Mitigating the challenge of Ethiopia's complex poverty cycle

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Introduction

Ethiopia faces a tough poverty crisis intertwined with its educational crisis that forms a vicious cycle. It is made worse with the triple challenges the country faces, namely, civil war, climate change disasters, and a UN funding gap. As of January 2026, approximately 7.2 million children are out of school, with local conflicts damaging over 9,600 schools, climate shocks like droughts and floods displacing families, and a funding shortfall where the UN education programme is facing a severe financial crisis. (Ethiopia's Education Crisis Brief, January 2026).

Education is seen as the mantra to resolve the poverty in Ethiopia, as UN estimates that basic education could lift 171 million people out of poverty (UNICEF State of the World's Children 2025).

This paper assesses the options of a hypothetical $1M budget to assess the following investment options to resolve the crisis:

- **Option A:** Spend it all on **Temporary Classrooms** ($10,000 each)?
- **Option B:** Spend it on **Home-Learning Kits** ($5 each) so children can learn even if they are moving?
- **Option C:** Spend it on **Inclusion Tools** for children with disabilities ($150 per child) so they aren't left behind?

Mathematical Assumptions and modelling

The key assumptions made in the modelling of the problem include:

- Each TLS (Temporary Learning Space) serves around 40 children at $10,000 cost.
    - A multiplier of 5x is assumed to be a mid-range for basic to higher boost from this investment.
- Home learning kits cost $5 each for basic education.
    - A multiplier of around 3x, assuming partial coverage.
- Inclusion tools cost $150 per child, enabling access for 2.1 million disabled children.
    - A multiplier of 10x as these inclusion kits bridge the 90% disability gap as education greatly amplifies societal gains for this segment of students.

Let x = Number of TLS built, y = Number of Home Learning kits, z = Number of inclusion kits

Mathematical Objective: Maximise total effectiveness of the investment denoted by the poverty multipliers, M = 5 X 40x + 3y + 10z = 200x + 3y + 10z

Budget constraint: Total investment is limited to $1M => C = 10000x + 5y + 150z <= $1000000

Disability focus, for 10% of children => z > = 0.1 (40x + y)

Each of the parameters, for the 3 options is assumed to be positive, so, x, y, z >=0

Internally displaced Person (IDP) : 0.5 X (40x + y + z) <= 2.3 million (# people internally displaced in Ethiopia as per Norwegian Refugee Council, 2024)

Upper bounds, as restricted by budget,

x < = 100; y <= 200000; z <= 14000 (focused on 2.1M disabled)

Results from Mathematical Modelling and Assumptions

Using the above mathematical modelling and assumptions, running a python program to find the optimal mix of x, y, z for the constraints cited above, the results noted are:

x = 50 ; y = 50,000 ; z = 1,666 **=>** Total number of children reached: **53,666**

Total poverty Multiplier, M = 200 X 50 + 50000 X 3 + 10 X 1666 = **176,660**

Total budge consumed in this mix of investment is:

Cost C = 10000 X 50 + 5 X 50000 + 150 X 1666 = **$999,900**

The above investment option using a mix of the options chosen, is better than the full investment of $1M going to one single option:

A: TLS: Maximum x =100 for 4000 children => M = 20000

B: Home kits: y = 200000 => M = 600000

C: Inclusion kits: z = 6666 => M = 66,660

Conclusion: Broadening the reach beyond numbers

Hence the above mathematical modelling shows that using a mix of investment on the 3 options, reaches out to around **53,666 students**.

However, beyond mathematical modelling, I would also leverage additional channels, which can be achieved with fairly limited budget, but providing for a proactive engagement to raise awareness towards Ethiopia's education crisis.

I feel this is extremely important, as it is like the grease smoothening the joints of a rusty car, which is essential to run the car smoothly, even if oil (funding) on its own, may prove insufficient to do so.

Some of these ideas include:

1. **Use of social media** : I would propagate hashtag campaigns, e.g. #EthiopiaEducationCrisis or #NoChildLeftBehindEthiopia, using free tools like X, Facebook, Instagram or Twitter to bring this crisis to the limelight and apt attention of general public as well as administration. Such an approach may work, as it has been proven with campaigns like "No Makeup selfie" for cancer awareness, which went viral organically, raising awareness without significant costs.
2. **Community Story telling sessions**: in villages, camps, local markets, religious places etc. so that people at grass root level can become aware of the initiatives to solve the crisis.
3. **Media pitching and gamified petitions**: Volunteers or NGO staffs pitching to outlets, local radios, international blog sites, sites already covering such crisis, or gamified forms for schools in UK, USA etc. to gain donors and awareness.

A holistic and well-rounded approach can help solve the crisis that Ethiopia faces today and help provide education to millions of children. Education is like the water, sun and soil, all combined together that can help nurture and grow these children out of poverty.