3 Delivering quality education in rural communities

Rural schools in OECD countries are facing smaller schools and class sizes as a result of declining student numbers. This chapter offers policy options for the provision of quality education services in rural communities. It analyses differences in resources in schools in rural areas compared to cities and the financial and quality effect of smaller school sizes in rural areas. It then focuses on educational outcomes in rural schools, disentangling the effect of socio-economic and geographical factors on student and teacher performance and motivation. The chapter suggests two main policy areas for dealing with potential issues in rural schooling provision: first, restructuring school networks with an emphasis on rural school clusters; and second, fomenting new forms of provision including digital approaches in order to bring flexibility to school provision in rural and remote areas.

Introduction

Schools and education more broadly lie at the heart of a people-centred approach to rural policy, as they play an important role for the cohesion of rural communities and are a key pillar of the local provision of public services (OECD, 2020[1]). The quality and accessibility of rural education have a double role to play in addressing gaps in skills: starting from children's early years, high-quality education and care can help raise outcomes in education and the labour market. At the same time, access to public services, such as childcare and schools, is a locational factor shaping the attractiveness of rural areas, including for highly skilled workers.

Access to high-quality education in rural areas can be one of the contributing factors to local economic development and help rural communities adapt to a fast-changing environment, while a lack of access risks widening the rural-urban divide with regard to the level and relevance of skills through multiple channels. The school closures and restrictions of movement that were put in place in response to the COVID-19 health crisis highlighted again how fundamental education services are not only for students' development but also to allow parents to pursue their own employment. They also brought to the fore different levels of digitalisation within and across countries, facilitating or hindering distance learning.

In view of demographic change and dwindling population figures in rural areas across the OECD, the financial viability of providing high-quality education close to people's place of residence is increasingly put into question as economies of scale falter. This challenge is not unique to education: other public services like health care provision also have to explore how to reconcile rural populations' needs with the cost of maintaining hospitals for ever fewer patients and amidst shortages of qualified staff. Countries and regions take different approaches to manage the tensions between constitutional obligations related to service provision and day-to-day challenges in doing so in a feasible way. The question of how to make schools with small and/or decreasing student enrolment ready for the future lies at the heart of the policy debate about education provision in rural and remote areas.

While there are many important policy issues to consider for rural early childhood education, vocational education and training and rural students' later potential higher education pathways, the present chapter focuses on mainstream primary and secondary education. Those levels are compulsory across OECD countries and thus the state has to ensure access to schools for students in a way that is accessible from their homes. As students in primary and most of secondary education are limited in their geographic mobility, especially in remote areas, the school they attend will largely be determined by the location of the home of their parents or guardians. Given the lack of alternatives, rural and remote schools, therefore, have a unique responsibility for the educational opportunities of children and youth in those areas.

How is education provided?

Rural education provision is a key factor both for rural economic development and for the well-being and cohesiveness of rural communities. To better understand countries' policies and practices, this section will: first provide a high-level explanation of different education levels; then explain how those services can be governed and funded; and close with an overview of regulations and quality considerations of particular relevance to rural communities.

Figure 3.1 illustrates some examples of facilitating and impeding factors that shape the provision of education in rural and remote contexts as well as rural outcomes and opportunities.

This chapter seeks to provide an overview of the policy context and policy options related to rural education provision across OECD countries. It draws extensively on analyses and data produced by the OECD Directorate for Education and Skills, in particular on the publications of the OECD Review of Policies to Improve the Effectiveness of Resource Use in Schools and the latest editions of the OECD Programme for International Student Assessment (PISA) and the Teaching and Learning International Survey (TALIS).

Box 3.1. What is "rural" in OECD education data?

International organisations, national administrations and researchers apply a variety of definitions to differentiate between "rural" and "urban" areas, often using criteria such as a community's population size, density and/or distance from other settlements. Within the data produced by the OECD, definitions of different levels of granularity and precision are applied depending on what is relevant and feasible based on the underlying data source.

The OECD Programme for International Student Assessment (PISA) on 15-year-old students' competencies, the Teaching and Learning International Survey (TALIS) on school teachers and principals and its TALIS Starting Strong adaptation to early childhood education and care all define the location of a school or early childhood setting, based on the principals' (centre leaders) characterisation of the community in which their institution is located. The same definition is applied across all participating countries and includes 5 categories that are largely identical across those studies: villages, hamlets or rural areas (fewer than 3 000 people), small towns (3 001 to 15 000 people), towns (15 001 to 100 000 people), cities (100 001 to about 1 000 000 people) and large cities (with over 1 000 000 people). In line with other OECD education reports and unless noted otherwise, this paper uses the term "rural schools" in the PISA and TALIS data to refer to those in communities with fewer than 3 000 people and "urban schools" to refer to those located in any city with more than 100 000 people.

Simplified, standardised definitions, such as those applied by PISA, can facilitate the international comparison of survey results and has enabled the consideration of a spatial perspective at the subnational level when evaluating student outcomes, school policies and practices across countries. Measuring the "rural" or "urban" location at the level of the educational institution, namely through principals' responses to surveys, allows are more granular classification than a categorisation of the entire surrounding region based on population density and other criteria in administrative data sources. At the same time, by reducing the concept of rurality to the above-mentioned options and drawing on self-reports of non-experts, such survey data can also contain errors and does not capture the multi-dimensionality of "rural". In addition, the combination of criteria about size ("fewer than 3 000 people") and type of area ("villages, hamlet or rural area") creates certain ambiguities as there may be very small but administratively autonomous settlements in a highly urbanised environment.

Contrary to the definitions applied in OECD education survey data, this new methodology definition implicitly considers topographic features via the proxy of travel times, which is also relevant for the accessibility of public services like education. However, there is currently no internationally comparative data allowing to link geographic location, accessibility, school characteristics and student outcomes across countries by using this new typology.

While this chapter focuses on the policy issues linked to schools in low-density and remote areas in line with the new typology, it will also draw on the above-mentioned data on rural schools with a lower level of precision for indicative insights.

Source: OECD (2019[2]), *PISA 2018 Results (Volume III): What School Life Means for Students' Lives*, https://dx.doi.org/10.1787/acd78851-en; OECD (2018[3]), *Responsive School Systems: Connecting Facilities, Sectors and Programmes for Student Success*, https://dx.doi.org/10.1787/9789264306707-en; OECD (2019[4]), *TALIS 2018 Results (Volume I): Teachers and School Leaders as Lifelong Learners*, https://dx.doi.org/10.1787/1d0bc92a-en; OECD (2019[5]), *Providing Quality Early Childhood Education and Care: Results from the Starting Strong Survey 2018*, https://dx.doi.org/10.1787/301005d1-en; OECD (2020[1]), *Rural Well-being: Geography of Opportunities*, https://doi.org/10.1787/d25cef80-en.

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Figure 3.1. Issues shaping rural skills and the provision of rural education

Education system organisation and governance

Education provision tends to move further away from children's and students' homes as they grow older and make their journey through the different levels of the education system. Oftentimes the change of the physical location is associated with a change in the level or type of education setting attended. Table 3.1. illustrates the education levels and settings typically in place. In practice, the structure of education levels differs significantly across countries. While England (United Kingdom, UK) largely follows the international structure, with primary school starting at age 5, lower secondary school at age 11 and upper secondary at age 14, in Latvia, general basic education starts at age 7 and spans both International Standard Classification of Education (ISCED) levels 1 and 2, followed by upper secondary education starting at age 16 (OECD, 2018[6]).

In most OECD countries, compulsory education starts with the beginning of primary school and ends over the course of upper secondary education (OECD, 2019, p. 148[7]). As mentioned in Chapter 2, 80% of all OECD countries recognise education as a right within their constitutions and 58% provide a constitutional guarantee of universal access to education. Entitlements to (free) education may also be regulated through other laws and several countries have chosen to establish individual legal entitlements to education (and care) provision already well before children start compulsory school, e.g. as early as from age 1 (OECD, 2017[8]).

Catchment areas define which schools by default serve which students based on their place of residence. However, depending on the level of school choice enshrined in a school system, parents can express preferences deviating from such catchment areas or there might even be no catchment areas to start with (OECD, 2018, p. 67[3]). The main rationale for allowing more parental choice is to encourage schools to improve their offer to attract students and better match students' preferences with the institutions in which they enrol (OECD, 2018, p. 68[3]; Burgess, Greaves and Vignoles, 2019[9]).

Table 3.1. Distinction of education levels across countries

Overview of the 2011 International Standard Classification of Education (ISCED) from early childhood to upper secondary education

ISCED level	International name	Examples	Typical age range	Average OECD enrolment rate (2017)
01	Early childhood educational development	Crèche, day care centre, nursery, early childhood development, child-minding services	0-2 years	26% (36% if other registered early childhood education and care included)*
02	Pre-primary education	Pre-primary education, early childhood education, kindergarten, pre-school education	3-5 years	87% (including students already in primary)
1	Primary education	Primary school/education, elementary school, special primary education, basic school, comprehensive school, special primary education	6-11 years	98%
2	Lower secondary education	(Lower) secondary school, (technical and) vocational education, special secondary education	12-14 years	
3	Upper secondary education	General secondary education/school, upper secondary schools, vocational (upper) secondary education, higher technical and vocational college	15-17 years	84% (ages 15 to 19)

Note: The precise age ranges covered by each ISCED level and the delineation of levels differs across countries. Enrolment rates correspond to the indicated typical age ranges unless indicated otherwise.
* Not all registered early childhood education and care provided in OECD countries meets the educational criteria for classification as early childhood educational development within ISCED 2011.
Source: OECD (2019[7]), *Education at a Glance 2019: OECD Indicators*, https://dx.doi.org/10.1787/f8d7880d-en; OECD/Eurostat/UNESCO Institute for Statistics (2015[10]), *ISCED 2011 Operational Manual: Guidelines for Classifying National Education Programmes and Related Qualifications*, https://dx.doi.org/10.1787/9789264228368-en.

While proximity is a key factor for parents when deciding on their children's school, other criteria, such as the school's specialisation, academic performance and (perceived) quality, also come into play. Some parents may be, however, more willing or able to exercise their right to choose or express a preference for a school. Schools' admission criteria affect who is ultimately able to enrol in their institution of choice. For those reasons, there are concerns that market-based approaches emphasising school choice exacerbate inequality due to differentiated access to information and potential biases in admission decisions. At the same time, tying school enrolment strictly to residential catchment areas can amplify sorting according to different population groups in contexts where residential segregation is prevalent. Findings from the OECD PISA study imply that an increase in the isolation of high achievers from other students is associated with lower test scores amongst socio-economically disadvantaged students at age 15, while not showing any significant effect on their advantaged peers (OECD, 2019[11]).

