios are used to measure the extent of coverage of an educational programme
- There are different types of enrolment ratios:
  → gross and net enrolment ratios
    » by level, sex, region etc.
- These figures are used for assessing how far a country has succeeded in providing education to all.
Gross Enrolment Ratio (GER)

- **Definition**: Total enrolment in primary education, regardless of age, expressed as a percentage of the eligible official primary school-age population in a given school-year.

- **Purpose**: GER is widely used to show the general level of participation in and capacity of primary education. Used in place of the net enrolment ratio (NER) when data on enrolment by single years of age are not available. Can also be used together with the NER to measure the extent of over-aged and under-aged enrolment.

Gross Enrolment Ratio (GER)

- This indicator shows the overall coverage of an educational system in relation to the population eligible for participation in the system.

- This ratio is useful for those who are interested in the overall participation of the school-age population, including both primary and secondary levels.

- It can be used for comparing two or more countries and urban and rural areas.
Gross Enrolment Ratio (GER)

- GER for Early Childhood Care and Education
  Enrolment in ECCE programmes
  \[ \text{GER}_{ECCE} = \frac{\text{Enrolment in ECCE}}{\text{Population of official age-group for ECCE}} \times 100 \]

- GER for Primary and Secondary School
  Enrolment in both primary and secondary levels
  \[ \text{GER}_{PRI+SEC} = \frac{\text{Enrolment in both primary and secondary levels}}{\text{Population of official age-group for primary and secondary levels}} \times 100 \]

- GER for Primary School
  Enrolment in primary level
  \[ \text{GER}_{PRI} = \frac{\text{Enrolment in primary level}}{\text{Population of official age-group for primary level}} \times 100 \]

- GER for Secondary School
  Enrolment in secondary level
  \[ \text{GER}_{SEC} = \frac{\text{Enrolment in secondary level}}{\text{Population of official age-group for secondary level}} \times 100 \]

Example: The gross enrolment ratio for primary education is obtained by dividing the third column (enrolment) by the second (population)

<table>
<thead>
<tr>
<th>Sec</th>
<th>Population at primary school age</th>
<th>Enrolment at primary level</th>
<th>GER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys</td>
<td>9,152,251</td>
<td>10,022,456</td>
<td>110%</td>
</tr>
<tr>
<td>Girls</td>
<td>8,912,483</td>
<td>9,625,564</td>
<td>108%</td>
</tr>
<tr>
<td>Total</td>
<td>18,064,734</td>
<td>19,648,020</td>
<td>109%</td>
</tr>
</tbody>
</table>
**Gross Enrolment Ratio (GER)**

**Interpretation**
- High GER indicates high degree of participation, regardless of age
- GER $\geq 100\%$ indicates that a country is, in principle, able to accommodate all of its primary school-age population, but does not indicate the proportion of that population actually enrolled
- The achievement of GER of 100\% is a necessary but not sufficient condition for universal primary education

**Gross Enrolment Ratio (GER)**

**Interpretation**
- When a country's GER exceeds 90\% for primary education, the aggregate number of places for pupils is approaching the number required for full enrolment of the official age-group population;
- In order to achieve universal primary education, the number of under and over-age pupils would need to decline in order to free places for pupils in the official primary school age-group
Limitation
- GER can sometimes exceed 100% due to the inclusion of over-aged and under-aged pupils and repeaters. In this case, a rigorous interpretation of GER needs additional information on the extent of repetition, early and late entrants, etc.

**Gross Enrolment Ratio (GER)**

**Net Enrolment Ratio (NER)**

- **Definition:** Enrolment in primary education of the official primary school age group expressed as a percentage of the corresponding population.

- **Purpose:** NER gives a more precise measurement of the extent of participation in primary education of children belonging to the official primary school age.
Net Enrolment Ratio (NER)

- To measure the participation of official school age population

\[
\text{NER} = \frac{\text{Enrolment of the official primary school age}}{\text{Population of official primary school age}} \times 100
\]

- The net level enrolment rate is also used to estimate the number of children not enrolled (out of school children), by subtracting NER from 100

What percentage of primary school age children in this country are not in school?

Answer: 100 – 95 = 5%
By analyzing GER and NER together, one can see the participation pattern of the system:
- Over and under age pupils
- Degree of participation
- Geographical disparity
- Gender disparity

Theoretically, NER should not be more than 100 while GER can be more than 100.

Limitations
- Lack of accurate data is a major problem when calculating enrolment ratios
  - Population figures are estimated and enrolment data is subject to tabulation errors and missing data
  - Inaccurate population estimates and less than 100% returns of school questionnaires make enrolment rates unreliable
When there are many enrolled pupils who are actually older or younger than the official age, the gross enrolment ratio is inflated.

- Shows that the school system hosts a certain number of late starters and possibly repeaters.
- To get a better picture of the situation, calculate both the gross and net or age specific ratios.

The ratios calculated at the national level conceal disparities that exist between urban and rural provinces and between boys and girls.

- District level enrolment ratios indicate better than the aggregate regional level ratios.
- The ratios don’t tell us about the extent of repetition and dropout rates and survival to any of the grades.
- These ratios do not tell anything about how much the pupils actually learn in schools.

- Not intended to be used as an indicator of learning.
### System Performance Indicators

#### Key performance indicators

- **Promotion rate**: is the proportion of pupils who have successfully completed a grade and proceeded to the next grade the following year.

