

RATIONALIZATION OF SERBIAN SECONDARY SCHOOL SYSTEM

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Introduction

1. The CARDS VET II project has – as one of its strands – a limited review of the issues surrounding the rationalization of Serbian Secondary Schools. After discussion with the EAR it is clear that the most useful approach is to:

- a) consider whether the basic structure of the secondary schooling system in Serbia is healthy, using comparative norms;
- b) consider the direction in which the Serbian schooling system is likely to evolve – either as a result of deliberate policy or as a result of social trends, given the domestic situation and trends in other countries;
- c) consider, and illustrate, the effects of such changes on the current structure of schooling, in the form of future scenarios including importantly the effects of demographic changes within Serbia
- d) Outline a methodology for dealing with identified problems in the distribution of schools;

2. The structure of this report follows this sequence, and concludes with a policy discussion which both summarizes and extends the issues that have been identified.

3. It should be noted that this report is largely confined to questions of participation and progression of students; it does not consider matters such as the physical state of Serbian schools or the quality of instruction, except indirectly, inasmuch as such matters affect participation and completion of students.

4. This note uses two main sources of information:

- *Secondary Education 2000-2005 – Statistical Bulletin*, Belgrade 2006, referred to henceforth as the ‘Statistical Bulletin’, and;
- a *database* of enrolments and classes in secondary schools, by school, school year and profile, in respect of the 2006-7 school year, referred to henceforth as the ‘School Plan Database’.

Other sources are noted at the appropriate point.

1. Is the basic structure fit for purpose?

5. The main aims of initial secondary education are:

- to promote participation by young people;
- to ensure a sufficient supply of young people to higher levels of education;
- to ensure a suitable supply of young people to the labour market;
- to do so efficiently.

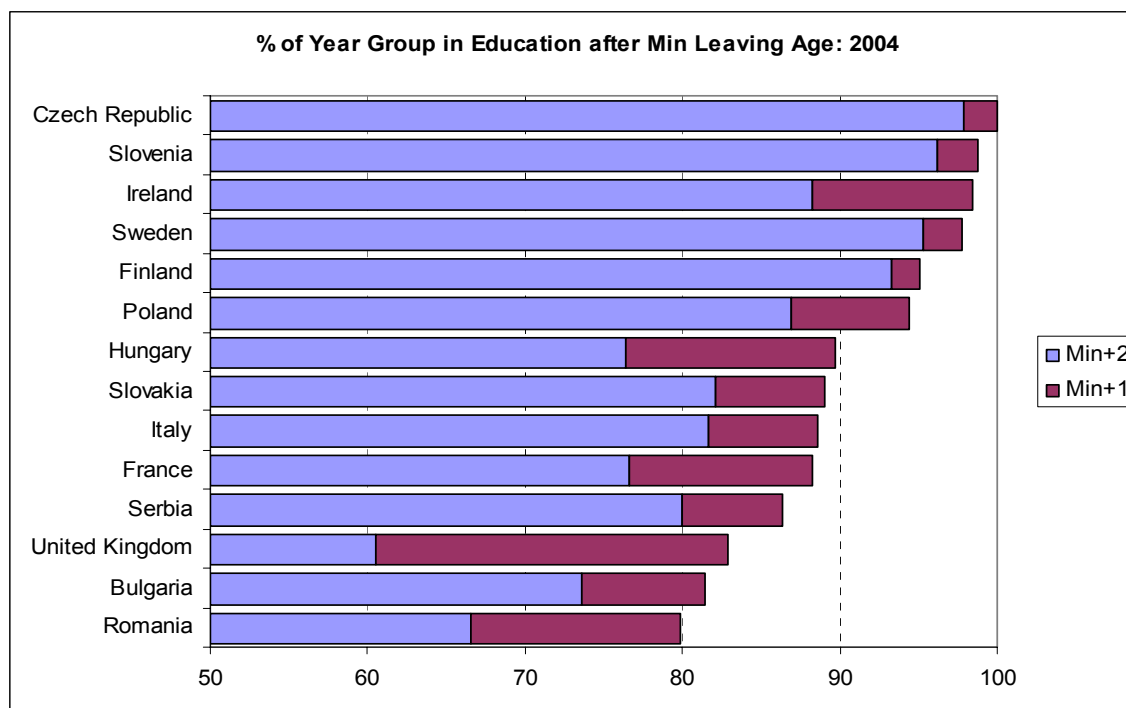
Participation

6. One key test as to whether secondary education is effective at promoting participation is the extent to which it attracts students after the end of compulsory schooling. Chart One presents information for selected European countries.

7. The countries selected all have extensive school-based secondary vocational systems, though some (England, Ireland and France) also include apprenticeships for school leavers. As can be seen, Serbia appears to lie towards the bottom of the central group of countries which have 85-90 per cent of young people staying one a year after completing compulsory

education, but ranks rather better (amongst the countries selected) when one looks at the proportion still engaged two years after compulsory education – ‘overtaking’ France and Hungary in this respect.

Chart 1



Source: Eurostat Database. For Serbia Table 11c of the *Statistical Bulletin* has been used. This shows ‘net’ participation rates by school year. This measure may be less generous than the Eurostat measure since the Serbian one excludes young people in the age group who attend education and training other than that in recognized secondary schools, while the Eurostat measure includes all those in the age group who are in education or training, at whatever stage of education. However in Serbia, the number pursuing education and training other than through the secondary school system is probably very low – even so it seems likely that this measure slightly underestimates the Serbian position in comparison with the other countries shown.

8. Drop out rates within Serbian education seem relatively low; the *Statistical Bulletin* puts them at 3.5 percent a year in the case of the three-year programmes, and 4 per cent a year in the case of the four-year programmes. In both cases – particularly in the three-year programmes – drop-out is higher in the first year and decreases thereafter. Within the four-year schools drop-out is nearly twice as high in the vocational schools as it is in the academic *Gymnazija*. Nevertheless it does not seem an acute problem within the system.

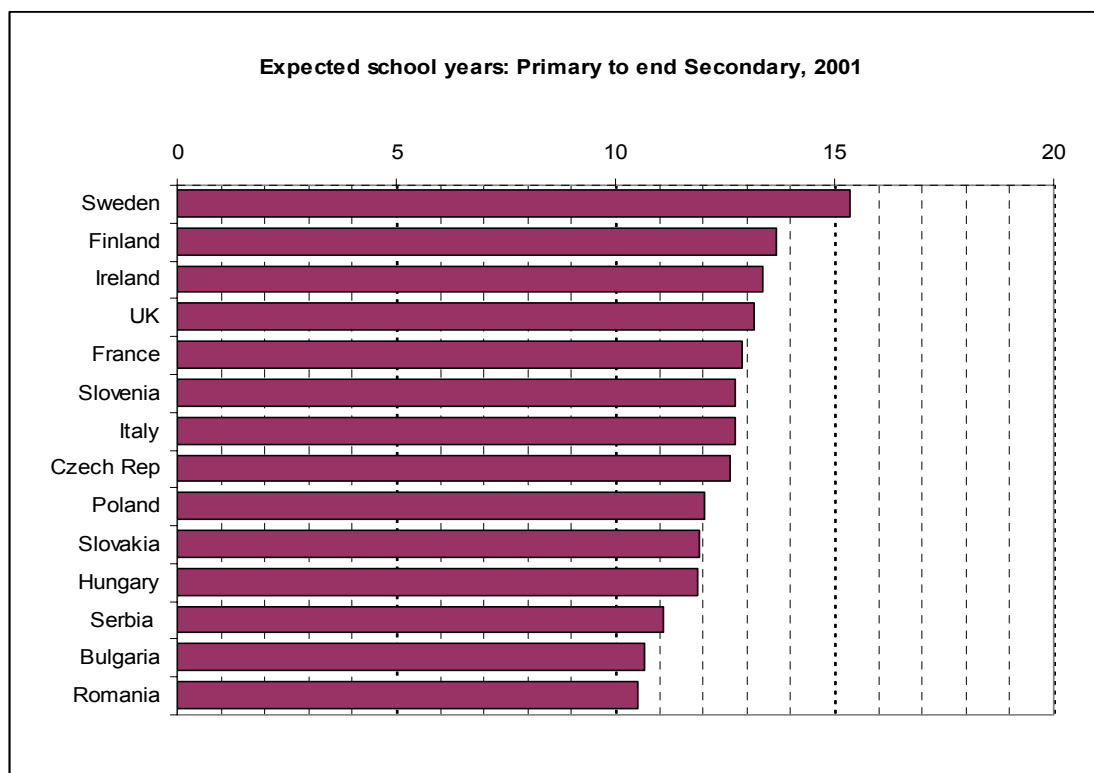
9. In 2001 (latest comparative figures) Serbia had a relatively low total duration of years of education between the beginning of primary and the end of secondary education, as shown in Chart Two. However this seems less due to higher drop out in secondary education (which as we have seen appears to be moderate), but more a result of two factors:

- the fairly late (age 7) commencement of primary school*, and:
- at least at the time, the high proportion of three year programmes within secondary education (nearly 40 per cent of 1st year secondary students in 2000/01 entered three year programmes).†

* Though a first, preparatory year of school has recently been added in Serbia

† *Statistical Bulletin*, Table 1.6

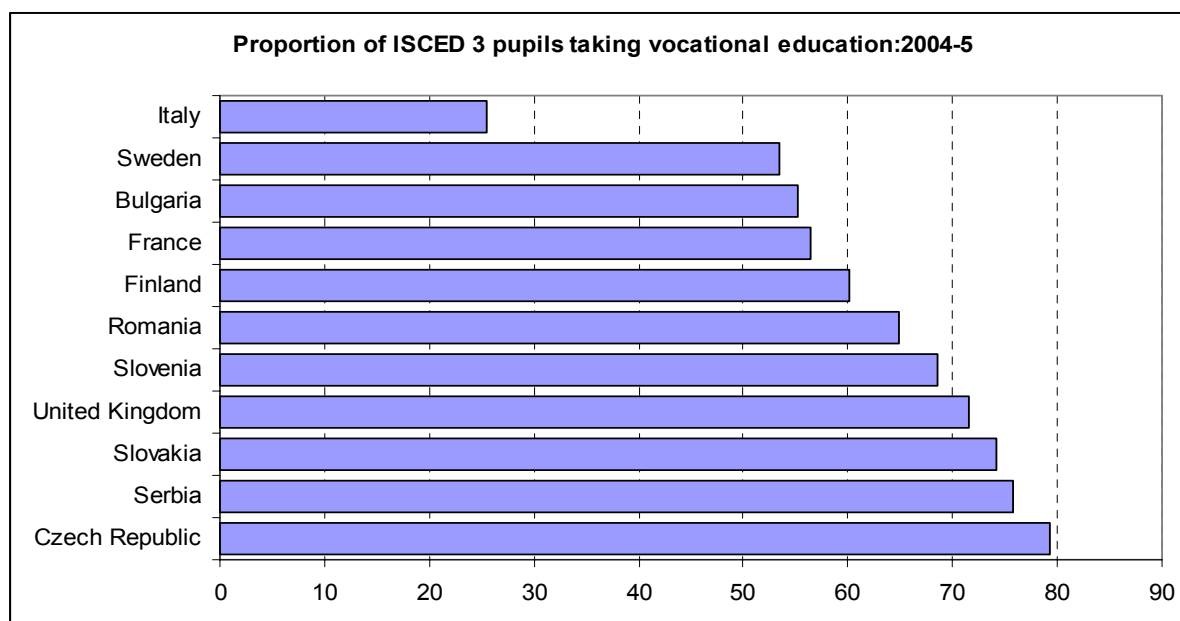
Chart 2



Source: *Unesco Institute for Statistics*, Education Table 8.

10. Serbia has a relatively high proportion of its young people pursuing vocational as opposed to academic pathways, as is shown in the following chart:

Chart 3



Source: *Eurostat and Statistical Bulletin*. Serbia figures are for 2005/6 all others are for 2004. There are some problems of definition in this analysis, for example Ireland and Hungary (not included in Chart) show 100 per cent and 88 per cent participation in general education respectively; these countries include secondary education of a technical nature within general education, while it is classed as vocational elsewhere.

11. From this analysis it would seem that secondary vocational education is relatively attractive in Serbia. The difference in education durations (and therefore probably also in relative expenditure on education) is the relatively short period of compulsory education in Serbia, with the starting age of 7 being shared with only 6 of the 29 European countries listed in Eurostat's *Education Across Europe 2003* and the finishing age of 14 being lower than any. Indeed even with (voluntary) 3-year school after compulsory schooling, Serbian pupils will spend no longer in education than the compulsory schooling in a number of countries.

12. Although relatively high with reference to EU norms, the proportion of Serbian post-compulsory students who undertake vocational rather than academic studies is not seriously adrift from many other countries. Indeed, since 2000 there has been a slight tendency across the EU for the proportion of vocational students to increase, no doubt as a result of increased overall participation in upper secondary education and training.

Access to Higher Education

13. There is no doubt that Serbian secondary education gives access to higher levels of education. Unlike some other EU countries, vocational programmes seem to lead readily to higher education. Though there are no easily available figures on the proportion of vocational secondary students who go on to higher education, it is clear that there are ample opportunities for successful secondary graduates of the 4-year schools, though some will need to pay.

14. The *Statistical Bulletin* shows 50,000 graduates of 4-year schools in 2004/5 which equates approximately with the annual numbers of opportunities in higher education (including the *viša škola*). There are fewer state-funded higher education places (around 15,000 opportunities in 2007); these bursaries are offered by universities on a competitive basis – the proportion of vocational students who succeed in obtaining them is not readily available from the statistics.

Relevance to Labour Market

15. There is much debate in Serbia about whether vocational education at secondary schools is relevant to the labour market in terms of its content – that is whether the knowledge and skills that young people learn with respect to any occupation is appropriate to it. That does not concern us in this note, but rather whether the *proportions* of young people training towards particular segments of the labour market is appropriate, regardless of the quality of their training.

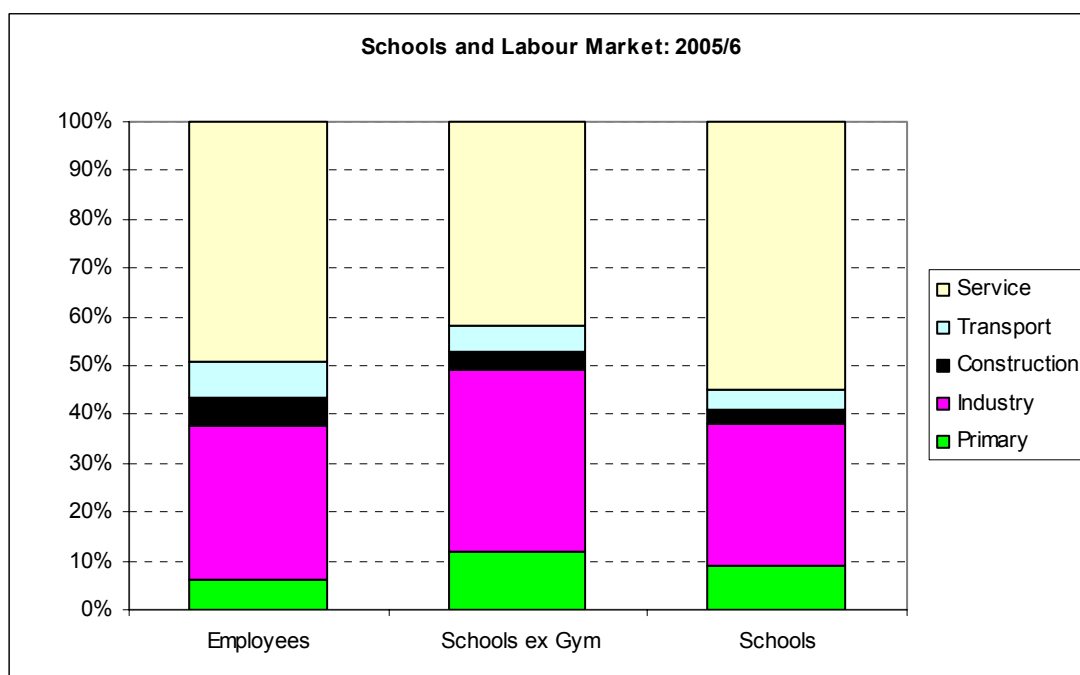
16. This is not an easy question to answer, in Serbia or any other country, for the following reasons:

- the classifications of vocational education (in Serbia, broad *Fields of Work* and more particular *profiles*) do not match the industrial or occupational classifications in labour market statistics. This is the case in many countries;
- in any case, published occupational statistics through the *Labour Force Survey* in Serbia – as in other countries – are only available at the very highest, nine classification, level. Sectoral industry statistics are not very suitable for relating to educational specializations since – for example – the numbers classified in the industry of motor vehicle manufacture will include managers, clerks and canteen workers employed by a car manufacturing firm;
- many young people taking vocational studies at secondary school continue to higher education where they may take different specializations. The fact that their school profile was not wholly relevant to the labour market may be fairly immaterial – what matters is whether it gets them to higher education, and whether what they study there is relevant to the labour market;
- of course a person entering secondary vocational education in Serbia will not emerge for at least 3-4 years, by which time – particularly in a transition economy – the labour market may be considerably different from today;

- labour market figures of employment are a 'snapshot' of a whole set of *careers*. It may be perfectly reasonable for someone to experience a career trajectory which involves a first, casual job, in a low level service occupation quite unrelated to their main ambition, then fulfil that ambition in an appropriate job, and subsequently leave it for higher management or professional responsibilities later in life. We cannot distinguish, in labour market statistics, between 'main' career options (for which it reasonable to aim specific school training) and other 'transient' or 'progression' occupations for which school training may be inappropriate.

17. Despite these caveats, though, we can perform a few crude tests of labour market relevance. Chart Four shows the proportion of current Serbian employees by broad industry grouping, together with the proportion of young people in secondary education, first excluding the academic *Gimnazija* and then classifying those taking the academic stream as likely to join the service sector.

Chart 4



Sources: Serbian Statistical Office, *Labour Force Survey 2006. Statistical Bulletin*. NB figures for those studying fields of work in 4-year schools have been adjusted by 3/4s to equate them with those in 3-year schools.