Most OECD countries apply a combination of parental choice and residential catchment areas for the assignment of places in specific primary and secondary schools. According to 2009 data, primary students are initially assigned to a proximate neighbourhood school in 26 of 32 OECD countries with available data, compared to 25 OECD countries at lower secondary and only 14 at the upper secondary level (OECD, 2011, pp. 440, Table D5.12 [web][12]). The same data source shows that in around half of OECD countries, families are given a general right to enrol in any traditional public school they wish. In around a quarter of countries, the choice of other public schools is restricted to the district or municipality in primary and lower secondary education. This share drops to around one in ten countries for upper secondary. Choice restrictions by region apply in ten countries in primary, eight in lower secondary and five in upper secondary education. Data from 2009 also indicates that in primary education, 12 out of 32 OECD countries with available data allow public schools to apply selective admission criteria, which rises to 18 out of 30 countries in lower secondary and 18 out of 29 in upper secondary education (OECD, 2011, pp. 440, Table D5.13 [web][12]).

Even in rather centralised education systems, local authorities or schools themselves can play a role in managing and financing the physical infrastructure or employing support staff (OECD, 2019[13]; 2018[3]). Depending on the funding arrangements across levels of government and potential redistribution mechanisms, municipalities may have far-reaching responsibilities for education funding and can be faced with sharp trade-offs across policy areas (e.g. road infrastructure or cultural and sports offers competing with education provision), especially when a decreasing number of inhabitants and economic decline reduce available funding.

Education resources and quality

Even in cases where broader concerns for the cohesion and attractiveness of communities may trump narrow efficiency arguments concerning rural education provision, a better understanding of the costs and quality of those services is crucial. The education offer in rural and remote areas is very much driven by regulations regarding the size of classes and institutions as well as regarding accessibility. Such regulations are not necessarily specific to those areas; the lower boundaries especially tend to be more salient in more sparsely populated and less connected circumstances. For instance, in areas with fewer school-age children, there will be a trade-off between providing education near students' homes and exploiting economies of scale by establishing larger facilities to which students need to travel for a longer time.

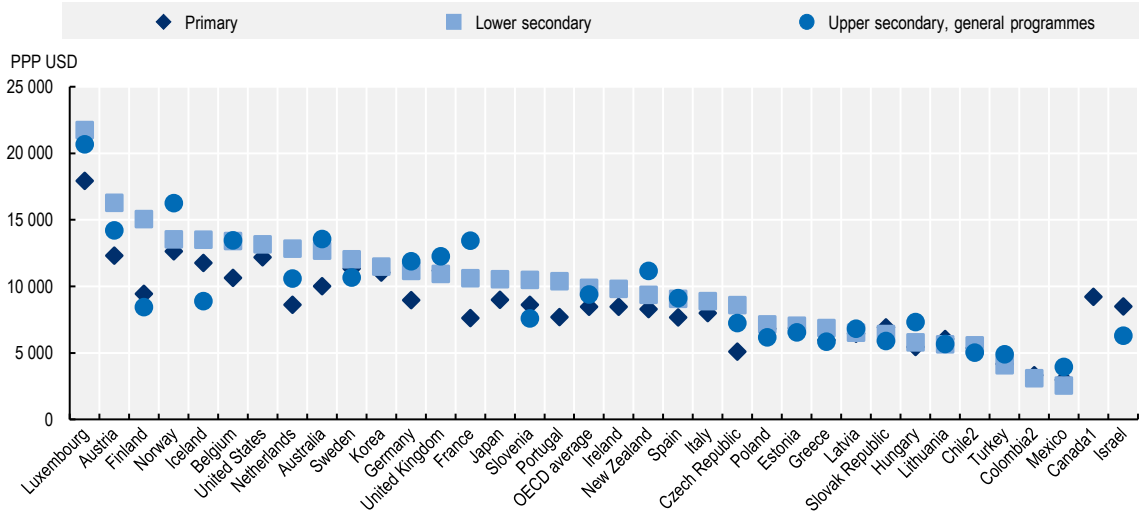
Inputs to providing education

In many European countries, the resources invested in education have come under strain in the aftermath of the global financial crisis (Ivankovic-Tamamovic, 2015, p. 42[14]). Austerity measures in the areas of education include, for instance, school closures and mergers, cuts in teaching staff and an increase of student-to-teacher ratios. Before reviewing the specific resource implications of providing education in rural and remote areas, it is important to consider that educational expenditure and teacher salaries tend to vary depending on the levels of education provided and across countries. In general, per student expenditure depends on several different factors, such as teachers' salaries (see further below), pension systems, instructional and teaching hours, the cost of teaching materials and facilities, the type of programme provided (e.g. general or vocational) and the number of students enrolled in the education system, including the number of students per teacher. Ancillary services like health services, transportation or school meals also add to the bill (OECD, 2019, p. 265[7]). At the OECD average, primary education expenditure per student tends to be lower than secondary education expenditure (Figure 3.2.). Within secondary education, lower secondary education involves a higher per student expenditure than general upper secondary programmes.

Initial analysis on geographical differences in the cost of school provision for England (UK) shows that facility costs per student in rural areas and villages tend to be more expensive than in suburbs and towns (Figure 3.3). There is also clear evidence that higher costs per student are driven by a higher proportion of small schools, defined as schools with an average year group size lower than 21.4 students by national rules.[1] Higher unit costs, which are associated with a lack of scale economies, are a common feature of a range of public services provided in rural areas (Ranasinghe, 2014[15]). A forthcoming analytical report on the present and future costs of service provision will analyse these differences in more depth.

Figure 3.2. Total expenditure on educational institutions per full-time equivalent student

2016 values in equivalent USD converted using purchasing power parity (PPP) for gross domestic product (GDP), direct expenditure within educational institutions, by level of education, based on full-time equivalents

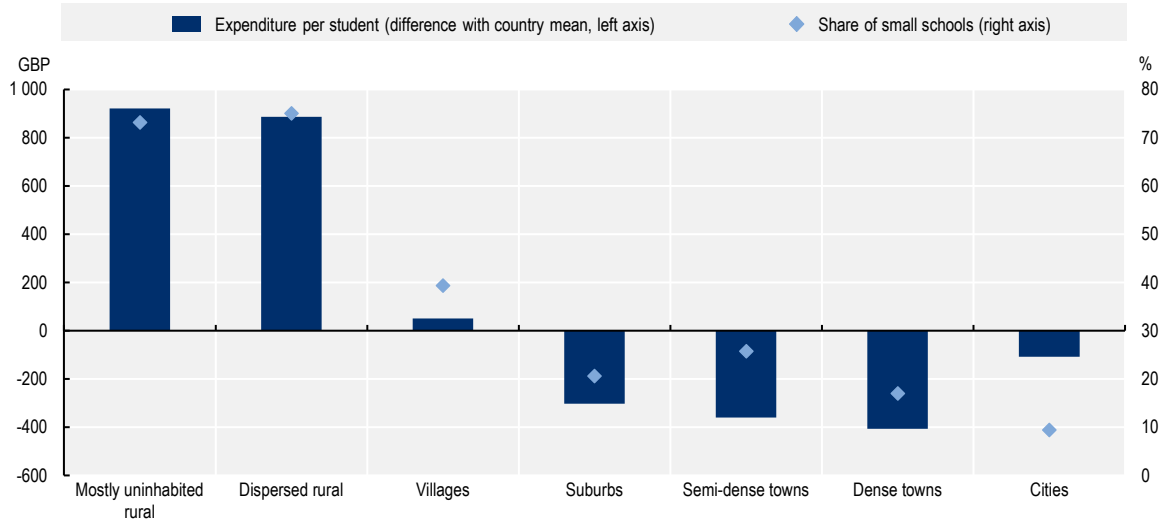


Note: See Education at a Glance 2019 Annex 3 for notes (https://doi.org/10.1787/f8d7880d-en).
1. Primary education includes pre-primary programmes. Post-secondary non-tertiary figures are treated as negligible; 2. Year of reference 2017; 3. Data on expenditure on public vs. private educational institutions are displayed in OECD Education at a Glance 2019, Table C1.5 available on line.
Source: OECD (2019[7]), *Education at a Glance 2019: OECD Indicators*, https://dx.doi.org/10.1787/f8d7880d-en.

StatLink https://doi.org/10.1787/cb48c119-en

Figure 3.3. Annual expenditure in primary schools and share of small schools by degree of urbanisation (average), England (UK)

2018-19 values, small schools have an average year group size lower than 21.4 students



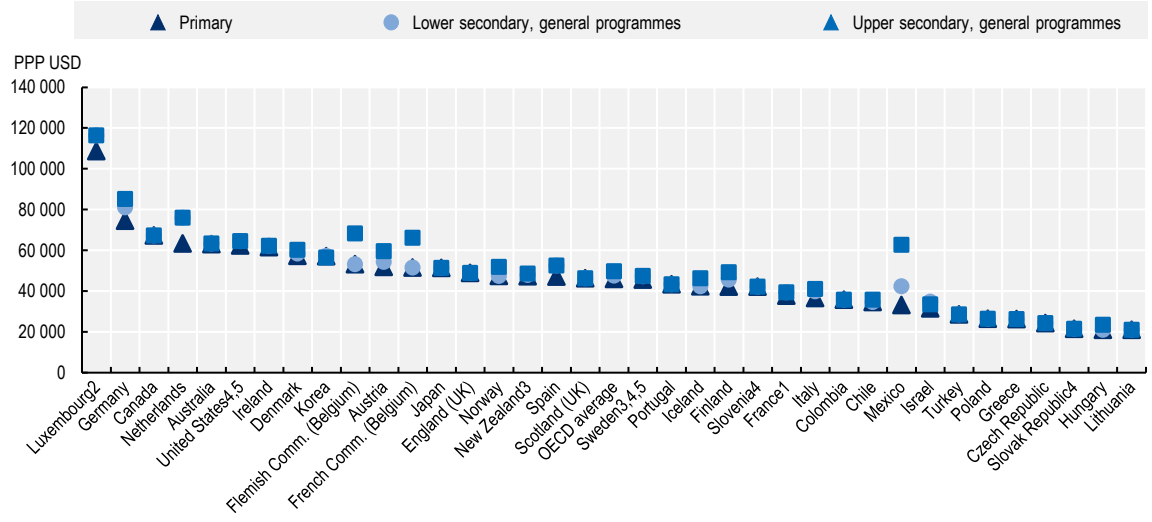
Source: Gov.uk (2020[16]), *UK Schools Financial Benchmarking*, https://schools-financial-benchmarking.service.gov.uk/Help/DataSources (accessed on 15 May 2020).

StatLink https://doi.org/10.1787/888934226538

In 2016, current expenditure accounted on average for 92% of total expenditure on educational institutions from primary to tertiary level in OECD countries (OECD, 2019, p. 334[7]). Across primary, secondary and post-secondary non-tertiary education, the compensation of staff makes up for 80% of current expenditure in public and 72% in private institutions across OECD countries (OECD, 2019, pp. 343, Table C6.3[7]). In line with the variation in per student expenditure, there are marked differences in teacher salaries across OECD countries, with teachers in Luxembourg earning more than twice the OECD average and those in Lithuania less than half when using purchasing power parity (PPP) for comparison (Figure 3.4) (OECD, 2019, pp. 408, Table D3.1c [web][7]). Compared to those cross-country differences, the differences between statutory salaries across primary, lower secondary and upper secondary teachers are relatively small for teachers with 15 years of experience and the most prevalent qualification within the majority of countries. Yet, there is a cross-country trend that primary teachers earn less than lower secondary teachers who in turn earn less than those in upper secondary education.

