EDUCATION VULNERABILITY ANALYSIS FOR THE E&E REGION

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Education Vulnerability Analysis for the E&E Region: Education Discussion Paper

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Executive Summary

Purpose

This study examines the educational vulnerability of the 28 countries in the Europe and Eurasia region based on the most recent data available. The purpose of this study is to measure and compare national progress in the education sector in order to identify those countries whose education systems are most fragile, at risk and in need of assistance, and ultimately to justify and inform USAID investment in the region. This report updates the 2008 Education Vulnerability Analysis for the E&E Region, using 2007 data to replace the 2005 data presented in the earlier report. It uses the same conceptual framework, indicators and methodology for evaluating and ranking the vulnerability of the education sector of individual countries compared with the region as a whole.

Analytic Framework, Approach and Methodology

The study's analytic framework is structured around three "pillars," which represent areas critical to understanding the status of the education sector. They are:

- Pillar 1 (Context) addresses the context in which the education system operates and its development takes place.

- Pillar 2 (Student Outcomes) addresses the effectiveness and productivity of the education system, in terms of producing students with desired levels of schooling and mastery of designated skills.

- Pillar 3 (System Capacity) addresses the capacity of the education system to provide the necessary quantity and quality of inputs, goods, and services to support the learning process and create an effective learning environment.

The primary analytic tool of this study is the comparative analysis of the 28 countries in the E&E region. Fifteen indicators, corresponding to the respective pillars, are used to compare, contrast, and rank the countries' educational performance. For each indicator, countries that were one standard deviation (1SD) from the regional mean were deemed "vulnerable." Countries that were two standard deviations (2SD) from the regional mean were deemed "highly vulnerable." To establish a vulnerability ranking for each pillar and for the pillars combined, a scoring system assigned points based on the degree of vulnerability and undesired direction in the change or growth rate over the period from 2000 to 2007. Countries were ranked in descending order of points, such that the higher the score, the greater the vulnerability ranking.

Vulnerability Results by Pillar

For Pillar 1 (context), comprising four economic, population, health, and corruption indicators, 9 of 28 countries were classified as vulnerable or highly vulnerable for one or more of the indicators. The Kyrgyz Republic suffers the highest degree of vulnerability in this pillar. Nineteen countries exhibited no vulnerability.

For Pillar 2 (student outcomes), comprising nine indicators of participation, equity, attainment, and performance, 20 of 27[1] countries were rated as vulnerable or highly vulnerable for one or more of the indicators. Turkmenistan suffers the highest degree of vulnerability in this pillar. Seven countries exhibited no vulnerability.

For Pillar 3 (system capacity), comprising two indicators on class size and expenditure on education, 8 of 27 countries are classified as vulnerable for one or more of the indicators; none are highly vulnerable. Azerbaijan suffers the highest degree of vulnerability in this pillar. Nineteen countries exhibited no vulnerability.

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[1] Montenegro could not be ranked due to insufficient data.

Synthesis and Conclusions

Twenty-one of the 27 ranked E&E countries—78 percent—exhibit vulnerability on one indicator or more. Of these, six countries—29 percent—were rated highly vulnerable on one or more indicators. Only three countries "achieved" vulnerability status on at least one indicator in all three pillars: Azerbaijan, Georgia, and Kazakhstan.

Frequency of Country Vulnerability by Pillar

All 3 Pillars	Two Pillars Only			One Pillar Only		
	Pillars 1 and 2	*Pillars 2 and 3*	*Pillars 1 and 3*	*Pillar 1*	*Pillar 2*	*Pillar 3*
Azerbaijan	Kyrgyz Republic	Estonia	-	-	Albania	Poland
Georgia	Moldova	Rep. Macedonia			Armenia	
Kazakhstan	Romania	Hungary			Belarus	
	Tajikistan	Latvia			Bosnia and Herzegovina	
	Turkmenistan				Bulgaria	
	Uzbekistan				Russia	
					Slovak Republic	
Sources: TransMONEE 2009, WDI 2010, WGI 2009, EdStats 2010, and UIS 2010.						

The greatest area of vulnerability among the countries rated vulnerable for one or more indicators is in student outcomes (Pillar 2): 95 percent of countries were vulnerable for one or more of the indicators. Less than one-half—43 percent and 38 percent respectively—displayed vulnerability for both context indicators (Pillar 1) and system capacity indicators (Pillar 3). By indicator, the greatest percentages of countries were vulnerable for: school life expectancy (37%), pre-primary NER (33%) and primary repetition (30%); the area of least vulnerability was the primary completion rate (0% of countries).

Based on the point scoring system, the most vulnerable country is Turkmenistan, which not only had the highest score, but had the greatest incidences of high vulnerability and undesirable directions of change. Tajikistan, the second highest scorer, had the highest total number of incidences of vulnerability (tying with Azerbaijan) and high vulnerability. Both Turkmenistan and Tajikistan exhibited vulnerability in only two pillars (Pillar 1 and Pillar 2). However, while three of the six indicators for which Turkmenistan was classified as vulnerable showed an unfavorable direction of change from 2000 to 2007, only one of the seven indicators for Tajikistan showed a negative direction of change for the same period.

Six countries—Croatia, the Czech Republic, Lithuania, Serbia, Slovenia, and Ukraine—are notable for showing no incidences of vulnerability on any of the 15 indicators used in the scoring. Their income status ranges from lower middle to upper middle to high income. In general, however, the degree of vulnerability appears to correlate with national per capita income: the three low-income countries in the region—Kyrgyz Republic, Tajikistan, and Uzbekistan—ranked in the higher vulnerability range, while most of the upper-middle income countries ranked in the lower vulnerability range.

A comparison of the 2010 and 2008 analyses of educational vulnerability suggests some improvement in the region. The number of "not vulnerable" countries grew from three in 2008 to six in 2010, although most countries maintained the same general ranking. Countries whose rankings notably worsened are Republic of Macedonia, Hungary, and Poland. Countries whose ranking notably improved are Slovenia, Serbia, and Ukraine.

Some tentative recommendations—subject to several caveats and qualifications—for the region are:

- Intervention with assistance to the education sector in the countries ranking among the most vulnerable, particularly those with notable incidences of undesirable directions of change.

- Planning, aligning and conducting education programs with other sector programs (economic, growth, population, health, and democracy and governance) in countries with a higher vulnerability ranking may reduce or control threats to the education system and its development.

- The goal or strategic objective for the education program in vulnerable countries should respond to the areas of weakness in student outcomes. System capacity building is the most obvious and sustainable route, even though less than half the countries displayed vulnerability in this pillar.

However, these recommendations must be considered within the parameters of this study and the methodologies used. Specifically:

- Assessment of educational need in the relatively educationally well-off E&E countries should take into account other comparable countries and internationally accepted standards, as well as levels for educational development.

- The ranking of country vulnerability may change according to the number and types of indicators selected.

- The national-level measures used may mask regional or population group disparities or problems.

- The point scoring methodology did not weight the various indicators. Some indicators may have more value in determining fundamental weakness in education than others.

This study provides a broad ranking of countries that gives general orientation to the degree of educational vulnerability of countries relative to their regional peers. As such, it can be used to identify countries that warrant further scrutiny, general areas of weakness or vulnerability that should be further investigated, and areas of strength that may be emulated or serve as a foundation for future action.

I. Introduction

A. Background

The dissolution of the Soviet Union in December 1991 precipitated an economic crisis in the former communist bloc countries of Central and Eastern Europe and the newly established states of the former Soviet Republics, which weakened national education systems. Whereas previously near-universal access to primary and secondary education was common in the region, the transition to a market economy and democratic governance created financial and social strains that resulted in stagnating or declining school enrollment and deteriorating educational standards in most countries,[2] narrowing the gap between the region's countries and other developing nations. Lack of public investment in education goods and services simultaneously led to decreased educational quality and increased household cost burdens with deleterious effects on student participation and performance.

Since 1998, however, most countries in the region have embarked on economic recovery. As more resources have become available, the education sector has stabilized and education systems have begun to experience growth. Improved living standards have also contributed to expanded educational opportunities for much of the school-aged population. All the region's countries have signed the Millennium Declaration of 2000, agreeing to strive toward the achievement of the Millennium Development Goals, among which education figures prominently. Nonetheless, many countries are still struggling to regain education ground lost, reprise the continued development, and undertake reform of their education systems, so that the region's youth acquire the critical skills and competencies needed for economic, political, and social development in today's world. While generally positive, progress in the region has been varied.

B. Purpose and Organization

This study examines the educational vulnerability of the 28 countries in the Europe and Eurasia region based on the most recent data available.[3] The purpose of this study is to measure and compare national progress in the education sector in order to identify those countries in the region whose education systems are most fragile, at risk and in need of assistance, and ultimately to both justify and inform USAID investment in the region. This report updates the 2008 Education Vulnerability Analysis for the E&E Region, using 2007 data to replace the 2005 data presented in the earlier report.

Both reports were preceded by the 2005 Education Sector Discussion Paper commissioned by the E&E Bureau. The 2008 Education Vulnerability Analysis presented a slightly revised conceptual framework and added new indicators for evaluating the performance of the education sector to serve as an analytic tool for tracking and comparing education development trends in both individual countries and the region as a whole. It introduced a different methodology for aggregating and ranking country performance overall and in key areas. The same framework, indicators and methodology are used for this report.[4]

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[2] In 1991 the regional average GER for basic education it was 93.9; in 1998, it was 93.7. In 1991, the regional average GER for upper secondary and vocational education was 76.7; in 1998, it was 71.5. The regional average for public education expenditure as the percentage of GDP fell from 5.3 percent in 1991 to 4.6 percent in 1998.

[3] This paper includes the 28 countries existing in the region through 2007, the latest year for which data was available. It should be noted that since 2008, the total number of countries has changed due to the 2008 withdrawal of Kosovo from Serbia. This study uses the official USG designation of the Republic of Macedonia, Kyrgyz Republic, Slovak Republic, and Russia.

[4] Information on donor support has not been included in this report.

This report is organized in six sections. The remainder of Section I (Introduction) describes the conceptual framework, approach, and methods used. Sections II through IV reflect the three analytic pillars of the framework—Context, Student Outcomes, and System Capacity. Each section is similarly organized with a brief orientation to the pillar, sub-pillars, and indicators; presentation of findings by indicator; and summaries by sub-pillar and pillar. Section V reviews, compares, and synthesizes the results across pillars. Section VI concludes with a discussion of the final country rankings for overall vulnerability and methodological considerations. References and an annex are appended.