18. As can be seen, at this broad level there is only a modest discrepancy between the current labour market and the broad occupational make-up of the school system. It may well be reasonable for rather more young people to enter agricultural occupations than the number of employees in the labour market might indicate, since there are many self-employed agricultural workers who are not included in the figures for employees*. Though the number studying for industrial occupations in vocational schools looks rather too large than is justified by the labour market, this appears less the case if it is assumed that most taking academic studies will not enter the industrial (manufacturing) sector.

19. It would be hard, on the basis of these figures, to argue that the sectoral emphasis in the school system is badly out of step with the labour market. No doubt there are individual profiles which are in over- or under-supply, but even at the relatively fine classifications of *Fields of Work* there are few examples of extreme imbalances. Two which do seem somewhat

* It is also the case that the figures for the Forestry and Wood Processing *Field of Work* in the School system, which is classified here as in the Primary Sector includes furniture making and carpentry, whereas Forestry in the employment figures does not.

oversupplied are Mechanics and Metal Processing, and Electrical Engineering, but the differences do not appear great – no more than 5 percentage points, which may well be accounted for by definitions in the classification system. Similarly Construction and Non-Metals Manufacture seem somewhat under-supplied. Given the difficulties outlined at the start of this section, it would probably be unwise to try to fine-tune the system too much in order to correct them, so long as students want to study in these areas.

20. Of course these comparisons are between the school system and the *present* labour market, yet a student entering today will not enter the labour market for at least three years, and in the case of most taking 4-year profiles, probably not for 7 years or more, since the majority enter higher education. In principle therefore it makes sense for the school system to look to the future, rather than to the present.

21. The difficulty, of course, is that we cannot say what the future will hold, let alone convince parents and students that our predictions are right. One of the few general predictions that can be made of transition economies, such as Serbia, is that there is likely to be a long-term shift into the service sector.* This, in any case, is rather larger in Serbia than in some other former communist states at the start of transition. And, as can be seen from Chart 4, the school system currently seems to be slightly biased towards services compared with the current economy.

22. We can also very roughly compare the occupational levels for which school pupils are training with the structure of employment, as shown in the following table:

Table 1: Levels of education and occupation

	1 st year students	Employment (Oct '06)
Clerks, technicians and higher/4-year school	67%	35%
Below skilled worker/ 3-year school	33%	65%

Sources: Serbian Statistical Office, *Labour Force Survey 2006*. Statistical Bulletin.

23. It would seem that Serbian vocational education is considerably over-qualifying its current students, at least in comparison with the structure of the current workforce. Such a policy could only be logically justified in the expectation that there would be a considerable up-grading of employment in the near future. However, the above figures presume that workers in the occupational categories *Skilled Agricultural and Fishery Workers* and *Craft and Related Trades Workers* merit only 3-year school, which may not be the case as work in these areas becomes more complex.

Efficiency

24. It is difficult easily to get comparative figures on expenditure in secondary education. Eurostat gives expenditure across the 27 member states at an average of €5,650 per student in 2004, though it ranges widely with Bulgaria (€1,400) Poland (€2,300) and Slovakia (€2,300) towards the bottom of the range. On this basis, at prevailing exchange rates and purchasing power parities[†], expenditure per pupil on Serbian secondary education in the same year, at some 48,000 dinars (Statistical Bulletin, Table 3.3b), would amount to €1,050.[‡] Such measures, though, do not fairly represent the relative burden that Serbia incurs in supporting

* *Serbia, Labour Market Assessment*, World Bank, 2006 p 48

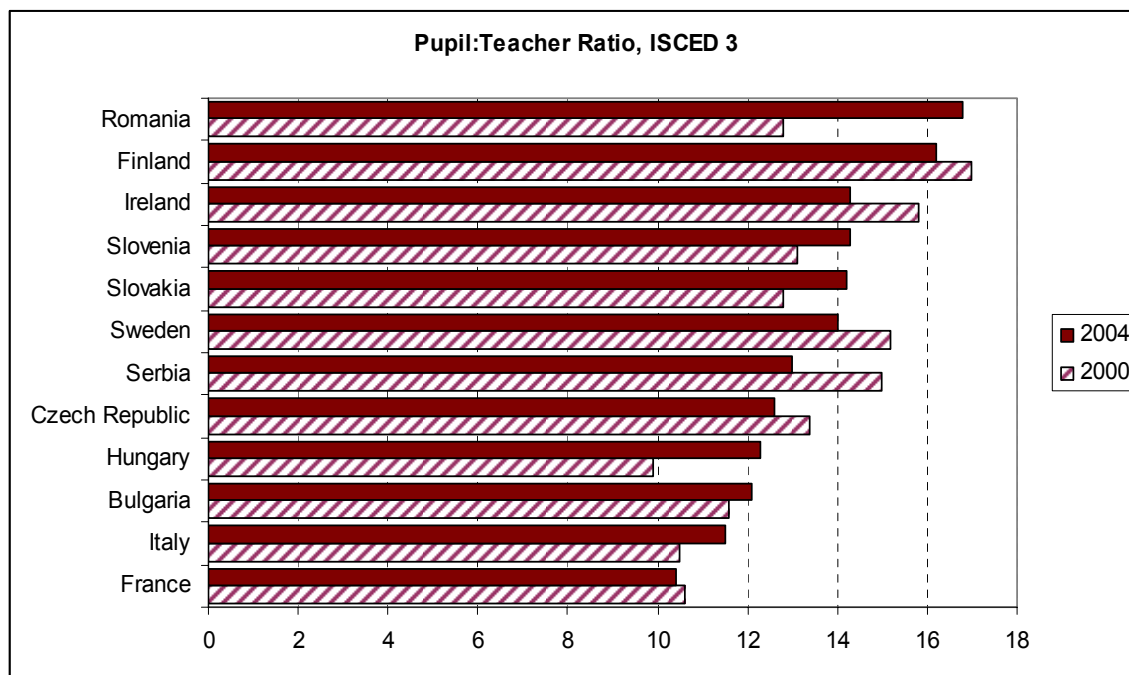
[†] The *Eurostat* figures are expressed in Purchasing Power Standards, which adjust for different price levels in different countries. No PPS is given for Serbia, so I have used that for Croatia at 65.3 for 2004 (Eurostat: Comparative Price Levels Table)

[‡] It is not clear whether this sum is that falling to the central Ministry of Education or whether it includes the costs (mainly premises-related) borne by municipalities. If it does not, then the costs would need to be increased by around 15 per cent to bring them to around €1,200.

secondary education. Eurostat offers such a measure in the costs per secondary student expressed as a proportion of a country's GDP per capita. On this basis Serbia is very much at the EU average, at 25 per cent.

25. However it is very difficult to compare 'like with like' in such calculations. Perhaps more straightforward is a comparison between the pupil : teacher ratio, which is at least independent of price levels. Chart Five shows comparisons with a number of countries for 2004 and for 2000. As can be seen, Serbia is in the middle category of the countries chosen for 2004, though unlike the New Member States shown it has reduced rather than increased the pupil : teacher ratio over the four year period.

Chart 5



Sources: Eurostat, *Statistical Bulletin*

26. What appears to be a distinctly low cost per pupil in Serbia, together with a medium and reducing pupil : teacher ratio would lead us to the conclusion that the teacher supply is relatively plentiful compared with other countries, but is relatively poorly paid. Serbia seems to be striking a rather different balance than many of the New Member States, opting for smaller classes with poorly paid teachers (and perhaps poor fabric and materials), rather than trading off fewer teachers for better conditions (for teachers and pupils).

Conclusions

- By European standards Serbia has a reasonable level of participation in post-compulsory education, with 80 per cent of its young people in education two years after minimum school leaving age.
- However as its period of compulsory education is notably shorter than other countries, total years of schooling in Serbia are relatively few.
- Drop out of both academic and vocational streams (whether 3-year or 4-year) seems moderate.
- In terms of broad fields, the pattern of Serbian vocational education seems reasonably matched to the current economy.
- In formal ISCED terms, Serbia's secondary education might seem pitched at rather too high a level compared with the level of jobs that are currently available, but given the short number of compulsory school years, this may be appropriate.

- Serbia's secondary education is not costly by European standards, though it seems roughly comparable in relation to GDP per head.
- Serbia has a reasonable ratio of teachers to pupils, though unlike other some other comparable countries this is reducing rather than rising.

2. Trends

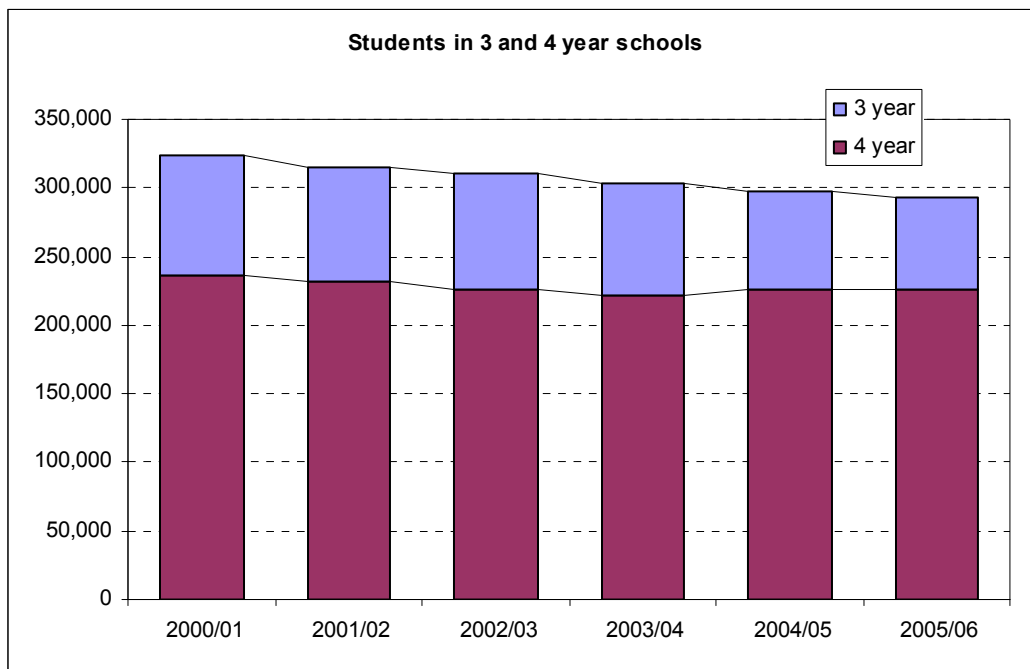
27. In this section we look at recent trends in the structure of schooling, with a view to establishing what factors are likely to affect Serbian education in the forthcoming years, unless policy changes are made. Three measures are examined:

- Changes in the structure of the schools;
- Changes in teacher numbers;
- Demographic changes, which will impact on future school generations.

The structure of schools

28. The following figure shows the change in student numbers over the 6 year period between 2000 and 2005.

Chart 6



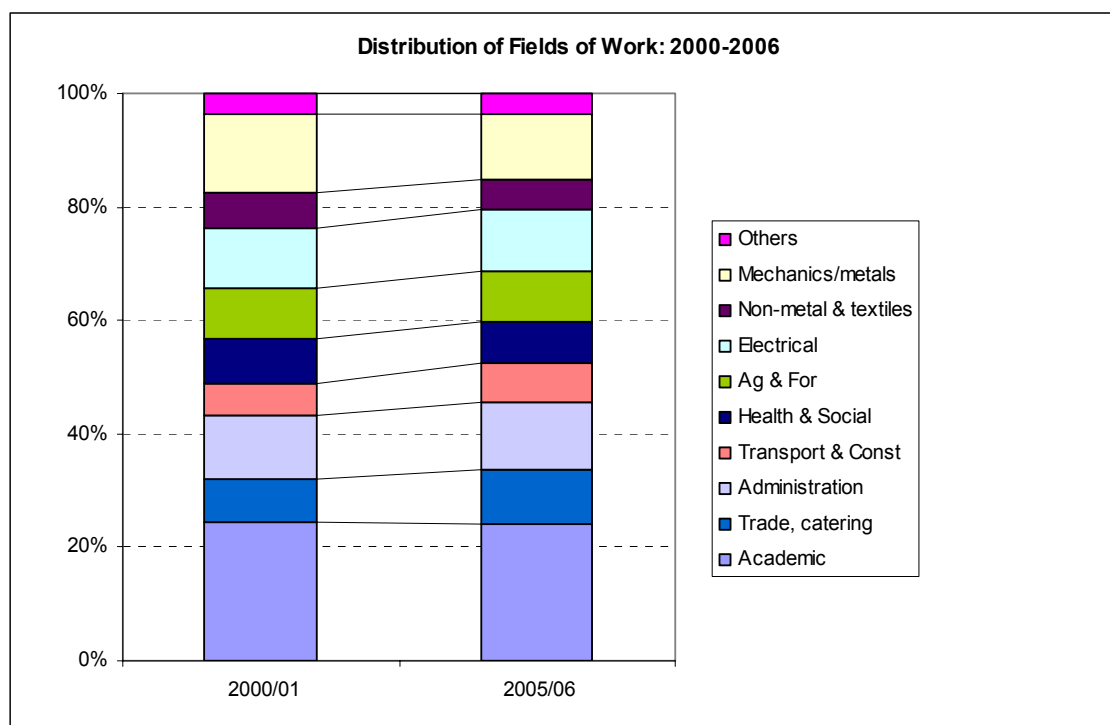
Source: *Statistical Bulletin*

While there has been a total decline in numbers, reflecting demographic changes, of 9 per cent*, this reduction has fallen disproportionately on the 3-year profiles (which have declined by 23 per cent, while the 4-year profiles have only reduced by 4 per cent).

* participation rates in secondary schooling have risen over the period. The *Statistical Bulletin* (table 1.7b) shows primary-secondary transition rising from 91 per cent in 2000 to 95 per cent in 2004.

29. Analysis by occupational 'field of work' also shows considerable changes over the same period.

Chart 7



Source: *Statistical Bulletin*. Some smaller categories have been excluded, and some combined.

30. The proportion of students in the academic *Gimnazija* have remained pretty constant over the period while relative expansions have taken place in:

- trade, catering and tourism;
- business, law and administration;
- transportation.

These increases have been counterbalanced by declines in:

- mechanics and metal processing;
- chemicals, non-metals, textiles and leather (combined in above chart);
- (to a lesser extent) in the health and social field.

With the exception of the last, these changes are broadly what one might expect as the economy shifts towards a more service based orientation, and seem consistent with the direction advocated by World Bank (paragraph 21 above).

31. The chart above is in terms of proportions. In absolute terms, there have been some significant shifts, with declines of nearly 30 per cent in mechanics and metals, and in textiles and leather, and absolute increases of over 10 per cent in trade, catering and tourism and in transportation. It should also be remembered that these figures are for total student numbers over a 3- or 4-year period; analysis by entrants to programmes would show sharper effects.

32. Putting the two trends together (reduction in 3-year profiles and re-balancing between manufacturing and service occupations) it is no surprise that the most dramatic reductions have occurred in the 3-year profiles in the manufacturing fields. 3-year profiles in the domains of mechanics and metals, non-metals manufacturing, wood processing and textiles and leather have each reduced by 40-50 per cent in the six year period. Interesting, the 4-year profiles in these fields have actually increased slightly (indeed by 20 per cent in the case of textiles and leather).

33. What is going on? The following points seem to be likely explanations:

- with the demographic decline students have a wider choice of programmes. They are particularly attracted by 4-year rather than 3-year vocational school, as this is more prestigious and carries the chance of university entrance;
- this trend is welcomed by schools and teachers, not only for educational reasons, as it also increases the loading on the system, thus rendering teacher jobs more secure;
- 3-year profiles are particularly unattractive. However – to a considerable extent – students who might have entered these are being tempted (or perhaps cajoled?) into doing 4-year programmes in the same domains, and no doubt delivered by the same teaching force;
- despite these effects, across the piece there is a helpful tendency for greater emphasis on services occupations rather than manufacturing. Whether this is due to central steering by the Ministry, to the perception of School Directors about trends in the labour market, or through the informed choices of students and parents who detect changes in the labour market, is not clear. In any case they are not mutually exclusive.

34. A number of people have commented on the lower entry standards that now prevail for 4-year profiles, and these figures would seem to bear out the increased facility with which students can enter the higher tier. However suggestions that this allegedly lower ability cohort of 4-year students will have difficulty in coping with the rigours of 4-year school are not borne out by the figures for drop-outs and year-repeaters, which one might have expected to be increasing with these trends. The *Statistical Bulletin* (Table 1.13) shows that drop out rates have barely increased in 4-year schools (from 3.5 per cent per year in 2000/01 to 4 per cent in 2004-5) and that rates of repeating have actually fallen (from 1.7 per cent to 1.3 per cent).

35. Of course it might be that all-round standards have been reducing, so that teachers are more tolerant of indifferent student performance. There seems no objective evidence of this, which – if it were the case – would be likely eventually to show up in difficulties of this ‘new’ cohort to 4-year schools in accessing or holding on to places in higher education.*

36. It is worth noting that the *Gimnazija* stream has maintained roughly the same proportion of the cohort throughout the years. It is perhaps surprising that it has not enjoyed an expansion given its relatively (by European standards) small presence and its apparent desirability in status and leading to higher education. Whether this field has been restricted by the Ministry or headteachers in a way in which others have not, or whether students like the ‘double option’ of graduation from vocational 4-year schools with a qualification which both gives access to higher education and to the labour market, is unclear from the figures.† On the face of it, there could be scope to increase this stream.