Figure 3.4. Teachers' statutory salaries after 15 years of experience with the most prevalent qualifications by level of education

Annual teachers' salaries in public institutions in 2018, in equivalent USD, converted using PPP for private consumption



Note: The definition of teachers' most prevalent qualifications is based on a broad concept, including the typical ISCED level of attainment and other criteria. The most prevalent qualification is defined for each of the four career stages included in this table. In many cases, the minimum qualification is the same as the most prevalent qualification, see Table X3.D3.2 in Annex 3. Please see Annex 2 and Definitions and Methodology sections of OECD Education at a Glance 2019 for more information. Data available at http://stats.oecd.org/, Education at a Glance Database. See Education at a Glance 2019 Annex 3 for further notes (https://doi.org/10.1787/f8d7880d-en).

1. Includes the average of fixed bonuses for overtime hours for lower and upper secondary teachers.
2. Includes the social security contributions and pension-scheme contributions paid by the employers.
3. Excludes the social security contributions and pension-scheme contributions paid by the employees.
4. At the upper secondary level includes teachers working in vocational programmes (in Slovenia and Sweden, includes only those teachers teaching general subjects within vocational programmes).
5. Actual base salaries.

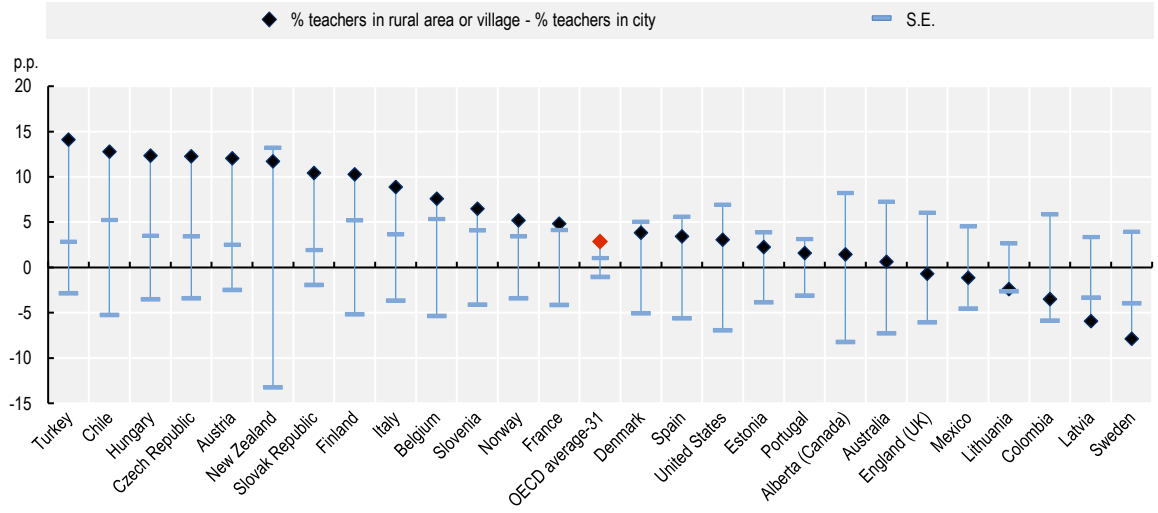
Source: OECD (2019[7]), *Education at a Glance 2019: OECD Indicators*, https://dx.doi.org/10.1787/f8d7880d-en.

StatLink https://doi.org/10.1787/888933805382

When asked about their satisfaction with their salaries, rural teachers tend to show higher levels of satisfaction as compared to their peers in city schools (OECD, 2020[17]). However, for principals, the responses are the other way around, with rural principals less likely to express satisfaction with their wages (OECD, 2020[17]). The lower alternative earning potential in rural areas in other jobs could be a reason behind rural teacher's satisfaction with their salaries. On the other hand, the dual principal/teacher role for some rural school principals, with the workload that this entails, may explain a feeling of underpayment among principals in rural areas. Principals of rural schools are, on average across OECD countries, more likely than their peers in cities to lament a lack of teaching staff as well as inadequate of poorly qualified teaching staff (Figure 3.5). Moreover, in almost half of OECD countries, teachers receive additional benefits for working in disadvantaged, remote or high-cost areas (OECD, 2019, pp. 408, Table D3.7[7]).

Figure 3.5. Gap in teachers' satisfaction with their salaries in rural and city schools

2018 values



Note: Results based on responses of lower secondary teachers and principals. For Australia, estimates for subgroups and estimated differences between subgroups need to be interpreted with great care. S.E = Standard error.
Source: OECD (2020[17]), *TALIS 2018 Results (Volume II): Teachers and School Leaders as Valued Professionals*, https://dx.doi.org/10.1787/19cf08df-en, Table II.3.58.

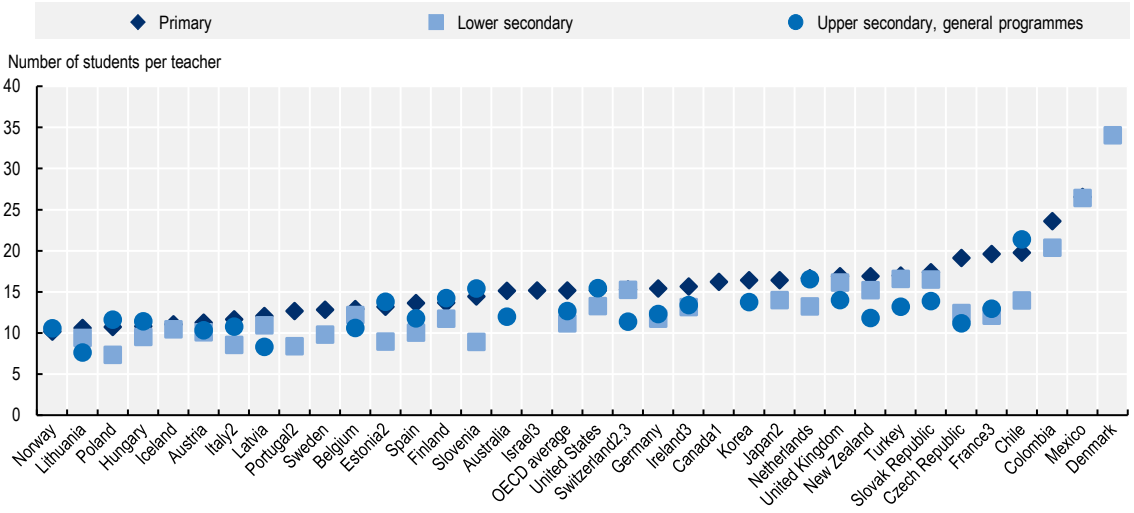
StatLink https://doi.org/10.1787/888934226557

The staffing of rural schools differs from that of urban schools, with rural schools showing a smaller number of teachers per principal. TALIS 2018 data suggests that across the OECD around 15% of teachers and 25% of principals work in rural areas or villages of up to 3 000 people (OECD, 2020, pp. 239, Table A II.B.5[17]). These figures suggest that the cost of principals in rural school is spread over a smaller number of students. In practice, this means that principals in rural schools may be asked also to perform teaching duties and may also have less support from other staff for administrative and managerial tasks compared to schools in cities.

While class size tends to be larger in lower secondary than in primary education, there tend to be fewer students per teacher in primary than in secondary education where students enrol in a greater variety of subjects (Figure 3.6) (OECD, 2019, p. 386; Table D2.1 & Table D2.2[7]). Rural schools in particular show a smaller number of students per teacher and class sizes in both primary and secondary levels in most OECD countries. In fact, both student-teacher ratios and class sizes tend to be smaller in rural as compared to city schools in secondary education across OECD countries, as findings from the PISA study suggest (Figure 3.7).

Figure 3.6. Ratio of students to teaching staff in educational institutions, by level of education

Calculations based on full-time equivalents. 2017 values



Note: See Annex 3 of OECD Education at a Glance 2019 for further notes (https://doi.org/10.1787/f8d7880d-en).
1. Primary includes pre-primary education.
2. Upper secondary includes programmes outside the upper secondary level.
3. For France, public and government-dependent private institutions only for all levels. For Ireland and Switzerland, public institutions only for all levels. For Israel, public institutions only for upper secondary education and all secondary.
Source: OECD (2019[7]), *Education at a Glance 2019: OECD Indicators*, https://dx.doi.org/10.1787/f8d7880d-en

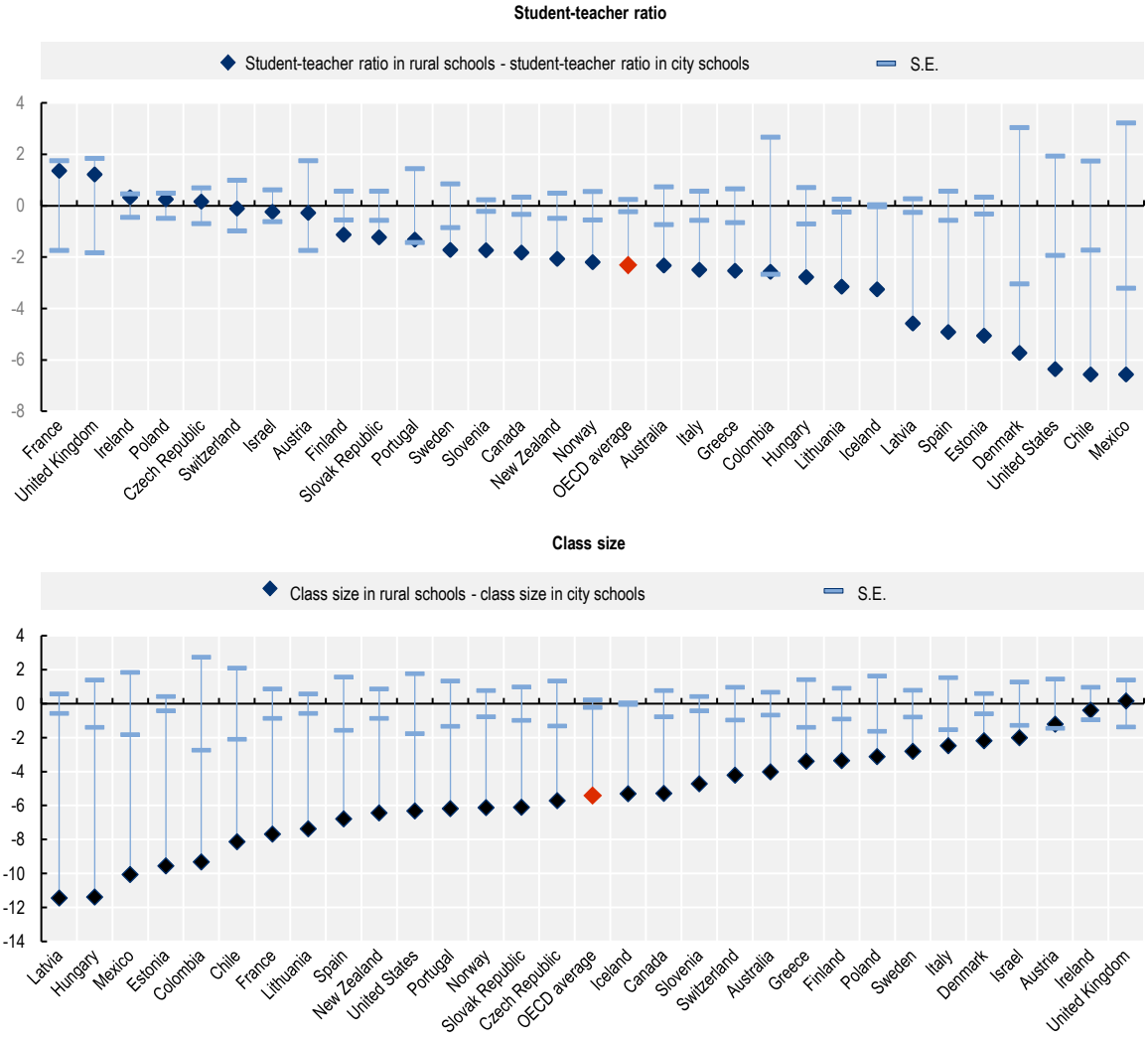
StatLink https://doi.org/10.1787/5235e788-en

A key question for rural schools in connection to resources is how small classes are allowed to get as schools have fewer and fewer pupils. The appropriate size of classes and the ratio between teachers and students are key topics of debate on the quality of education delivery, working conditions for teachers and of course financial viability (Ares Abalde, 2014[18]; OECD, 2019[7]). This debate is dominated by the issue of too-large classes, as very large classes are often opposed by teachers and parents that fear they cannot provide a learning environment that effectively supports all students' learning. However, for rural schools, the opposite question also holds, as too-small schools can also be detrimental to educational quality through a narrower curricula variety and fewer specialist teachers.

