Regional Model on Costing SDG4 Asia and the Pacific

UNESCO Bangkok
Masaya Noguchi

12-13 July 2021 at 1:30 pm – 3:30 pm (Bangkok time/ GMT+7)
Outline

1. Current Status of Education Finance in the Asia-Pacific Region
2. Regional efforts for Education Finance
3. Regional Model on Costing SDG4 Asia and the Pacific
Current Status of Education Finance in the Asia-Pacific Region (1/2)

- Spending on Education is not encouraging.
  
  At regional average, Asia met neither of two public education expenditure benchmarks: spend at least 4% of GDP or at least 15% of total public expenditure.
Current Status of Education Finance in the Asia-Pacific Region (2/2)

Education Speding

- Only 9 out of 48 AP countries reached education expenditure benchmarks.
Costing and Financing SDG4-Education 2030 in the Asia-Pacific Region

Regional Effort for Adequate / Efficient Education Finance

1) Methodology/Guideline/Tool Development for Costing and Financing of SDG4
   - Desk Review and Mapping
     - Regional situation and Existing methodologies
   - Expert Group Meeting
     - Establishing regional expert group; regular meeting and consultation
   - Methodology/Guideline/Tool Development
   - Assessing current education expenditures and financing
   - Regional Costing Model(4.1, 4.2 and 4.5)
   - Identifying innovative financing mechanisms and partnerships

2) Technical Support and Capacity Development on Costing and Financing of SDG4
   - Regional Capacity Development Workshop (Series of virtual seminars)
   - Information/data generation for costing and financing at national level
   - Preparation of Country Profiles and Case Studies
   - National consultations and discussions

3) Contribute to mid-term review in 2023 and policy forums
   - Integration of key results to AP-Regional SDG4 Progress Review Report
   - 4th Regional Policy Forum on ECCE

Costing and Financing SDG4-Education 2030 in the Asia-Pacific Region

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What is Education Simulation Model?

- A simulation model aims to simulate reality by estimating and assessing future circumstances based on changes in given variables. Simulation models take policy options, technical feasibilities, and financial constraints into account in order to project future resourcing and budgeting needs that would serve as a basis for policy dialogue.

Expenditures projections (reccurent and investment)

- Enrolments projections
- Projection required inputs
  - Population eligible for targeted grade
  - Enrolment projections
  - Projections of teachers, textbooks etc.
  - Cost estimates for teachers, other staffs, equipments, etc.

Learning and teaching conditions

Projected domestic resources

Funding Gap (Reccurent and capital)

- Enrolment targets (GER, etc.)
- Flow rates (propotion, repetition, dropout rates)
- Projections of enrolment
Regional Model on costing SDG4 Asia and the Pacific

**Existing Education Costing Models**

**Global Level**
- UNESCO GMR costing model (2015)
- UNESCO costing model ESCAP version (2018)
  + Specialized for AP region
- Education Commission Costing model (2016)

**Regional Level**
- UNESCO costing model ESCAP version (2018)
  + Specialized for AP region
- AP Regional Costing and Financing Model (2020)
  + Estimations at national and sub-regional level
- UNESCO EPSSim v2.9b (2012)
- UNESCO SimuED (2020)
- UNESCO EPSSim v1.0 (2001)

**Country Level**
- UNESCO EPSSim v1.0 (2001)
- AP Regional Costing and Financing Model (2020)
  + Specialized for AP region
- ECE Costing and Financing Model (2021)
  + Specialized for ECE subsection
- Regional Model on costing SDG4 Asia and the Pacific
- KFIT Projects
Regional Model on costing SDG4 Asia and the Pacific

Purpose

The main purpose is to be used for estimating the resources associated with attaining SDG4 targets specifically, Target 4.1 (Basic Education), 4.2 (Pre-primary education) and Target 4.5 (gender equality).