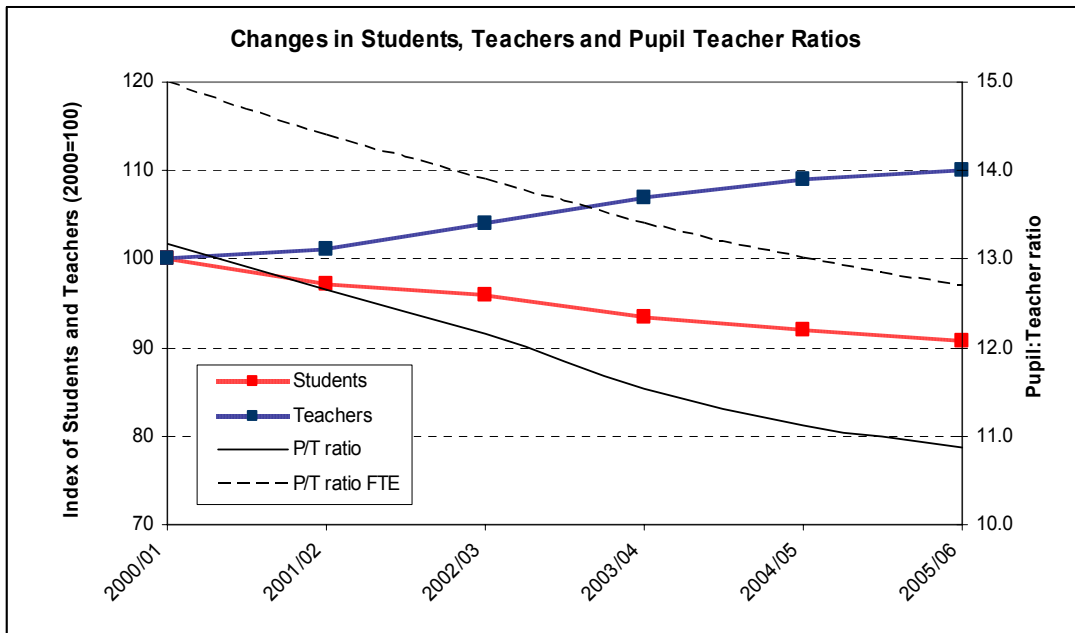
Teachers

37. It is a curious feature of the Serbian situation that the number of teachers has been rising as the number of students has been falling. This is illustrated in the chart, which also contains pupil/teacher ratios (in respect of all teachers, and in respect of full-time equivalent (FTE) teacher posts).

* Completion rates in higher education are already low.

† The view on our field trip to Subotica was that students very content with a vocational programme, so long as this gave a realistic chance of attaining a place in higher education. This, admittedly, was a view from teachers at a vocational school.

Chart 8

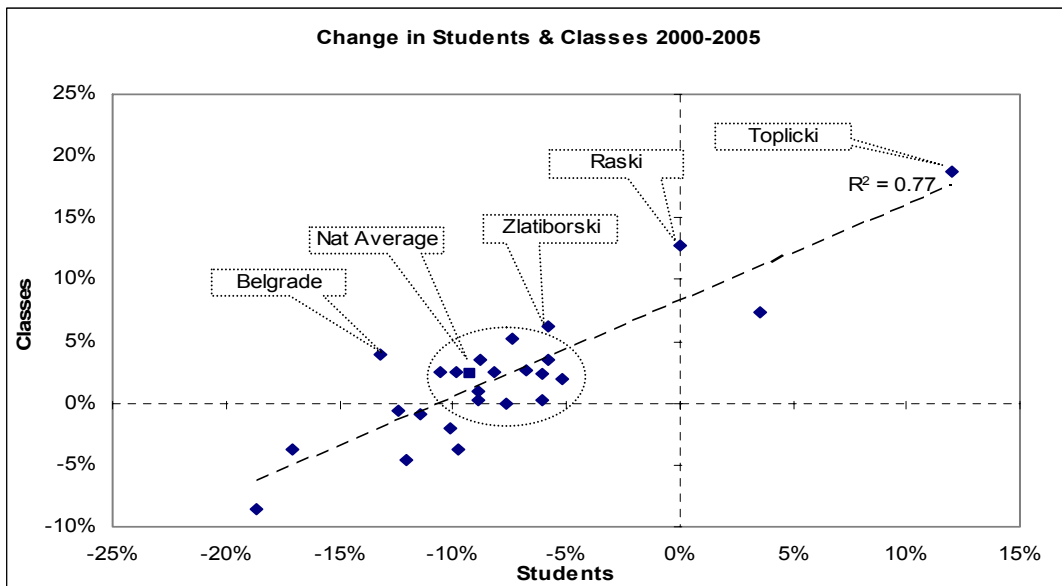


Source: *Statistical Bulletin*

As can be seen, there has been a 10 per cent reduction in students while there has been a 10 per cent *increase* in teachers. As a consequence the pupil : teacher ratio has declined appreciably.

38. It is hard to detect what has caused this increase in teacher numbers. At first sight the causal link seems evident. Teacher numbers are calculated from classes and if classes change so will teachers. The following chart shows that there is indeed a strong relationship between *student* numbers and classes. Each point represents one of the administrative 'regions' of Serbia:

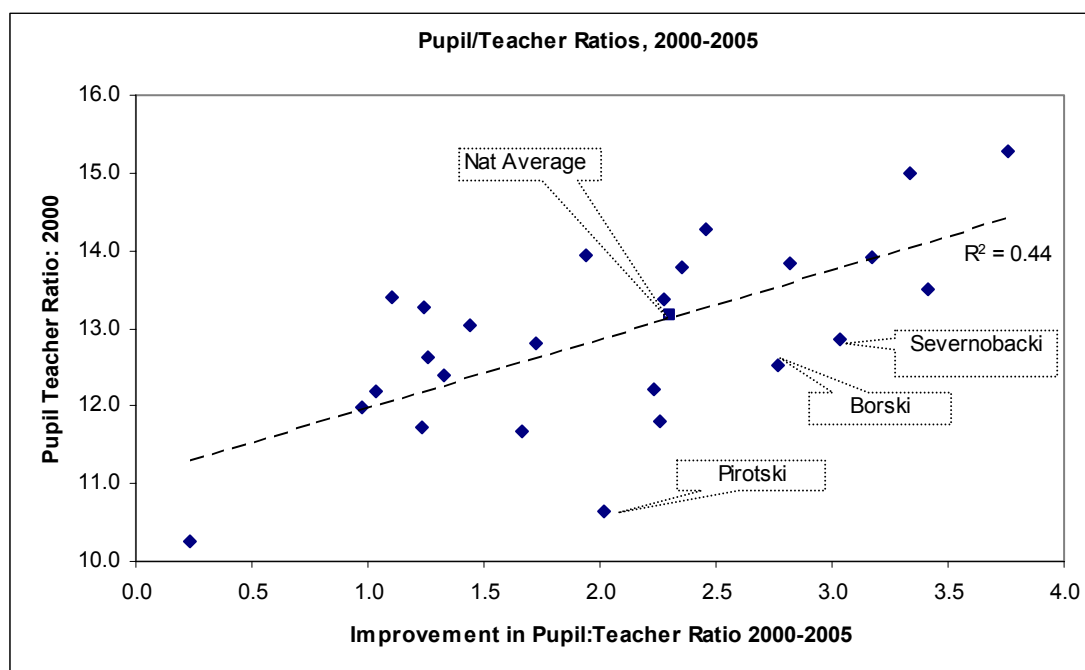
Chart 9



The relationship is strong ($R^2 = 0.77$).^{*} As can be seen the bulk of regions (circled) have experienced a decline in students of 5-10 per cent over the five year period, but have seen the number of classes rise by 0-5 per cent. Quite why the number of classes should rise when student numbers are falling is not clear, unless there is a deliberate policy to reduce class sizes or to hire new teachers (it seems unlikely that a school would increase the number of classes if it merely wanted to protect the jobs of existing teachers, or did not have the powers to dismiss them). In some regions this rise in the number of classes is pronounced and clearly unrelated to student numbers. Belgrade (4 per cent rise in classes against at 14 per cent decline in students) is especially important because of its size (over 20 per cent of the national total). Zlatiborski and Raski seem also have seen an especially disproportionate growth in classes.

39. Any concerted policy to reduce pupil : teacher ratios would obviously seek to make the largest effects on those areas where the ratios were highest. To what extent can we see such an effect?

Chart 10

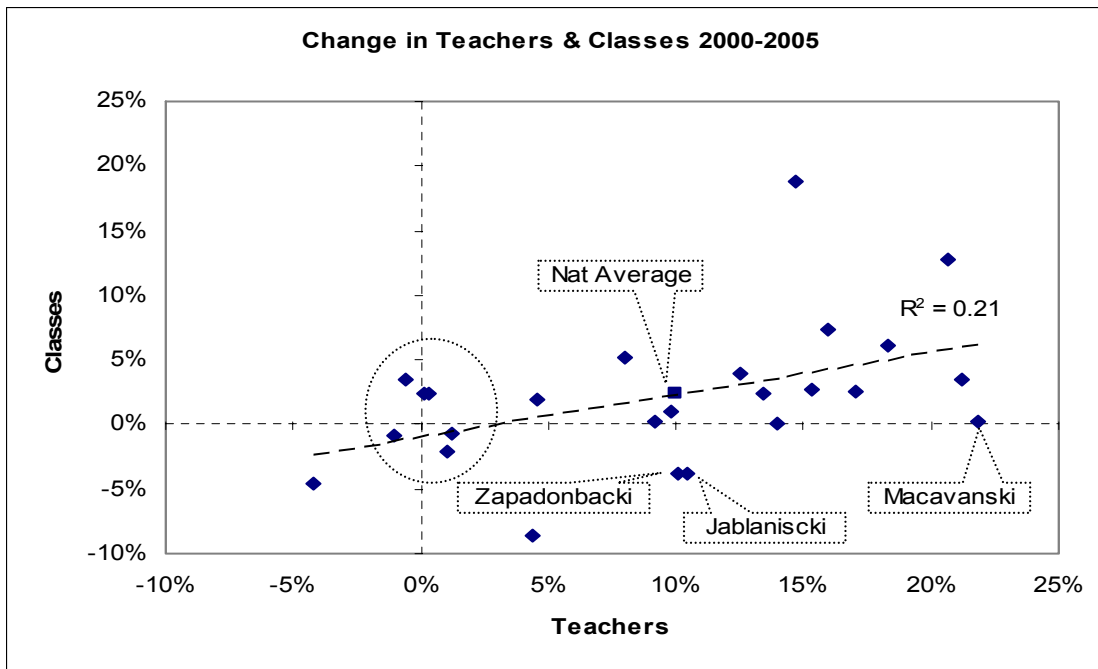


40. The chart shows that there is a correlation – though a fairly mild one – between those areas which had comparatively high pupil : teacher ratios in 2000 (vertical scale) and those where the ratio has most been improved (right hand scale). However there is lot of variation: Severnobacki and Borski regions, in particular have seen higher than average reductions while initially enjoying lower than average ratios. The Pirotoski region has seen a two point (20 per cent) improvement even though it already had one of the lowest ratios in the country.

41. Though in theory teacher numbers are linked to the number of classes, in practice the relationship seems very weak as is shown in the next chart:

^{*} An R^2 of 1 would denote a perfect relationship. 0 denotes no relationship at all. A correlation of less than 0.3 is probably insignificant in practical terms.

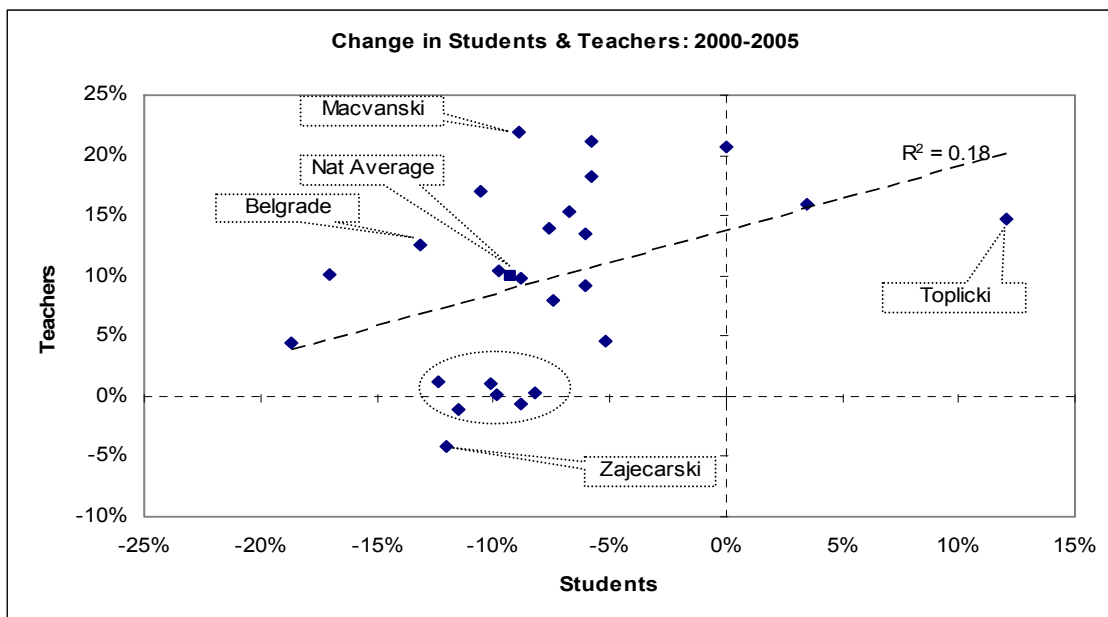
Chart 11



Most regions have seen increases in teachers quite out of proportion to the modest increases in the number of classes. In particular Macavanski region has increased teacher numbers by over 20 per cent without any change in the number of classes and both Zapadonbacki and Jablanski regions have seen a 10 per cent *increase* in teachers despite a four per cent *decrease* in classes. The reasons for this are not clear, but on the face of it there would seem to have been rapid increases in teachers without corresponding reductions in class sizes. Having said that there is a cluster of six regions (Južnobanatski, Kolubarski, Nišavski, Pomoravski, Rasinski and Šumadijski) where teacher numbers have not risen while the number of classes has remained constant, or even increased in some cases. The low R^2 of .21 shows that overall there is little, if any, relation between the increase in teachers and the change in the number of classes.

42. The net result of all these effects, or lack of relationships, is that in the great majority of regions teacher numbers have risen with no obvious relation to student numbers as shown in the last chart.

Chart 12



43. The same group of 'restrained' regions is circled. While not decreasing, teacher numbers (either to take advantage of reducing student numbers to reduce class sizes, or because of difficulties in reducing teacher numbers), these have not increased teachers. However the great majority have taken on new teachers, without (as we have seen) increasing the numbers of classes very much. Belgrade is one of the more extreme examples, with teachers rising by 13 per cent while students *decreased* by same amount. In all, teacher hiring decisions do not seem to be made with any obvious regard to changes in student numbers.

44. While this analysis is confined to the regional level (which is the lowest shown in the *Statistical Bulletin*) it is sufficient to indicate that there seems to be a serious control issue over teacher numbers. While one might view with some understanding a failure to reduce teacher numbers in line with a reducing student roll, it is difficult to understand why *increases* have taken place. It could be that new profiles have been launched requiring new teachers, while old ones have remained with few students but the original numbers of teachers. However, though there have been changes in the distribution of profiles, these are not particularly dramatic, and – as we have seen – have largely been shifts between 3- and 4-year profiles in the same domain. It could also be that there has been migration of students within regions, causing expanding schools to hire more teachers, while declining schools have not been able to reduce teacher numbers or to transfer teachers to expanding schools. However the Serbian regions are not enormously large, and it is particularly difficult to see how such an effect could reasonably occur in Belgrade. The final interpretation would be that schools have been able to hire new teachers fairly indiscriminately, and have done so, perhaps in the interests of distributing employment opportunities.*

45. Whatever the reason, it would seem that teacher numbers have increased in a manner which it is difficult to explain. It is perhaps worth reflecting that the same total salary budget could have been used to pay existing teachers more, and/or to smooth the path for teacher re-deployment or redundancy. As we have seen this trend has so far served to reduce Serbian pupil : teacher ratios to around the mid-field in European terms, but the fact that this trend is going in the opposite direction to the demography is worrying.

Demography

46. The effects of demography on secondary school populations in the short and medium term (5-10 years) are fairly certain, since the Serbian children who will make up the school population in 2012 and 2017 have already been born, and death rates in this age group are very low. At the national level the only factor which is likely to disturb projections is net migration of families. There is reason to believe that this has had a considerable effect in the last five years, particularly on Toplicski region next to Kosovo which probably explains why this was often noted as an 'outlier' in the charts of pupil : teacher ratios earlier. However this effect may now be over.

47. Using the demographic figures by age-group we can make a fair prediction of the changes in the school population between 2007, 2012 and 2017. This is done by comparing the size of different age-groups from the 2002 Census with those aged 10-14 at that date forming (more or less) the 2007 population of secondary school age, those aged 5-9 forming the 2012 population and those aged 0-4 the population in 2017:

* A further reason may have been the introduction of a new mandatory subject of civics or religious studies in the early years of the decade. This may have caused some schools to take on extra teachers capable of taking classes in these subjects. However if this was a factor one would have expected a one-off rise in teachers rather than the fairly constant drift upwards which has occurred.