School size influences the costs per student as larger schools can more easily fill up classes to the legal maximum, whereas smaller schools risk operating under capacity in view of the human and physical resources that are in place (OECD, 2018, p. 57[3]). As data from England (UK) illustrates, the size of schools tends to vary with the level of education provided. While most English primary schools receive around 300-500 students, the majority of lower secondary schools is larger than 1 000 students (Figure 3.8). Regulations concerning class sizes have an important impact on human resources in a school as they determine above which size a class needs to be split into two – requiring additional teaching staff and physical space. While such regulations can be a way to centrally steer certain quality standards and resources even in decentralised systems, if applied rigidly, they can also have unintended consequences when an unexpected change in enrolment causes a sudden and hard-to-meet demand for additional teachers (OECD, 2019, p. 211[13]).

Figure 3.7. Gap in student-teacher ratio and class size in rural versus city schools

2018 values



Note: Language of instruction class size. S.E = Standard error.
Source: OECD (2018[19]), *PISA 2018 Database*, https://www.oecd.org/pisa/data/2018database/ (accessed on 15 May 2020); adapted from Echazarra, A. and T. Radinger (2019[20]), "Learning in rural schools: Insights from PISA, TALIS and the literature", https://dx.doi.org/10.1787/8b1a5cb9-en.

StatLink https://doi.org/10.1787/888934226576

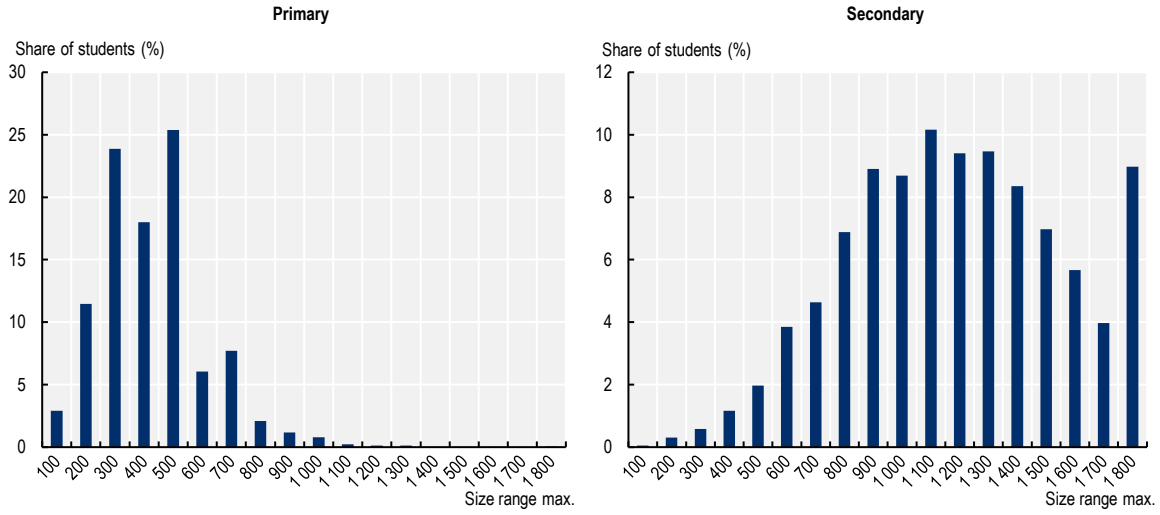
Beyond financial considerations, school size can influence the quality of the educational offer for students as well as the working environment for teachers. Since small schools are more prevalent in rural and remote areas than in more densely populated areas, concerns about the quality of education provided in such locations should also be viewed in the context of the rural-urban skills gap.

In general, different levels of education are associated with different school sizes: primary schools usually much smaller than secondary schools and lower secondary institutions again have a smaller size than upper education schools in most countries (OECD, 2018, p. 55[3]). The prevalence of small schools varies widely across OECD countries. Analyses of data on 15-year-old students surveyed by the OECD PISA study suggest that in 2015, in 17 OECD countries, there were no secondary schools with 100 or fewer

students. In Austria, Estonia, Greece, Hungary, Latvia, Mexico and Poland, more than 5% of students were enrolled in such small secondary schools (OECD, 2018, p. 57[3]).

Figure 3.8. School size distribution of primary and secondary schools, England (UK)

2018-19 values



Source: Gov.uk (2019[21]), *Schools, Pupils and Their Characteristics: January 2019*, https://www.gov.uk/government/statistics/schools-pupils-and-their-characteristics-january-2019 (accessed on 15 May 2020).

StatLink https://doi.org/10.1787/888934226595

In the absence of recent internationally comparative data,[2] some examples can illustrate how different countries approach the regulation of class sizes. Measures seem to more commonly focus on avoiding what is seen as too-large classes, while the establishment of minimum sizes appears less salient:

- **Establishment of maximum class sizes**: In Estonia, basic school classes are limited to 24 students, albeit with possible school-owner specific exceptions for up to a year, and there is a provision for smaller schools to merge classes with fewer than 16 students. New state-run upper secondary general schools are advised to limit class size to a maximum of 28 students for small schools (i.e. planned for 252 students), 30 students for medium-sized schools (planned for 360 students) and 36 students for schools located in larger towns (planned for 540 or 750 students). Smaller classes are regulated for children with special educational needs (Santiago et al., 2016, p. 166[22]). In Denmark, in 2011 only, a regulation regarding class size in upper secondary school was introduced, limiting the number to a maximum of 28 students per class in view of a trend of increasing student-teacher ratios (EC/EACEA/Eurydice, 2013, p. 62[23]). In 2011-12, Slovenia gradually lowered the maximum class size at the upper secondary level from 32 to 30 students in general and technical education, and from 30 to 28 students in vocational education. Similarly, in Scotland (UK), the maximum class size in the first year of primary school was reduced from 33 to 25 pupils from 2011 (EC/EACEA/Eurydice, 2013, p. 62[23]). Analysis on Israel, where classes in primary education split once they have more than 40 students, suggest that hard limits can also unintentionally trigger efforts to artificially modify enrolment figures to provoke a split of classes and thereby achieve more favourable class sizes (Angrist et al., 2019[24]).
- **Establishment of minimum class and school sizes**: The state of West Virginia, United States (US), requires new high schools to have a minimum of 1 000 students to be able to benefit from

state facilities funding (McColl and Malhoit, 2016[25]). In Portugal, as part of a larger re-organisation of the school network, the minimum and maximum class sizes have both been raised since 2010-11 and a minimum number of 21 students has been set for operating a school providing the first cycle of primary education (EC/EACEA/Eurydice, 2013, p. 61[23]). In the Netherlands, the average minimum school size increased from 62 to 101 students in primary school as part of a reform implemented in 1994. This reform entailed a move from a step functioning determining minimum size based on the number of municipalities' inhabitants to a smooth function based on the density of students in a municipality (De Haan, Leuven and Oosterbeek, 2016[26]). The flexibility of the Dutch approach reflects the importance of considering different local circumstances and scopes for action when defining and implementing such minimum levels so that they do not exacerbate spatial inequalities (OECD, 2018, p. 62[3]).

Establishing regulations on minimum class and school sizes are one possible approach to ensuring a financially viable delivery of quality education services in sparsely populated areas. Minimum class sizes may, for instance, be used to incentivise or mandate the merger of small classes, potentially with additional support for multi-grade teaching arrangement, while funding formulae can use the assumption of maximum class sizes to nudge schools to align usage and capacity, as in Denmark (OECD, 2018, p. 62[3]) (see Box 3.2 for an in-depth discussion of the case of England). At the same time, smaller classes are often seen as an indicator of higher quality education provision. There is research documenting the benefits of smaller classes for students of younger ages and specific groups, such as primary school pupils and students from disadvantaged backgrounds, and that students in secondary schools with smaller classes are more likely to report the adaptation of lessons to students' needs and knowledge through teachers. But the broader evidence on the relations between class size and student outcomes in secondary education across countries is not consistent (OECD, 2019, p. 377[7]; 2019, p. 109[27]). Small classes also need to be seen in the context of teacher supply: if there is already a lack of qualified teachers, potential benefits of smaller classes may evaporate if they are achieved by lowering requirements on teaching quality, which is key for supporting the learning of all students.

Box 3.2. Funding and organisation of the education system in England, UK

As shown in Figure 3.2, the UK's expenditure on educational institutions is higher than the OECD average across primary, lower secondary and upper secondary general programmes. Contrary to the order found on average across OECD countries, per student expenditure in the UK is highest for upper secondary general programmes, followed by primary and then by lower secondary education. Secondary and primary school expenditure per student had been increasing for decades, froze between 2010 and 2015 and has since seen a small drop in real terms (Belfield, Farquharson and Sibieta, 2018, p. 29[28]). Statutory teacher salaries are the same for all three levels in England (Figure 3.2.). Within this context, the reforms implemented in England provide a good illustration of government efforts to improve efficiency and structure market mechanisms.

In England, access to school has been mediated by a model of school choice since 1988, with parents submitting a ranking of their preferred schools to local authorities and pupils are then allocated to schools based on publicly available criteria that are being processed by an algorithm (Burgess, Greaves and Vignoles, 2019[9]). The system was amended in 2007 to avoid strategic or "safety-first" choices and the algorithm is designed in a way that parents' have an interest in revealing their true preferences to achieve the best result. A recent study suggests that parents in area with a lower density of schools are more likely to select the closest school as their first choice (Burgess, Greaves and Vignoles, 2019, p. 701[9]).