C. Analytic Framework

This study's analytic framework is structured around three "pillars," which represent areas critical to understanding the status of the education sector.

Pillar 1 (Context) addresses the context in which the education system operates and its development takes place. It comprises four key factors (sub-pillars) that affect—either positively or negatively—educational performance and system capacity. They are: (i) e*conomic status*, (ii) *population pressure*, (iii) *health*, and (iv) *control of corruption.*

Pillar 2 (Student Outcomes) addresses the effectiveness and productivity of the education system, in terms of producing students with desired levels of schooling and mastery of designated skills. It comprises four sub-pillars: (i) *participation* explores the extent to which school-aged children are enrolled in various levels of schooling; (ii) *equity* explores the degree to which countries have achieved parity in the major area of inequality—gender; (iii) *attainment* explores the extent to which students remain in school so that they, in principle, have sufficient instruction to acquire desired skills and competencies; and (iv) *performance* explores the extent to which students appear to have achieved the required skills.

Pillar 3 (System Capacity) addresses the capacity of the education system to provide the necessary quantity and quality of inputs, goods, and services to support the learning process and create an effective learning environment. It comprises two sub-pillars: (i) *efficiency* explores the extent to which the system is providing inputs in amounts consistent with efficiency standards, and (ii) *resources and finance* explores the extent to which the education system has been provided with the resources needed to provide quality education services and inputs. Due to the dearth of indicator data, other sub-pillars were dropped from this analysis, although they merit inclusion in an ideal framework. These are: *access* (number of schools and amount of educational services available per population or geographic unit), *equity* (the existence and prevalence of student or household support services such as tuition or fee waiver programs), and *teaching-learning quality* (teacher qualifications and availability of learning materials).

D. Indicators

Fifteen indicators have been used in this analysis (see Table I.B.1 below) and correspond to the pillars and sub-pillars. The indicators used in the various ranking exercises provide the data foundation for the study.

To determine whether additional or better indicators might be available to augment or substitute for those used in the initial 2005 Education Sector Discussion Paper, an expanded list of potential indicators and those typically used in the education sector was created based on discussions with E&E Bureau

representatives. Ultimately, three indicators were added: the incidence of tuberculosis, gender parity for primary and secondary school (combined), and the primary repetition rate.

Reviews were conducted using multiple databases to identify and confirm the availability of indicators, including: TransMONEE, World Development Indicators (WDI), World Bank EdStats (EdStats), the UNESCO Institute of Statistics (UIS) , World Governance Indicators (WGI), the Human Development Report, UNICEF Statistics, and Source OECD Statistics. The first four databases often cross-referenced one another, such that ultimate indicator data was compiled from the following databases: TransMONEE, WDI, EdStats, and WGI, with supplementary data from UIS. The other databases were found to have either combined data in ways not useful for this analysis (e.g., combing years or countries) or covered only some of the countries (e.g., the OECD database includes only the Czech Republic, Hungary, Poland, and Slovak Republic).

Indicator selection was based on three factors: the strength of the indicator as a measure of the specific concept (e.g., average student scores on validated achievement tests are a strong measure of student performance), parsimony (using as few indicators as possible, so aggregation does not become overly complex), and the robustness of the data (i.e., the number of countries for which data is available).

In the end, this third factor—availability—was the key determinant. Often the best indicators, particularly for student performance and educational quality, suffered from insufficient country coverage. A country coverage threshold was set which required that data for each indicator be reported for at least 22 of the 28 countries in the region if the indicator was to be retained and used in the analysis. For example, "survival rate through the end of the primary cycle" is an excellent indicator of education quality; however, this was available for only 9 of the 28 targeted countries in 2007. In some countries, data for an indicator was not available every year during the targeted 2000-2007 time period. In these instances, data was used from the most recent year available.

For each indicator, comparisons are made with the global averages to identify relatively strong or weak educational performers within the E&E region and educational performance of the region as a whole. Comparable data categories include: world, high income, upper-middle income, middle income, low and middle income, lower-middle income, low income, and least developed countries. Not all indicators had the same or any comparable data. For example, EdStats does not report "least developed countries" and TransMONEE indicators for basic education and total secondary are particular to this data set; therefore, comparison group data cannot be obtained from other databases. For other TransMONEE indicators, comparison data can be derived from the WDI or EdStats databases, but its comparability (in terms of data treatment) is not clear.

Changes in the databases used for the 2008 report have resulted in: (1) a greater reliance on EdStats data rather than TransMONEE data, (2) a slight change in indicator focus from basic education to primary education in some instances (e.g., pupil-teacher ratio), and (3) discontinuity between 2005 and 2007 data, due to different estimation methods, making it impossible to compare the data presented in the 2008 report with the present analysis. Consequently, we use 2000 as the base year in this analysis as data has not been readjusted for earlier years.

Table I.D.1: Summary of Pillars and Indicators

Indicator	Definition	# Countries	Source
Pillar 1: Context			
A. Economic status			
1. GDP per capita (PPP), current international $	Gross domestic product divided by midyear population converted to international dollars using purchasing power parity rates. PPP allows for a standard comparison of real price levels between countries, such that a representative basket of goods in one country costs the same as in another country if the currencies are exchanged at that rate. An international dollar has the same purchasing power over GDP as the U.S. dollar has in the United States.	28	1. TransMONEE 2009 2. WDI 2007
B. Population pressure			
2. % of population under 15 years	Population aged 0-14 is defined as the population (total, male, female) of a particular country aged 0-14 as proportion of total population	28	1. WDI 2010
C. Health			
3. Incidence of tuberculosis	New cases of tuberculosis per 100,000 population	28	1. WDI 2010
D. Corruption			
4. Control of Corruption	The aggregate indicators combine the views of a large number of enterprise, citizen and expert survey respondents in industrial and developing countries. The individual data sources are drawn from a diverse variety of survey institutes, think tanks, non-governmental organizations, and international organizations.	28	1. WGI 2009
Pillar 2: Student Outcomes			
A. Participation			
1. NER, Pre-primary	Number of pupils (total, male, female) in the theoretical age group (3-5/6 years) for pre-primary education enrolled in pre-primary education expressed as a percentage of the (total, male, female) population in that age group.	28	1. TransMONEE 2009 2. WDI 2010
2. GER, Basic Education	Number of pupils (total, male, female) enrolled in primary and lower secondary school, regardless of age, expressed as a percentage of the population (total, male, female) in the theoretical age group (6/7-14/15) for basic education.	28	1. TransMONEE 2009 2. WDI 2010 3. UIS 2010
3. GER,Total Upper Secondary	Number of pupils (total, male, female) enrolled in upper secondary and vocational and technical education school, regardless of age, expressed as a percentage of the population (total, male, female) in the theoretical age group for upper secondary and vocational and technical education.	28	1. TransMONEE 2009 2. WDI 2010 3. UIS 2010
4. GER, Tertiary	Number of pupils (total, male, female) enrolled in upper secondary school, regardless of age, expressed as a percentage of the population (total, male, female) in the theoretical age group following on from the secondary school leaving age.	27	1. WDI 2010 2. UIS 2010
B. Equity			
5. Gender parity, primary+secondary	Ratio of the female-to-male values of the gross enrollment ratio in primary and secondary education. A GPI of 1 indicates parity between sexes.	26	1. EdStats 2010 2. WDI 2010
C. Attainment			
6. Completion, Primary	Total number of students (total, male, female) regardless of age in the last grade of primary school, minus the number of repeaters (total, male, female) in that grade, divided by the (total, male, female) number of children of official graduation age.	25	1.EdStats 2010 2. WDI 2010
7.School life expectancy (years)	Number of years a child (total, male, female) of school entrance age is expected to spend at school, or university, including years spent on repetition. It is the sum of the age-specific enrolment ratios for primary, secondary, post-secondary non-tertiary and tertiary education. Gross enrolment rate is used as a proxy to compensate for the lack of data by age for tertiary and partial data for the other ISCED levels.	26	1. EdStats 2010 2. WDI 2010
D. Performance			
8. Youth Literacy rate	Percentage of people ages 15 to 24 who can, with understanding, both read and write a short, simple statement about their everyday life. (Data Source: Estimates from the UNESCO Institute for Statistics)	23	1. WDI 2010 2. EdStats 2010
9. Repetition, Primary	Proportion of pupils (total, male, female) enrolled in a given grade at a given school-year at primary level who study in the same grade in the following school-year.	26	1. WDI 2010 2. EdStats 2010
Pillar 3: System Capacity			
A. Efficiency			
1.Pupil Teacher Ratio, Primary	Average number of pupils per teacher in primary education in a given school-year, based on headcounts for both pupils and teachers.	27	1. WDI 2010 2. EdStats 2010
B. Resources and Finance			
2. Public education expenditure as % of GDP	Current and capital expenditures on education by local, regional and national governments, including municipalities (household contributions are excluded), expressed as a percentage of the gross domestic product.	26	1. TransMONEE 2009 2. WDI 2009

E. Approach and Methodology

The primary analytic tool of this study is comparative analysis of the 28 countries in the E&E region.[5] The countries' educational performance is compared, contrasted, and ranked against the others'. As such, it is norm-referenced, meaning that it does not use established or internationally recognized standards, threshold values, or other criteria to assess country performance.

Following the recommendation of the 2005 "Defining Vulnerability Thresholds" report, vulnerability classification was based on standard deviation from the mean. Standard deviation is a common measure of statistical dispersion, measuring how widely the values in a data set are spread. The statistic itself is an average of the distance of individual data points from the mean (technically, the square root of the sum of values from their arithmetic mean). Used in isolation standard deviation can be deceptive as it expresses relativity rather than concrete thresholds. For example, if data points are close to the mean, then the SD is small; if they are far from the mean, the SD is large.

Countries that were one standard deviation (1 SD) from the mean (either above or below as the indicator dictated) were deemed "vulnerable." Countries that were two standard deviations (2 SD) from the mean were deemed "highly vulnerable." Countries that were within 1 SD (either above or below) were considered "not vulnerable" for the purposes of this analysis, although it should be noted that their indicator values may fall below what policy-makers or educationalists consider optimal.