Table 2: Forecast student population change for Serbia

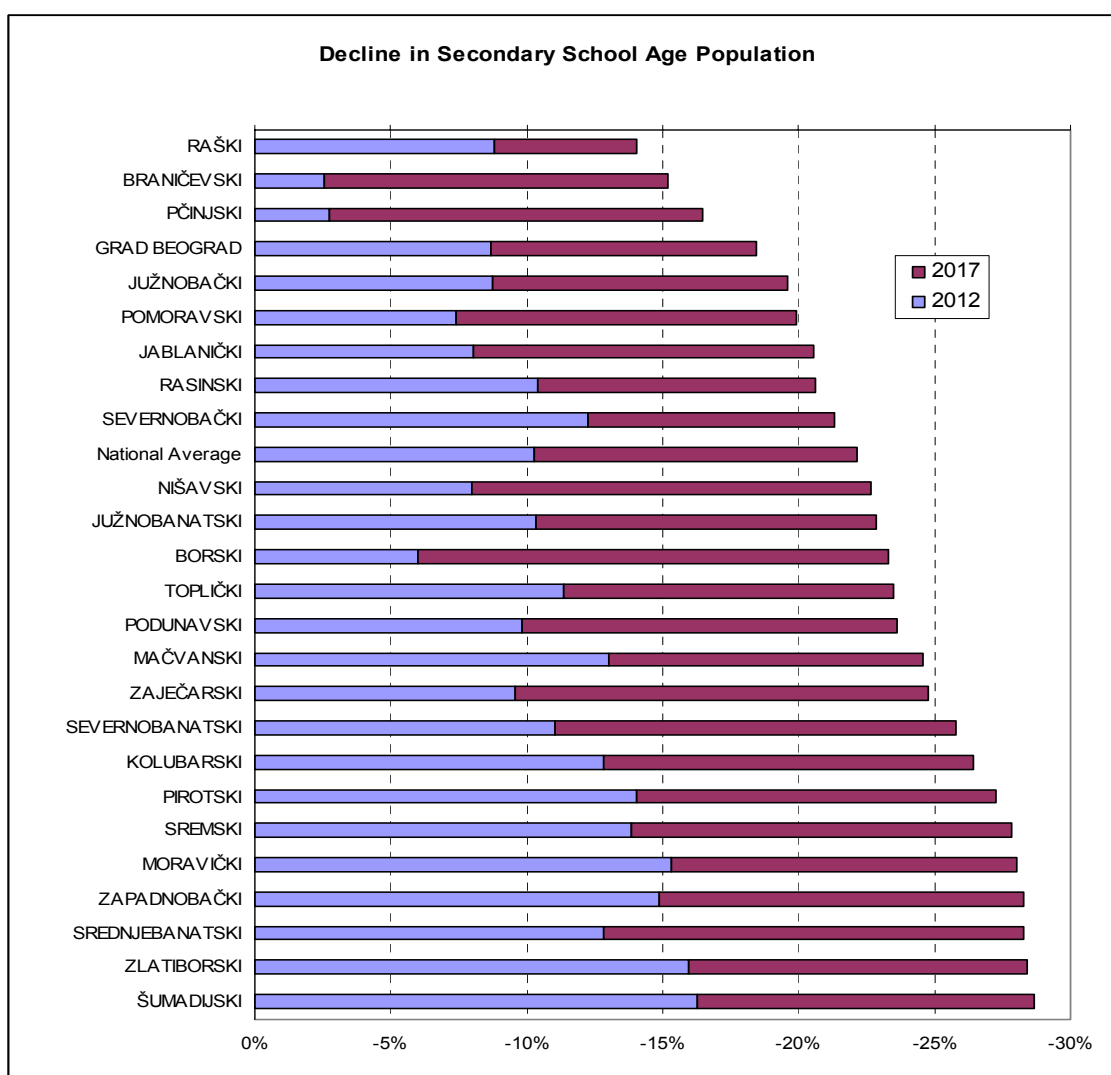
	15-19 population	Change from 2007
2007	439,830	
2012	394,596	-10.3%
2017	342,344	-22.2%

Source: *Municipalities of Serbia 2006*. Statistical Office of the Republic of Serbia.

48. If all factors (length of schooling, drop-out, tendency to participate) remained the same as now this is the level of change we would expect to see in students in Serbian secondary education. The period to 2012 would see a rate of reduction averaging 2.2 per cent a year and the period 2012-2017 a rather faster rate of 2.8 per cent. These rates compare with the recent average rate of decline of the underlying secondary school population of 2.4 per cent a year over the period 2002-2007. In short, present trends will continue.

49. At regional level net migration is likely to be a more significant factor, and unfortunately we cannot readily take this into account in projections. However, we can track the current age-cohort by the region they currently live in (that is, assuming that there is no internal migration between regions). This gives a fairly wide range of different rates of decline, as shown in the chart. Some parts of Serbia will be much more affected by demographic decline than others.

Chart 13



3. Current distribution of Secondary Schools

50. The *School Plan Database** shows 445 schools of 5 main types, as shown in the following table.

Table 3: Schools by Type

Type of School	Number of Schools	Average pupils enrolled	Average Pupils enrolled 1st year
Gimnazija	100	636	163
Mixed	32	445	134
Vocational 3/4-year	238	712	218
Vocational 4-year	50	740	191
Music and Dance Schools	25	109	35
Total	445	645	186

51. It is not easy to compare the size of secondary schools in different countries as the secondary phase lasts for different lengths, and indeed may vary within a country as well as between them (for example in the UK, some secondary schools cater for 11-18 year olds, and some for 11-15 year olds). Countries with sizeable apprenticeship pathways have schools which cater for part-time students, and clearly this gives rise to very different sizes of school than schools with full-time vocational programmes. However looking at a number of countries with broadly similar school-based secondary vocational education as Serbia, and for which average size of school is given in the *Eurydice* database, would seem to indicate that, if anything, Serbia's secondary schools, with an average size of over 600 students are rather larger than is typical.

Table 4: Size of Schools in Other Countries

Country	Average size of secondary school
France	576
Romania	533
Sweden	456
Ireland	450
Finland	252
Spain	120

* This section is based upon a database provided by the Ministry of Education showing the entrants in October 2006, by class, school, and profile. The database has been supplemented by giving each school an individual identifier and classifying it by type. The database seems reasonable when compared with the published figures (for earlier years) in *The Statistical Bulletin*, though there are around 30 fewer schools in the database than shown in the *Bulletin*. Whether this is caused by missing data in the database, a discrete set of school (eg. Special Schools) which are included in the *Bulletin* but not in the database, or differences in classification of what constitutes a 'school' (annexes, satellites etc.) is not known. The discrepancy, however is only 7 per cent and is unlikely greatly to affect the figures given here.

52. In Serbia most towns of any size boast a gimnazija, providing general education. A few smaller towns, though, have a mixed school providing both general and vocational education. In most cases these mixed schools have a gimnazija stream alongside both 3 or 4-year vocational profiles, but in some case only 4-year profiles are offered – in all such cases there is a vocational school in the same municipality which offers 3-year programmes.

53. Vocational schools which offer only 4-year profiles tend to be either health related *Medicinska škola* or schools of art and design. In the larger cities there are some other types of specialized technical schools offering only 4-year programmes, but these tend to be exceptional.

54. The great bulk of vocational schools offer both 4-year and 3-year profiles. A number have *either* a limited number of 4-year profiles (often just one or two), *or* a limited number of 3-year profiles; it may be that they have added a profile or two fairly recently to achieve a balance. There was only one school in the country, in Novi Kneževac, which offered only 3-year profiles in 2006.

55. In any kind of sizeable town there are usually two or three different types of vocational school. The main categories, apart from health-related and art and design which have been already mentioned, tend to cluster around:

- mechanical and electrical trades (*Tehnička or Mašinsko-elektrotehnička škola*)
- agricultural occupations (*Poljoprivredna škola*)
- commercial occupations (*Ekonomsko-trgovinska škola*)

Schools focussing on textiles, chemicals and (less commonly) construction are also fairly common, but none of these categories are watertight, and particularly in the more rural areas the vocational schools offer profiles from a range of different domains (fields of work).

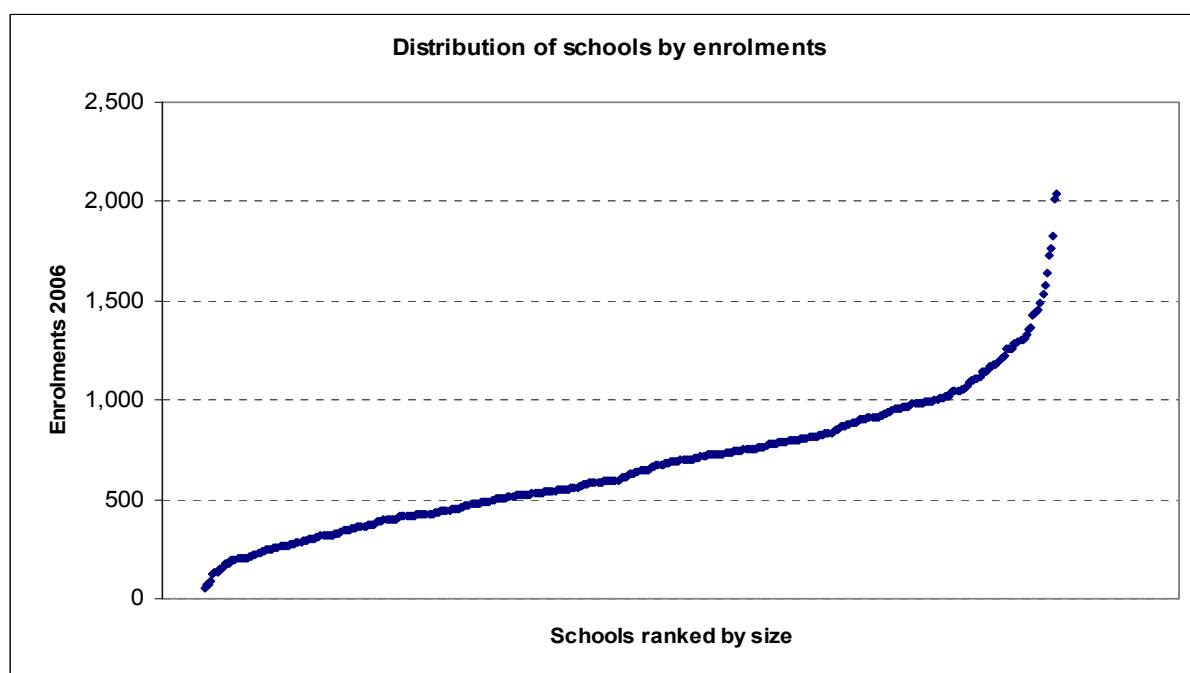
56. Only 14 of Serbia's 141 municipalities outside the big cities of Belgrade and Niš do not have a secondary school. 58 have only one school, and of these:

- 3 only have Gimnazija, with no vocational school;
- 30 only have a vocational school;
- 25 have mixed schools (offering both vocational and gimnazija streams).

57. Together with those municipalities which have no secondary school, this means that 34 municipalities – about a quarter – have no gimnazija streams, and that students wanting this type of education need to travel. Whether this is in fact a problem in terms of being an obstacle would need to be examined; it would be matter of establishing how easy transport to the nearest gimnazija was. On the other hand all those locations without gimnazija do offer 4-year vocational profiles, so children from these places can in principle have access to higher education without travelling.

58. The chart shows the distribution of schools by the number of enrolments in 2006 (the music schools have been excluded, as they tend to be particularly small and specialized).

Chart 14



Half of schools are in the range 425 (lower quartile) to 875 (upper quartile). As can be seen the upper end of the range incorporates some schools which are very much larger than the norm (the largest – the *Medicinska Škola*, Beograd, at over 3000 students is not shown). The relatively small ‘tail’ consists of some specialist schools and also a number of instances of the sole school in a municipality.

59. Of the 262 vocational profiles which had students in 2006 (leaving aside the gimnazija and performing arts profiles), 241 attracted first year students. 99 of these were 3-year profiles, and 142 were 4-year profiles. The table shows the number of municipalities (outside the Greater Belgrade area) where different numbers of vocational profiles were provided to first year students.

Table 5: Municipalities offering different numbers of vocational profiles

Number of profiles provided	Number of municipalities
1	2
2	7
3-5	32
5-10	37
19-20	21
21-50	21
51-100	7
Over 100	4

NB: Belgrade and Niš counted as one municipality

As can be seen, in most municipalities between 3 and 10 profiles were actually provided. In only 11 places were more than 50 profiles provided.

60. The next table gives the same data for 3- and 4-year profiles:

Table 6: Municipalities offering 3 and 4-year vocational profiles

Number of profiles provided	Number of municipalities	
	3-year	4-year
0	7	8
1	12	23
2	14	19
3-5	47	35
5-10	24	18
19-20	19	13
21-50	7	12
Over 50	1	2

NB: Belgrade and Niš counted as one municipality

It is noticeable that nearly two-thirds of municipalities offered 5 profiles or fewer in each type of profile. Of the 122 municipalities where 4-year profiles are provided, in fact 42 (a third) offer only one or two versions.

61. We now look at the availability of different types of profiles over the whole country. The next table shows the profiles (total, 3-year and 4-year), provided by different numbers of schools for 2006 vocational entrants (*ie.* again excluding gimnazija and specialized musical schools).

Table 7: Profiles by numbers of schools offering

Number of Schools providing	Profiles offered to first year students		
	All	3-year	4-year
No school in 2006	21	15	5
1 school	66	31	28
2 schools	35	11	22
3-5 schools	52	20	22
5-10 schools	29	12	13
19-20 schools	29	9	17
21-50 schools	23	12	6
Over 50 schools	7	4	3

62. Thus 66 profiles were offered in only one school and seven profiles were offered in over 50 schools. The first line represents profiles which were being taught in schools in 2006, but which – for whatever reason – were not being provided for first year students.

63. In the case of 3-year profiles the 16 profiles offered in over 20 schools are,:

elektroinstalater
muški frizer
autolimar
konfekcionar - krojač
proizvođač prehrambenih proizvoda
instalater

bravar
ženski frizer
vozač motornih vozila
mehaničar grejne i rashladne tehnike
autoelektričar
elektromehaničar za termičke i rashladne uređaje
kuvar
konobar
trgovac
automehaničar

and in the nine 4-year profiles offered in over 20 schools were:

elektrotehničar energetike
prehrambeni tehničar
finansijski tehničar
medicinska sestra - tehničar
poljoprivredni tehničar
tehničar drumskog saobraćaja
elektrotehničar računara
mašinski tehničar za kompjutersko konstruisanje
ekonomski tehničar

64. As can be seen, large numbers of profiles are in practice only offered in a few schools. Around two-thirds of profiles (whether 3- or 4-year) are only offered in 5 schools or fewer and a half are only offered in 1 or 2 schools, and even then sometimes only intermittently.

65. Of course this may be reasonable in the case of large specialized schools which offer a large number of profiles in their particular 'field of work'. And it may also be reasonable in a smaller rural school if there are very particular job opportunities in a locality or where a school is linked to a sizeable enterprise (though this is probably less frequently the case than in the past). It is less likely that dedicated training of this kind is appropriate for those attending 4-year schools, many of whom – as we saw earlier – go on to higher education, where they can specialize further.

66. But whatever the justification for providing pretty unique training in particular schools, it does raise the question of whether rare profiles of this nature need to be nationally specified, or be taken through elaborate procedures of approval. If it is the case that a particular school has a particular employer in their locality, with particular requirements, then it makes sense, surely, for the curriculum to be designed by that school with that employer. This may, of course, already happen under the aegis of national procedures.

67. Given that the majority of students taking 4-year profiles are either destined for higher education (and are likely to be taking vocational studies there), or at least would like to be, it may not matter greatly to them or to the Serbian economy precisely which 4-year profile they take.* In this context it is worth noting that, of the 157 4-year vocational profiles actually being taught in Serbian schools in 2006, just 12 of them account for over 50 per cent of students (22 account for two-thirds of students and 59 – around a third of all 4-year profiles – account for over 90 per cent of students). If one wanted to establish a vocational 'high road' to higher education, then it is likely that this could consist of relatively few 4-year profiles.

* On our field visit we were told that it was common for students to take a programme in one field of work at secondary school, and then go on to quite another in higher education.

'At Risk' localities and schools

68. We now focus on:

- those localities which have few secondary school facilities;
- those schools which are particularly small;

These categories overlap, but it is worth noting that in the larger towns and cities there are specialized schools which may be small, but which form part of a richer availability of secondary options in their locality and region. It is by no means clear that small, specialized schools are a problem, so long as there other options for students. There are some diseconomies in terms of overheads of heads and administration staff, but these may well be outweighed by the expertise, industry links and *esprit de corps* created by a dedicated specialism.* However, there comes a point where a school becomes so small that its viability must be questioned.

69. We first look broadly at regions and the availability of 'fields of work' in each:

Table 8: Fields of Work by Region

Grad Beograd	16
Severnobački	15
Južnobački	14
Nišavski	14
Podunavski	14
Pomoravski	14
Raški	14
Srednjebanatski	14
Sremski	14
Zlatiborski	14
Jablanički	13
Južnobanatski	13
Mačvanski	13
Rasinski	13
Šumadijski	13
Zapadnobački	13
Braničevski	12
Kolubarski	12
Moravički	12
Severnobanatski	12
Pčinjski	11
Pirotski	11
Zaječarski	11
Borski	10
Toplički	9

70. Only Belgrade offers all 16 Fields of Work, which is no surprise as only one school in the country (in Belgrade) offers the *hidrometeorologija* field. However towards the bottom of the table there is some concern; nowhere in the Bor region can one learn clothing and textile

* England, for example, is attempting to create *more* specialized secondary schools, through its *Academies* programme.

trades, forestry or carpentry, or – probably more seriously – any health-related or construction trades. In the Topliča region there is also nowhere to train for construction trades, or personal services such as hairdressing, or anything concerning the arts and communication.

71. Turning to the municipality level, the following 47 municipalities (outside the Belgrade and Niš areas) can offer 3 or fewer fields of work, including the gimnazija stream:

Table 9: Municipalities with little choice in Fields of Work

Bač	1	Kučevo	3
Bački Petrovac	1	Kuršumlija	3
Čajetina	1	Lajkovac	3
Doljevac	1	Lapovo	3
Kovačica	1	Lebane	3
Srbobran	1	Ljig	3
Sremski Karlovci	1	Ljubovija	3
Ćićevac	2	Medveđa	3
Crna trava	2	Pećinci	3
Dimitrovgrad	2	Petrovac na Mlavi	3
Alibunar	2	Rača	3
Kanjža	2	Raška	3
Trgovište	2	Rekovac	3
Veliko Gradište	2	Sečanj	3
Vrnjačka Banja	2	Sokobanja	3
Bojnik	3	Titel	3
Bosilegrad	3	Topola	3
Brus	3	Bajina Bašta	3
Babušnica	3	Ub	3
Čoka	3	Batočina	3
Despotovac	3	Vladičin Han	3
Aleksandrovac	3	Žagubica	3
Knić	3	Žitorađa	3
Kosjerić	3		

72. Twenty-eight municipalities outside the Belgrade and Niš areas, including the 20 in bold in the list above, do not support a gimnazija stream – which is not of course to say that there may not be gimnazija education available nearby.