Key rational: SDG 4 (4.1, 4.2, 4.5)
Main objective: To estimate the cost of education policies to achieve SDG4
Coverage: countries: 48 countries in Asia-Pacific region
Platform: Excel

<table>
<thead>
<tr>
<th>Southeast Asia</th>
<th>South Asia</th>
<th>East Asia</th>
<th>Central Asia</th>
<th>Pacific</th>
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<tbody>
<tr>
<td>Brunei</td>
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<td>Australia</td>
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<td>Papua New Guinea</td>
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<tr>
<td>Thailand</td>
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<td>Timor-Leste</td>
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<td>Vietnam</td>
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<td>Solomon Islands</td>
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<td>Vanuatu</td>
<td>Vanuatu</td>
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</tbody>
</table>
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For SDG 4.1, 4.2, and 4.5 Targets

4.1: Universal primary and secondary education
- Gross intake ratio to the last grade of primary education and lower secondary education
- Completion rate (primary, lower secondary, upper secondary)
- Out-of-school rate (primary, lower secondary, upper secondary)
- Number of years of (a) free and (b) compulsory primary and secondary education guaranteed in legal frameworks

4.2: Universal pre-primary education
- Participation rate in organized learning (one year before the official primary entry age)
- Gross early childhood education enrolment ratio in (a) pre-primary education and (b) early childhood educational development

4.5: Gender equality and inclusion
- Parity indices (female or male) for all education indicators
- Additional cost for marginalized pupils (% of total education expenditure)
- Enrollment projection by gender.

The model can trace the historical data (2008 – 2020) prospect future educational trend.

- 5-Year Progress Review (5PR) on SDG4

The 63 scenarios under 5 key categories (pre-primary education, primary education, secondary education, post-secondary education, and economic variable)

- Estimate costs and financial requirements for specific targets and various situations.

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Setting scenarios/targets for estimation ①

**EDUCATION ACCESS TARGETS:**

<table>
<thead>
<tr>
<th></th>
<th>Gross enrolment ratio, pre-primary (%)</th>
<th>Gross enrollment ratio, primary (%)</th>
<th>Gross enrollment ratio, LS (%)</th>
<th>Gross enrollment ratio, US (%)</th>
<th>GER, post-secondary (%)</th>
<th>Target, % repetition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>60</td>
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<td>0</td>
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</table>

**PRE-PRIMARY EDUCATION TARGETS:**

<table>
<thead>
<tr>
<th></th>
<th>Percent private pre-primary</th>
<th>Min Pupil Teacher Ratio</th>
<th>Max Pupil Teacher Ratio</th>
<th>Additional cost for marginalized pupils</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10</td>
<td>20</td>
<td>20</td>
<td>20%</td>
</tr>
</tbody>
</table>

**PRIMARY EDUCATION TARGETS:**

<table>
<thead>
<tr>
<th></th>
<th>Gross intake ratio to the last grade</th>
<th>Completion rate of primary</th>
<th>Percent private primary</th>
<th>Min Pupil Teacher Ratio (PTR)</th>
<th>Max Pupil Teacher Ratio (PTR)</th>
<th>Target non-salary as % of recurrent: Primary</th>
<th>Add1 cost marginalized pupils (% of total), LS</th>
<th>Add1 cost marginalized pupils (% of total), US</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100</td>
<td>100</td>
<td>10</td>
<td>40</td>
<td>40</td>
<td>35%</td>
<td>30%</td>
<td>40%</td>
</tr>
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</table>

**SECONDARY EDUCATION TARGETS:**

<table>
<thead>
<tr>
<th></th>
<th>Gross intake ratio to the last grade of LS</th>
<th>Gross intake ratio to the last grade of US</th>
<th>Completion rate of LS</th>
<th>Completion rate of US</th>
<th>Percent private lower secondary</th>
<th>Percent private upper secondary</th>
<th>Min secondary PTR</th>
<th>Max secondary PTR</th>
<th>Target non-salary as % of recurrent: LS</th>
<th>Target non-salary as % of recurrent: US</th>
<th>Add1 cost marginalized pupils (% of total), LS</th>
<th>Add1 cost marginalized pupils (% of total), US</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>10</td>
<td>10</td>
<td>35</td>
<td>35</td>
<td>35%</td>
<td>35%</td>
<td>30%</td>
<td>40%</td>
</tr>
</tbody>
</table>