For each indicator, regional averages were computed using only data from a single designated year (2007). On an individual country basis, however, the latest year's data was used to fill in missing data points. Although for most countries 2007 data was available, data from earlier years was used in some cases. Such occurrences are noted in the indicators tables, and the year for which data is used is indicated. Based on actual values for the various indicators, countries were listed in order from worst case to best, with the vulnerable and highly vulnerable countries naturally topping the list. This also shows how the other non-vulnerable countries rank among their peers in the region.

The total percentage change and average annual change (or growth) rates for the 2000-2007 period were also calculated for each indicator to help identify trends in the various countries and the region as a whole. The total percentage change is the difference between the latest year data (generally 2007) and the 2000 base year data divided by 2000 data value. The resulting statistic is then divided by the number of years (ideally seven) in the timeframe to produce the annual change (or growth) rate for the time period. The rate of change or growth can be negative (declining over the time period) or positive (increasing over the time period). Consequently, references to "negative growth" mean that the change or growth rate during the period has declined.

This report continues the use of the point scoring system developed for the 2008 analysis.[6] For each indicator, countries were assigned points according to the degree of vulnerability and an undesired direction of change in the change (or growth) rate. A "highly vulnerable" (i.e., 2 SD) classification was awarded two points. A "vulnerable" (i.e., 1 SD) classification was awarded one point. Countries classified as vulnerable or highly vulnerable were awarded an additional one-half "penalty" point if an

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[5] The 2005 Education Discussion Paper used 20 countries, omitting the "northern tier countries."
[6] Aggregation of the various countries' ranking status on multiple indicators was a particular challenge and not addressed in the first 2005 study. Several methods were tried to aggregate country vulnerability status by pillar and sub-pillar, but these proved unsatisfactory. Ultimately, a point scoring system was developed and applied.

undesired or unfavorable direction of change was exhibited, based on the total percentage change (2000-2007).[7] For Pillars 1, 2, and 3, a total score was calculated based on the number of indicators for which the country was classified as vulnerable or highly vulnerable. Countries with the highest number of points are considered the most vulnerable. Country scores for each pillar were ranked in descending order to identify relative vulnerability, with the highest scores representing the greatest vulnerability.

To derive a picture of the overall educational vulnerability of a country (presented in the final chapter), country scores for Pillars 1, 2, and 3 were aggregated. Total country scores were then ranked in descending order, with the higher scores signifying the more vulnerable countries (i.e., the higher the score, the greater the vulnerability ranking).

Table 1.D.2 provides an overview of the indicators and their values presented in this report.

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[7] An undesired or unfavorable rate of change is often, but not always, a negative value. For example, a positive value for the change (or growth) rate in grade repetition or tuberculosis incidence would be considered undesirable or unfavorable.

Table I. D. 2 Vulnerability Indicators and Values

Country	Pillar 1:\nContext				Pillar 2:\nStudent Outcomes									Pillar 3:\nSystem Capacity	
	A.\nEconomic Status	B.\nPopulation Pressure	C.\nHealth	D.\nCorruption	A.\nParticipation				B.\nEquity	C.\nAttainment		D.\nPerformance		A.\nEfficiency	B.\nResources
	GDP per capita, PPP	Percent Population 0-14	Tuberculosis Incidence	Control of Corruption	Pre-Primary NER	Basic Education GER	Total Upper Secondary GER	Tertiary GER	Primary+ Secondary GER GPI	Primary Complet-ion Rate	School Life Expect'y	Youth Literacy Rate	Primary Repetition Rate	Primary Pupil-Tchr Ratio	% GDP on education
Albania	6,385	24.92	13.9	-0.59	47.2	88.5	70.6	19.3	0.977	94.5	11.3	99.38	2.1	21.5	3.4
Armenia	5,711	20.90	47.0	-0.71	29.2	96.6	76.5	34.2	1.042	97.9	11.9	99.77	0.2	19.3	3.2
Azerbaijan	7,477	25.16	43.3	-1.01	21.6	102.0	67.9	15.2	0.967	113.3	12.8	100.00	0.3	11.6	2.6
Belarus	10,850	15.02	46.9	-0.86	90.1	98.1	51.2	68.4	1.011	92.4	14.6	99.78	0.1	16.0	5.2
Bosnia and Herzegovina	7,468	15.89	60.5	-0.42	9.0	91.6	61.2	33.5	1.002	nd	13.0	99.60	0.5	21.4	nd
Bulgaria	11,298	13.44	37.1	-0.19	74.4	96.4	91.7	49.7	0.967	98.2	13.7	97.48	2.1	15.9	3.9
Croatia	15,515	15.50	22.1	0.06	60.3	94.8	87.5	47.0	1.020	101.6	13.8	99.65	0.3	16.7	4.5
Czech Republic	23,194	14.30	8.4	0.28	79.1	102.6	94.5	54.3	1.006	94.3	15.2	nd	0.6	18.7	4.3
Estonia	21,257	14.89	34.0	0.98	89.0	102.5	98.7	65.0	1.010	100.2	15.8	99.79	2.1	12.8	4.9
Georgia	4,667	17.44	95.0	-0.32	38.7	89.0	75.6	37.0	0.955	92.4	13.0	nd	0.4	14.5	2.8
Hungary	18,680	15.13	17.4	0.49	88.6	100.6	98.1	67.2	0.990	94.6	15.3	98.55	1.9	10.1	4.8
Kazakhstan	10,829	23.73	126.4	-0.88	42.4	107.4	45.1	51.1	0.992	100.6	15.0	99.82	0.1	16.5	2.8
Kyrgyz Republic	1,980	30.17	107.2	-1.10	14.3	97.6	48.7	42.8	1.006	93.9	12.4	99.60	0.1	24.2	6.6
Latvia	17,517	13.89	53.9	0.34	83.0	103.2	99.4	69.2	1.003	95.4	15.4	99.72	3.2	11.8	5.8
Lithuania	17,673	15.72	66.2	0.18	71.7	101.2	107.3	75.9	0.997	95.9	15.9	99.77	0.6	13.3	4.9
Moldova	2,560	17.65	99.1	-0.67	73.3	91.6	47.9	40.7	1.022	91.5	11.8	99.69	0.1	16.3	8.0
Montenegro	10,393	19.73	6.0	-0.43	36.5	99.4	85.6	nd	nd	nd	nd	nd	nd	nd	nd
Poland	15,811	15.53	22.7	0.18	59.6	99.5	85.1	66.9	0.993	96.3	15.2	99.47	0.7	10.6	5.4
Rep. Macedonia	8,543	18.90	27.5	-0.28	22.8	92.5	75.1	35.5	0.984	92.3	12.3	98.72	0.1	18.3	2.9
Romania	11,394	15.28	90.5	-0.17	76.1	99.8	88.8	58.3	0.993	120.4	14.3	97.42	1.3	16.5	4.6
Russia	14,743	14.70	83.3	-0.91	73.3	107.2	49.9	75.0	0.983	94.2	13.8	99.70	0.5	17.1	3.9
Serbia	10,221	18.02	27.3	-0.39	49.2	99.3	83.2	48.0	1.019	100.5	13.6	nd	0.6	17.0	3.3
Slovak Republic	20,205	15.98	11.7	0.31	73.5	100.2	94.5	50.1	1.003	94.1	14.7	nd	2.7	15.3	3.8
Slovenia	27,093	13.93	9.6	0.95	82.1	96.5	101.5	85.5	0.993	98.9	16.7	99.85	0.5	15.6	5.7
Tajikistan	1,754	38.15	85.1	-0.86	6.9	97.5	57.6	19.8	0.887	94.8	11.0	99.86	0.2	21.6	3.7
Turkmenistan	4,677	30.80	69.0	-1.21	23.5	86.7	10.0	3.0	nd	nd	nd	99.82	0.1	13.8	5.3
Ukraine	6,916	14.08	80.1	-0.71	73.0	99.6	57.8	76.4	0.996	101.6	14.6	99.79	nd	16.3	6.2
Uzbekistan	2,425	30.95	73.6	-0.93	22.1	96.0	79.3	9.9	0.980	96.4	11.5	99.80	0.0	18.2	6.3
Regional Mean	11,576	19.28	52.3	-0.32	56.4	98.3	76.3	49.2	0.993	98.0	13.9	99.41	0.7	16.3	4.5

II. Pillar 1: Context

Educational system performance and capacity are influenced by the context in which they are situated. Multiple factors can impact both the provision of and participation in education, ranging from the economy and demographics to public health and governance. In this chapter, indicators in four context areas that can either support or threaten student outcomes and education system capacity are explored. The context areas are: economic status, population pressure, health, and corruption. While not direct measures of education, the selected indicators show the conditions with which the education system and its students must contend.

A. Economic Status

A healthy, growing economy can provide the resources for a better-funded education system to support quality services and more educational inputs.[8] Conversely, an ailing economy and widespread poverty not only deplete the resources available to the education system, but households may be hard pressed to finance the direct, indirect, and opportunity costs of schooling. One indicator is used: GDP per capita adjusted for purchasing power parity and expressed in current international dollars to ensure comparability among countries.

1. GDP Per Capita (PPP, current international $)

In the region as a whole, the GDP per capita has grown at about 12 percent annually since 2000, reaching a regional average of $11,576 in 2007 and outpacing the worldwide 6 percent annual growth rate. All countries in the region have experienced positive yearly growth, ranging from five percent in the Republic of Macedonia to 26 percent in Armenia and 34 percent in Azerbaijan.[9] There remains, however, a great disparity in per capita GDP, ranging from $1,754 in Tajikistan to $27,093 in Slovenia. Ten of the 28 countries exceed the regional average, while 18 fall below

Using the standard deviation method of determining vulnerability, none of the countries are *highly vulnerable* or fall 2 SD from the mean. Four countries are *vulnerable*, falling 1 SD below the mean: Tajikistan, Kyrgyz Republic, Uzbekistan, and Moldova, generating less than $2,560 per capita per year. Only two of these countries exhibit rates of change or growth above the regional mean: low-income Tajikistan and lower-middle-income Moldova. The other vulnerable countries—Kyrgyz Republic and Uzbekistan—have rates of growth roughly between 60 and 80 percent of the regional mean, a sign of ongoing poverty with negative implications for education.