73. To identify whether secondary education in a municipality is ‘at risk’ we need some criteria. The main criterion we propose is the extent of choice and breadth in the curriculum which is offered by the school or schools of that municipality. This is clearly important because if that choice is small, then any or all of the following may happen:

- a) students may not take part in secondary education at all, because they find nothing which is attractive;
- b) students travel to other municipalities to take their chosen subject. This lowers the base of students who support the local schools, leading to a cycle of decline;
- c) the schools in the municipality are not able to respond to the developing needs of employers, as they can only support a limited number of fields of work and profiles.

74. It is, of course, inevitable that smaller areas will be restricted in what they can offer, and that students wanting specialized or uncommon options will need to travel. However, by identifying the areas which are ‘at risk’ in this sense, policymakers can develop conscious plans

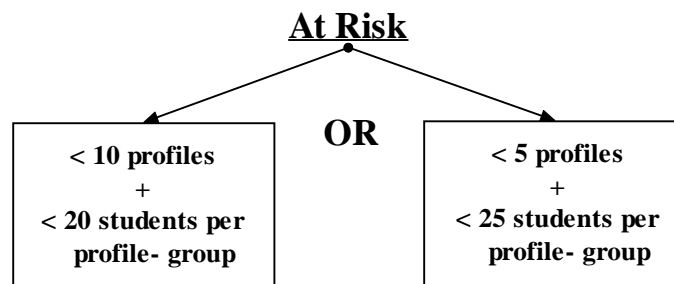
to optimize the situation rather than finding that decline occurs in a disorganized fashion which unnecessarily harms the interest of students.

75. A secondary criterion is the size of groups. The term 'groups' in this context needs some explanation. It is not the same as classes, but rather is a group of first year students in a given school, studying a particular profile in a given language.* Thus 70 first year students in a given school studying (say) financial accounting will count as one group for this purpose, even though they would probably be divided into three classes. The point of using a group size criterion to identify areas which have problems is that if schools in a municipality have large group sizes, they could offer further profiles (if students made different choices, or if businesses needed a wider variety of skills). However if group sizes are already fairly small, then this option will not be available, without producing diseconomic class sizes.† On this definition the average size of group in Serbia was 33.3 in 2006.

76. Annex A shows all the municipalities, with key information about the number of profiles, fields of work, schools, students and average group sizes.

77. There are many different criteria that can be used. For this exercise we wished to identify municipalities where there is *both* only very limited secondary education available *and* where group sizes were already so small that it seems unlikely that they could introduce further profiles in order to make themselves more attractive to students.

78. We selected two groups of areas, those which we classified as 'at risk' in the sense that either had a very limited range of profiles or had a slightly wider range, but very small group sizes. These municipalities are 'at risk' in the sense that it would only take small decreases in student numbers to mean that they had to reduce the number of profiles yet further, thus decreasing their attraction for students. The criteria used for 'at risk' municipalities were:



* a number of municipalities need to offer secondary education in ethnic mother tongues, thus meaning that students need to be separated for the bulk of their instruction, even where they are studying the same profile. This particularly effects areas in the north of the country, where there is a significant Hungarian speaking minority.

† a class size of fewer than 15 students is generally regarded as diseconomic, though exceptions can be made.

79. Using these criteria we can identify the following 15 municipalities which might be considered to be 'at risk':

Table 10: Municipalities where Secondary Education is 'at risk'

Municipality	Profiles	Fields of Work	Av Group Size ^{*****}	Schools	Year 1 students	Total students
ČOKA	6	3	9.9	1	99	274
SREMSKI KARLOVCI	7	1	12.9	1	116	483
NOVI KNEŽEVAC	6	4	16.5	2	132	379
ŽAGUBICA	5	3	17.0	1	68	202
BABUŠNICA	7	3	17.0	2	68	189
BAČ	3	1	17.3	1	52	136
TEMERIN	8	4	17.6	1	141	364
KRUPANJ	7	4	18.3	1	128	361
BELA PALANKA	6	4	19.0	1	57	200
SVRLJIG	6	4	19.5	1	78	209
SEČANJ	4	3	19.8	1	79	209
KUČEVO	4	3	20.5	1	82	294
REKOVAC	4	3	22.3	1	89	314
KNIĆ	3	3	22.3	1	67	221
CRNA TRAVA	2	2	23.5	1	47	175

80. Clearly one could use rather different criteria, with differing results, but it seems clear that the 'at risk' group at least are areas where the existence of secondary education is marginal. If students in these areas want a reasonable choice they undoubtedly need to look outside, as well as inside their own municipality. These areas are also very vulnerable to further declines in student numbers which will force group sizes yet lower while they have very few options to form viable groups by reducing the number of profiles offered.

81. The map shows the location of these areas, together with the municipalities which have no secondary school. It also shows the centres which have a good choice of secondary education (expressed in terms of those which can offer 8 or more of the 16 'fields of work').

82. As can be seen in most cases the 'at risk' municipalities have an adjoining major centre, so – in principle – it should not be too difficult for students to travel if the 'at risk' facility(ies) were closed. Indeed many students from these areas may already be travelling to the major centres in order to enjoy a wider range of options than they have in their home area, thus contributing further to the decline in their home town.

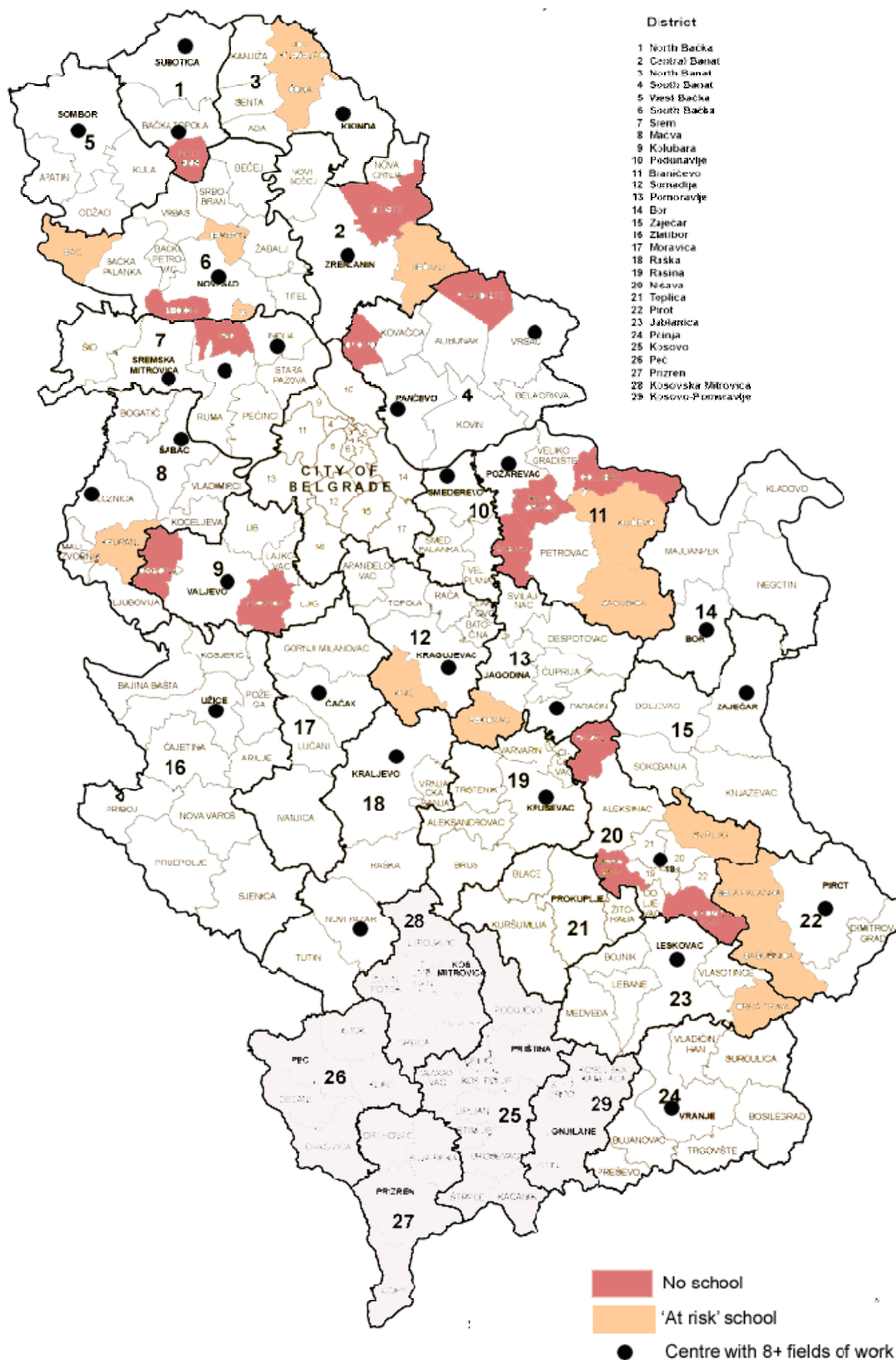
83. In three cases

Novi Kneževac
Bač
Crna Trava

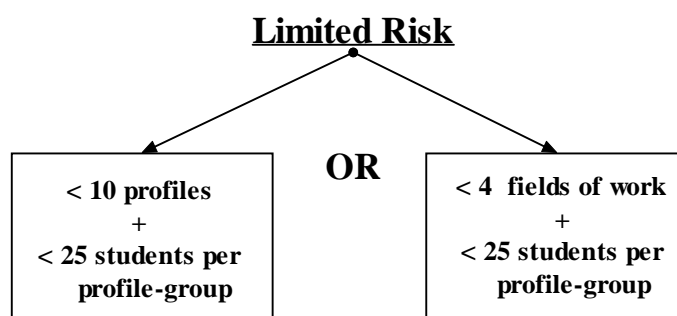
there is no major centre immediately nearby and it may be little option but to keep facilities open, perhaps attracting students from other sparsely provided areas.

***** excluding music schools

Map 1: Municipalities with no, or 'at risk', secondary education: 2006



84. We used slightly wider criteria to show further municipalities where secondary education might be considered to be 'limited'. These criteria were:



Here we are selecting areas which either can offer only a very limited number of fields of work, or which offer rather more, but can offer few profiles in any of them. Again, the group sizes are already low, so there is little prospect of these areas developing a wider selection of programmes.

85. On this basis a further 17 municipalities are identified.

Table 11: Municipalities where Secondary Education is 'limited'

Municipality	Profiles	Fields of Work	Av Group Size†††††	Schools	Year 1 students	Total students
KANJIŽA	11	2	16.5	1	198	701
DESPOTOVAC	10	3	17.0	1	153	488
UB	10	3	19.7	2	197	676
LJIG	8	3	20.3	1	142	440
BLACE	6	4	20.6	1	103	392
TOPOLA	11	3	20.9	1	209	589
NOVI BEČEJ	7	4	21.2	1	127	506
KLADOVO	8	4	21.4	2	150	506
SOKOBANJA	7	3	21.7	1	152	553
BATOČINA	6	3	22.3	1	134	368
KOCELJEVA	6	4	23.5	1	141	400
ŽITORAĐA	6	3	23.8	1	95	245
LJUBOVIJA	5	3	23.8	1	119	441
BOLJEVAC	6	4	24.3	1	97	295
TITEL	9	3	24.3	1	146	433
VLADIČIN HAN	10	3	24.5	2	147	618
VARVARIN	7	4	24.8	1	124	454

††††† excluding music schools

'At risk' schools

86. It is of course conceivable that an individual school could be too small to be sensibly viable, even when it is in an area which is otherwise well served in terms of secondary education. Indeed, competition with other schools in an area can easily lead a less popular school to decline in numbers, particularly where there is an overall shortage of pupils.

87. Having said this, many countries prize small, specialized schools. One only has to think of *conservatoires* for music and dance to realize that a recipe for amalgamating schools into those of a high minimum size teaching a wide range of subjects, would be unlikely to gain popular assent in all cases.

88. Nevertheless, at a certain stage a small school becomes diseconomic. There are the overheads of premises, certain fixed staff costs such as a Director and caretakers. More importantly, perhaps, it becomes difficult to offer pupils optional subjects within the curriculum. Although, when situated within a town with other schools available, this may not be a problem since students can go elsewhere, in more isolated areas it can be a problem.

89. There is no 'right answer' for a minimum size of school, but as a rough indication of the scale and nature of the issue, we have used a criterion of fewer than 100 entrants in the 1st year. This corresponds with the general view of the UK's Schools Inspectors that upper secondary schools (which have 2 year programmes) of less than 200 give suboptimal education. Having said this, it must be stressed that there are considerable numbers of such small schools in the UK, which are often vigorously supported by parents.

90. Annex B shows the municipality and type of the 66 Serbian schools (excluding music and dance schools) which fall below this threshold. The table below summarizes the data:

Table 12: Small schools in Serbia

Type	No of Schools	Average Year 1 entrants
Gimnazija	22	69
Mixed	10	76
Vocational	34	72
Total	66	72

In many cases these schools are in municipalities which have a fair range of alternative provision, but in the case of 20 schools, situated in 17 municipalities (shown in Annex B) they are in areas which we have already identified as offering limited or 'at risk' secondary education. These then are true problem areas. It is worth noting that in four of these areas, namely:

Kladovo
Babušnica
Vladičinhan
Novi Kneževac

there are two schools, in each case one supporting gimnazija education and a dedicated vocational school. Merging these to create mixed schools might well be a sensible step to reduce the costs of education and prolong the prospect of viable education in the area. However in a further four of the 'problem' municipalities this step has already been taken.

91. In the case of the majority of the municipalities where a small school sits alongside one or more larger ones, the decision as to whether to continue supporting the smaller school seems to be one which rightly belongs to the municipality itself. Since they have to meet the overhead costs of the schools, they already have incentives to rationalize if they consider this to be advantageous and they believe they can obtain a political mandate to do so.

Demographic Scenario

92. In Chart 13 (page 16) we noted the demographic decline expected amongst the school age population in Serbia.

93. These projections are fairly certain up until 2017 as the cohorts of young people in question had already been born at the time of the Census in 2002. At national level they will only be uncertain to the extent that there is net inward or outward migration to or from Serbia as a whole, which seems unlikely to be a large effect (except possibly affecting the recent influx of refugees from Kosovo which has added – perhaps temporarily – to student numbers in the south of the country).

94. At sub-national level they will be less certain due to the effects of:

- a) inward or outward migration between regions or municipalities;
- b) young people from one region or municipality opting to attend school in another one.

These factors can be expected to play a part, and are plainly more likely to be significant if one takes projections for the smallest (municipality) level. For that reason, in this scenario, we apply the forecast change in student numbers for the relevant region, and apply it to all municipalities within the region. Although the Statistical Office's *Municipalities of Serbia 2006* does give figures for age groups for each municipality, using these would increase the danger of minor changes in migration between rural and the nearest urban areas disrupting our forecasts.

95. We can apply these trends to the pattern of schooling which is apparent in the *School Plan Database*. In doing so, we make the following assumptions for the purposes of illustration:

- the regional change in school-age pupils applies to each municipality within that region;
- the existing patterns of students attending schools outside their municipality remain the same as they are now;
- there is no change in the current distribution of schools and relative popularity of them.

In this sense the scenario which follows is a 'policy-off' illustration. It shows what would happen if neither policy-makers nor students/parents did anything different from what they do now. In practice it might be expected that the changes illustrated to municipalities with the lowest number of school students will be rather more extreme than those shown; this is because of a probable 'snow-balling' effect whereby students in areas which only offer limited secondary education choose to go elsewhere to get the choice of education that they want. This effect will increase as student numbers decline, both because in the weakest areas the offer becomes yet more limited, and because more spare places become available in neighbouring areas. The prospect for those that remain (probably from the poorest families) is for limited options, a peer group who are also disadvantaged, and a schools which everyone knows will close sooner or later.

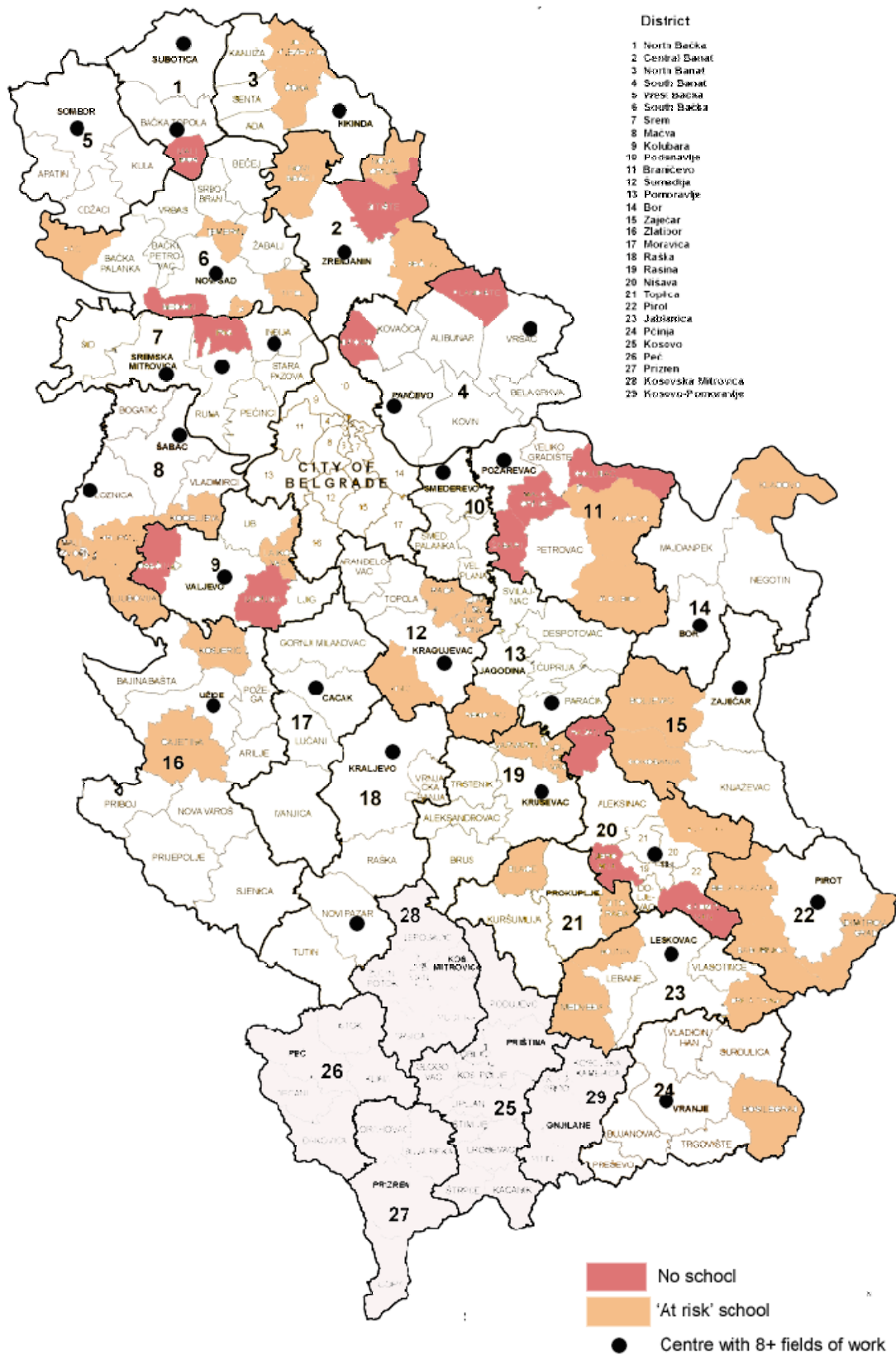
96. With these assumptions the following Table and Map show the 'at risk' municipalities and schools as the model would predict for 2017, using the same criteria as before (paragraph 78 above). As can be seen the list more than doubles from 15 to 39 (including the 'limited' category on this new scenario would add a further 18 municipalities to the list).