Until 2002, there has been a steady increase in the delegation of financial responsibilities to the school level in England to improve the efficiency of spending (Levačić, 2008, p. 231[29]). Some authority, such

as for the planning of school places, remains with local governments (OECD, 2015, p. 22[30]). The 2013/14 school funding reform in England sought to simplify the funding system and improve transparency and the quality of choices regarding education (OECD, 2015, p. 25[30]). The reform tried to make the funding system more student-driven and improve the consistency and equivalence of allocations to schools. In 2016, simplifications to the overall allocation mechanism were introduced to allow for greater flexibility at the local level: the block grants for schools are split into a schools block, an early years block and high needs block, incorporating most of the previously separate grants (targeted funding) (OECD, 2017, p. 112[31]). At the same time, the funding formulae for local authorities were simplified to include 2 mandatory factors (i.e. minimum amounts per primary and secondary student and deprivation) and up to 12 other optional factors (e.g. location in sparsely populated or rural areas).

In 2018, a new national funding formula started to be implemented in England to address unintended differences in funding for similar schools across the country related to the local variation in funding formulae (Belfield, Farquharson and Sibieta, 2018, pp. 33-35[28]). Even before becoming fully implemented within local authorities (scheduled for 2021-22 at the earliest), the new national formula has brought school funding available to similar local authorities closer together. Given that many local authorities already aligned their formulae for the allocation of funding to schools with the national reference, there has also been a trend towards more similar funding levels for similar schools. Yet, some exceptions remain in place and the full implementation would imply major shifts of funding between schools.

With regard to education governance, an organisational reform was implemented in 2010 to simplify education policy planning and implementation. This involved a redefinition of responsibilities of different departments as well as the closure and restructuring of certain institutions and their functions (e.g. government councils and bodies) (OECD, 2015, p. 22[30]). England also sought to remodel its education workforce through a reform starting in 2003. This involved an increase in administrative tasks for assistants to lower the administrative burden for teachers in favour of leaving more time for pedagogical tasks (Hutchings et al., 2009[32]). However, the outcomes fell short of expectations and from 2013, the use of pedagogical support staff was reduced (OECD, 2019, p. 175[13]). England tried to render schools' non-staff expenditure more efficient, too, for instance by providing a Schools' Buying Strategy in 2017 with tools and best practice advice as resources for school heads and financial administrators. Among other support, the ministry provides an online benchmarking system to enable schools to compare their own spending patterns to those of peers in view of exploring efficiency gains (OECD, 2018, p. 88[3]).

Source: Belfield, C., C. Farquharson and L. Sibieta (2018[28]), *2018 Annual Report on Education Spending in England*, https://www.ifs.org.uk/uploads/publications/comms/R150.pdf (accessed on 9 April 2020); Burgess, S., E. Greaves and A. Vignoles (2019[9]), "School choice in England: Evidence from national administrative data", http://dx.doi.org/10.1080/03054985.2019.1604332; Levačić, R. (2008[29]), "Financing schools", http://dx.doi.org/10.1177/1741143207087774; OECD (2015[30]), *Education Policy Outlook: United Kingdom*, https://www.oecd.org/education/UKM_profile_final%20draft_EN.pdf; OECD (2017[31]), *The Funding of School Education: Connecting Resources and Learning*, https://dx.doi.org/10.1787/9789264276147-en; Hutchings, M. et al. (2009[32]), *Aspects of School Workforce Remodelling: Strategies Used and Impact on Workload and Standards*, https://dera.ioe.ac.uk/10822/1/DCSF-RR153.pdf (accessed on 12 April 2020); OECD (2019[13]), *Working and Learning Together: Rethinking Human Resource Policies for Schools*, https://dx.doi.org/10.1787/b7aaf050-en; OECD (2018[3]), *Responsive School Systems: Connecting Facilities, Sectors and Programmes for Student Success*, https://dx.doi.org/10.1787/9789264306707-en.

Beyond class size, extant research can point to potential linkages between the size of schools and quality. A review of existing research on small rural schools in Sweden finds that the evidence points towards "small rural schools perform[ing] their obligations at least as well as other schools" (Åberg-Bengtsson, 2009, p. 106[33]). However, a Dutch study on the impact of a change in school size regulations found that an increase in the minimum school size was associated with an improvement in student achievement

outcomes, even when potential effects of changing the number of schools per municipalities, student segregation or closure of small and low-performing schools are being taken into consideration (De Haan, Leuven and Oosterbeek, 2016[26]).

The relations between size and student attainment also differ between primary and secondary schools, with some indications that school performance peaks at a smaller size for primary than for secondary schools (Ares Abalde, 2014[18]). Literature reviews by Leithwood and Jantzi (2009, p. 468[34]) and Knoth Humlum and Smith (2015, p. 22[35]) suggest that there is consistent albeit not very extensive evidence that smaller primary schools benefit students' academic achievement. However, they also conclude that schools should be neither "too big" nor "too small", in line with the fact that some "small schools" covered by the underlying research papers (e.g. schools with fewer than 200 students) may be much larger the small schools in question in remote areas. For secondary schools, there is evidence from a number of studies that greater school size has positive or at least no negative impact on student achievement, but may be associated with less favourable social outcomes (Knoth Humlum and Smith, 2015, pp. 23, 27[35]).

Small schools affect the education offer and put specific demands on principals and teachers. For principals, being in a rural area or village is, on average, also associated with a higher likelihood of having teaching responsibilities alongside their leadership role as compared to their peers in cities (OECD, 2020, pp. 236, Table II.3.20[17]). At the same time, they lack opportunities for collaboration among peers, which is an important factor for quality, professional learning and staff satisfaction. Teaching in small schools is often associated with supporting the learning of different age groups and grades in the same classroom when there are insufficient students to establish age-homogenous classes. As national data cited by Smit, Hyry-Beihammer and Raggl (2015, p. 99[36]) suggest, the prevalence of multi-grade classes differs greatly across countries, ranging from 24% in Switzerland to around 15%-16% in Austria and Finland and around 4% in Spain. While more prevalent in small rural primary schools, this approach can also be a pedagogical choice in some larger schools, such as in Sweden (Ares Abalde, 2014[18]; O Slatara and Morgan, 2004[37]; Lindström and Lindahl, 2011[38]).

Reviews of past studies indicate mixed and inconclusive findings regarding potential effects of such approaches on student outcomes across countries, suggesting that multi-grade teaching may be neither inherently positive nor inherently negative for students' learning (OECD, 2018, p. 134[3]). Multi-grade teaching requires different pedagogical practices and ways of organising lessons: for instance, teachers may seek to overcome the heterogeneity of students through parallel curricula or whole-class teaching focusing on the same content or instead embrace the heterogeneity to spend more time on free work or personal work plans instead of direct teaching (Ares Abalde, 2014, p. 11[18]; Smit, Hyry-Beihammer and Raggl, 2015, p. 101[36]; Smit and Engeli, 2015[39]; Hyry-Beihammer and Hascher, 2015[40]; Kalaoja and Pietarinen, 2009[41]). Yet, there are concerns about the extent to which pre- and in-service training sufficiently prepares teachers for this specific environment and whether relevant support materials are available (Raggl, 2015[42]; Ares Abalde, 2014[18]).

Potential constraints about small schools' ability to provide a broad offer to students are often cited as a reason for favouring larger settings. For instance, larger schools are assumed to be more easily able to teach a more diverse set of subjects through an expanded curriculum. However, there are concerns that a diverse offer that tends to be less used by students with lower socio-economic status (who represent a higher share in rural areas, as shown in Figure 3.10) and that an increased breadth may be less relevant for student outcomes than ensuring the successful implementation of a high-quality core curriculum (Leithwood and Jantzi, 2009[34]; Echazarra and Radinger, 2019[20]). In addition, some earlier research suggests that the size of secondary schools from which greater curricular breadth can be realised may be as low as 400 students (Monk, 1987[43]). Another potentially more relevant consideration about scale relates to the ability of small schools to provide specialist support to students with special educational needs. While small schools and classes may allow for more tailored interactions with each pupil based on their respective needs, including in the context of multi-grade teaching with a more project-based

approach, especially remote settings are struggling to offer support by other specialised professionals (Ares Abalde, 2014[18]; Echazarra and Radinger, 2019[20]).

Table 3.2. A large-scale survey perspective on challenges and opportunities for rural schools

Selected insights from OECD PISA and TALIS 2018 comparing rural and city schools at the secondary level

Challenges in rural schools in terms of quality	Opportunities for rural schools in terms of quality
Resources	
Greater shortage of educational material (PISA 2018 new)	Fewer students per teacher in schools and smaller class size (PISA 2018 new)
Higher ratio of new teachers in rural schools (Table II.2.58, TALIS 2018 Vol II)	Longer teaching experience of teachers in the same school (Table II.3.71, TALIS 2018 Vol II)
Lower share of computers connected to the Internet (PISA 2018 new)	Teachers more likely to be satisfied with their salary (Table II.3.58, Vol II TALIS 2018)
A greater lack of teaching staff and more inadequate or poorly qualified teaching staff (PISA 2018 new)	Higher number of computers available per student (PISA 2018 new)
Teacher and parent behaviour	
Less teacher participation in collaborative professional learning in rural schools (Table II.4.11, TALIS 2018 Vol II)	Higher level of teacher enthusiasm (Figure III.5.1, PISA 2018)
Parents less likely to discuss children's progress on their own initiative (Figure III.10.2, PISA 2018)	Higher level of teacher support (Figure III.6.2, PISA 2018)
Larger share of students' parents who volunteered in physical or extracurricular activities (Table III.B1.10.6, PISA 2018)	Lower level of teacher behaviour hindering learning (Figure III.7.2, PISA 2018)
Higher teacher turnover in rural schools [Table II.2.59 TALIS 2018 Vol II]	
Student characteristics, outcomes and behaviour	
Lower test scores of 15-year-olds in reading (PISA 2018 new)	Larger share of students reporting to be satisfied with their lives (Table III.B1.11.6, PISA 2018)
Students have a lower socio-economic status (PISA 2018 new)	Students less likely to report feeling sad sometimes or always (Table III.B1.12.8, PISA 2018)
Higher levels of student truancy (Figure III.4.1; PISA 2018)	Less student lateness (Figure III.4.2, PISA 2018)
Students less likely to expect completing a university degree (PISA 2018 new)	
Weaker sense of belonging and lower self-efficacy (Figure III.9.2, Table III.B1.13.7, PISA 2018)	

Note: Differences between rural and city schools refer to statistically significant differences of the OECD average in the underlying surveys.
Source: OECD (2019[2]), *PISA 2018 Results (Volume III): What School Life Means for Students' Lives*, https://dx.doi.org/10.1787/acd78851-en; OECD (2019[4]), *TALIS 2018 Results (Volume I): Teachers and School Leaders as Lifelong Learners*, https://dx.doi.org/10.1787/1d0bc92a-en; OECD (2020[17]), *TALIS 2018 Results (Volume II): Teachers and School Leaders as Valued Professionals*, https://dx.doi.org/10.1787/19cf08df-en.