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[8] See Annex 1 for country income classification.
[9] The previous Education Vulnerability Analysis (2008) reported that Turkmenistan enjoyed a 26 per cent annual growth rate. Data was not sufficient to conduct analysis for this report.

Table II.A.1: GDP per capita, PPP (current international $)

Vulnerability Rank (worst case = 1)	Country	GDP per capita, PPP (2007)	Average Annual Rate of Change (2000-2007)	Total Change (2000-2007)
2 SD Below Mean				
	No countries			
1 SD Below Mean		4,665.		
1	Tajikistan (LI) [10]	1,754	0.139	0.97
2	Kyrgyz Republic (LI)	1,980	0.070	0.49
3	Uzbekistan (LI)	2,425	0.096	0.68
4	Moldova (LMI)	2,560	0.141	0.98
5	Georgia	4,667	0.178	1.25
6	Turkmenistan*	4,677	n/a	n/a
7	Armenia	5,711	0.259	1.81
8	Albania	6,385	0.096	0.67
9	Ukraine	6,916	0.159	1.11
10	Bosnia and Herzegovina	7,468	0.098	0.68
11	Azerbaijan	7,477	0.341	2.39
12	Republic of Macedonia	8,543	0.054	0.38
13	Serbia	10,221	0.107	0.75
14	Montenegro	10,393	0.109	0.77
15	Kazakhstan	10,829	0.180	1.26
16	Belarus	10,850	0.158	1.11
17	Bulgaria	11,298	0.120	0.84
18	Romania	11,394	0.125	0.88
19	Russia	14,743	0.133	0.93
20	Croatia	15,515	0.099	0.69
21	Poland	15,811	0.072	0.51
22	Latvia	17,517	0.183	1.28
23	Lithuania	17,673	0.159	1.11
24	Hungary	18,680	0.075	0.52
25	Slovak Republic	20,205	0.119	0.83
26	Estonia	21,257	0.168	1.17
27	Czech Republic	23,194	0.078	0.55
28	Slovenia	27,093	0.083	0.58
	EE Regional Mean	11,576	0.118	0.82
	Standard deviation	6,912	0.088	0.62
	World	10,015	0.064	0.53
	Least developed countries	1,254	0.086	0.67
	Low income (LI)	1,272	0.080	0.63
	Lower-middle income (LMI)	4,269	0.127	1.02
	Low & middle income	5,016.	0.101	0.82
	Middle income	5,795	0.104	0.85
	Upper middle income (UMI)	11,795	0.081	0.68
	High income (HI)	36,427	0.049	0.43
Pillar 1 Context Indicators Country data source: TransMONEE 2009 Aggregate data source World Bank Development Indicators 2010				

* Latest data from 2005

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[10] Used throughout the document, the abbreviations LI, LMI, UMI, and HI refer to low income, lower middle income, upper middle income and high income, respectively, based on the World Development Indicator income classifications for 2005 GNI Per Capita.

B. Population Pressure

The population pyramid (i.e., distribution of population according to age group) provides important insight into the demands that will be made on the education system. Obviously, the greater the percentage of people falling into school-age categories, the greater is the pressure on the education system to provide services. Depending on the country context, this could result in either an increase in educational expenditure to maintain per student outlays or a reduction in the quality and quantity of education services and inputs. The indicator employed is the percentage of the population age 0-14, as it captures the school age population for the present and the ensuing five or six years. It should be noted, however, that the "flip-side" of a low proportion of population in the 0-14 age group may indicate a high percentage of aging population which also presents a drains on resources available for education, as needs of the elderly population must be met with pensions and health care and smaller working-age group is relied on to fuel income generation and contribute to tax revenues.

1. Percent Population 0-14

In 2007, the regional average for population under age 15 was 19 percent. This proportion had fallen steadily at 2.3 percent per year over the 2000-2007 period. The regional average compares favorably worldwide with all but the highest income group, with an average of 18 percent of the population in the 0-14 age group. In fact, more than half the region's countries (17) fall below this threshold and all countries exhibit decreasing percentages in the 0-14 age group. However, the rates of change are not uniform and the disparities among countries are striking.

Among the countries that do have high 0-14 population percentages, one country falls 2 SD below the regional mean and three countries fall 1 SD below. Tajikistan, with 38 percent of its population below age 15, is highly vulnerable (tying the world-wide low income group average) and has one of lowest annual declining rates of growth in the region, indicating fertility rates above replacement levels. Vulnerable countries are Uzbekistan, Turkmenistan, and Kyrgyz Republic, with about 30 percent of their population in the 0-14 age group. All three of the region's low-income countries are included among the vulnerable countries.

Table II. B.1 : Percent Population 0-14

Vulnerability Rank (worst case = 1)	Country	Percent Population 0-14 (2007)	Average Annual Rate of Change (2000-2007)	Total Change (2000-2007)
2 SD above mean		32.27		
1	Tajikistan (LI)	38.15	-0.01	-0.10
1 SD above mean		25.77		
2	Uzbekistan (LI)	30.95	-0.025	-0.17
3	Turkmenistan (LMI)	30.80	-0.022	-0.15
4	Kyrgyz Republic (LI)	30.17	-0.020	-0.14
5	Azerbaijan	25.16	-0.027	-0.19
6	Albania	24.92	-0.026	-0.18
7	Kazakhstan	23.73	-0.020	-0.14
8	Armenia	20.90	-0.027	-0.19
9	Montenegro	19.73	-0.012	-0.09
10	Republic of Macedonia	18.90	-0.022	-0.15
11	Serbia	18.02	-0.014	-0.09
12	Moldova	17.65	-0.037	-0.26
13	Georgia	17.44	-0.029	-0.21
14	Slovak Republic	15.98	-0.027	-0.19
15	Bosnia and Herzegovina	15.89	-0.028	-0.20
16	Lithuania	15.72	-0.030	-0.21
17	Poland	15.53	-0.028	-0.19
18	Croatia	15.50	-0.013	-0.09
19	Romania	15.28	-0.024	-0.17
20	Hungary	15.13	-0.014	-0.10
21	Belarus	15.02	-0.028	-0.20
22	Estonia	14.89	-0.026	-0.18
23	Russia	14.70	-0.027	-0.19
24	Czech Republic	14.30	-0.019	-0.13
25	Ukraine	14.08	-0.028	-0.20
26	Slovenia	13.93	-0.018	-0.12
27	Latvia	13.89	-0.031	-0.22
28	Bulgaria	13.44	-0.021	-0.14
	EE Regional Mean	19.28	-0.023	-0.16
	Standard deviation	6.50	-0.017	-0.12
	World	27.70	-0.01	-0.09
	Least developed countries	40.71	-0.01	-0.04
	Low income (LI)	38.72	-0.01	-0.05
	Lower-middle income (LMI)*	28.37	-0.02	-0.11
	Low & middle income	29.55	-0.01	-0.09
	Middle income	27.65	-0.01	-0.10
	Upper middle income (UMI)	24.85	-0.01	-0.10
	High income (HI)	17.81	-0.01	-0.06
Pillar 1 Context Indicators	Source: World Bank Development Indicators 2010			

C. Health

Morbidity and mortality due to disease, poor nutrition, and other health hazards can negatively affect both the providers and consumers of education and schooling. Ill health results in student and teacher absenteeism, and inability to concentrate on the teaching-learning process. In some parts of the world, the HIV/AIDS pandemic has ravaged the education systems (e.g., Sub-Saharan Africa), decimating the

teaching force and creating millions of orphans and children made vulnerable by disease in their family, whose struggle to support themselves, as well as their siblings and ill relatives, makes attending school difficult. At present, however, the prevalence of HIV/AIDS in the E&E region is relatively low: at one-third of a percent, it is one-third the worldwide average and one-eighth the least developed country average. The greater health threat in the E&E region is tuberculosis. Consequently, the incidence of tuberculosis (new cases per 100,000 population) is used as the measure of health status. No comparable group data was available for this indicator.

1. Tuberculosis Incidence

In 2007, the regional mean was 52.3 cases (out of 100,000), far below all comparison groups except high income countries. The region exhibited a seven percent decline in incidence over the period 2000-2007. Although nearly half (13) of the countries had incidences above the regional average, more than four-fifths (23) enjoyed declining rates. Among the countries with increasing rates of TB incidence was Tajikistan with a striking 12 percent annual growth rate.

Five countries qualified as vulnerable or highly vulnerable. Kazakhstan ranked 2 SD above the mean (highly vulnerable), but showed a negative annual growth rate. Kyrgyz Republic, Moldova, Georgia, and Romania are vulnerable. Among these, only Moldova, however, showed that TB incidence was increasing.

Table II.C.1: Incidence of Tuberculosis

Vulnerability Rank (worst case = 1)	Country	TB Incidence out of 100,000 cases (2007)	Average Annual Rate of Change (2000-2007)	Total Change (2000-2007)
2 SD above mean		120.9		
1	Kazakhstan (UMI)	126.4	-0.025	-0.17
1 SD above mean		86.6		
2	Kyrgyz Republic (LI)	107.2	-0.001	-0.01
3	Moldova (LMI)	99.1	0.058	0.41
4	Georgia (LMI)	95.0	-0.003	-0.02
5	Romania (UMI)	90.5	-0.020	-0.14
6	Tajikistan	85.1	0.128	0.90
7	Russia	83.3	-0.009	-0.07
8	Ukraine	80.1	0.046	0.33
9	Uzbekistan	73.6	0.018	0.12
10	Turkmenistan	69.0	-0.021	-0.15
11	Lithuania	66.2	-0.001	-0.01
12	Bosnia and Herzegovina	60.5	-0.008	-0.06
13	Latvia	53.9	-0.036	-0.25
14	Armenia	47.0	0.056	0.39
15	Belarus	46.9	-0.009	-0.06
16	Azerbaijan	43.3	-0.045	-0.32
17	Bulgaria	37.1	-0.014	-0.10
18	Estonia	34.0	-0.039	-0.27
19	Republic of Macedonia	27.5	-0.023	-0.16
20	Serbia	27.3	-0.041	-0.29
21	Poland	22.7	-0.034	-0.24
22	Croatia	22.1	-0.059	-0.41
23	Hungary	17.4	-0.072	-0.51
24	Albania	13.9	-0.041	-0.29
25	Slovak Republic	11.7	-0.043	-0.30
26	Slovenia	9.6	-0.070	-0.49
27	Czech Republic	8.4	-0.057	-0.40
28	Montenegro	6.0	-0.091	-0.64
	EE Regional Mean	52.3	-0.010	-0.07
	Standard deviation	34.3	0.005	0.03
	World	139.7	0.004	0.03
	Least developed countries	285.5	0.005	0.03
	Low income (LI)	287.1	0.003	0.02
	Lower-middle income (LMI)	145.3	0.000	0.00
	Low & middle income	163.0	0.003	0.02
	Middle income	137.3	0.001	0.01
	Upper middle income (UMI)	106.2	0.010	0.07
	High income (HI)	14.9	-0.021	-0.15
Pillar 1 Context Indicators Source: World Bank Development Indicators 2010				

