

Improving Performance of Secondary Schools: Initial Evidence on School Size and Siting

Summary

School siting and size have a major impact on student performance and school cost. Modelling shows that providing education in small schools can be up to 70% more expensive than in larger schools.

Current RMSA school-siting policies result in many small schools. This creates challenges for providing sufficient specialist teachers and using resources efficiently. This can impact on student learning performance.

This Information Note provides initial evidence in India and explores potential solutions drawn from international experience. A more detailed Brief including policy options will be produced based on research in India.

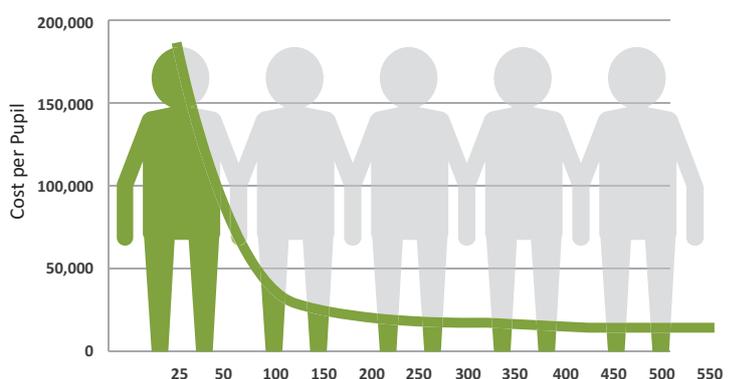
School size and siting norms in RMSA

The current school-siting norm for RMSA which suggests schools should be sited within 5km of every habitation may not result in optimum cost-effective school provision and teacher utilisation, undermining access to quality secondary education:

- The problem of small and inefficient schools is recognised in the Government of India 12th plan¹ and has been flagged in RMSA JRM as potentially impacting on student learning.
- International research and practice show an optimum secondary school size of between 500 to 1500². Yet government secondary schools in India are seldom large and schools below 50 students are common.
- Larger schools enable more effective specialist teacher deployment. Small schools often have difficulties in attracting and retaining specialist teachers, especially in remote areas, and with minority language groups.

As indicated by Figure 1, the cost per pupil falls rapidly with increased school size, and stabilises at about INR 18,000 above enrolments of 350:

Figure 1: Cost per pupil by school size



Whilst these initial estimates, based on current norms, need verification and vary according to location, State and school type, they clearly show a correlation between school size and cost per pupil.

The higher costs per pupil in small schools are shown in more detail in the following simulation which makes broad assumptions around school size and teacher ratio's (See Figure 2). The simulation calculates cost based on four scenarios for schools of different enrolments and pupil teacher ratios. The scenarios generate average costs per student that vary from INR 14,350 to INR 24,700. The number of students that can be educated for INR 50 million ranges from 2,000 to 3,500. The scenario with the highest costs (all schools below 200 and with a PTR of 35:1) is therefore over 70% more expensive per pupil than the scenario with the lowest costs.

Figure 2: Four scenarios of enrolments and school size

Scenario	1	2	3	4
	50% schools below 200 PTR as norm	25% schools below 200 PTR as norm	No school below 200 PTR 30:1	No school below 200 PTR 35:1
Average cost per student	INR 24,738	INR 18,978	INR 16,742	INR 14,350
Number of students for INR 50,000,000	2,021	2,634	2,986	3,484
Additional students for the same money as Scenario 1	--	30.4%	47.8%	72.4%

PTR: Pupil Teacher Ratio

Solutions that can improve efficiency in school siting and size

Many countries have faced the challenge of school siting and size and have developed different approaches to address it. The following solutions, drawn from international experience, have the potential to improve secondary education:

1. Improve data and school planning:

- School location mapping should **consider the time it takes students to travel to schools**. Measuring distance to determine school siting, without considering other factors, is ineffective.
- **Digital maps and low-cost Geographical Positioning Systems devices** make producing highly accurate school maps affordable. Geographic Information

Systems can greatly help in showing data (where schools are, teacher deployments etc) in map form.

2. Make schools more accessible:

- Organising **free or subsidised school transport** children can be more cost effective than having multiple smaller schools. Funded transport can enable larger, better-equipped and better-staffed schools.

Dormitory accommodation to support for children from remote areas can be done by both building specialist boarding schools and/or adding boarding facilities to existing secondary schools as is the case in China for example.

- In some countries, such as Australia, education is provided to remote communities using distance learning through two-way radio and the internet. In countries with remote communities such as Kenya and Nigeria, peripatetic teachers and mobile classrooms have been used.

3. Use resources more efficiently:

- Combining and clustering schools makes for more efficient resource use. In many countries students aged 11 to 18 are taught in one school to maximise use of specialist equipment and teachers.
- Many systems work on a system of 'catchment area'. All primary schools within this area send students to one secondary school. This can encourage better intra-school relationships and enable sharing of resources and facilities between primary and secondary schools.
- In reality it may always be necessary to have some small schools. Where this is necessary multi-grade teaching can be deployed though this required highly trained teachers particularly at secondary levels where specialist subjects are taught.

Further research needs

A research programme into school siting and size is being planned by MHRD to be conducted by RMSA-TCA. This will consider the above evidence and provide specific policy guidance for the Indian context. This will be presented in a detailed policy brief with options and recommendations for consideration by planners at the centre and the State levels. Research will be led by Professor K Lewin of the University of Sussex as research advisor.

¹"About one-half of rural schools are government funded. Secondary and higher secondary schools must be viable and large enough to benefit from investments on quality. The fact is that it is much harder to have good quality education in very small schools with few teachers" (21:104).

² Secondary school size: a systematic review, EPPI-Centre, 2004