TOOL 3.3 TIPS, CHECKLIST AND EXAMPLES

ECE SIMULATION MODELS

TIPS: Communicating key aspects of the ECE subsector and envisioned policy priorities and strategies with costers/planners

The ECE Technical Working Group (ECE TWG) might not directly take part in the development of the simulation model. However, it is important that ECE stakeholders may communicate key information to those in charge of these costing simulations, to make sure they appropriately reflect the current situation and the ECE policies envisaged. Below are tips on which information is important to share with the costers/planners.

Tip: Communicate the Current Situation Main Goals

- **The objectives in terms of coverage** It is important to outline coverage in the last 10-20 years and current coverage aims. If ECE participation is not yet universal in your country, and your ESP plans to improve this coverage, you need to specify exactly what the objective is (e.g. 100% Net Enrolment rate), and by which year.
    - Note that, recognizing that the last children to participate in ECE are often the most vulnerable and the hardest to reach,[1] you may want to consider setting an intermediary target, e.g. from 70% to 90% over the first 5 years of the plan, then from 90% to 100% over the following 5 years.
- **The service providers:** There are often various service providers for ECE, and non-state providers often represent an important proportion of the services available to children. It is therefore important for the projections to understand who these actors are, and which share of the current enrolment they serve. For each of them, you will need to also specify:
    - **Their expected share of the objective enrolment/coverage:** for instance, will the private service providers maintain the same share of the ECE enrolment as they currently do? Or will the public preschools cover all the new enrolments projected? Or are community preschools expected to increase significantly to help the expansion of coverage? Which other sectors provide services, such as the health sector or social welfare sector? Do these other sector providers cover enrolments or only specific services?
    - **The support provided to these providers:** Will the non-state providers cover the whole cost of providing ECE services (potentially with parent's financial contribution/fees or with humanitarian or refugee funding mechanisms in humanitarian or refugee settings)? Or will the government provide capitation grant? Or pay for some teachers?

Tip: Communicate the Policies Envisaged

- **Changes in learning environment:** If your ECE policies plan for major changes in the learning environment of children, it is important to communicate it. In particular, if the size of the classes, or the number of children per teacher/monitor/educator is planned to change (to decrease for better supervision, or to increase to control costs), this will be an important factor in the total costs.

- **Changes in the work force/human resources:** As teacher remuneration is often the main component of any education level's expenditures, planned changes in the profile of the teacher work force need to be correctly reflected in the cost simulations. In particular:

    - **Remuneration:** The planned evolution of teachers' remuneration needs to be reflected: will teachers' salaries remain constant? Or increase with inflation, or with the country's growth (GDP/capita)? Will it significantly increase to make the profession more attractive? Or decrease to make it more affordable?

    - **Status:** If the status of teachers is planned to change, it is also important to reflect it in the simulations. For instance, if a large proportion of ECE teachers are contract teachers or voluntary/community teachers, and they will be incorporated into the civil service, this will have important financial implications.

    - **Training/education:** Related to the above, if teachers need a new degree/diploma to be recognized as ECE teachers, this is important to consider as it will impact the status of teachers, their remuneration, as well as the teacher training institutes.

- **Types of construction:** If a large expansion of coverage is planned, it is likely that important infrastructure development will be needed. Different types of construction and of procurement can be envisioned and reflected in the simulations:

    - **Types of classrooms:** Will all new classrooms be permanent, or will they be prefab, or local materials?

    - **Types of procurement:** Will the procurement of constructions be entirely done centrally, through big firms, or will it be done at local level, or involve communities?

Checklist for ECE TWG Stakeholders Communicating with Costers and Planners:

Use this checklist as a complementary tool to the tips which provide more information. Reflect on: Have you communicated the following with costers and planners?