D. Corruption

In recent years, the prevalence, type, and impact of corruption in the education sector have been under scrutiny. Corruption diverts resources from their intended purposes and beneficiaries, increases the cost of providing or obtaining public services, and undermines confidence in government efficacy. While no indicator of corruption was available that specifically focuses on the education sector (e.g., teacher absenteeism), an indicator measuring control of corruption has been developed. This indicator, produced annually by Kaufmann, Kraay, and Mastrizzi (2009) as part of the World Bank's Worldwide Governance Indicator Project, aggregates the multiple survey responses of a large number of enterprises, citizens, organizations, and experts about their perception of the control of corruption in their particular country. On a global scale, this indicator ranges from -2.5, the lowest level of confidence in government effectiveness to control corruption, to +2.5, the highest level of confidence. No comparable income group data was available, so country groupings with high and low income status were used.

1. Control of Corruption

The regional mean for 2006 was -0.32, with confidence in government control of corruption increasing by 18 percent over the 2000-2007 period. This compares favorably with Sub-Saharan Africa (-0.64), where confidence has decreased, and unfavorably with OECD countries (+1.69), where it has grown.

Nevertheless, 19 out of 28 countries exhibited negative ratings and 7 countries (3 with positive ratings) showed increases in the perception of corruption over the 2000-2007 time period. Four countries are classified as vulnerable: Turkmenistan, Kyrgyz Republic, Azerbaijan and Uzbekistan. All surpass the average for Sub-Saharan Africa and the former Soviet Union in perceptions of corruption. Of these, two—Turkmenistan and the Kyrgyz Republic—show growth in the perception of corruption over the period. Although only low and lower middle income countries qualify as vulnerable, confidence has eroded in three upper middle income countries: Croatia, Lithuania, and Hungary.

Table II. D. 1: Control of Corruption

Vulnerability Rank (worst case = 1)	Country	Control of Corruption (2007)	Average Annual Rate of Change (2000-2007)	Total Change (2000-2007)
2 SD below mean				
	No countries			
1 SD below mean		-0.92		
1	Turkmenistan (LMI)	-1.21	0.029	0.17
2	Kyrgyz Republic (LI)	-1.10	0.039	0.24
3	Azerbaijan (LMI)	-1.01	-0.019	-0.11
4	Uzbekistan (LI)	-0.93	-0.005	-0.03
5	Russia	-0.91	-0.005	-0.03
6	Kazakhstan	-0.88	-0.015	-0.09
7	Belarus	-0.86	0.080	0.48
8	Tajikistan	-0.86	-0.047	-0.28
9	Armenia	-0.71	-0.007	-0.04
10	Ukraine	-0.71	-0.048	-0.29
11	Moldova	-0.67	-0.014	-0.08
12	Albania	-0.59	-0.034	-0.20
13	Montenegro	-0.43	-0.044	-0.04
14	Bosnia and Herzegovina	-0.42	-0.044	-0.26
15	Serbia	-0.39	-0.108	-0.65
16	Georgia	-0.32	0.426	2.56
17	Republic of Macedonia	-0.28	-0.083	-0.50
18	Bulgaria	-0.19	-0.035	-0.21
19	Romania	-0.17	-0.083	-0.50
20	Croatia	0.06	-1.167	-7.00
21	Lithuania	0.18	-0.056	-0.33
22	Poland	0.18	-0.089	-0.63
23	Czech Republic	0.28	0.011	0.08
24	Slovak Republic	0.31	0.134	0.94
25	Latvia	0.34	0.231	1.62
26	Hungary	0.49	-0.041	-0.29
27	Slovenia	0.95	0.050	0.30
28	Estonia	0.98	0.083	0.58
	EE Regional Mean	-0.32	-0.031	-0.18
	Standard deviation	0.60	-0.005	-0.03
	Eastern Europe and Baltic States	0.03	0.286	2.00
	Former Soviet Union	-0.85	-0.011	-0.08
	OECD Countries	1.69	0.007	0.05
	Sub-Saharan Africa	-0.64	0.007	0.05
Pillar 1 Context Indicator Source: WGI 2009				

E. Summary for Pillar 1 (Context)

Table II.E.1 (below) summarizes the countries' vulnerability, based on standard deviations, in terms of the demands made on and threats to the stability and development of education. Those countries appearing in bold-face type also show unfavorable directions of change.

Table II.E.1: Highly-Vulnerable and Vulnerable Countries for Pillar 1 (Context)

	A. Economic Status	B. Population Pressure	C. Health	D. Corruption
	GDP per capita, PPP (2007)	*Percent Population 0-14 (2007)*	*Tuberculosis Incidence (2007*	*Control of Corruption (2007)*
Highly vulnerable	--	Tajikistan (LI)	Kazakhstan (UMI)	--
Vulnerable	Tajikistan (LI)	Uzbekistan (LI)	Kyrgyz Republic (LI)	**Turkmenistan (LMI)**
	Kyrgyz Republic (LI)	Turkmenistan (LMI)	**Moldova (LMI)**	**Kyrgyz Republic (LI)**
	Uzbekistan (LI)	Kyrgyz Republic (LI)	Georgia (LMI)	Azerbaijan (LMI)
	Moldova (LMI)		Romania (UMI)	Uzbekistan (LI)
Missing Data	--	--	--	--
Pillar 1 Context Indicator Sources: TransMONEE2009, WDI 2010, EdStats 2010, and WGI 2009.				

Nine countries are classified as vulnerable or highly vulnerable for one or more of the indicators. Kyrgyz Republic appears most frequently, either as highly vulnerable or vulnerable for all four indicators; in one instances, it exhibits an undesirable rate of growth. It is followed by Uzbekistan, which appears for three of the indicators, and Moldova, Tajikistan, and Turkmenistan for two of the indicators. Azerbaijan, Georgia, Kazakhstan, and Romania each appear once. Based on the number of vulnerable countries, at present the greatest threat to education is posed by the incidence of tuberculosis. The other three categories—Economic Status, Population Pressure, and Corruption—exhibit the same number of vulnerable countries. It could be argued that pervasive corruption presents the second greatest threat. Two of four countries showed an increase in the perception of corruption, whereas countries ranked vulnerable in economic and population status showed desirable directions of change over the 2000-2007 timeframe.

Using the point methodology (described in Chapter I), which assigns points per incidence of more than one standard deviation from the mean and undesired direction of change, to aggregate and score vulnerability for all the pillar indicators, Table II.E.2 shows overall country scores and ranking. Of the nine countries that were rated vulnerable on at least one indicator, Kyrgyz Republic scores the highest for vulnerability. Nineteen countries exhibited no vulnerability in this pillar.

Table II.E.2: Relative Vulnerability Ranking for Pillar 1 (Context)

No.	Country	Highly Vulnerable (x2 pts)	Vulnerable (x1 pt)	Undesirable Change (x0.5pt)	Points	Vulnerability Ranking
		Pillar 1				
1	Kyrgyz Republic	0	4	1	4.5	1
2	Tajikistan	1	1	0	3	2
3	Uzbekistan	0	3	0	3	2
4	Moldova	0	2	1	2.5	3
5	Turkmenistan	0	2	1	2.5	3
6	Kazakhstan	1	0	0	2	4
7	Azerbaijan	0	1	0	1	5
8	Georgia	0	1	0	1	5
9	Romania	0	1	0	1	5
10	Albania	0	0	0	0	Not Vulnerable
11	Armenia	0	0	0	0	Not Vulnerable
12	Belarus	0	0	0	0	Not Vulnerable
13	Bosnia and Herz.	0	0	0	0	Not Vulnerable
14	Bulgaria	0	0	0	0	Not Vulnerable
15	Croatia	0	0	0	0	Not Vulnerable
16	Czech Republic	0	0	0	0	Not Vulnerable
17	Estonia	0	0	0	0	Not Vulnerable
18	Hungary	0	0	0	0	Not Vulnerable
19	Latvia	0	0	0	0	Not Vulnerable
20	Lithuania	0	0	0	0	Not Vulnerable
21	Montenegro	0	0	0	0	Not Vulnerable
22	Poland	0	0	0	0	Not Vulnerable
23	Rep. of Macedonia	0	0	0	0	Not Vulnerable
24	Russia	0	0	0	0	Not Vulnerable
25	Serbia	0	0	0	0	Not Vulnerable
26	Slovak Republic	0	0	0	0	Not Vulnerable
27	Slovenia	0	0	0	0	Not Vulnerable
28	Ukraine	0	0	0	0	Not Vulnerable
	Total Frequencies	2	15	3		
	Total Countries	2	8	3		
Pillar 1 Context Indicators Sources: TransMONEE 2009, WDI 2010, EdStats 2010, and WGI 2009.						

III. Pillar 2: Student Outcomes

Multiple measures of student outcomes provide an overall indication of education system effectiveness and its impact in terms of reaching and teaching its school-aged population. Because these measures are expressed in terms of student units, they capture the effect of both supply (quantity and quality of system services and inputs) and demand (social, economic, and cultural environment; attitudes and behaviors) factors, but do not necessarily distinguish which has the greatest influence on student behavior, including learning. Indicators in four categories (or sub-pillars) of student outcomes are employed in this analysis: (i) participation, (ii) equity, (iii) attainment, and (iv) efficiency.