Education outputs and outcomes

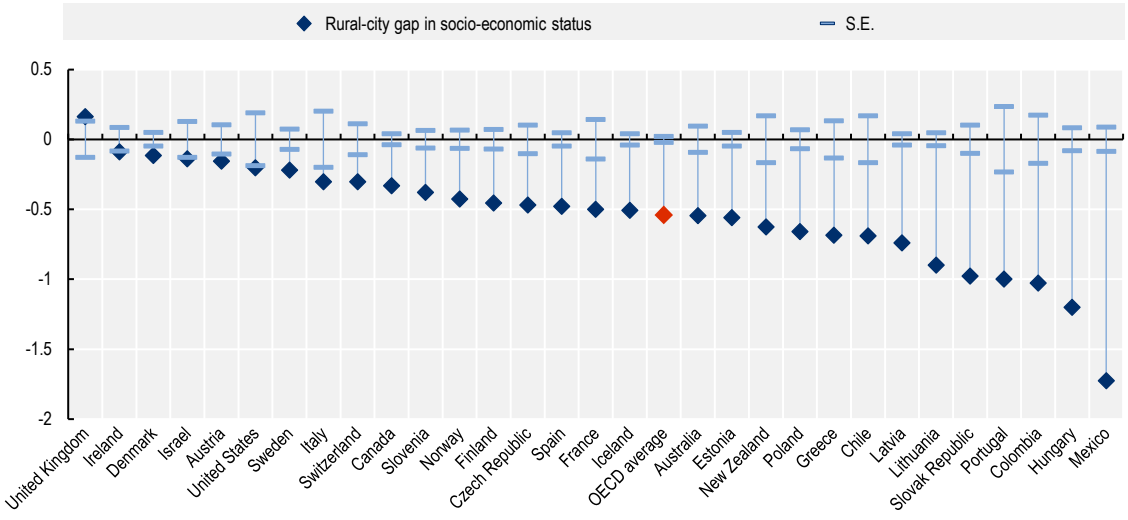
Neither the evidence on the relationship between student-teacher ratios and quality nor on the relationship between school size and quality allows identifying specific "advisable" minimum and maximum sizes (Ares Abalde, 2014[18]). As Newman et al. (2006[44]) summarise, the overall relationships between school size and outcomes are complex, inconsistent and depend on what dimension is in focus. For instance, the studies they reviewed suggest that student attitudes, teacher perception and expenditure tend to be negatively related to school size whereas the improvements in exam scores and student absences that are associated with larger schools are reversed after a certain size threshold is passed. When drawing

policy conclusions, it is key to consider the specific context of providing education in settings and groups of different sizes (OECD, 2018, p. 62[3]).

While incentives to create larger schools and classes may raise quality and efficiency in more dense areas, a minimum school size, class size or funding mechanisms penalising small structures may be counterproductive for remote schools that admit at most one class per year. Thus, the regulation of minimum thresholds needs to include safeguards and strategies to avoid further disadvantages for remote rural schools.

Rural students tend to start their educational journey with a disadvantage as they are, on average, from family backgrounds with a lower socio-economic status as compared to their peers in city schools in most OECD countries (Figure 3.9). The largest gaps in socio-economic status between rural and city students occur in Latin American OECD countries, including Colombia and Mexico, as well as European OECD countries including Hungary, Lithuania, Portugal and the Slovak Republic.

Figure 3.9. The rural-city gap in students' socio-economic status

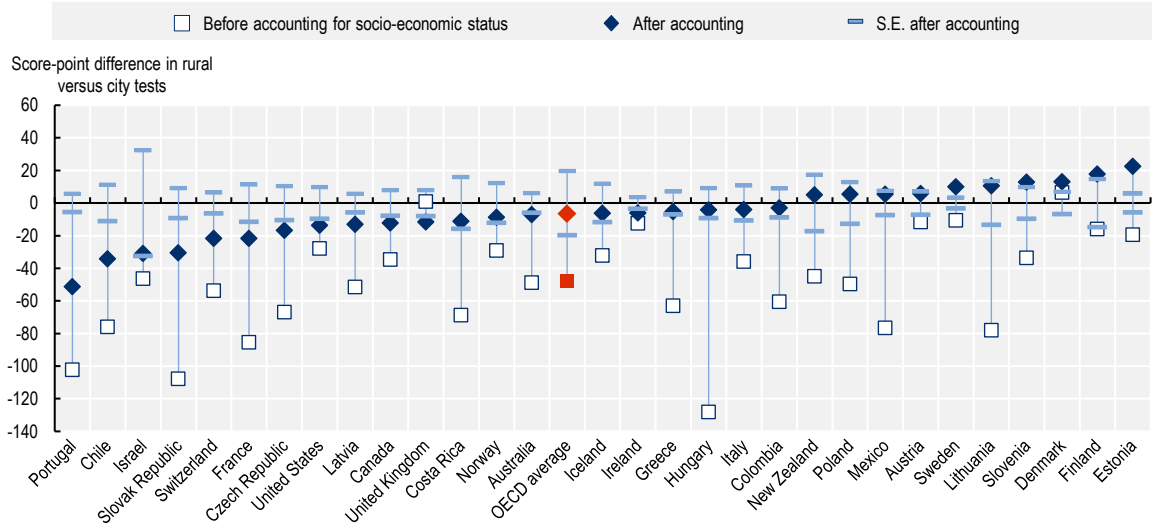


Note: Socio-economic status measured by the PISA Index of Economic, Social and Cultural Status. S.E = Standard error.
Source: OECD (2018[19]), *PISA 2018 Database*, https://www.oecd.org/pisa/data/2018database/ (accessed on 15 May 2020), adapted from Echazarra, A. and T. Radinger (2019[20]), "Learning in rural schools: Insights from PISA, TALIS and the literature", https://dx.doi.org/10.1787/8b1a5cb9-en.

StatLink https://doi.org/10.1787/888934226614

In terms of the level of skills of students, results from PISA show that students in rural schools, defined as villages, hamlets or rural areas with fewer than 3 000 people, tend to underperform in secondary education outcomes in comparison to cities that have more than 100 000 inhabitants (Echazarra and Radinger, 2019[20]). On average, students in city schools across OECD countries scored 48 points higher in reading than their peers in rural schools, according to the PISA 2018 data – more than the equivalent of a year of schooling (Figure 3.10). Yet, when the comparison accounts for socio-economic status of students and schools, the performance gap between rural and city schools was no longer statistically significant. This means that differences in the socio-economic composition of the population tend to explain the rural-urban gap in academic performance.

Figure 3.10. The rural-city gap in reading performance of secondary school students



Note: Results based on linear regression models. S.E = Standard error.
Source: OECD (2018[19]), *PISA 2018 Database*, https://www.oecd.org/pisa/data/2018database/ (accessed on 15 May 2020), adapted from Echazarra, A. and T. Radinger (2019[20]), "Learning in rural schools: Insights from PISA, TALIS and the literature", https://dx.doi.org/10.1787/8b1a5cb9-en.

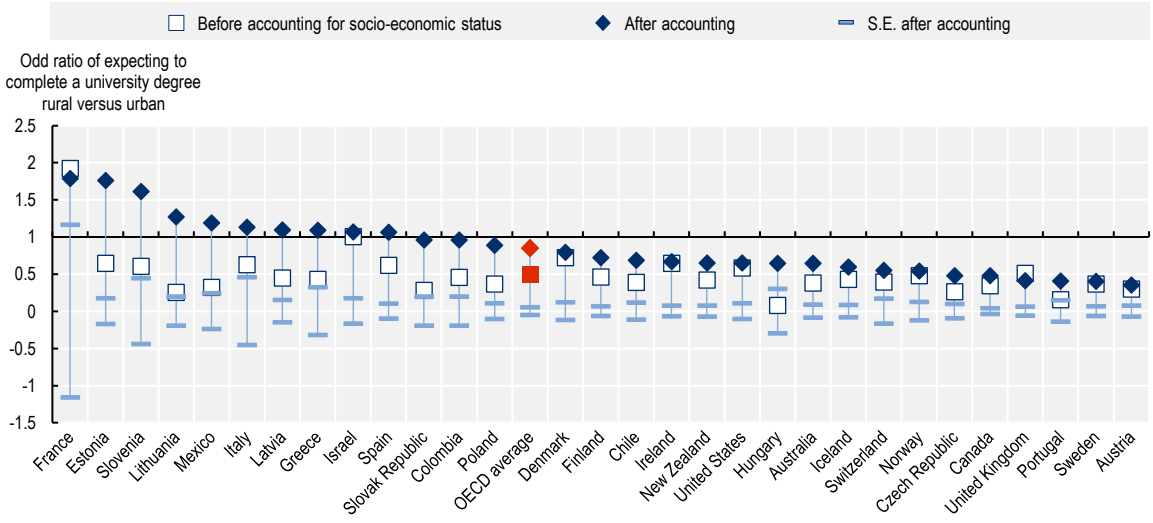
StatLink https://doi.org/10.1787/888934226633

The rural-urban education gap is even more visible when analysing rural students' educational expectations. Based on a survey among 15-year-old students carried out by PISA 2018, on average across OECD countries, students in rural schools are half as likely to expect completing a university degree as those in city schools (Figure 3.11; new analysis of PISA 2018 data adapted from (Echazarra and Radinger, 2019[20]). This reflects students' self-assessment of their opportunities and capacities regarding higher education (OECD, 2017[45]). In that sense, beyond financial facilities, geographical barriers, lack of career role models and highly skilled jobs in their home areas are factors that might discourage students in rural areas to advance further in their studies. This ultimately feeds into lower educational attainment and achievement in rural areas, lower geographical mobility and higher territorial inequalities.

Attracting highly skilled teachers to rural areas is key to improve student outcomes. While differences in the highest level of education are on average not statistically significant between rural and city schools OECD countries, there tends to be a greater share of new teachers and a higher turnover rate in rural schools (OECD, 2020[17]). As teachers in rural schools also tend to be more satisfied with their salaries (Figure 3.5) and are reported to be more enthusiastic (Figure 3.12), policymakers need to take a broader approach to measures to attract and retain teachers to those locations, for instance by offering opportunities for skill development. Those trends vary across countries but they highlight that a spatial lens is warranted when considering the support teachers need to deliver high-quality education in different locations.

The question of accessibility is paramount for decisions about the operation of small schools. There is a clear trade-off between the implications of regulations mandating a minimum size for schools and other rules seeking to contain the travel time for students attending schools in other villages or towns in sparsely populated areas. For instance, school size and attendance have been found to be negatively correlated at primary and secondary levels, in line with concerns that transportation costs and other negative effects on the school environment may overshadow positive effects of increased school size (Knoth Humlum and Smith, 2015, p. 26[35]).