**POST-SECONDARY EDUCATION TARGETS:**

<table>
<thead>
<tr>
<th></th>
<th>Post-secondary access: % using new delivery (online) provision</th>
<th>Post-secondary access: % going to post-secondary non-tertiary</th>
<th>Post-secondary access: % going to tertiary</th>
<th>Target post-secondary graduation rates: Online delivery</th>
<th>Target post-secondary graduation rates: Post-secondary non-tertiary</th>
<th>Target post-secondary graduation rates: tertiary</th>
<th>Post-secondary targets: % private</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0%</td>
<td>30%</td>
<td>70%</td>
<td>80%</td>
<td>80%</td>
<td>80%</td>
<td>80%</td>
</tr>
</tbody>
</table>

**ECONOMIC VARIABLES:**

Exclude high income countries from projection
Long-term value, GDP growth
Use IMF or UN DESA GDP growth projections
Government expenditure on education target % of GDP
Household contribution to basic ed, LIC, max
Household contribution to basic ed, LMIC, max
Household contribution to basic ed, UMIC, max
Household contribution to post-secondary, LIC, max
Household contribution to post-secondary, LMIC, max
Household contribution to post-secondary, UMIC, max
Cut off for Low income countries
Cut off for lower middle income countries
Cut off for upper middle income countries
Cut off for IDA eligible countries
Cut off for IBRD eligible countries (greater than)
Deliver: online cost per year as % of GDP per capita
Tertiary and PSNT annual cost, use target or trend?
Tertiary and PSNT cost as % of GDP per capita (target only)
Max-min classroom cost (as multiple of GDP per capita)
Max-min classroom cost (as $)
Capital amortization=1, Cash flow =2
Young adult 15-24 literacy target year
Cost of full literacy program, times annual primary student cost
Use “all” or “Top 50%” of salaries for salary projection
Fixed salary costs (use for constant spending projection only)

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## Setting scenarios/targets for estimation

To Estimate Financial Impact of COVID-19 on Education

### Economic scenario
- **GDP growth**
- **Epidemiological scenario**
  - **Length of school closure (weeks):** 20
  - **Policy options**
    - **Launch of re-enrollment strategy:** No
    - ** Remediation strategy for re-enrolled students:** No

### Re-enrollment scenario
- **Length of school year:**
  - Pre-primary: 52 weeks
  - Primary: 52 weeks
  - Secondary: 52 weeks
  - U Secondary: 52 weeks
- **Length of school closure:**
  - Pre-primary: 20 weeks
  - Primary: 20 weeks
  - Secondary: 20 weeks
  - U Secondary: 20 weeks
- **Share of students affected by closure:**
  - Pre-primary: 100%
  - Primary: 100%
  - Secondary: 100%
  - U Secondary: 100%
- **Scope of students targeted for re-enrolment:**
  - Pre-primary: 0%
  - Primary: 0%
  - Secondary: 0%
  - U Secondary: 0%
- **Re-enrolment unit cost:**
  - Pre-primary: 2% of unit cost
  - Primary: 2% of unit cost
  - Secondary: 2% of unit cost
  - U Secondary: 2% of unit cost
- **Friction of re-enrolment strategy:**
  - Pre-primary: 2%
  - Primary: 2%
  - Secondary: 2%
  - U Secondary: 2%