A. Participation

This cluster of indicators shows the percentage of children enrolled in the four levels of schooling—pre-primary, basic education (typically grades 1-9), upper secondary (including both general and vocational education), and tertiary or university. These indicators capture the effects of both the supply (availability and accessibility) of schooling offered and the household demand for schooling. The net enrollment rate (NER) presents the number of students enrolled in a level of schooling as a proportion of the population falling in the specified age range for the level of schooling, which eliminates over- and under-aged children. The gross enrollment ratio (GER) presents the number of students enrolled in a level of schooling as a proportion of the overall school-aged population, capturing both over- and under-aged children.

In today's world, a principal yardstick against which educational progress and human capital development is measured is that of universal primary and secondary education, which have been virtually achieved by high income countries. This is generally based on NERs, but "success" is often declared on the basis of GERs. High enrollment rates in pre-primary education and tertiary education are generally indicative of better-resourced education systems and wealthier populations. However, in some countries, these high rates can denote an investment imbalance, favoring these levels of education to the detriment of basic education, which economic analysis generally shows to have the highest rate of return.

1. Pre-Primary Enrollment

In 2007, the regional mean[11] for the NER in pre-primary education (for children 3-5) was 56.4 percent, with an average annual growth rate of three percent since 2000. Table III.A.1 (below) shows the tremendous variation among the 28 countries, ranging from 6.9 percent NER in Tajikistan to 90.1 percent NER in Belarus.

In roughly half (15) the countries, more than 50 percent of pre-school age children are enrolled in pre-primary schooling. All but four (24) of the region's countries experienced a positive average annual growth rate, ranging from one to 14 percent (the latter in the Kyrgyz Republic). Albania, the Czech Republic, and Hungary exhibited no growth. Only in the Republic of Macedonia has the NER declined.[12]

Seven countries have NERs lower than 29 percent (1 SD below the mean) and are classified as vulnerable: Tajikistan, Bosnia and Herzegovina, Kyrgyz Republic, Azerbaijan, Uzbekistan, Republic of Macedonia and Turkmenistan. With the exception of the Republic of Macedonia, their annual growth rates either meet or exceed the regional average.

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[11] The regional mean is computed using the data for 2007 only.

[12] The pre-primary NER in the Republic of Macedonia grew from 27 percent in 2000 to 37 percent in 2006. In 2007, it fell precipitously to 23 percent.

Comparable data were not available by country income group for the NER, but were available for the GER. As a rule, GERs are higher than NERs, as over- and under-aged children are not excluded from the population denominator, although in practice the age range participation for pre-primary is generally self-limiting. Three of the vulnerable countries—Tajikistan, Bosnia and Herzegovina and Kyrgyz Republic—have pre-primary NERs that fall below the average for low income countries (14.6%). The remaining four vulnerable countries—Azerbaijan, Uzbekistan, Republic of Macedonia, and Turkmenistan—have pre-primary NERs that are about one-half the rate for the world-wide lower middle income countries (41.3%).

Table III.A.1: Pre-Primary Net Enrollment Rate (Participation Indicator 1)

Vulnerability Rank (worst case =1)	Countries (note)	Pre-Primary Net Enrollment Rate (2007/08)	Average Annual Rate of Change (2000/01-2007/08)	Total Change (2000/01-2007/08)
2 SD below mean				
	No countries			
1 SD below mean		29.0		
1	Tajikistan (LI)	6.9	0.03	0.23
2	Bosnia and Herzegovina (LMI)	9.0	0.07	0.14
3	Kyrgyz Republic (LI)	14.3	0.14	0.97
4	Azerbaijan (LMI)	21.6	0.04	0.28
5	Uzbekistan* (LI)	22.1	0.03	0.16
6	Republic of Macedonia (LMI)	22.8	-0.02	-0.17
7	Turkmenistan* (LMI)	23.5	0.03	0.17
8	Armenia	29.2	0.12	0.85
9	Montenegro	36.5	0.05	0.37
10	Georgia*	38.7	0.06	0.38
11	Kazakhstan	42.4	0.09	0.65
12	Albania	47.2	0.00	0.00
13	Serbia	49.2	0.01	0.04
14	Poland	59.6	0.03	0.19
15	Croatia	60.3	0.05	0.36
16	Lithuania	71.7	0.05	0.32
17	Ukraine	73.0	0.07	0.47
18	Moldova	73.3	0.09	0.66
19	Russia	73.3	0.02	0.14
20	Slovakia*	73.5	0.01	0.06
21	Bulgaria	74.4	0.01	0.08
22	Romania	76.1	0.02	0.14
23	Czech Republic	79.1	0.00	-0.02
24	Slovenia	82.1	0.03	0.18
25	Latvia	83.0	0.04	0.31
26	Hungary	88.6	0.00	0.00
27	Estonia	89.0	0.01	0.09
28	Belarus	90.1	0.01	0.06
	EE Regional Mean	56.4	0.03	0.20
	Standard deviation	27.4	0.01	0.09
Gross Pre-primary	World	45.0	0.04	0.26
	Least developed countries**	7.8	n/a	n/a
	Low income***	14.6	-0.03	-0.03
	Lower middle income	41.3	0.03	0.36
	Low & middle income	7.8	0.00	0.00
	Middle income	45.6	0.04	0.31
	Upper middle income	64.4	0.03	0.23
	High income	78.9	0.00	0.03

Pillar 2 Student Outcomes- Participation Indicators Country data source: TransMONEE 2009 Aggregate data source: World Bank Development Indicators 2010
* latest data from 2005/06   **latest data from 2000 ***latest data from 2001

2. Basic Education Enrollment

Basic education typically includes first through eighth or ninth grade, and the age group six to 14 years. In 2007, the regional mean GER for basic education was 98.3 percent and increasing annually at an

average rate of less than1 percent (0.003%), having grown by two percent over the seven year period from 2000 to 2007. While fourteen of the countries were below the regional mean, six qualified as highly vulnerable or vulnerable. With a basic education GER of 86.7 percent, Turkmenistan fell 2 SD below the mean. Albania, Bosnia and Herzegovina, Georgia, Moldova, and the Republic of Macedonia fell 1 SD below the mean, with GERs ranging from 88.5 percent to 92.5 percent. These countries do not appear to be on a significant growth path: with the exception of the Bosnia and Herzegovina, the primary GERs in the vulnerable countries experienced declines ranging from two percent to seven percent over the 2000-2007 time period. Although not classified as vulnerable, Croatia, Uzbekistan, Slovenia, Serbia, Montenegro, Poland, and Slovakia also exhibited negative growth.

Comparable data was not available for basic education by country income groups, so the GER for primary education has been used for comparison. In general, it should be expected that the primary GER will be somewhat higher than the basic education GER.[13] Nevertheless, the region does not compare favorably with the world (98% v. 106%). Fourteen countries, including those classified as "vulnerable," performed worse than the least developed country average (99%), as well as the comparable lower middle income group. None of the region's low income countries fell into the vulnerable category; all six vulnerable countries belong to the lower-middle income group, but fall 15 to 21 percentage points below the lower middle income group average (108%). It should be noted, however, that while GERs that exceed 100 percent show high participation in school, they also indicate internal inefficiencies (e.g., students not cycling rapidly through the system, over-aged children, etc.). More efficient education systems are likely to have GERs that move backwards toward 100 percent, at the same time that NERs approach 100 percent.

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[13] Although it varies among countries, primary education generally comprises Grade 1 through Grade 5, 6 or 7, and basic education generally comprises Grade 1 through Grades 8, 9 or 10.

Table III.A.2: Basic Education Gross Enrollment Ratio (Participation Indicator 2)

Vulnerability Rank (worst case =1)	Countries	Gross Enrollment Ratio Basic Education (2007/08)	Average Annual Rate of Change (2000/01-2007/08)	Total Change (2000/01-2007/08)
2 SD below mean		88.2		
1	Turkmenistan* (LMI)	86.7	-0.01	-0.03
1 SD below mean		93.2		
2	Albania (LMI)	88.5	-0.01	-0.06
3	Georgia (LMI)	89.0	0.00	-0.02
4	Moldova (LMI)	91.6	0.00	-0.02
5	Bosnia and Herzegovina (LMI)	91.6	0.01	0.08
6	Republic of Macedonia (LMI)	92.5	-0.01	-0.07
7	Croatia	94.8	0.00	-0.02
8	Uzbekistan*	96.0	0.00	-0.01
9	Bulgaria	96.4	0.00	0.01
10	Slovenia**	96.5	-0.01	-0.04
11	Armenia	96.6	0.01	0.04
12	Tajikistan	97.5	0.01	0.10
13	Kyrgyz Republic	97.6	0.00	0.01
14	Belarus	98.1	0.01	0.07
15	Serbia	99.3	0.00	-0.02
16	Montenegro	99.4	0.00	-0.02
17	Poland	99.5	0.00	-0.01
18	Ukraine	99.6	0.01	0.04
19	Romania	99.8	0.00	0.01
20	Slovakia*	100.2	0.00	-0.01
21	Hungary	100.6	0.00	0.00
22	Lithuania	101.2	0.00	0.00
23	Azerbaijan	102.0	0.02	0.12
24	Estonia	102.5	0.00	0.00
25	Czech Republic	102.6	0.00	0.00
26	Latvia	103.2	0.01	0.07
27	Russia	107.2	0.01	0.07
28	Kazakhstan	107.4	0.01	0.08
	EE Regional Mean	98.3	0.003	0.02
	Standard deviation	5.0	0.01	0.06
Primary GER	World	106.2	0.01	0.07
	Least developed countries	99.16	0.02	0.13
	Low income (LI)	100.9	0.03	0.21
	Lower-middle income (LMI)	108.2	0.01	0.08
	Low & middle income	106.8	0.01	0.08
	Middle income	108.6	0.01	0.06
	Upper middle income (UMI)	110.5	0.00	-0.03
	High income (HI)	101.5	0.00	0.00

Pillar 2 Student Outcomes- Participation Indicator Country data source: TransMONEE 2009 Aggregate data sources: WDI 2010, UIS 2010
* latest data from 2006/07 **latest data from 2004/05

3. Total Upper Secondary Enrollment

Following completion of basic education, students of countries in the E&E region who wish to continue their schooling typically have two options: (1) two to four year programs in general secondary school with an academic and preparatory orientation for higher education, or (2) three to four year programs in vocational or technical school which allows entry to tertiary education, and one to three year programs which prepare students for the labor market and excludes entry to the tertiary level.