- ◯ **1.** The objectives in terms of ECE coverage
- ◯ **2.** The ECE service providers – including expected share of the objective enrolment/ coverage and support to providers
- ◯ **3.** Changes in learning environment (e.g., change in class sizes, pupil to teacher ratio, or a specific age group targeted, such as a 1 year for a school readiness programme)
- ◯ **4.** Changes in the work force/human resources e.g. teacher salaries and specifying if they will remain constant, teachers' status, and teacher training)
- ◯ **5.** Types of Construction envisaged

1 Disadvantaged, marginalized and vulnerable young children and families are those that are socially and/or economically excluded in their communities due to vulnerability characteristics such as gender, geographic location (i.e. remoteness), disability status, orphanhood status, household wealth, household arrangements such as single headed households, being from a minority group (i.e. ethnic or linguistic minorities), and/or affected by conflict and crisis (i.e. migrants, immigrants, internally displaced persons, or refugees).

ECE Simulation Model Examples

Introduction to the Sao Tome and Principe model

Need-based projection model

The Sao Tome and Principe model is a typical example of the projection tools that can be developed to assess the financial and practical feasibility of the policies envisaged in an Education Sector Plan. It is typically developed by the MoE Planning Division, in coordination with the other divisions (ECE, basic education, secondary, higher education, HR, infrastructure, teacher training, etc.), and with support from external technical assistance. It offers a great flexibility in the way needs can be projected and costs estimated.