Table 13: Projection of 'at risk' municipalities, 2017

Municipality	Profiles	Fields of Work	Av Group Size ^{####}	Schools	Year 1 students	Total students
ČOKA	6	3	7.3	1	73	203
SREMSKI KARLOVCI	7	1	10.4	1	93	388
NOVI KNEŽEVAC	6	4	12.2	2	98	281
BABUŠNICA	7	3	12.4	2	49	137
KRUPANJ	7	4	13.8	1	97	272
BELA PALANKA	6	4	13.8	1	41	145
BAČ	3	1	13.9	1	42	109
SEČANJ	4	3	14.2	1	57	150
TEMERIN	8	4	14.2	1	113	293
ŽAGUBICA	5	3	14.4	1	58	171
LJIG	8	3	14.9	1	104	324
SVRLJIG	6	4	15.1	1	60	162
NOVI BEČEJ	7	4	15.2	1	91	363
BLACE	6	4	15.8	1	79	300
BATOČINA	6	3	15.9	1	96	262
KNIĆ	3	3	15.9	1	48	158
SOKOBANJA	7	3	16.3	1	114	416
KLADOVO	8	4	16.4	2	115	388
KUČEVO	4	3	17.4	1	70	249
KOCELJEVA	6	4	17.7	1	106	302
REKOVAC	4	3	17.8	1	71	251
LJUBOVIJA	5	3	17.9	1	90	333
ŽITORAĐA	6	3	18.2	1	73	188
RAČA	6	3	18.2	1	73	212
BOLJEVAC	6	4	18.2	1	73	222
DIMITROVGRAD	3	2	18.7	1	56	241
CRNA TRAVA	2	2	18.7	1	37	139
MALI ZVORNIK	5	4	19.4	1	78	202
TITEL	9	3	19.6	1	117	348
ČAJETINA	6	1	19.6	1	98	304
VARVARIN	7	4	19.7	1	98	360
KOSJERIĆ	3	3	19.8	1	59	201
BOJNIK	4	3	19.9	1	79	278
LAJKOVAC	7	3	20.0	1	120	376
LAPOVO	4	3	20.4	1	61	170
NOVA CRNJA	4	4	21.8	1	65	196
ĆIĆEVAC	2	2	22.6	1	45	152
BOSILEGRAD	3	3	23.8	1	48	193
MEDVEĐA	3	3	24.6	1	99	272

excluding music schools

Map 2: Projection of 'at risk' municipalities, 2017



97. Clearly the situation in 10 years' time will be considerably more acute than it is currently. To plan for this it may be insufficient to rely on students travelling to a nearby major centre (though this will often still be the best plan), and it may be worth considering consolidating

some new centres to act as 'magnets' for a range of areas which are unlikely to be able to sustain their own secondary schools efficiently. For example it could be appropriate to build up the facilities in Petrovac in the Branicevo region, which will be surrounded by areas of no or unviable schooling. Petrovac only currently offers three fields of work (which may be sufficient for its own population), but if students in neighbouring municipalities cannot be offered a choice of education it may be better for all concerned to close or limit schools in these districts and to build up the regional centre.

98. Similarly it will be worth undertaking a detailed network examination in the triangle Pirot-Nis-Leskovac where there will be a range of problem municipalities, to see what the optimal pattern of provision should be, taking into account ease of travel. The same will be needed in the area between Valjevo and Lornica in the west of the country. The Central Banat region currently has a good offer of different provision in Zrenjanin (with 14 fields of work), but it seems likely that this will be put under considerable strain if students from the large number of surrounding municipalities with only marginal schools increasingly travel to it in order to get the secondary education of their choice.

Further scenario

99. A further scenario was constructed, using the same demographic data as that used above, but adding also:

- an assumption that gimnazija streams would expand to 30 per cent of all entrants at the expense of vocational programmes;
- an assumption that – amongst the vocational streams – 4-year profiles would expand by a further 6 per cent at the expense of 3-year profiles (about the same rate as in the past 5 years);

100. Although these assumptions increase the total size of the secondary school population by 3 per cent (because more students are doing a fourth year), the effect on the 'at risk' municipalities was very minor, resulting in the deletion of Mali Zvornik and Bosilegrad from the list in Table 13, and the inclusion of Vladimirci in the Mačvanski region.

4. Outline methodology for dealing with identified problems

101. Though there are no doubt many issues of efficiency in individual schools it appears to us that any wholesale exercise in rationalization is both unnecessary and – given current political and administrative capacity in Serbia – unlikely in any case to be undertaken.

102. Moreover the capacity of the existing system to respond to changes in circumstances should not be underestimated. As we have seen in Section 2 there has been considerable change in numbers undertaking different fields of work, and in migrating from 3- to 4-year programmes. Though the current system of approval of individual classes at individual schools seems centralized and rigid, in practice it appears there is considerable flexibility, caused principally by:

- decisions taken by schools jointly in a given area, often convened by the municipality who of course have a stake in the optimum organization of schools for both political and financial reasons;
- flexibility on the part of the Ministry in terms of allowing classes which are smaller than usually permitted where a good case can be made on grounds of the labour market, catering for language minorities or other special reasons;
- a margin of extra places (currently around 8 per cent of the total) which both prompts some useful competition between schools and gives young people a choice of profile – it seems from the evidence that, in exercising their choice, young people and their parents are influenced by prospects in the labour market and by having opportunities for further education.

103. Some no doubt will argue that the system would work better on a *per capita* funding system, with school directors or municipalities given a budget based on pupil numbers from which teachers' salaries and other costs are paid. A number of other countries (e.g. UK, Denmark) have moved in this direction over the past 10-15 years. It may well be the case that such a system would be preferable to the current system in Serbia, but we doubt that in practice it would lead to a greatly different outcome than is currently achieved, and that a wholesale move to such a system would be more likely to divert attention from the evident future problems of 'at risk' areas, rather than help to resolve them.^{§§§§§}

104. So we propose a methodology which will focus very much on a 'case by case' approach, aiming to identify real problems and evaluate alternative solutions to them.

105. The first stage, which has already been exemplified in this paper, is to identify municipalities which can offer only limited secondary education and which are unlikely to be able to increase their offer in a cost-efficient manner. We suggest that the list of municipalities at risk in 2017 (Table 13 and Map 2) should form the basis of an examination, with priority given to those currently in this category (Table 10 and Map 1). Of course, the exercise could be replicated if it were considered that different criteria for selection were appropriate.

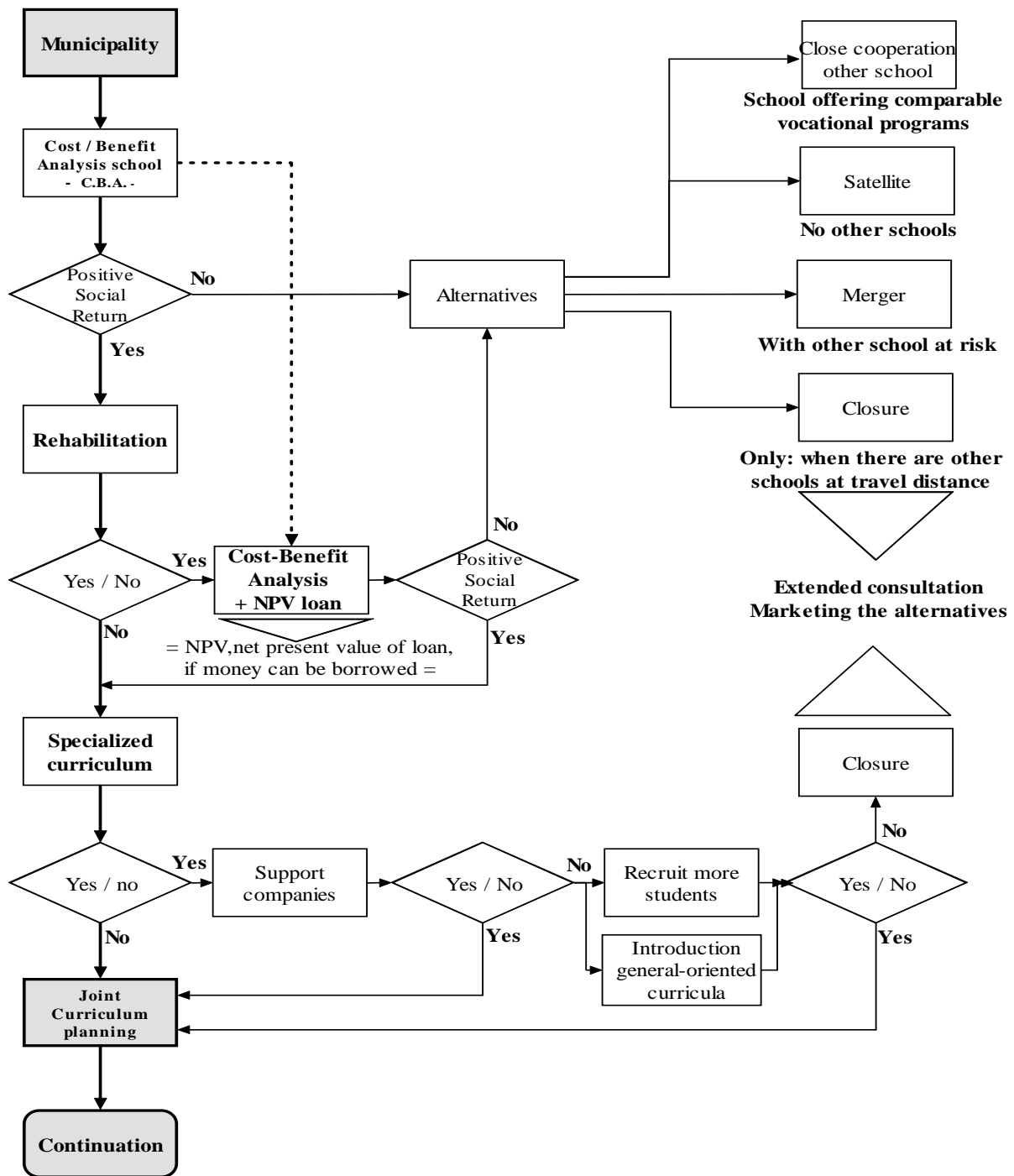
^{§§§§§} In practice such systems need to be adapted in order to manage change in an orderly fashion, for example through incorporating 'dampeners' to prevent violent fluctuations which would otherwise occur through the formula, ability for central 'override' for special circumstances, additional allowances for students with special needs and programmes which use expensive equipment or materials etc. Such supplementary features may mean that the outcome of this kind of system, in terms of the distribution of monies between schools, may not be very different from the more discretionary system operating in Serbia.

106. Having done this, a detailed examination of each case needs to be undertaken, taking into account the following factors:

- do the costs of retaining the current pattern of schooling outweigh the benefits of ceasing to provide in that area? To answer this a cost/benefit analysis is necessary;
- will additional investment for rehabilitation be needed to maintain the current school(s)? If so the costs of this need to be factored into the cost/benefit analysis;
- what are the alternatives to the current pattern of schooling in that area?
- where schools in these areas are providing specialized profiles (*ie.* those not commonly provided), is there a case for continuing to do so?
- if, as a result of this exercise it is determined to maintain the school(s), then arrangements for joint planning with other schools in the surrounding area need to be put in place in order to broaden the offer of secondary schooling.

107. The suggested method is summarized as a 'decision' tree, and is followed by notes on the various stages.

Figure 1: Decision tree for 'at risk' municipalities



Step One

Conduct a cost/benefit analysis. The aim here is to compare the costs of continuing with the existing arrangements with the costs of ceasing secondary education in that municipality. Annex C gives a detailed outline of cost/benefit analysis, as it might be applied to Serbian schools. Though there are many factors which can be added, in many cases a simple calculation will indicate whether there are likely to be financial savings in closing a school and transporting students to a nearby one:

Where: current average cost per student in municipality *minus* average cost per student in Serbia *is greater than* costs of transporting students to nearest alternative school^{*****}

As well as financial costs or savings, other factors clearly need to be taken into account, including:

- will students have a better or worse education if they attend a different school? In many cases they will be able to enjoy more opportunities than in an increasingly isolated school;
- will these benefits outweigh the risk of future students failing to participate in secondary education, if they are deterred by travelling further.

From these calculations and considerations a decision is taken about whether or not the current arrangements give a positive 'social return' for continuation (*ie.* that benefits of the present arrangement are greater than their costs).

Step Two

Add in costs of any rehabilitation that will be needed. If maintaining the existing school(s) will require major works to maintain the buildings then this needs to be taken into account in the cost/benefit analysis. If a major work is foreseen over the next 10 years, the costs of this should be estimated and added to cost/benefit analysis. If the costs of rehabilitation are either unlikely to be met (because of shortage of available capital or loans) or if the costs when added to the result of the cost/benefit analysis in Step One mean that continuing the school no longer will yield a Social Return, then alternatives to continuing the school(s) will need to be considered.

Step Three [If there is a positive social return for continuation]

If it is decided that the current arrangements are cost-effective, a further step is to consider whether the school(s) maintain any profiles which are specialized and may not be needed in the locality. We must remember that we are looking at municipalities which can in any case only support a limited number of profiles, and it is important that these cater for the maximum number of students. As a general rule a profile should be considered 'specialized' if it is *not* one of the popular profiles given in paragraph 63 above (or part of gimnazija curriculum). In the case of such a specialized profile it should be established whether *either* such a profile is in demand from local companies *or* whether it attracts students from outside the municipality. If neither of these is true, then it will usually make sense to replace it with a more commonly taken profile (*ie.* one of those in paragraph 63).

Step Four

If a decision is taken to continue with the current pattern of schooling, arrangements should be made (perhaps through the regional office of the Ministry of Education) to plan the curriculum offered in the 'at risk' municipality in a co-ordinated way with nearby municipalities. The reason for this is that there still will be limited secondary education available in the area, and it is important that more specialized options are available in the wider area. From our earlier analysis this seems particularly important in the field of construction (paragraph 70).

^{*****} The principle behind this rough rule is that the costs of educating a pupil will remain whatever the solution decided. We can assume that the new costs of education will be close to the average for Serbia. If the costs of transporting students, plus these new costs, is less than the current cost of education in the 'at risk' municipality there may well be financial savings in transporting students rather than educating them closer to their homes.

Step Five [if there is not a positive social return for continuation]

If the cost/benefit analysis shows that the costs of the current arrangements are greater than their benefits, then alternatives need to be considered. Four different alternatives are illustrated, depending on the situation of the municipality in question, and the situation in neighbouring areas:

- where neighbouring schools offer similar programmes. In this case it may be possible to share teachers and equipment with these neighbouring areas, thus reducing the costs and converting the Social Return to a positive one. Such co-operation will probably need to be arranged, and monitored, by the Ministry of Education through its regional office;
- where there are no other schools within reasonable travelling distance. In this case, clearly, the removal of secondary education from the municipality will mean that there are no opportunities for students, which is unacceptable. In such a case it is probable that a 'satellite' (*delatnost*) arrangement will be most suitable where the school in the problem area becomes an outpost of a larger school in a neighbouring centre. In this way the curriculum can be planned to fit in with the needs of students (*ie.* profiles most popular in the locality can be provided there while others are available at the main school). There are already examples of such satellite schools in Serbia;
- where there are other schools in nearby municipalities, but these too are 'at risk'. From our projections it seems that there will be cases of this nature (paragraphs 97-98 above). In these cases it may well make sense to expand one of the schools, merging it with others to provide a centre for the whole area;
- where there are other viable schools within reasonable travelling distance. In such cases it will probably make sense to cease to provide secondary education in the 'at risk' municipality and to pay for students to travel to the neighbouring centre. Closing a school will be controversial and needs to be accompanied by:
 - consultation with the local community;
 - making it clear that there will be better opportunities at no cost to families (it is likely that some families are already sending their children to the larger centre);
 - support for teachers to re-deploy or retire (the larger centre is likely to need additional teachers).

Shift system

108. A system of two 'shifts' is common in Serbian secondary schools. In most schools students are assigned to a morning or afternoon shift, and our understanding is that in the main teachers operate also on one shift or the other, though a few will spread their teaching time across both.

109. Though there are disadvantages to the shift system, such as:

- greater wear and tear on buildings and less time for maintenance without students present;
- less scope for private study time on school premises (because another shift is in occupancy);
- greater pressure on school directors who may have to cope with emergencies over a longer school day;

there are plainly significant economies in most cases including efficient utilization of school premises (in most cases further premises would be needed if there was only to be a single shift).