Combined enrollments for these two tracks provide an overall picture of access to and participation in secondary schooling. Because the Vocational/Technical Education GERs was not available, the table below presents "inferred" GERs, derived by subtracting available General Upper Secondary GERs from the Total Upper Secondary GERs.

Table III.A.3a (below) shows that while the GER in general upper secondary (47.1) is on average higher than the GER for vocational/technical education (29.2), in seven countries (more than one-quarter of countries for which data is available) the majority of students are enrolled in vocational/technical education. On average, General Upper Secondary Education GER in the region has grown 18 percent from 2000 to 2007, with Albania, Azerbaijan, and Poland showing remarkable increases of 55, 53 and 58 percent, respectively. Three countries—Armenia, Belarus, and Russia—exhibited negative change rates, ranging between seven and nine percent for the same period.

Table III.A.3a: General Upper Secondary Education & Vocational/Technical Education GERs[14]

Country	General Upper Secondary GER (2007/08)	% Change (2000/01-2007/08)	Vocational/Technical Education GER (2007/08) (inferred)	% Change (2000/01-2007/08)	General Upper Sec GER: VocTech GER Ratio (2007/08)
Albania	58.8	0.55	11.8	nd	5.0
Armenia	67.1	-0.07	9.4	nd	7.1
Azerbaijan	68.0	0.53	0.0	nd	-1359.0
Belarus	49.5	-0.09	1.7	nd	29.8
Bosnia and Herzegovina	46.8	0.00	14.4	nd	3.2
Bulgaria	44.5	0.34	47.2	nd	0.9
Croatia (UMI)	24.2	0.15	63.3	nd	0.4
Czech Republic (UMI)	24.4	0.35	70.1	nd	0.3
Estonia	66.7	0.11	32.0	nd	2.1
Georgia	Non-viable data				
Hungary	34.9	0.18	63.2	nd	0.6
Kazakhstan	Non-viable data				
Kyrgyz Republic	40.5	0.27	8.2	nd	4.9
Latvia	63.8	0.11	35.6	nd	1.8
Lithuania	79.1	0.22	28.2	nd	2.8
Moldova	35.3	0.13	12.6	nd	2.8
Montenegro (LMI)	26.7	0.15	58.9	nd	0.5
Poland	61.7	0.58	23.4	nd	2.6
Republic of Macedonia	30.2	0.16	44.9	nd	0.7
Romania	31.3	0.20	57.5	nd	0.5
Russia	33.8	-0.08	16.1	nd	2.1
Serbia (LMI)	19.9	0.02	63.3	nd	0.3
Slovak Republic*	78.2	0.34	16.3	nd	4.8
Slovenia	41.1	0.28	60.4	nd	0.7
Tajikistan	51.7	0.12	5.9	nd	8.7
Turkmenistan	No data		No data		
Ukraine	42.3	0.04	15.5	nd	2.7
Uzbekistan*	33.2	0.00	46.1	nd	0.7
EE Regional Mean	47.1	0.18	29.2	nd	
Pillar 2 Student Outcomes- Participation Indicators Source: TransMONEE 2009.					

[14] The sum of General Upper Secondary Education GER and Vocational Technical Education GER equals Total Upper Secondary Education. Since Vocational/technical education GER data was not available for 2007/8, a synthetic or inferred statistic was calculated by subtracting the General Upper Secondary GER from Total Upper Secondary GER, indicators for which 2007/8 data was available. Statistics for Georgia and Kazakhstan have been eliminated from the table because their General Upper Secondary data was not viable (i.e. exceeded Total Upper Secondary Education GER.

In 2007, the combined enrollment in general secondary and vocational/technical schooling ("total upper secondary GER") yielded a regional average of 76.3 percent, growing at an average rate of two percent per year or 12 percent over the 2000-2007 period (see Table III.A.3b below). Six countries fall 1 or 2 SD below the regional mean. Highly vulnerable is Turkmenistan (10% GER); vulnerable are Kazakhstan, Moldova, Kyrgyz Republic, Russia, and Belarus with less than 56 percent of the 15 to 18 age group enrolled in secondary and vocational/technical education programs. Kazakhstan, Russia, and Belarus experienced declining growth in GERs over the 2000-2007 period, Turkmenistan and Moldova exhibited modest growth in GERs, and the Kyrgyz Republic showed no change in either direction.

As comparable data was not available for total upper secondary education (i.e., general upper secondary and vocational/technical schooling) by country income groups, the gross enrollment for general secondary education (i.e., lower and upper general secondary schooling) has been used for comparison. This could cause the region's countries to compare unfavorably with the global comparison groups, as the latter excludes vocational/technical education (the secondary education structure inherited from the Soviet system emphasized vocational and technical education). Interestingly, the low income Kyrgyz Republic (48.7%) exceeded the GER in low income countries in general (41.4%). However, the vulnerable lower-middle income countries of the region performed 11 to 52 percentage points below the global mean for lower-middle income countries (62.4%). Russia, classified as an upper middle income group, trailed the global mean for comparable countries by 30 percentage points.

Table III.A.3b: Total Upper Secondary Gross Enrollment Ratio (Participation Indicator 3)

Vulnerability Rank (worst case =1)	Countries	Gross Enrollment Ratio Total Upper Secondary (2007/08)	Average Annual Rate of Change (2000/01 - 2007/08)	Total Change 2000/01 - 2007/08
2 SD below mean		36.6		
1	Turkmenistan* (LMI)	10.0	0.01	0.07
1 SD below mean		56.4		
2	Kazakhstan (LMI)	45.1	-0.02	-0.12
3	Moldova (LMI)	47.9	0.02	0.14
4	Kyrgyz Republic (LI)	48.7	0.00	0.00
5	Russia (UMI)	49.9	-0.01	-0.04
6	Belarus (LMI)	51.2	-0.01	-0.09
7	Tajikistan	57.6	0.01	0.05
8	Ukraine	57.8	0.01	0.04
9	Bosnia and Herzegovina	61.2	-0.03	-0.15
10	Azerbaijan	67.9	0.08	0.53
11	Albania	70.6	0.08	0.57
12	Republic of Macedonia	75.1	0.01	0.07
13	Georgia*	75.6	0.02	0.12
14	Armenia	76.5	0.00	0.01
15	Uzbekistan*	79.3	0.07	0.44
16	Serbia	83.2	0.01	0.04
17	Poland	85.1	-0.02	-0.17
18	Montenegro	85.6	0.02	0.13
19	Croatia	87.5	0.01	0.07
20	Romania	88.8	0.03	0.23
21	Bulgaria	91.7	0.03	0.22
22	Czech Republic	94.5	0.01	0.05
23	Slovak Republic*	94.5	0.04	0.26
24	Hungary	98.1	0.02	0.13
25	Estonia	98.7	0.02	0.12
26	Latvia	99.4	0.01	0.06
27	Slovenia	101.5	0.01	0.05
28	Lithuania	107.3	0.02	0.12
	EE Regional Mean	76.3	0.02	0.12
	Standard deviation	19.9	-0.01	-0.09
	World	66.4	0.02	0.10
	Least developed countries	20.6	0.01	0.06
	Low income (LI)	41.4	0.03	0.18
	Lower-middle income (LMI)	62.4	0.03	0.18
	Low & middle income	62.3	0.02	0.13
	Middle income	67.4	0.02	0.13
	Upper middle income (UMI)	89.7	0.004	0.03
	High income (HI)	100.3	0.001	0.004

Pillar 2 Student Outcomes- Participation Indicators Country data source: TransMONEE 2009 Aggregate data source WDI 2010, UIS 2010

*latest data from 2006/07

4. Tertiary Enrollment

In 2007, the regional average GER for tertiary education (i.e., degree- or non-degree granting higher education programs) reached 49.2, having increased by 52 percent since 2000 and grown at seven percent per year. While the regional mean surpasses that for upper-middle income countries (43%), there is wide variation, ranging from 3 GER in Turkmenistan (below the least developed country average

of 5.5) to 85.5 GER in Slovenia (surpassing the high income country average of 68.6). Turkmenistan is classified as highly vulnerable; Uzbekistan, Azerbaijan, Albania, and Tajikistan are vulnerable. All have tertiary GERs less than 20. The average annual change rates for three of these countries—Turkmenistan, Uzbekistan and Azerbaijan—are negative, with average annual change rates for the two other countries increasing between five and six percent.

Table III.A.4: Tertiary Gross Enrollment Ratio (Participation Indicator 4)

Vulnerability Rank (worst case =1)	Countries	Gross Enrollment Ratio Tertiary (2007)	Average Annual Rate of Change (2000-2007)	Total Change (2000-2007)
2 SD below mean		8.4		
1	Turkmenistan* (LMI)	3.0	-0.03	-0.19
1 SD below mean		28.7		
2	Uzbekistan (LI)	9.9	-0.03	-0.24
3	Azerbaijan (LMI)	15.2	-0.01	-0.08
4	Albania** (LMI)	19.3	0.05	0.19
5	Tajikistan (LI)	19.8	0.06	0.42
6	Bosnia and Herzegovina	33.5	n/a	n/a
7	Armenia	34.2	0.06	0.45
8	Republic of Macedonia	35.5	0.08	0.57
9	Georgia	37.0	0.00	-0.03
10	Moldova	40.7	0.03	0.24
11	Kyrgyz Republic	42.8	0.03	0.23
12	Croatia	47.0	0.08	0.53
13	Serbia	48.0	n/a	n/a
14	Bulgaria	49.7	0.02	0.11
15	Slovak Republic	50.1	0.11	0.91
16	Kazakhstan	51.1	0.12	0.81
17	Czech Republic	54.3	0.12	0.85
18	Romania	58.3	0.20	1.42
19	Estonia	65.0	0.02	0.17
20	Poland	66.9	0.05	0.35
21	Hungary	67.2	0.11	0.80
22	Belarus	68.4	0.04	0.28
23	Latvia	69.2	0.03	0.23
24	Russia	75.0	0.04	0.14
25	Lithuania	75.9	0.07	0.51
26	Ukraine	76.4	0.08	0.56
27	Slovenia	85.5	0.08	0.54
No data	Montenegro			
	EE Regional Mean	49.2	0.07	0.52
	Standard deviation	21.8	0.04	0.29
	World	25.7	0.05	0.35
	Least developed countries	5.5	0.09	0.40
	Low income (LI)	6.3	0.04	0.27
	Lower-middle income (LMI)	18.4	0.09	0.65
	Low & middle income	20.2	0.07	0.49
	Middle income	23.2	0.07	0.52
	Upper middle income (UMI)	42.9	0.06	0.41
	High income (HI)	68.6	0.03	0.20
Pillar 2 Student Outcomes - Participation Indicator Sources: World Bank Development Indicators 2010, UIS 2010				

* latest data from 2006 ** latest data from 2004

5. *Participation Summary*

Table III.A.5a (below) summarizes the countries that fall 1 or 2 SD from the mean for educational participation, and are considered vulnerable or highly vulnerable. Those countries appearing in bold-face type also show unfavorable directions of change. Twelve countries are classified as vulnerable or highly vulnerable for one or more of the indicators. Turkmenistan appears most frequently, either as highly-vulnerable (three times) or vulnerable (once) for all four indicators. It is followed by Albania, Azerbaijan, Bosnia and Herzegovina, Kyrgyz Republic, Moldova, Republic of Macedonia, Tajikistan, and Uzbekistan, which are vulnerable for two of the indicators. Belarus, Georgia, Kazakhstan, and Russia are vulnerable for only one indicator.