As a tool for the development of a sector-wide strategy, such need-based projection models normally cover all education subsectors, from ECE to higher education. The example provided focuses on the ECE section of the model. It is built upon a baseline year, which is the most recent year for which the necessary data, or best estimates, (in terms of funding, costs, enrolments, teachers) are available.

The first step of the projection is to decompose the education expenses into key elements. The level of details in this decomposition will depend on the information available and the policies envisaged: it should include the main aspects of the education sector that will be impacted by these policies directly (teacher recruitment, training and/or remuneration, construction of classrooms…) or indirectly (enrolments, maintenance costs…), or evolve externally (e.g. school age population).

Keeping in mind that financial simulations are uninformative when they are too rough, and generally wrong when they try to be too precise, they essentially lay somewhere between two extremes:

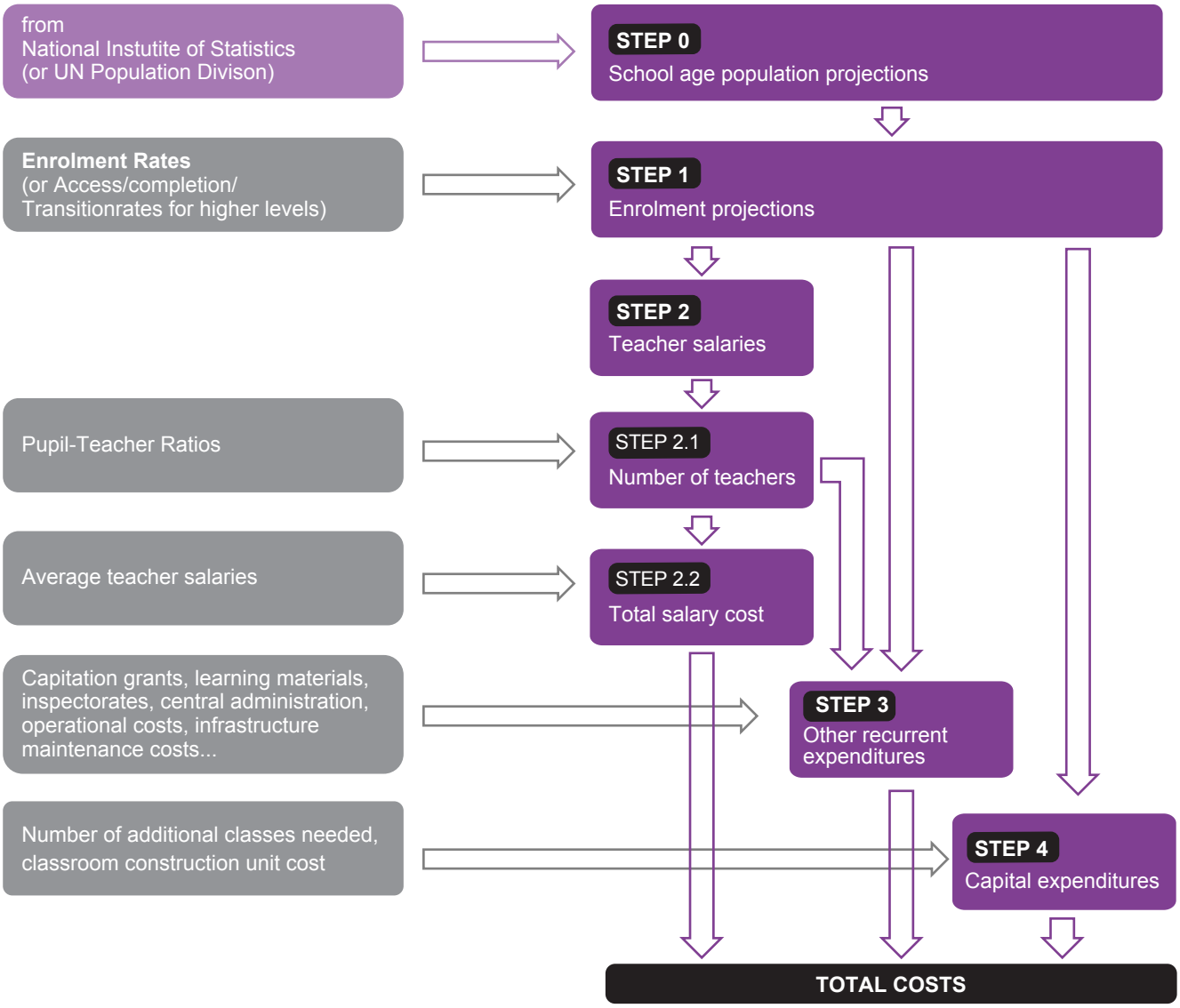
- The projection of the costs as the multiplication of the unit cost (expenditure per student) (based on the budget spent on ECE divided by the number of learners) by a target number of learners.
- The costing of every policy and activity in the Operational Plan.