### Remediation scenario
- **Learning loss scenario**
  - **Learning loss as function of school closure - scenario linked:**
    - Pre-primary: 50%
    - Primary: 50%
    - Secondary: 50%
    - U Secondary: 50%
  - **Remediation time per week of learning lost:**
    - Pre-primary: 20%
    - Primary: 20%
    - Secondary: 20%
    - U Secondary: 20%
  - **Remediation effort:**
    - Pre-primary: 0%
    - Primary: 0%
    - Secondary: 0%
    - U Secondary: 0%
  - **Remediation unit cost:**
    - Pre-primary: 100%
    - Primary: 100%
    - Secondary: 100%
    - U Secondary: 100%
  - **Multiple severe learning loss (marginalized):**
    - Pre-primary: 500%
    - Primary: 500%
    - Secondary: 500%
    - U Secondary: 500%
  - **Frustration of remediation strategy (marginalized):**
    - Pre-primary: 2%
    - Primary: 2%
    - Secondary: 2%
    - U Secondary: 2%
  - **Repetition rate (additional):**
    - Pre-primary: 50%
    - Primary: 50%
    - Secondary: 50%
    - U Secondary: 50%

### Additional classroom costs
- **Students per water supply infrastructure:**
  - Pre-primary: 400
  - Primary: 400
  - Secondary: 400
  - U Secondary: 400
  - **Assumption**
- **Students per handwashing facilities:**
  - Pre-primary: 50
  - Primary: 50
  - Secondary: 50
  - U Secondary: 50
  - **Assumption**
- **Intervention scenarios:**
  - Average # times water supply equipment needs to be replaced in 10 yr period:
    - Pre-primary: 0
    - Primary: 0
    - Secondary: 0
    - U Secondary: 0
  - Average # times handwashing facility needs to be replaced in 10 yr period:
    - Pre-primary: 3
    - Primary: 3
    - Secondary: 3
    - U Secondary: 3
  - Percentage of refurbishment cost from total cost of furnishing:
    - Pre-primary: 5%
    - Primary: 5%
    - Secondary: 5%
    - U Secondary: 5%
    - **Assumption**
How much would it cost to achieve universal access to education in the Asia-Pacific?

How much would it cost to provide free education from pre-primary to secondary?

How much would it cost to improve the student-teacher interactions in Philippines?

How much would it additionally cost to address COVID-19 measures in Philippines?
How much would it cost to achieve universal access to education from PP to US in the region?

829.5 billion USD will be required in 2030 at regional level, mostly for primary education and in East and North-East Asia.
Sub-Regional Level Estimation

**How much would it cost to provide free education from pre-primary to secondary?**

**Total costs in 2030, by country in South-East Asia**

<table>
<thead>
<tr>
<th>Country</th>
<th>2024</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brunei</td>
<td>108.4</td>
<td>123.8</td>
</tr>
<tr>
<td>Cambodia</td>
<td>122.5</td>
<td>151.9</td>
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<tr>
<td>Indonesia</td>
<td>1152.0</td>
<td>2394.3</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>2304.3</td>
<td>668.2</td>
</tr>
<tr>
<td>Malaysia</td>
<td>3172.0</td>
<td>2796.6</td>
</tr>
<tr>
<td>Myanmar</td>
<td>696.2</td>
<td>16316.5</td>
</tr>
<tr>
<td>Philippines</td>
<td>4593.1</td>
<td>2394.3</td>
</tr>
<tr>
<td>Singapore</td>
<td>15976.0</td>
<td>2651.7</td>
</tr>
<tr>
<td>Thailand</td>
<td>3062.7</td>
<td>15606.9</td>
</tr>
<tr>
<td>Timor-Leste</td>
<td>178.3</td>
<td>123.0</td>
</tr>
<tr>
<td>Vietnam</td>
<td>674.8</td>
<td>9979.8</td>
</tr>
</tbody>
</table>