Figure 3.11. The rural-city gap in educational expectations

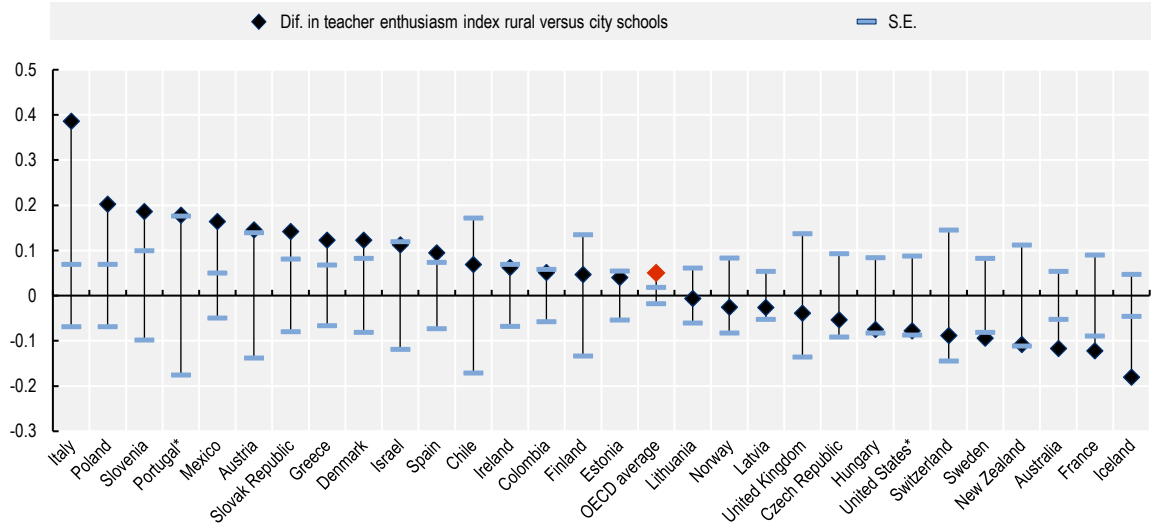


Note: Results based on logistic regression models. The odds ratio is a measure of the relative likelihood of a particular outcome across two groups. An odds ratio below one denotes a negative association; an odds ratio above one indicates a positive association; and an odds ratio of one means that there is no association. S.E = Standard error.

Source: OECD (2018[19]), *PISA 2018 Database*, https://www.oecd.org/pisa/data/2018database/ (accessed on 15 May 2020), adapted from Echazarra, A. and T. Radinger (2019[20]), "Learning in rural schools: Insights from PISA, TALIS and the literature", https://dx.doi.org/10.1787/8b1a5cb9-en.

StatLink https://doi.org/10.1787/888934226652

Figure 3.12. Rural-urban gap in teacher enthusiasm



Note: S.E = Standard error.

* Data did not meet the PISA technical standards but were accepted as largely comparable (see Annexes A2 and A4 from PISA 2018 Database). In some countries/economies, sub-units within schools were sampled instead of schools; this may affect the estimation of between-school variation components (see Annex A2 from PISA 2018 Database).

Source: OECD (2018[19]), *PISA 2018 Database*, https://www.oecd.org/pisa/data/2018database/ (accessed on 15 May 2020), Table III.B1.5.4.

StatLink http://dx.doi.org/10.1787/888934029584

What can policymakers do to ensure access to quality education services in rural areas while pursuing cost efficiency?

In view of the above-mentioned demographic and financial pressures, policymakers at different levels of government can consider a variety of measures to render the delivery of education services more efficient. The options discussed in the following should be seen against the backdrop of the majority of OECD countries with available data including locational criteria in their funding formulae, i.e. countries that consider spatial differences when allocating funding for current expenditure (OECD, 2017, pp. 150-153[31]). This chapter does not discuss, however, the country-specific issue of whether these allocations are sufficient to compensate for unavoidable costs in rural areas.

Restructuring rural schools

While efforts to improve rural education require sector-specific considerations, general strategies to improve the efficiency of public service delivery, such as colocation, collaboration, co-operation and co-production, remain salient in this domain. Previous analyses by the OECD (2018[3]) provide an overview of potential strategies to address both financial and quality concerns as school networks in rural areas are faced with dwindling numbers of students. These strategies are evaluated keeping in mind that interventions aiming at centralising provision to increase scale will likely lead to lower access and increased travel times and costs for students.

Creating school clusters and establishing co-operations

Another approach to fostering economies of scale is the formation of clusters or federations, i.e. structures in which schools formally co-operate under a single leadership to allocate resources, such as staff, more flexibly and efficiently (OECD, 2018[3]). Even though this approach may effectively also entail the closure of schools in their current form, it can be seen as a potential alternative to or a step short of completely halting service provision in one location (OECD, 2018[3]; Ares Abalde, 2014[18]). Clusters can involve both horizontal (i.e. integrating schools with a similar educational offer) and vertical integration (i.e. integrating schools at different levels of education). Such arrangements usually imply the designation of a lead or core school with satellites schools in other locations but can also mean the creation of schools split across different sites with a single management and budget. School clusters in countries covered by a recent OECD review were of different sizes but typically comprised up to 15 schools which were geographically relatively close to each other (OECD, 2018, pp. 143-144[3]).

Clusters may be established in the context of a strategy of the ministry of education, potentially even obliging schools to participate, or as a locally initiated approach to foster information exchange and more efficient resource use (Giordano, 2008, p. 88[46])

Co-operation and sharing of resources can also be fostered without structurally changing the school network. This approach can entail, for instance: the joint provision of specialised programmes for students and professional development training for teachers; shared human resources and infrastructure; joint purchasing of materials or services; or co-ordinated student transport (OECD, 2018, p. 138[3]). This co-operation of providers enables economies of scale and scope, with the prospect of improving efficiency and providing a larger array of opportunities to students. Whether or not local authorities or schools engage in such co-operation depends on, for instance, local capacity, potential incentives as well as the presence of pre-existing structures and traditions facilitating or hampering co-operation.

The formation of school communities or associations can be incentivised at the educational system level, for instance by providing additional staff resources to be shared across schools that voluntarily participate, as was done in the Flemish Community of Belgium (OECD, 2018, pp. 138-139[3]; Nusche et al., 2015[47]). In Spain, so-called Grouped Rural Schools (*Colegios Rurales Agrupados*) allow providers across

municipalities to share resources, such as peripatetic teachers and instruction materials, jointly offer extracurricular activities and support the professional community of teachers through regular co-ordination meetings (Ares Abalde, 2014, p. 30[18]). To address the challenge of providing specialised services in small schools, for instance with regard to children's special educational needs, a regional approach of allowing specialists to work across geographically proximal schools can be a possible strategy, as applied in countries like Austria or Estonia (OECD, 2018, p. 141[3]).

Adapting the definition and distribution of education levels across schools

While the distribution and combination of different grade levels, such as primary, lower and upper secondary education, often follows regulatory or traditional conventions, some flexibility regarding the grade levels delivered in a single institution can facilitate the response to a changing demand (OECD, 2018, p. 141[3]). Estonia, for instance, has separated general upper secondary and basic education to a greater extent to enable a consolidation of the upper secondary school provision without affecting the lower secondary school network (Santiago et al., 2016[22]). This approach also seeks to align requirements for proximal provision with municipalities' capacity to ensure the quality of education for younger students.

Consolidating schools

The consolidation of schools implies that one or more schools are being closed and that students are transferred to other providers in the vicinity, increasing their total enrolment. Because of the impacts of school closures on communities, consolidation constitutes a last resort policy after a continued approach involving other strategies discussed above has been tried. As an illustration, Box 3.3 discusses the impact of school closures on educational inequality following COVID-19 restrictions in the UK.

Box 3.3. The impact of school closures during COVID-19 restrictions on educational inequality in the UK

The closure of schools as a consequence of restrictions following the COVID-19 pandemic led to a significant increase in educational inequalities in the UK. According to the British Centre for Macroeconomics (CFM), the economic cost of school closures was felt in educational, socio-economic and gender equality levels:

- At the educational level, according to the UCL Institute of Education, children spent an average of just 2.5 hours a day on schoolwork during the school closure period between March and summer, with no more than 1 online lesson a day for 71% of state school children. The length of education disruption in the life of a child can have significant consequences on future skills. Meyers and Thomasson (2017[48]) found that the skills of children aged 14-17 during the 1916 polio pandemic were found to be lower than those of their older peers.
- At the socio-economic level, home schooling will undoubtedly penalise pupils from less advantaged backgrounds with lower access to the Internet and a computer and the opportunity to get help from their parents, with significant differences across income groups. Burgess, Greaves and Vignoles (2019[9]) report that students in the poorest quintile had seven fewer school days' worth of time spent on schooling compared to their richest peers. Green (2020[49]) reports that children entitled to free school meals are almost three times more likely than non-eligible children not to have access to a computer at home. Cullinane (2020[50]) notices that working-class children are less likely to receive home schooling from their parents (by a ten-percentage-point margin) than are middle-class children.

- In terms of gender inequality, as women are responsible for the majority of childcare responsibilities, the time spent by women on developmental childcare (including home schooling) has naturally increased with the COVID-19 pandemic (Hupkau and Petrongolo, 2020[51]). Furthermore, whether they telework or not, women are slightly more likely than men to lose their jobs during the COVID-19 pandemic: women in the US and the UK are respectively 7 and 5 percentage points more likely to lose their jobs compared to men (Adams-Prassl et al., 2020[52]).

Source: Ilzetzki, E. (2020[53]), "The economic cost of UK school closures", https://voxeu.org/article/economic-cost-uk-school-closures?utm_source=dlvr.it&utm_medium=twitter; Burgess, S., E. Greaves and A. Vignoles (2019[9]), "School choice in England: Evidence from national administrative data", http://dx.doi.org/10.1080/03054985.2019.1604332; Meyers, K. and M. Thomasson (2017[48]), "Paralyzed by panic: Measuring the effect of school closures during the 1916 polio pandemic on educational attainment", https://www.nber.org/system/files/working_papers/w23890/w23890.pdf; Green, F. (2020[49]), "Schoolwork in lockdown: New evidence on the epidemic of educational poverty", https://www.llakes.ac.uk/sites/default/files/LLAKES%20Working%20Paper%2067.pdf; Cullinane, C. and R. Montacute (2020[50]), "COVID-19 and social mobility impact brief #1: School shutdown", http://www.suttontrust.com/wp-content/uploads/2020/04/COVID-19-Impact-Brief-School-Shutdown.pdf; Hupkau, C. and B. Petrongolo (2020[51]), "COVID-19 and gender gaps: Latest evidence and lessons from the UK", https://voxeu.org/article/covid-19-and-gender-gaps-latest-evidence-and-lessons-uk; Adams-Prassl, A. et al. (2020[52]), "Inequality in the impact of the coronavirus shock: Evidence from real time surveys", No. 13183.

The approach of merging and closing schools is widespread and, according to the European Commission (EC), two-thirds of countries and regions in the European Union (EU) enacted such measures between 2010 and 2012 (EC/EACEA/Eurydice, 2013, p. 60[23]). In Poland, for instance, the number of rural primary schools has dropped by 9.3% since 2003-04 (EC/EACEA/Eurydice, 2013, p. 61[23]). While those decisions were mainly motivated by the goal of aligning public investment with the changing demographic context, in several countries the overall financial and economic context was also an important factor (EC/EACEA/Eurydice, 2013, p. 61[23]).

Policymakers can bring about consolidation and closures of schools through a variety of financial and regulatory tools. For instance, if the number of enrolled students determines the allocation of funding to schools or local authorities, the operation of small schools becomes economically less viable, while providing temporary grants to cover the costs of the transition to consolidated units can alleviate short-term financial challenges (OECD, 2018[3]). The decentralisation of school funding to the local level, as in Sweden in the 1980s and 1990s, can also trigger an effort to cut costs in the provision of schooling by consolidating the offer in order to create fiscal space for other expenditures (Ares Abalde, 2014[18]).