The typical financial simulation will be based on:

- **The salary cost for teachers, itself calculated based on the expected number of pupils, the teacher-student ratio and the teacher salaries**
- **An estimation of the other recurrent costs. This is where different levels of details will be envisaged based on the policies and the information available.**
- **An estimation of the infrastructure costs.**

A special attention is given to the total cost of teacher salaries, as they usually represent 80-95% of the recurrent costs of any education level.

As indicated, the choice of level of detail will be driven by the need to simulate the impact of some key, large cost policies, and constrained by the data available: to project the cost of a policy, one will need to know the cost structure of the current situation. For instance, if the policy calls for equipping each kindergarten class with play materials, one will ideally need to know the current budget allocated to learning/play materials; if this information is not available, one will need to project the costs of these new materials together with the goods and services budget. Tool "2.3 List of Core ECE Cost and Financing Indicators and Variants" highlights the key data needed to develop projection models with varying level of details based on the data available and estimates that may be made.



Introduction to the Lesotho simulation tool

Intervention-based projection model

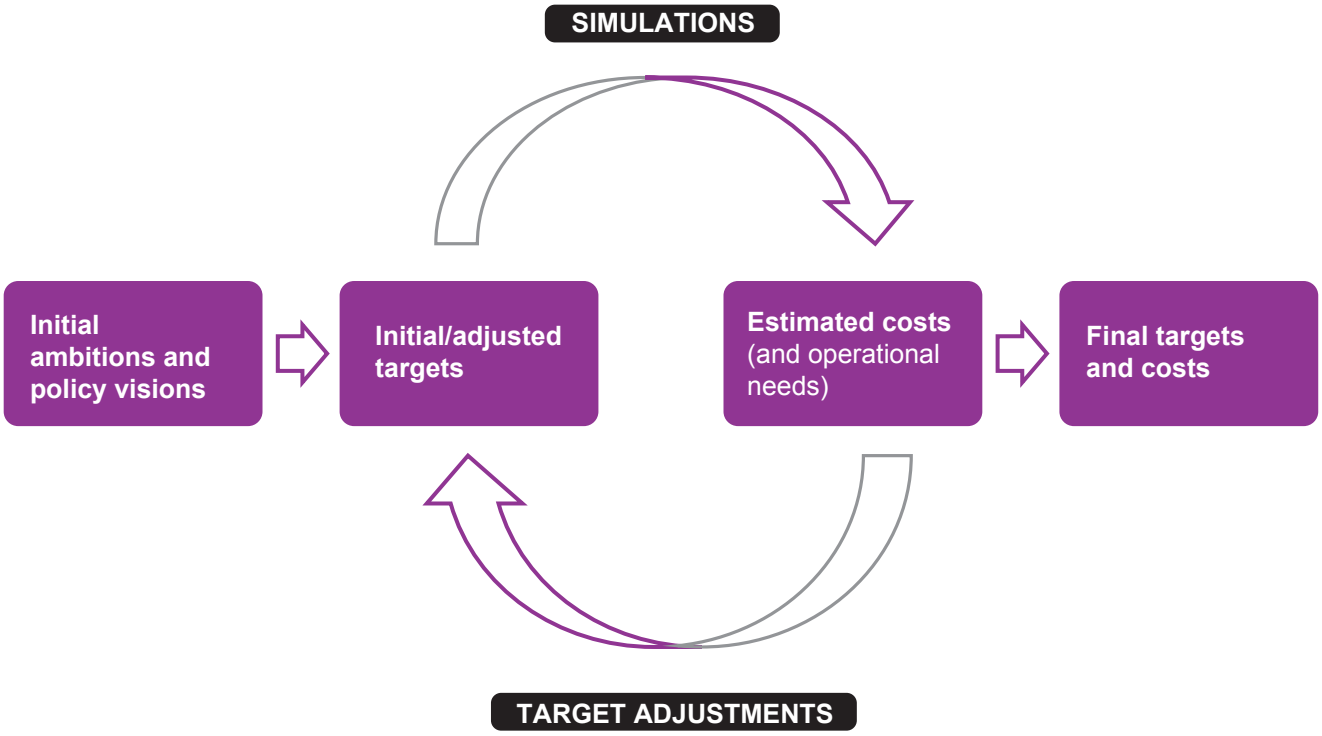
The Lesotho simulation tool is an example of an intervention-based projection model. Like many such models, it was not developed as part of the ESP development, but to assess the feasibility and expected impact of a new envisaged ECE policy.

In light of difficulties faced by students in primary schools, and indications that school readiness (or lack thereof) was one major issue, the government vowed to considerably expand the ECE service provision in the country. The new policy thus plans for an extension of public ECE service provision by ensuring all primary schools have a "reception class", i.e. a preschool class attached to it. The simulation model was then developed to anticipate the financial and operational requirements for the implementation of this new policy. The main challenges associated with it are the construction of the additional classrooms and the recruitment of (trained) ECE teachers.

As noted, unlike most simulations models, which are need-driven (like the Sao Tome example: the objective is expressed in terms of enrolment rates, and teachers, classrooms and other needs are calculated accordingly), this model is supply-driven: the projections are led by the expansion of the service provision; increases in enrolment are calculated as a result of this expansion.

Recommendations and Reflection Tips: Adjustments to ESP ECE Components Post-Simulation

The use of the simulation model (and costed Action Plans) to set and adjust targets is an iterative process.



The inputs of this process are the initial ambitions and visions of the plan, in terms of:

- overall objectives (e.g. ECE Net Enrolment Rate),
- learning conditions (e.g. in terms student-teacher ratio, student-classroom ratio, or availability of learning materials),
- management (e.g. teacher salaries), etc.

The outputs of the process are the final targets and resulting costs.