- **Repetition rate**: the proportion of pupils who repeat a grade once or twice. The repetition rate of grade $g$, year $y$ is obtained by dividing repeaters of grade $g$, year $y+1$, by enrolment in grade $g$, year $y$.

- **Drop-out rate**: the proportion of pupils who leave the system without completing a given grade in a given school year.

- **Percentage of repeaters**: Percentage of repeaters at a particular grade.
### Key performance indicators

- All these key indicators can be calculated by using reconstructed-cohort flow model.

- Data required to produce such indicators
  - Enrolments by grade for two consecutive years
  - Repeaters by grade for the year 2
  - In and out transfer pupils (Optional)

- More details in session on Internal Efficiency

### Interpretation

- High rates of repetition reveal problems of internal efficiency (wastage of resources) and possibly reflect a poor level of instruction;

- When compared across grades, the patterns can indicate specific grades with relatively higher repetition rates, hence requiring more in-depth study of the causes and possible remedies;

- Repetition rates could be zero due to an automatic promotion system

- In some cases, low rates merely reflect policies or practices of automatic promotion;
Interpretation

- The maximum repetition rate and the number of grade repetitions allowed may in some cases be determined in order to cope with limited capacity and to increase the flow of pupils through the education cycle;

- Care should be taken in interpreting this indicator, especially when making comparisons between education systems.

Survival Rate

- **Definition:** The percentage of a cohort of pupils enrolled in grade 1 of the primary level of education in a given school year who are expected to reach a specific grade (Survival rate to Grade 5).

- **Purpose:** To assess the “holding power” and internal efficiency of an education system. The survival rate to Grade 5 indicates the proportion of a pupil cohort that completes Grade 4 and reaches Grade 5. Conversely, it indicates the magnitude of drop-out before Grade 5.
Rationale

- Measures an education system’s success in retaining students from one grade to the next as well as its internal efficiency
- Various factors account for poor performance on this indicator:
  - low quality of schooling
  - discouragement over poor performance
  - direct and indirect costs of schooling
  - students’ progress may be limited by the availability of teachers, classrooms and materials

Survival Rate

- The indicator is typically estimated from data on enrolment and repetition by grade for two consecutive years, in a procedure called the reconstructed cohort method
- This method makes three assumptions:
  - drop-outs never return to school;
  - promotion, repetition and drop-out rates remain constant over the entire period in which the cohort is enrolled in school;
  - the same rates apply to all pupils enrolled in a given grade, regardless of whether they previously repeated a grade.
Survival Rate

Limits
- Flows caused by new entrants, reentrants, grade skipping, migration or transfers during the school year are not considered.

Considerations
- Should be complemented by grade 1 intake rate, because together the indicators give a much better sense of the proportion of children in the population who complete primary education.

Measuring quality of education
Pupil Teacher Ratio (PTR)

- Pupil-teacher ratio (PTR) is one of the most common indicators used in educational planning.
- It is believed that a low number of pupils per teacher indicate pupils will have a better chance of contact with the teachers and hence a better teaching/learning process.
- This ratio is also used to measure the level of human resource input (teachers).
- Many planners also use this ratio for projecting the number of teachers required.

Pupil Teacher Ratio (PTR)

- Pupil-teacher ratio is defined as the average number of pupils per teacher in primary education in a given school-year.

\[
PTR = \frac{\text{Total number of pupils in a given level}}{\text{Total number of teachers at the level}}
\]

- This ratio also gives a rough indication of the quality of the teaching/learning process.
Pupil Class Ratio (PCR)

- The average number of pupils per class is an important indicator which gives a rough indication of class size.
- It is used to assess the efficiency of resource utilization.
- It is also used, indirectly, to assess the teaching/learning process.
- This ratio is defined as the number of pupils to the number of class rooms.

* A group of pupils in one instructional class. Hence, a section is equal to a class. One classroom can be used for a number of sections.

Example:

The total number of pupils in primary grades of region B, 2004 was 18,257. The total number of sections (classes) in primary school of region B in 2004 was 270. Hence, the pupil-class ratio in primary grades for region B in 2004 is:

\[
P\text{C}R = \frac{18,257}{270} = 68
\]

The objective - to bring this number to, at least 50, in order to improve the situation.
Percentage of trained teachers

- **Definition**: The number of school teachers with at least the minimum academic qualifications required by the public authorities for teaching in primary education, expressed as a percentage of the total number of primary school teachers.
- **Purpose**: Indicates magnitude of quality teaching force in education.
- The formula is as follows: (e.g. Primary level)
  \[
  \frac{\text{Total number of primary teachers with at least the minimum academic qualifications}}{\text{Total number of primary teachers at that level}} \times 100
  \]

Interpretation

- A high percentage denotes the availability of academically qualified teachers and the general quality of the teaching force.
- Teachers' academic qualifications, together with pre-service or in-service teacher training, correlate strongly and consistently with pupils' scholastic performance.
- Other factors would be - the experience and status of teachers, teaching methods, teaching materials and the quality of classroom conditions.
Final Thoughts

- Key issues:
  - education access
  - coverage
  - efficiency
  - resource allocation
  - disparities with regard to various policy target groups.
- Developments related to these issues need to be monitored and analysed for formulating effective education reform programmes;
- For this purpose, regular and functional monitoring of system performance is required;
- The lack of such monitoring is a hindrance to informed decision-making capacity.

Thank you for your time!