While consolidation and the organisation of education provision in larger units promise to reap economies of scale and lower per student expenditures, costs may increase at least temporarily in other respects, for instance, due to increased transportation costs or the need to adapt the school infrastructure to larger enrolment numbers (OECD, 2018[3]; Ares Abalde, 2014[18]). As discussed above, the evidence on the effects of school size itself is somewhat inconclusive. For the process of school consolidation, research from Norway finds no negative effect on student achievement (Thorsen, 2017[54]), while a Danish study suggests that, especially for students coming from small schools, there is a negative effect in the short term which weakens over time (Beuchert et al., 2018[55]).

Comprehensive and digital approaches

In addition to the above-described measures that largely remain within the framework of mainstream education delivery, there are other approaches that can introduce flexibility to help address rural and remote challenges. This set of approaches can be seen as complementary to the measures concerning the setup of the school network itself.

Information and communication technology (ICT)-based support to education delivery

Distance learning is a well-established approach to facilitating educational provision in remote areas, either delivered in the presence of teachers or independently from onsite pedagogical staff (OECD, 2018, p. 162[3]). Distance learning allows small and remote schools to diversify their curriculum and course offer and can help teachers access relevant professional development opportunities and learning materials (Ares Abalde, 2014, p. 32[18]). Chapter 5 discusses distance learning in the context of digital service provision in more detail.

Involve stakeholders and draw on local community support

Schools in rural areas are often seen as front and centre of community life and social cohesion in localities (OECD, 2018, p. 165[3]). This means that those rural schools are more likely to be able to draw on community resources for their support. PISA 2018 results suggest that in many countries, a larger share of parents participates in extracurricular activities of rural schools as compared to those in cities (OECD, 2019[2]). Parents and community members may also volunteer or be invited to make a financial or in-kind contribution to help sustain rural schools, for instance, to ensure the maintenance of the physical infrastructure (OECD, 2018, p. 166[3]). The regulation of such community engagement needs to strike a balance between the adherence of important standards, such as regarding health and safety, and the flexibility to allow the community to provide support in a way that can lower the cost of operation and capital. The Small School (*Mala szkola*) programme in Poland, for instance, lifts certain norms, such as requirements for cleaners and kitchen staff, so that parents can take on such roles as volunteers to contain costs (OECD, 2018, p. 166[3]). When schools in Poland come under threat of closure through local governments or are being closed, they are increasingly taken over by associations, which allows for partial deregulation of teacher salaries while continuing to benefit from public funding (EC/EACEA/Eurydice, 2013, p. 61[23]).

Box 3.4. Networked Schools in Québec, Canada

The project Networked Schools (*L'École en réseau*) in Québec (Canada) was designed by researchers in collaboration with teachers and offers an alternative approach to ensuring the delivery of quality education in low-density regions by other means than school consolidation. The initiative stands out in seeking to leverage ICT to foster social innovation in primary and secondary schools, rather than only digitalising existing practices or offering distance learning. Around half of the school boards across the province are joining the initiative each year, involving more than 1 000 teachers. The Québec Ministry of Education has been providing financial support since 2012 and in 2018 the initiative was included among the measures of the ministry's digital plan. The annual budget of CAD 500 000 is allocated according to criteria such as the number and size of participating classrooms.

By joining the network, schools are expected to enrich the learning environment and thereby address quality concerns ahead of time that would otherwise serve as potential reasons for closing schools. The project promotes the establishment of a community of learning and student participation to develop knowledge across schools by harnessing digital technology. It supports teachers and students alike to gain independence. The network involves new ways of work organisation, such as: the collaboration of two teachers in two different schools realising joint activities with their students; the inclusion of a teacher from another school in the local teacher's implementation of specific activities for their students; project-based groupwork involving students from different schools; and remote interventions by specialists and counsellors. The project encourages co-operation with scientists, museum staff, experts and other partners to enhance learning activities even in remote regions.

Pedagogical and technical support plays a key role in developing the capacity of teachers to harness the new tools in their work, for instance, to participate in web conferences or a forum for joint knowledge development. To this end, a university team addresses requests and training needs via video-conferencing to provide support to teachers and students. Students themselves can assist teachers in the use of digital tools and, by acquiring technical skills, in addition to pedagogical ones, teachers can in turn improve students' learning experiences. Students in the project were found to benefit from new opportunities to extend their skills in using new technologies, problem-solving, reading comprehension, reasoning and argumentation in different domains, as well as oral expression in person and via video-conferencing, with an extended vocabulary. Overall, the model allows increasing both the quantity and quality of learning experiences available to students through real-time and on-demand digital solutions.

The project's experience also highlights that the take-up of new ICT-based teaching and evaluation practices is a gradual process and cannot be expected to take place from one day to another. For example, available analysis tools for tracking students' use of new vocabulary in the project are still underutilised by teachers. More generally, case studies suggest that for the flawless operation of digital tools in schools, technical support that is close to the users and available just in time is superior to more centralised, distant support services.

Source: CEFRIO (2011[56]), *L'École éloignée en réseau (ÉÉR), un modèle*, https://eer.qc.ca/publication/1599172066320/eer-rapport-synthese-2011.pdf (accessed on 27 January 2020); CEFRIO (2015[57]), *Usages du numérique dans les écoles québécoises*, https://eer.qc.ca/publication/1599172483031/rapport-synthese_usages_du_numerique_dans_les_ecoles.pdf accessed on 25 February 2020); Québec Ministry of Education (2018[58]), "Plan d'action numérique [Digital action plan]", http://www.education.gouv.qc.ca/fileadmin/site_web/documents/ministere/PAN_Plan_action_VF.pdf (accessed on 5 April 2020).; personal communication.

Improve transport provision for students and teachers

Especially in the case of school consolidations that may increase the distance between schools and homes for some students, the provision of school transportation is key to avoid conflicts with parents work schedule and ensure a safe commute for students (OECD, 2018, p. 156[3]; Gottfried, 2017[59]). In Chile, for example, the central government provides transportation services for students attending municipal schools located in remote areas free of charge from pre-primary to secondary education (Santiago et al., 2017, p. 131[60]). While school transportation can mitigate some of the challenges of longer travel distances, there is also a risk that an increased time of travel and transportation costs affect the net benefits of school consolidations, both financially and in terms of students' learning experience (Ares Abalde, 2014[18]).

In addition to measures to ensure students' access to schools, rural education provision hinges upon the ability to attract and retain teachers in rural and remote schools. Although financial incentives may not be able to outweigh downsides of remote locations, they have proved effective in attracting teachers to rural schools. For instance, a few countries like Colombia, Kazakhstan or Uruguay provide higher base salaries for teachers in those areas, whereas in others like the Czech Republic, Estonia and Sweden, it is at local authorities' discretion to establish financial incentives (OECD, 2019, p. 239[13]).

Extending and combining services provided in a single location

A larger scale of provision can also be ensured by colocation, that is, expanding the services provided in a single location, either for students or for a broader set of community members. In Chile, for instance, rural schools offering boarding services to be able to serve students with long travel times receive an additional subsidy to cover accommodation and meals for those students (OECD, 2018, p. 214[3]). Similarly, in Australia, boarding facilities are used at the upper secondary level to complement the provision through rural school networks in cases where distances to students' homes are too far for a daily commute. A large multivariate study from Australia suggests that although boarding significantly changes students'

experience at school, there is parity between day and boarding students with regard to most measures of motivation, engagement and psychological well-being (Martin et al., 2014[61]).

The transformation or integration of schools into hubs for the provision of a broader set of public services is a way to reflect the importance of the availability of public services for the cohesion of rural communities (Berry, n.d.[62]). In Lithuania, for instance, municipalities created so-called "multi-function centres" (*daugiafunkcis centras*) with financial support from EU Structural Funds to exploit economies of scale and improve service provision in rural areas. Those centres unite kindergarten or day care services, pre-primary and primary education, and a community facility under a single management structure, allowing for greater co-operation and alignment across different levels of education (Shewbridge et al., 2016, p. 62[63]). In a similar effort, the extended schools programme in England (UK) encourages schools to provide a wider set of services for the community such as information technology facilities, sports facilities, parenting support or childcare (Carpenter et al., 2010[64]; Moseley, Parker and Wragg, 2004[65])

Consider rural education provision as part of regional economic development efforts

Rural education provision is intertwined with local economic development. On the one hand, depopulation and dropping student numbers are indicative of an economic decline starting well before schools come under pressure. On the other hand, efforts to strengthen the local economy and make rural life attractive require quality public services, including education (OECD, 2018, p. 167[3]). The positive relationship between the availability of schools in surrounding areas and the local economic development has been empirically shown, however without establishing a causal mechanism in one direction or another (Sipple, Francis and Fiduccia, 2019[66]). School closures often face resistance in local communities because of fears that young families would subsequently leave the area and thus further weaken the local economy (OECD, 2018, p. 160[3]; Lyson, 2012[67]). However, it would be misleading to expect rural schools to sustain rural social and economic activities against all odds, especially when dwindling student number make it hard to provide quality education services in the best interest of students (OECD, 2018, p. 161[3]).

Conclusions

This chapter set out to explore the question of how to provide quality education in rural and remote areas today and in the future. The analysis showed that this question is intertwined with the trend towards smaller schools and/or decreasing student enrolment. While there is no clear and direct effect of school size on performance, small school sizes pose a challenge for financial sustainability in communities that will likely continue losing population. At the same time, centralisation of education aiming at increasing scale economies brings higher travel times and reduced access for students and teachers, and can as such have consequences on school attendance and performance. This chapter suggests novel alternatives to primary and secondary education provision that can bring benefits not only in terms of cost reduction but also in terms of important dimensions of education such as diversity and motivation of students and teachers.

The chapter proposed two main policy areas for dealing with potential issues in rural schooling provision: restructuring schools and working on consolidating schools where necessary, and embracing comprehensive and digital approaches to introduce flexibility to school provision in rural and remote areas. For restructuring schools, policy options include creating school clusters and co-operation networks, and adapting the definition of school levels to local realities. Digital and other approaches to increase flexibility include: expanding ICT support; involving different stakeholders in different rural communities to build support; improving the geographical mobility of students and teachers; incorporating schools in service integration strategies; and fully incorporating the delivery of education into local and regional development plans.

A common thread across the different policy options outlined in this chapter is the effort to increase scale through various means. This may involve having fewer but larger institutions, but can also imply to open up networks allowing schools, principals, teachers and even students to collaborate across institutions. Finding ways to build and support these networks and collaborations will pay off in terms of equity and efficiency of school provision in the future. Above all, this chapter makes clear that place-based policies are called for given current and future levels of inequality in access to education.

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Notes

[1] England has a rule as part of their block national funding formula to decide if a school is eligible for sparsity funding. See https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/844007/2020-21_NFF_schools_block_technical_note.pdf.

[2] See Eurostat and Eurydice for 2010/11 data on maximum class sizes in European countries (Eurostat/Eurodyce, 2012[68]).