**Required amount of government expenditure to achieve the targets (as % of GDP)**

<table>
<thead>
<tr>
<th>Country</th>
<th>2024</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brunei</td>
<td>6.1%</td>
<td>6.1%</td>
</tr>
<tr>
<td>Cambodia</td>
<td>5.7%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>5.3%</td>
<td>5.3%</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>5.1%</td>
<td>5.1%</td>
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<tr>
<td>Malaysia</td>
<td>4.7%</td>
<td>4.7%</td>
</tr>
<tr>
<td>Myanmar</td>
<td>4.4%</td>
<td>4.4%</td>
</tr>
<tr>
<td>Philippines</td>
<td>3.8%</td>
<td>3.8%</td>
</tr>
<tr>
<td>Singapore</td>
<td>3.7%</td>
<td>3.7%</td>
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<td>Thailand</td>
<td>3.7%</td>
<td>3.7%</td>
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<tr>
<td>Timor-Leste</td>
<td>4.7%</td>
<td>4.7%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>7.5%</td>
<td>7.5%</td>
</tr>
</tbody>
</table>

To provide free education from pre-primary education to upper-secondary, the governments need to scale up its educational expenditures to compensate decrease in revenues from household. At sub-regional level average, **7.5 % of GDP** needs to be spent for education.
How much would it cost to improve the student-teacher interactions in Philippines?

Student-Teacher Ratio (STR) Target

<table>
<thead>
<tr>
<th></th>
<th>Scenario 1</th>
<th>Scenario 2</th>
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<tbody>
<tr>
<td>Pre-Primary</td>
<td>25</td>
<td>20</td>
</tr>
<tr>
<td>Primary</td>
<td>30</td>
<td>25</td>
</tr>
<tr>
<td>L-Secondary</td>
<td>21</td>
<td>20</td>
</tr>
<tr>
<td>U-Secondary</td>
<td>25</td>
<td>20</td>
</tr>
</tbody>
</table>

Required number of teachers will be increased to improve student-teacher interaction (decrease STR). Costs will be also increased (+18.3% in 2030).

Total costs by expenditure items in Philippines

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How much would it additionally cost to address COVID-19 measures in Philippines?

Financial impacts of COVID-19 on education provision by educational levels (million USD)

<table>
<thead>
<tr>
<th></th>
<th>PP</th>
<th>Primary</th>
<th>L-S</th>
<th>U-S</th>
<th>Total (2020-2030)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Re-Enrolment</td>
<td>41.7</td>
<td>143.1</td>
<td>148.3</td>
<td>141.4</td>
<td>474.5</td>
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<td>Learning loss</td>
<td>563.6</td>
<td>2679.3</td>
<td>1593.1</td>
<td>1345.6</td>
<td>6181.6</td>
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<tr>
<td>Participation reduction</td>
<td>321.8</td>
<td>1288</td>
<td>1057.4</td>
<td>662.2</td>
<td>3329.4</td>
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<tr>
<td>Additional classroom costs</td>
<td>96.5</td>
<td>736.1</td>
<td>359.6</td>
<td>305.8</td>
<td>1498.0</td>
</tr>
<tr>
<td>Total</td>
<td>1023.6</td>
<td>4846.4</td>
<td>3158.4</td>
<td>2455.0</td>
<td>11483.5</td>
</tr>
</tbody>
</table>

Accumulated costs (2020-2030): 226863.8 million USD

Annual average: 20624.0 million USD

Minimum additional costs to provide education during and after COVID 19 pandemic will be 11483.5 million USD in Philippines.

This amount will be increased if providing remote-learning devices is considered.
Utilize Costing Model for Policy Development

Cost Analysis Report

Policy Setting

- How much would it cost to achieve universal access to education in the Asia-Pacific?
- How much would it cost to provide free education from pre-primary to secondary?
- How much would it cost to improve the student-teacher interactions in Philippines?
- How much would it additionally cost to address COVID-19 measures in Philippines?

Policy

- Setting scenario/targets

Utilization

Data Organization

Data collection

• Different sources
• Different reference period
• Different coverage

• Standardize
• Systematize
• Streamline
• Synergize
Thank you

Learn more: [www.unesco.org/education](http://www.unesco.org/education)

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