Recommendations and tips when using the simulation model and setting and adjusting the targets

1. What you should know:

- **Initial targets are usually guided by the visions and ambitions driving the plan.** Using the example of the indicators mentioned above, the vision of the MoE might be to reach universal ECE by 2025, while lowering student-teacher and student classroom ratios to 1:30, and increasing teacher salaries by 10% to attract more teachers.
- **When inputting these initial targets into the model, it often reveals some feasibility issues**
- **Operational implementation capacity: The other aspect of the feasibility is whether the MoE (or the education/ECE system as a whole) has the capacity to implement the scale of activities projected**

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2. What you should ask:

- **Financial affordability and coherence:** The main two cost-related questions to ask oneself based on the simulations are:
  - **Are the projected resources and costs of the same order of magnitude?** While it is normal for some financing gaps to remain, especially towards the end of the plan's duration, it should be comparable to reasonably expected increases in domestic and external (aid) resources.

    When the costs appear too high, it is generally useful to examine the indicators associated with the largest cost items, typically:

    - Teacher remuneration: enrolment projections, STR, teacher salaries
    - Capitation grants (when they exist): enrolment projections, amount of the grant
    - Constructions: enrolment projections, SCR

  - **Is the distribution of expenditures consistent with the plan's priorities?** This question is pertinent at two levels:
    - **At the sector level:** Is the distribution of expenditures between education levels consistent with the plan's priorities? Is ECE getting a fair share of the total projected expenditures, considering the ambitions for the sub-sector? Or is it on the contrary taking up too large a share?
    - **At the sub-sector level:** Are the costs of the various interventions commensurate to their respective expected importance or impact? For instance, if a communication strategy is as expensive as the provision of learning materials, or if a type service delivery is much more expansive than another for fewer learners, they might need to be rethought.

- **Does the MoE (or the education/ECE system as a whole) have the capacity to implement the scale of activities projected?**

  EXAMPLE For instance:

  - Teacher training: Do the teacher training institutes have the capacity to train enough teachers every year to sustain the planned growth of the teaching force?

- Classroom/school construction: Do the country's companies have the capacity to build (and equip) the planned number of additional classrooms within the given timeframe? Does the ministry have the institutional capacity to procure and supervise the planned construction?

- **What are the main "demand-side" constraints?**

  EXAMPLE For example:

  - Is there enough demand among the population to reach the targets?
  - What needs to be done extra to advocate for more ECE enrolment, at what cost?

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3. What you should do:

In both cases, adjustments of the targets might be necessary. These can be of several types:

- **Lowering the target:** In our example, increasing the teachers' salaries by 5% only for instance.
- **Offsetting the target year:** For instance, aiming for universal coverage by 2030 instead of 2025.
- **Introducing flexibility and medium term targets:** To reduce the need for yearly training of teachers or classroom construction, the student-teacher and student-classroom ratios can for instance be allowed to increase in the first years, and decrease towards the end of the plan's duration, when training institutes and construction capacity are strengthened.

In practice, several scenarios are often developed to explore the necessary adjustments and trade-offs.

- The first scenario usually shows the initial vision and ambition of the plan, while the other ones show the successive target adjustments necessary to ensure the affordability and feasibility of the plan.
- Alternatively, the scenarios can present various combinations of target adjustments which maintain feasibility by compromising on different aspects. For instance, one scenario might only aim for 80% ECE NER with a low student-teacher ratio and distribution of learning materials to all schools, while another one would maintain the target of 100% NER but with a higher student-teacher ratio and fewer learning material (typical quantity/quality trade-off).
- Another area of adjustment could be increased participation in private institutions.

In the case of a costed operational plan, the logic is the same, but the constraints are stronger.

- The simulation model gives general directions for the long term and allows for more flexibility linked to the lack of precision in terms of funding and implementation capacity required in the long term. However, these funds and implementation capacity need to be well-understood for the typically 3 years covered by the operational plan, especially when it is based on a Medium-Term Expenditure Framework.[2]
- It is therefore important that the targets in the operational plan guarantee the affordability and feasibility of the planned activities.

Important Notes: Remember that while the simulation model is a technical tool, target setting and their final adjustments are political decisions. Therefore, the simulation models and the scenarios should be used as communication tools with senior management to convey the necessary trade-offs and facilitate their decision-making.

2 See Tool "4.2 Checklist: ECE Implementation Feasibility and Capacity Appraisal for the ESP".