110. Detailed information on the premises currently available to each school, together with the likely costs of additional premises would be needed to evaluate the likely costs of moving to a single shift as a matter of policy across Serbia. However it can be expected that these costs would be very significant, and that such an exercise would consume a great deal of the time

and attention of School Directors and policy makers while it was being carried out. We cannot think that this would be a sensible course of action given the marginal benefits (if any) of such a move.

111. However with the demographic decline that we have noted, there will be increasing opportunities for moving to a single shift without acquiring new premises. In some cases collapsing classes, currently held across two shifts, into fewer held in a single shift will be possible and may allow reduction of teaching staff in a cost-effective manner.

112. In most cases of under-utilized schools moving to a single shift will be less economic than merging the school with one in the same locality, as there will be greater opportunities for premises savings in the case of a merger which retains two shifts. However in the case of an isolated and under-occupied school, moving to a single shift may yield some economies. Therefore it is recommended that this is one of the options considered in the cost/benefit analysis for 'at risk' municipalities – in a few cases the savings that would result could reduce costs to the extent that a negative social return to continuation was altered to a positive one.

5. Policy Discussion

113. It is apparent that Serbian vocational education, in terms of its structure and trends, is not dissimilar to much that exists in the EU, particularly the new member states which have school-based vocational education, with fairly high participation rates, and – within secondary vocational education – two streams: one fairly strictly vocational aimed at distinct trades and operative occupations, and the other of a ‘technician’ nature with opportunities to advance to higher education.

114. Indeed it would appear that Serbia has a pattern of vocational education which (in terms of numbers, if not in content) aligns not too badly with the current labour market. Some other countries (*cf.* Romania) have a far greater disparity between what vocational schools offer and the structure of employment. This may well reflect the fact that production in the former Yugoslavia was less focussed on large industrial enterprises than in some other countries. Moreover there is evidence of change in the occupational structure of Serbian education, and it seems to be in the right direction (*ie.* from manufacturing industry towards services).

115. The following points, though, merit some discussion:

- the relatively low duration of general education in Serbia (to 14/15 for most);
- the suspicion that teacher numbers have been out of control;
- the fate of the 3-year vocational school pathway, which has been in serious decline;
- the purpose of the 4-year pathway, which is increasingly and perhaps predominantly leading to higher education, and seems to be popular for that very reason;
- the distribution of schools and profiles.

General Education

116. Both the duration of initial general education, and the numbers taking general education at secondary level seem low by European standards. And unlike a number of other countries there seems to have been little movement towards more general education in Serbia. Hungary, for example, has recently extended general education to age 16, with vocational specialization only taking place after that point, and Romania has instituted a two-year initial cycle of largely general education within its equivalent of 4-year schools (Technological High Schools).

117. Serbian reformers point to the failure, in the 1970s and 1980s of the *Šuvar* reforms which tried to institute a period of more general education at the beginning of vocational streams. That may have not suited the times, or may have been mishandled, but there may well be a case for undertaking something similar in the new circumstances of today – other countries can clearly point to successfully reforms of this kind. An alternative would simply be to extend the period of primary education (perhaps re-forming a second cycle as lower secondary), but without any specifically vocational content, though attending to such pre-vocational topics as careers advice and taster options.

118. There seems likely also to be some scope to expand the gimnazija stream a bit. While it might be unfortunate if this became the only ‘high road’ to higher education (thus downgrading the vocational 4-year schools), and there will be understandable worries about reducing its rigour by taking many more candidates, it does seem rather restricted by EU standards. A modest expansion by, say, 5-10 percentage points (*ie.* to 30-35 per cent of secondary students) might well be appropriate.

Teachers

119. It is hard to escape the conclusion that the numbers of teachers have been rising in an uncontrolled manner. The reasons for this are not clear, but unless this trend is stopped – and

indeed reversed – pupil : teacher ratios will move from being reasonable by international standards to become decidedly over-generous. More importantly, money that could either have gone on better equipment, or on better paid teachers will have been diverted into what appears to be a *de facto* scheme to share out available employment in hard times.

120. With recovery in the economy the low wages paid to teachers will mean that it will be very hard to attract able new entrants, and yet impossible (because of the numbers) to give a general wage increase without causing an unacceptable drain on public resources. The prospects of an ageing, resentful and de-motivated teaching profession, defending their territory against every reform which might conceivably threaten their jobs, is a real prospect if things go on as they have been.

121. There evidently needs to be:

- a good understanding of just what is causing the increase in teacher numbers and why the current controls (through central approvals of school plans) do not seem to be working to contain costs and teacher numbers;
- new controls if those that currently exist are deficient;
- consideration of a re-structuring package for the profession, perhaps tying appreciable pay increases to agreements on redundancy, early retirement re-training and internal mobility. Such a package would be a good investment for donor agencies, but only once it was clear that the controls were working – otherwise there could be a ‘revolving door’ with new teachers arriving to replace surplus ones who had been retired or redeployed.

Three-year schools

122. The situation with regard to 3-year profiles is potentially serious. Practically all vocational schools offer 4-year profiles and these are evidently more popular than the 3-year versions. Though some might want to ‘put back the clock’ it must be questioned whether this is possible, now that the expectation of many families is that 4-year profiles will be available. The risk is that the 3-year training profiles are taken only by those with evident problems in learning (this is what has happened in Hungary)⁺⁺⁺⁺⁺ and fall further in terms of low public esteem.

123. It might be that with an improving economy, shortage of intermediate skilled labour, and an emphasis on practical and competence-based training (roughly the current expectations of the Serbian progressive VET reform movement) that the 3-year schooling can be to some extent revived. However, even with improvements, there must be doubts that it can be made more attractive to students and parents by improved content and pedagogy alone.

124. Alternative measures might be:

- to have a recognized ‘add on’ component which gave access to higher education. For example, Romania has instituted a senior two-year cycle of high school (equivalent to 4-year schools) which can be taken by those going to *Arts & Trades* schools (equivalent to Serbian 3-year schools). Students therefore have the prospect, if they are successful and if they wish it, to take a lengthened period of schooling and achieve the same outcome as those who attend 4-year schools. The French *Bac Pro* can be seen as a rather similar reaction to the same issue. Bridging courses for 3-year students already exist to some extent – they could be further institutionalized and promoted;
- to institute an apprenticeship-style period with an employer after 3-year school, if necessary supported by the State, to cement practical training and ease the transition to the labour market. Such a ‘temporary job guarantee’ might prove attractive to young people and persuade those who were not optimistic about going on to higher education to take the 3-year rather than 4-year profiles;

⁺⁺⁺⁺⁺ *Education in Hungary*, 2006, Hungarian Ministry of Education

- simply making all 3-year profiles into 4 years, perhaps with an initial phase of fairly general and pre-vocational education.

The alternative of simply restricting places in 4-year profiles, thus effectively compelling students to take the 3-year versions seems politically impossible as it would be violently unpopular with parents and sharply resisted by the teaching profession, for whom it would represent a distinct threat to jobs.

The 4-year pathway

125. It is certainly viable to have a large and successful pathway of technical education. This is evident in many countries, co-existing with a more explicit and restricted academic option. Romania, Hungary, France, Britain (in the form, say, of BTECs) and Denmark (in the form of HHX and HTX) all provide examples of how this form of education can both be of a broadly vocational nature and yet lead to higher education.^{#####}

126. This seems to be the role that Serbian 4-year schools are playing, and as such they provide a valuable resource and tradition, countering the suspicion (which affects a number of countries) that only academic upper-secondary education is the ‘real’ pathway to higher education, thus causing vocational options as a whole to be denigrated.

127. But it is hard to see why 4-year profiles need to be so specialized. If the majority of students undertaking them in fact proceed to higher education, and specialize at that point – sometimes in a quite different field – there seems little point in pursuing a specialist path at secondary level; it is likely to be a minimum of 3 years after graduation that most will actually practice the occupation they have learned, and for very many a good deal longer than that. An emphasis on work practice, particular competences *etc.* seems not the path to take for policy in relation to this type of schooling.

^{#####} The World Bank report *Fiscal Efficiency and Vocational Education in the EU8 Countries* (2006) seems to challenge this. It states (p ix) that “the logical place for specialist and relevant vocational training is after the completion of a high-quality secondary education...the aim within upper secondary education would then be to ensure that it imparts key competences and new skills”. However it is not clear from the report what curriculum vehicle should be used to impart ‘key competences and new skills’ if not ‘specialist and ‘relevant vocational training’. It would be hard to think of any European country which offered only general education through the upper secondary phase, and the example of the USA which (more or less) does this would not convince many Europeans, or indeed Americans, about the excellence of its educational outcomes for the lower ability student. The example, cited in the report, of the Polish ‘profile’ school pathway which attempts to impart ‘key competences and new skills’ in a relatively direct manner without a strong occupational context, seems – by the report’s own admission – to have experienced serious problems. If one can neither impart this ‘key competences and new skills’ directly, nor effectively through general education to the client group in question, then this effectively leaves vocational education as the only means. It is open to debate how ‘specialized’ this needs to be in the upper secondary phase, and there is a good case for vocational education to be in a relatively broad occupational field, with options to specialize further. It does, however, need to be ‘relevant’ or else it will not attract students who want to see the connection between what they learn and how they may in future earn their livings. It is open for debate just what a ‘broad’ but ‘relevant’ vocational pathway looks like. At one end of the spectrum lies a country such as Sweden, with only 14 upper secondary vocational fields (though there are options within it to specialize in around 30 ‘branches’), at the other lie Finland and France with around 100 titles in their vocational education and *Bac Pro* tracks.

The World Bank report’s further recommendation for former communist countries that “A minimum requirement for [equity] is that all upper secondary students should be in the same type of school.” is plainly not followed *inter alia* by England, France, Netherlands, Denmark, and Finland, and runs against the OECD’s view (in its 2000 report on youth transitions to the labour market) that a strong, and clearly delineated vocational pathway (albeit yielding possibilities to access higher education) was a desirable goal for policy makers. While there is good evidence from PISA studies (cited in the report) for common schooling in the lower secondary phase, the indications that this is helpful in the upper secondary phase seem sparse at best.

128. Moreover, as we have seen, in practice only a few individual profiles are actually available at any single school, and outside the larger towns and cities. Having hundreds of profiles seems really rather irrelevant either in terms of their usefulness to students, or in terms of the practicalities of actually offering them.

129. While abolition of cherished profiles (which may be actually useful in a few schools) would no doubt raise alarm bells and opposition, a policy of letting them 'wither on the vine', perhaps through allowing them to be updated by the few schools that operate them rather than centrally, may be more realistic.

130. Such a policy could be accompanied by introducing, perhaps for each of the current 'Fields of Work', a fairly broad 4-year profile explicitly designed to lead to higher education. This might well prove attractive to the smaller vocational schools which can only put on a few 4-year profiles in any case, and it could prove popular, too, with the many students who want to go on to higher education and who are not yet sure about their precise area of specialization. The currently most popular 4-year profiles might well provide a decent foundation for the design of such broader offerings.

131. The direction that 4-year schooling is taking (*ie.* increasingly towards higher education) raises the issue of vocational specialization within higher education. The current structure of *viša škola* and polytechnic higher education already provides for this, of course, but there are issues about student support (*ie.* how state-supported students should be selected, on merit or according to need), and also on labour market relevance. It may be that planning for labour market relevance is more appropriately an issue for higher education than it is for many vocational secondary schools offering 4-year programmes, whose students will not go directly into work.

132. The Hungarian model of permitting the more established vocational secondary schools, as well as specialist colleges, to offer post-secondary, non University higher education might well be worth exploring in Serbia

Distribution of schools and profiles

133. Attention has often been drawn to the (allegedly) large numbers of vocational schools in Serbia, and suggestions have been made that amalgamations into more regionally based and larger schools offering a greater range of profiles would be appropriate.

134. As we have seen, in terms of the average number of students per school, it is not the case that Serbian schools are particularly small by the standards of a number of other countries. Neither is it the case that other EU countries are moving inexorably to larger schools. And there are discernable and fairly well distributed regional centres which offer a wide range of different vocational options (though the lack of construction training in some regions is a worry, particularly given the likelihood of continued major re-construction works in Serbia for the foreseeable future).

135. Despite the large number of profiles which are in principle available, in fact the majority of Serbian students take a limited number. It is these which need to be the focus of development work in terms of up-dating. Profiles which are important in a locality, but not widely used elsewhere (*e.g.* because of the presence of a particular large firm), should be updated by the teachers and employers in that locality, rather than being the subject of central development work.

136. The study has identified a number of schools and localities (municipalities) where the educational offer is limited and the number of students will not permit a wider offer to be made – indeed with the demographic changes, these schools and localities will be under pressure to reduce the number of profiles they can offer yet further, thus deterring students and their parents from using them, giving rise to a 'cycle of decline'.

137. In terms of *schools* (Annex B) decisions on the future of those in the larger centres can be left to the established procedures of approving class numbers and to the decisions of the municipality who need to bear the non-salary running costs. There may well be cases where small, specialized schools make a good deal of sense as one of an array of secondary offerings in an area.

138. However the situation of those *municipalities* which can offer (whether through one or more schools) only a limited offer of secondary education the situation is more serious, and will become appreciably worse over the next 10 years. This report has identified where these 'stress' points are likely to occur (Table 13). Here a deliberate policy of evaluating costs and benefits of the existing arrangements and considering a range of alternatives (closure and transport for students to the nearest larger centre, 'satellite' arrangements with a larger school in a neighbouring municipality, merger and concentration in an newly designated sub-regional centre) need to be evaluated against the costs of maintaining the existing school(s). Whatever the outcome it will make sense, in these areas, to plan the curriculum on a sub-regional rather than a school or municipality basis, so as to ensure a range of available profiles within travelling distance.

139. Though mechanisms such as *per capita* funding or a different basis of cost-sharing between the central Ministry, municipalities and (possibly) employers might present a better means of allocating resources than the current system, they would be unlikely to alter the facts, or the alternatives, in the areas identified and introducing them could be a distraction to the important task of focussing on the problem areas and finding pragmatic solutions.

Recommendations

For the Serbian Authorities:

- consider extending compulsory general education by one or two years, *or*;
- introduce a one-two year non-specialist phase at the beginning of the existing 3- and 4-year profiles;
- expand the gimnazija stream to 30-35 per cent of secondary pupils;
- focus development of competence-based training on the 3-year profiles;
- make arrangements for extended company placements during or immediately after training in 3-year profiles, if necessary with subsidies to companies;
- encourage and recognize a 'bridging' programme for those with 3-year profiles to prepare for higher education;
- focus development work on 4-year profiles to those which are most commonly taken (maximum 10-20 profiles);
- develop a limited number of broad-based 4-year profiles in each field of work which are particularly suitable for higher education (some existing ones may already provide a good model);
- allow rarely taken 3- and 4-year profiles to be updated by schools and companies which use them;
- permit and encourage larger vocational schools to offer non-University post-secondary programmes;
- review controls on teacher numbers;
- consider introduction of construction training facilities in those regions which do not have them;
- institute reviews of schooling in 'at risk' municipalities (Table 13), including cost/benefit analysis and consideration of alternative patterns.

For donors:

- support any of the above;
- re-consider support for competence-based modernization of 4-year profiles (this is unlikely to be appropriate if the majority are going to higher education rather than the labour market);
- consider support for a scheme for teacher re-deployment, retirement and redundancy package *if* satisfied that there are effective controls over teacher numbers;
- review carefully any major investments in school buildings or equipment in 'at risk' municipalities *unless* a proper cost/benefit analysis and realistic consideration of alternatives has taken place.

September 2007

ANNEX A

KEY STATISTICS BY MUNICIPALITY: 2006

Municipality	Profiles	Fields of Work	Schools	Year 1 intake	Total students	Av size of school	% 4-year (entrants)	Av Group Size (exc music schools)
BOR	30	9	4	555	1,809	452	82%	29.2
KLADOVO	8	4	2	150	506	253	70%	21.4
MAJDANPEK	6	4	2	186	627	314	78%	31.0
NEGOTIN	15	5	4	322	1,099	275	80%	27.6
KUČEVO	4	3	1	82	294	294	45%	20.5
PETROVAC NA MLAVI	3	3	1	180	595	595	82%	60.0
POŽAREVAC	45	12	7	1,176	4,027	575	65%	31.3
VELIKO GRADIŠTE	5	2	1	154	496	496	60%	30.8
ŽAGUBICA	5	3	1	68	202	202	41%	17.0
BARAJEVO	9	5	1	274	800	800	45%	34.3
ČUKARICA	26	6	4	971	3,302	826	74%	47.1
GROCKA	11	5	1	321	994	994	59%	32.1
LAZAREVAC	15	5	2	519	1,810	905	72%	39.9
MLADENOVAC	25	4	2	518	1,769	885	69%	22.5
NOVI BEOGRAD	30	5	5	1,530	5,425	1,085	86%	54.6
OBRENOVAC	28	6	3	648	2,215	738	71%	27.0
PALILULA	35	5	5	1,338	4,565	913	80%	46.1
RAKOVICA	14	5	4	785	2,971	743	84%	62.8
SAVSKI VENAC	39	8	9	1,871	6,777	753	88%	46.8
SOPOT	14	5	2	237	797	399	54%	23.7
STARI GRAD	42	8	12	2,750	9,538	795	86%	72.1
VOŽDOVAC	25	7	6	1,585	5,273	879	74%	79.3
VRAČAR	16	5	5	1,181	3,984	797	71%	75.4
ZEMUN	34	9	8	1,898	7,163	895	80%	63.9
ZVEZDARA	37	6	10	2,367	8,856	886	90%	56.4
BOLJEVAC	6	4	1	97	295	295	58%	24.3
KNJAŽEVAC	13	5	2	202	777	389	72%	22.4
SOKOBANJA	7	3	1	152	553	553	77%	21.7
ZAJEČAR	32	8	4	821	2,801	700	71%	32.8
ARILJE	12	5	1	193	665	665	83%	24.1
BAJINA BAŠTA	11	3	2	231	904	452	77%	25.7
ČAJETINA	6	1	1	137	424	424	63%	27.4
KOSJERIĆ	3	3	1	83	281	281	100%	27.7
NOVA VAROŠ	10	4	2	197	691	346	74%	21.9
POŽEGA	18	4	3	509	1,641	547	73%	29.9
PRIBOJ	12	4	2	300	1,068	534	81%	33.3
PRIJEPOLJE	23	6	3	466	1,611	537	59%	27.4

Municipality	Profiles	Fields of Work	Schools	Year 1 intake	Total students	Av size of school	% 4-year (entrants)	Av Group Size (exc music schools)
SJENICA	16	5	2	316	1,037	519	80%	35.1
UŽICE	62	13	6	1,203	4,477	746	77%	32.5
BOJNIK	4	3	1	100	350	350	85%	25.0
CRNA TRAVA	2	2	1	47	175	175	100%	23.5
LEBANE	6	3	2	166	597	299	75%	33.2
LESKOVAC	65	12	11	1,898	6,717	611	76%	35.8
MEDVEĐA	3	3	1	124	343	343	76%	31.0
VLASOTINCE	7	5	2	265	839	420	69%	37.9
LAJKOVAC	7	3	1	163	511	511	75%	27.2
LJIG	8	3	1	142	440	440	44%	20.3
UB	10	3	2	197	676	338	52%	19.7
VALJEVO	54	12	6	1,347	4,792	799	72%	35.2
BOGATIĆ	10	4	1	179	505	505	68%	25.6
KOCELJEVA	6	4	1	141	400	400	59%	23.5
KRUPANJ	7	4	1	128	361	361	48%	18.3
LJUBOVIJA	5	3	1	119	441	441	59%	23.8
LOZNICA	45	11	5	1,054	3,721	744	69%	31.9
MALI ZVORNIK	5	4	1	103	268	268	83%	25.8
ŠABAC	72	13	8	1,596	5,480	685	70%	27.5
VLADIMIRCI	9	4	1	215	738	738	56%	26.9
ČAČAK	54	11	7	1,571	5,656	808	76%	34.6
GORNJI MILANOVAC	16	6	3	443	1,542	514	74%	36.9
IVANJICA	12	4	2	303	992	496	78%	27.5
LUČANI	10	5	1	204	721	721	79%	25.5
ALEKSINAC	24	6	3	422	1,441	480	64%	23.4
DOLJEVAC	1	1	1	60	245	245	100%	60.0
NIŠ	103	14	19	3,659	14,227	749	77%	42.3
SVRLJIG	6	4	1	78	209	209	38%	19.5
BABUŠNICA	7	3	2	68	189	95	68%	17.0
BELA PALANKA	6	4	1	57	200	200	51%	19.0
DIMITROVGRAD	3	2	1	77	331	331	78%	25.7
PIROT	30	10	5	627	2,348	470	70%	27.3
SMEDEREVO	51	12	6	1,351	4,594	766	65%	31.8
SMEDEREVSKA PALANKA	20	6	4	500	1,822	456	74%	26.3
VELIKA PLANA	18	7	3	417	1,393	464	57%	24.5
ĆUPRIJA	11	5	4	351	1,353	338	91%	33.9
DESPOTOVAC	10	3	1	153	488	488	41%	17.0
JAGODINA	34	7	4	890	2,903	726	74%	31.8
PARAĆIN	26	8	4	711	2,274	569	69%	32.3

Municipality	Profiles	Fields of Work	Schools	Year 1 intake	Total students	Av size of school	% 4-year (entrants)	Av Group Size (exc music schools)
REKOVAC	4	3	1	89	314	314	83%	22.3
SVILAJNAC	17	6	2	353	1,063	532	73%	25.2
BOSILEGRAD	3	3	1	57	231	231	82%	28.5
BUJANOVAC	12	6	2	493	1,409	705	83%	41.1
PREŠEVO	14	5	2	614	2,070	1,035	80%	47.2
SURDULICA	15	6	3	267	941	314	78%	29.7
TRGOVIŠTE	2	2	1	66	281	281	45%	33.0
VLADIČIN HAN	10	3	2	147	618	309	84%	24.5
VRANJE	42	11	6	1,124	4,203	701	84%	36.3
ALEKSANDROVAC	6	3	1	163	688	688	87%	32.6
BRUS	5	3	1	162	508	508	75%	32.4
ĆIČEVAC	2	2	1	57	192	192	53%	28.5
KRUŠEVAC	60	13	7	1,563	5,669	810	80%	32.1
TRSTENIK	15	4	2	397	1,462	731	79%	36.1
VARVARIN	7	4	1	124	454	454	76%	24.8
KRALJEVO	60	12	9	1,682	5,716	635	76%	33.1
NOVI PAZAR	38	8	4	1,345	4,294	1,074	73%	42.0
RAŠKA	8	3	2	210	716	358	75%	26.3
TUTIN	10	6	2	351	1,169	585	78%	39.0
VRNJAČKA BANJA	8	2	2	387	1,208	604	59%	48.4
BLACE	6	4	1	103	392	392	58%	20.6
KURŠUMLIJA	7	3	2	241	932	466	82%	34.4
PROKUPLJE	21	7	4	708	2,465	616	77%	37.3
ŽITORAĐA	6	3	1	95	245	245	69%	23.8
ARANĐELOVAC	19	6	3	558	1,961	654	69%	32.8
BATOČINA	6	3	1	134	368	368	67%	22.3
KNIĆ	3	3	1	67	221	221	52%	22.3
KRAGUJEVAC	70	13	8	2,508	9,025	1,128	77%	43.2
LAPOVO	4	3	1	86	239	239	41%	28.7
RAČA	6	3	1	102	297	297	83%	25.5
TOPOLA	11	3	1	209	589	589	61%	20.9
APATIN	12	5	3	237	765	255	64%	21.5
KULA	24	6	4	539	2,063	516	69%	24.5
ODŽACI	16	6	2	244	788	394	66%	20.3
SOMBOR	53	10	6	1,275	4,241	707	67%	31.9
ALIBUNAR	4	2	1	197	676	676	65%	39.4
BELA CRKVA	12	6	2	188	636	318	65%	20.9
KOVAČICA	1	1	1	91	358	358	100%	45.5
KOVIN	12	4	2	205	657	329	71%	22.8
PANČEVO	56	12	8	1,729	5,489	686	67%	41.3

Municipality	Profiles	Fields of Work	Schools	Year 1 intake	Total students	Av size of school	% 4-year (entrants)	Av Group Size (exc music schools)
VRŠAC	35	9	4	725	2,510	628	83%	27.9
BAČ	3	1	1	52	136	136	58%	17.3
BAČKA PALANKA	21	6	3	609	1,995	665	64%	43.5
BAČKI PETROVAC	1	1	1	97	403	403	100%	48.5
BEČEJ	18	6	3	561	1,668	556	60%	24.4
NOVI SAD	128	14	15	4,720	16,363	1,091	77%	38.7
SRBOBRAN	1	1	1	75	258	258	100%	75.0
SREMSKI KARLOVCI	7	1	1	116	483	483	100%	12.9
TEMERIN	8	4	1	141	364	364	24%	17.6
TITEL	9	3	1	146	433	433	43%	24.3
VRBAS	19	5	2	422	1,518	759	78%	30.1
ŽABALJ	12	4	1	202	620	620	58%	25.3
ADA	10	4	1	161	505	505	68%	23.0
ČOKA	6	3	1	99	274	274	22%	9.9
KANJIŽA	11	2	1	198	701	701	54%	16.5
KIKINDA	40	10	4	826	2,491	623	74%	28.5
NOVI KNEŽEVAC	6	4	2	132	379	190	31%	16.5
SENTA	7	4	4	304	1,303	326	87%	33.8
BAČKA TOPOLA	23	8	3	412	1,291	430	64%	17.9
SUBOTICA	77	15	8	1,875	6,315	789	78%	24.3
NOVA CRNJA	4	4	1	91	273	273	64%	30.3
NOVI BEČEJ	7	4	1	127	506	506	73%	21.2
SEČANJ	4	3	1	79	209	209	38%	19.8
ZRENJANIN	67	14	8	1,738	6,068	759	74%	30.5
INĐIJA	24	8	3	582	1,847	616	61%	27.7
PEĆINCI	10	3	1	187	573	573	50%	26.7
RUMA	30	8	4	578	1,842	461	65%	26.3
ŠID	10	6	2	262	736	368	78%	29.1
SREMSKA MITROVICA	49	12	6	1,329	4,376	729	71%	31.8
STARA PAZOVA	17	6	3	477	1,686	562	75%	36.7

SMALL SCHOOLS

The following table shows schools (by region and municipality) with fewer than 100 entrants in 2006. Municipalities featured in **bold** are those identified as limited or 'at risk' because of a general lack of secondary education options. Specialized music and dance schools are not included, nor are schools identified as satellite (*delatnost*).

Region	Municipality	Type	1 st year students 2006
BORSKI	KLADOVO	mixed	75
		vocational	75
	MAJDANPEK	gimnazija	58
	NEGOTIN	vocational	93
BRANIČEVSKI	KUČEVO	vocational	82
	ŽAGUBICA	vocational	68
BEOGRAD	SOBOT	vocational	64
ZAJEČARSKI	BOLJEVAC	mixed	97
	KNJAŽEVAC	gimnazija	58
ZLATIBORSKI	BAJINABAŠTA	gimnazija	88
	KOSJERIĆ	vocational	83
	NOVAVAROŠ	gimnazija	85
	UŽICE	vocational	41
JABLANIČKI	CRNATRAVA	vocational	47
	LEBANE	gimnazija	91
		vocational	75
	LESKOVAC	vocational	58
		vocational	77
KOLUBARSKI	UB	gimnazija	66
MAČVANSKI	ŠABAC	vocational	51
NIŠAVSKI	ALEKSINAC	vocational	81
	NIŠ	vocational	92
	SVRLJIG	mixed	83
PIROTSKI	BABUŠNICA	gimnazija	78
		vocational	26
	BELAPALANKA	mixed	42
	DIMITROVGRAD	mixed	57
	PIROT	vocational	77
		vocational	74
PODUNAVSKI	SMEDEREVO	vocational	68
	VELIKAPLANA	gimnazija	18
POMORAVSKI	ĆUPRIJA	gimnazija	96
	REKOVAC	vocational	97
PČINJSKI	BOSILEGRAD	mixed	89
	SURDULICA	gimnazija	57
		vocational	42
	TRGOVIŠTE	vocational	94
	VLADIČINHAN	gimnazija	66
vocational		84	
RAŠKI	KRALJEVO	vocational	63
	RAŠKA	gimnazija	48
TOPLIČKI	ŽITORAĐA	vocational	96
			95

Region	Municipality	Type	1 st year students 2006
ŠUMADIJSKI	KNIĆ	vocational	67
	LAPOVO	vocational	86
ZAPADNOBAČKI	APATIN	gimnazija	69
		vocational	65
	KULA	gimnazija	54
		vocational	86
ODŽACI	gimnazija	76	
JUŽNOBANATSKI	BELACRKVA	mixed	48
	KOVAČICA	gimnazija	91
	KOVIN	mixed	96
JUŽNOBAČKI	BAČ	vocational	52
	BAČKIPETROVAC	gimnazija	97
	SRBOBRAN	gimnazija	75
SEVERNOBANATSKI	ČOKA	vocational	99
	NOVIKNEŽEVAC	gimnazija	41
		vocational	91
	SENTA	gimnazija	91
		vocational	66
gimnazija*		18	
SEVERNOBAČKI	BAČKATOPOLA	vocational	95
	SUBOTICA	gimnazija	32
SREDNJEANATSKI	NOVACRNJA	mixed	91
	SEČANJ	mixed	79

*This very small gimnazija is a specialized school for gifted mathematicians.

COST-BENEFIT ANALYSIS

The purpose of this paper is to show a practical way for carrying out cost-benefit analysis for measures to rationalise the VET-system. It is not a manual to undertake a cost-benefit analysis. Therefore, some pilot project should be carried out in Serbia and the results translated in a guide.

Cost-benefit analyses are becoming more and more popular for taking deliberate decisions in case of evaluating different options, for example determining policy plans (rationalising VET). It should be clear that a deliberate approach should be undertaken to include all effects in the cost-benefit analysis and to make a deliberate approach to monetarise the effects, though it is acknowledged that there will be important factors which cannot be given a monetary value.

Cost-benefit analysis

In a cost-benefit analysis the future situation without the measure (continuation of existing situation) is compared with the situation with the measure (for example: rationalisation and closure of the school transporting students to larger schools). The effects of the measures are included in the cost-benefit analyses and discounted where they occur over a long period. Discounting means that the effects which occur later are weighted less heavily than effects that occur sooner. To this a *discount rate* is used. The present value of the effects of the measure is thus a weighted summation during the analysis period.

Social return

If the (net) present value of the effect of the measures has been determined, the social return can be calculated. If the exercise shows that the benefits of the measure are greater than the situation without the measure (*ie.* continuation) then we call this a positive social return for closure. But if the exercise shows that continuation without the measure gives a positive return, it will not be socially desirable to take the measure, as the costs are greater than the benefits. We call this a positive social return for continuation. Criteria for social return presented in this paper are, the net present value (summation of the present value of costs and benefits), and the cost/benefit ratio (quotient of the present value of costs and benefits).

Grouping of measures

For undertaking the cost-benefit analysis of the VET-system the effects (benefits and costs) are grouped in four categories:

- Direct financial effects: related to school operation
- Economic effects: related to the labour market
- Pedagogic effects: related to the quality of education
- Society effects: related to the community

Direct financial effects are to be measured, economic effects are bit more difficult to calculate though estimates can be made, and yet more difficult to calculate are the pedagogic and society effects. Even if such effects cannot be quantified, they still have to be taken into account. Therefore, effects should be weighted on a quality scale.

For example: a pedagogic effect of rationalisation could be better education for pupils, since a bigger school has more opportunities: pedagogic staff, more vocational tracks, career guidance. Measurable benefits are probably to be traced after leaving school: getting a job sooner and therefore an income (compare to the situation of not rationalising / closure small school and moving to a bigger school).

Opportunity costs

It has already been stated that a deliberate attempt should be taken to include all possible monetary effects of measures to rationalise the VET – system. Included in the effects of measures should be also the possible opportunity costs. What are opportunity costs? Opportunity costs are missing the benefits of the next-highest valued alternative because of giving the measure priority according to deliberate policy option (e.g. upgrading the physical infrastructure of the school, see example below).

An example of opportunity costs:

Rationalising the VET system and closing of schools may not only depend on the size of a school. Also, for example, the cost of continuation of the school because of an urgent upgrading of the physical infrastructure (roof, electric system, water and sanitation) could be an obstacle for continuation of the existing situation. Upgrading needs an investment for rehabilitation of the school. Using the money for rehabilitation is missing the benefits of using the money for a next-highest value alternative. As an example of a next highest value: interest rate of a bank, or another worthwhile investment. These costs of missing benefits of a highest value alternative must be part of the cost-benefit analysis.

Discounting rate

To calculate the (net) present value of the costs and benefits of measures a discounting rate has to be used. The level of the discounting rate is an important point. The discount rate reflects the future value of money. Therefore it has typically two elements, an adjustment for inflation, and for the risks. Operating in the sphere of the government the discount rate for state projects (mostly at fixed percentage) is usually set by the Ministry of Finance. One would expect it to be 2-3 percentage points higher than the rate of interest applied to long-term government bonds.

Time span of the cost-benefit analysis

The time span of the cost-benefit analysis is set by the resulting time (number of years) of the life cycle of the school.

The following page gives an overview of the items which might be included in a cost-benefit analysis.

Cost - Benefit Analysis (concept)

Benefits rationalisation	One-off	annual	time span for period of discounting	Present Value benefits
Direct financial benefits				
Saving salaries:				
Management		x	End of life cycle closed school (years)	€ -
Teaching staff		x	Idem	€ -
Non-teaching staff		x	Idem	€ -
Security personnel		x	Idem	€ -
No costs:				
Maintenance building		x	Idem	€ -
Cleaning		x	Idem	€ -
Heating, water, electricity		x	Idem	€ -
Maintenance equipment		x	Idem	€ -
No costs:				
Insurance		x	Idem	€ -
Economic benefits				
Renting out space of closed school		x	Idem	€ -
/ selling premises		x	Payment scheme	€ -
Increased efficiency of planning (ratio pupils/teacher)		x	Idem	€ -
Pedagogic benefits				
Better education, more specialised pedagogic staff		x	Idem	€ -
Better education, more educational programs		x	Idem	€ -
Improved careed guidance of pupils		x	Idem	€ -
Increased network for teachers and exchange of experiences		x	Idem	€ -
Benefits for society				
TOTAL BENEFITS				€ -
Costs rationalisation	One-off	Annual	time span for period of discounting	Present Value Costs
Direct financial costs				
<i>Closure of school</i>				€ -
Preparation for closing the school (planning)	x			€ -
Consulting of stakeholders	x			€ -
Personnel costs to regulate the closure	x			€ -
Costs to secure empty building	x			€ -
Markenting of alternatives for parents	x			€ -
Transport costs for pupils (to another school)		x	End of life cycle closed school (years)	€ -
<i>Increase enrollment neighbouring schools</i>				
Extra teaching staff salaries		x	Idem	€ -
Extra non-teaching staff salaries		x	Idem	€ -
Extra maintenance costs (more intensive use of the building)		x	Idem	€ -
Adjustments workplaces Increase class size/more classes	x			€ -
Economic costs:				
Disinvestment / decreased real estate value state	x			€ -
Social benefits for dismissed personnel:				
Management		x	Legal period	€ -
Teaching staff		x	Idem	€ -
Non-teaching staff		x	Idem	€ -
Security personnel		x	Idem	€ -
Loss of income contributed by local companies		x	End of life cycle closed school (years)	€ -
Pedagogic costs				
Premature terminating study (too far from home)		x	End of life cycle closed school (years)	€ -
Increasing absenteeism (too much travel time)		x	Idem	€ -
Less involvement by companies (practical workplaces)				
Costs for society				
Loss of social cohesion village		x	Idem	€ -
TOTAL COSTS				€ -