Eight countries have experienced negative (declining) growth and undesirable directions of change for one or more indicator. Turkmenistan and the Republic of Macedonia exhibited negative change for two indicators. Probably most fragile are those countries which have been rated as vulnerable in the critical areas of basic and total upper secondary education and have experienced negative (declining) growth and undesirable directions of change in these educational areas: Albania, Belarus, Kazakhstan, Republic of Macedonia, and Russia.

Table III.A.5a: Highly Vulnerable and Vulnerable Countries for Participation in Education

	Net Enrollment Rate, Pre-Primary (2007)	Gross Enrollment Ratio, Basic Education (2007)	Gross Enrollment Ratio, Total Upper Secondary (2007)	Gross Enrollment Ratio, Tertiary (2007)
Highly vulnerable		**Turkmenistan* (LMI)**	Turkmenistan (LMI)	**Turkmenistan (LMI)**
Vulnerable	Tajikistan (LI)	**Albania (LMI)**	**Kazakhstan (LMI)**	Uzbekistan (LI)
	Bosnia and Herzegovina (LMI)	Georgia (LMI)	Moldova (LMI)	**Azerbaijan (LMI)**
	Kyrgyz Republic (LI)	Moldova (LMI)	Kyrgyz Republic (LI)	Albania (LMI)
	Azerbaijan (LMI)	Bosnia and Herzegovina (LMI)	**Russia (UMI)**	Tajikistan (LI)
	Uzbekistan (LI)	**Rep. of Macedonia (LMI)**	**Belarus (LMI)**	
	Rep. of Macedonia (LMI)			
	Turkmenistan (LMI)			
Missing Data				Montenegro
Pillar 2 Student Outcomes- Participation Indicator Sources: TransMONEE 2009, EdStats 2010, WDI 2010 and UIS 2010.				

B. Equity

While there are several types of inequities that plague education systems and result in a variety of underserved populations distinguished by geography, ethnicity, wealth, and urban-rural location, the one for which there is readily available data is gender. Although most student indicators are disaggregated by sex, one indicator was selected to capture the relative gender equity of the target countries—the gender parity index for the GER for primary and secondary education combined. Since the prevailing high enrollment ratios for basic education signal the likelihood of high gender parity, more variation is likely to occur if a higher level of education, where coverage is not as widespread, is included.

The gender parity index (GPI) is the ratio of girls' GER to boys' GER. Perfect parity equals one. Values less than one indicate that girls are under-represented, while values greater than one show that boys are under-represented. Because the desired value ("1") is intrinsic in this indicator, the reader is cautioned that use of the standard deviation methodology sets the reference point at below parity. While this

method shows the extent of country deviation from the regional norm, it does not necessarily mean that all countries that are within one standard deviation do not suffer from gender inequity.[15]

1. *Primary and Secondary GER Gender Parity*

In 2007, the regional mean GPI for primary and secondary education was 0.993, showing that a near perfect degree of equity had been achieved, surpassing the average for middle income countries and approaching the average for high income countries. Between 2000 and 2007, the GPI for the region and for 11 countries declined in disfavor of girls, albeit negligibly.[16] In the region as a whole, girls are more disfavored than boys in 15 countries and boys are more disfavored than girls in six countries.

While five of the countries can be considered to have achieved virtual gender parity in 2007 (less than five one thousandths of a point from 1.00), few of the other countries for which data is available show notable levels of disparity.[17] Only three countries deviate by 1 or 2 SD from the regional mean. Highly vulnerable, Tajikistan exhibited the worst case of gender disparity in enrollment (0.887 GPI), where the proportion of girls enrolled in primary and secondary school is notably lower than boys, as well as slightly lower than the GPI for comparable low income countries. Vulnerable countries Armenia and Georgia show different directions of vulnerability. In Armenia, boys are under-enrolled in relation to girls; in Georgia, girls are under-enrolled compared with boys. In each of these countries, the direction of change has been undesirable, i.e., a worsening of disparity.

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[15] For example, Moldova—a vulnerable country—is only 0.02 points from parity. At the same time, Serbia and Croatia (also 0.02 points away from parity) and Albania, Macedonia, Russia, and Uzbekistan (-0.2 points away from parity) are not classified as vulnerable.

[16] The reader is cautioned that rates of change must be interpreted differently for this indicator. In cases where girls were over-represented (GPI above 1.0), a negative growth rate could signify a move toward parity or gender equality; in other cases, a negative growth rate signifies a growing under-representation of girls (such cases are indicated by italicized growth rates in the table).

[17] Given the high GPIs for this region, we have adopted more stringent definition of gender parity. UNESCO (2003) has defined a GPI value of between 0.97 and 1.03 (after rounding) as the achievement of gender parity. By this definition, 14 countries in the region could be considered to suffer no gender disparity.

Table III.B.1: Primary and Secondary GER Gender Parity (Equity Indicator 1)

Vulnerability Rank (worst case =1)	Countries	Primary & Secondary GER GPI (2007)	Greatest Distance from Parity (1)	Average Annual Rate of Change (2000-2007)	Total Change (2000-2007)
2 SD below or above the mean		.934 or 1.052			
1	Tajikistan (LI)	0.887	-0.11	*0.000*	*-0.002*
1 SD below or above the mean		.964 or 1.023			
2	Armenia (LMI)	1.042	0.04	0.000	0.002
3	Georgia	0.955	-0.04	*-0.004*	*-0.028*
4	Moldova (LMI)	1.022	0.02	0.005	0.032
5	Bulgaria	0.967	-0.03	*-0.002*	*-0.011*
6	Azerbaijan	0.967	-0.03	*-0.005*	*-0.033*
7	Albania*	0.977	-0.02	*0.001*	*0.003*
8	Uzbekistan	0.980	-0.02	0.000	0.000
9	Russia	0.983	-0.02	*-0.003*	*-0.013*
10	Republic of Macedonia	0.984	-0.02	0.001	0.007
11	Hungary	0.990	-0.01	*-0.001*	*-0.010*
12	Kazakhstan	0.992	-0.01	*-0.003*	*-0.024*
13	Romania	0.993	-0.01	*-0.002*	*-0.011*
14	Poland	0.993	-0.01	0.001	0.010
15	Slovenia	0.993	-0.01	*-0.005*	*-0.037*
16	Ukraine	0.996	0.00	*-0.001*	*-0.006*
17	Lithuania	0.997	0.00	0.001	0.004
18	Bosnia and Herzegovina	1.002	0.00	n/a	n/a
19	Latvia	1.003	0.00	-0.001	-0.009
20	Slovakia	1.003	0.00	-0.001	-0.006
21	Kyrgyz Republic	1.006	0.01	-0.001	-0.005
22	Czech Republic	1.006	0.01	0.000	-0.001
23	Estonia	1.010	0.01	0.001	0.006
24	Belarus	1.011	0.01	-0.001	-0.007
25	Serbia	1.019	0.02	0.001	0.008
26	Croatia	1.020	0.02	0.002	0.010
No data	Montenegro				
No data	Turkmenistan				
	EE Regional Mean	0.993		0.0003	-0.002
	Standard deviation	0.030		0.008	0.053
	World	0.961		0.006	0.042
No data	Least developed countries				
	Low income (LI)	0.909		0.005	0.037
	Lower-middle income (LMI)	0.957		0.010	0.072
	Low & middle income	0.956		0.007	0.050
	Middle income	0.969		0.008	0.055
	Upper middle income (UMI)	1.005		0.001	0.006
	High income (HI)	0.995		*-0.001*	*-0.005*
Pillar 2 Student Outcomes - Equity Indicator Data source: World Bank EdStats 2010					

* latest data from 2004

3.   *Equity Summary*

Table III.B.2a (below) summarizes the three countries that are considered vulnerable. Tajikistan is highly vulnerable, and Armenia and Georgia are vulnerable. All countries (appearing in bold-face type) have experienced growing gender disparity, with Tajikistan and Georgia moving to favor boys over girls and Armenia moving to favor girls over boys.

Table III.B.2a: Highly Vulnerable and Vulnerable Countries for Equity in Education

	Primary + Secondary GER GPI (2007)
Highly vulnerable	Tajikistan (LI)
Vulnerable	Armenia (LMI)
	Georgia (LMI)
Missing Data	Montenegro
	Turkmenistan
Pillar 2 Student Outcomes- Equity Indicator Sources: EdStats 2010	

C. Attainment

Children must not only enroll in school, but they also must remain in schools for a sufficient amount of time to acquire the skills and competencies needed for both individual and national economic and social development.   Two indicators are used to measure educational attainment: the primary school completion rate and the school life expectancy.   Both indicators show how long the students are retained in school, although they do not distinguish among the causes behind it—either the strength of the education system, the general demand for education, or some combination of the two.   These two indicators may be viewed as proxies for student learning, but do not measure learning achievement and are no guarantee that fundamental skills have been mastered.

1. Primary Completion Rate

Overall, the E&E region enjoys a high primary school completion rate.   Ninety-eight percent of the school-aged population completes primary school,[18] which approaches the average (99.9%) for upper middle income countries. Table III.C.1 (below) shows the wide variation among the countries, ranging from 91.5 percent completion in Moldova to 120.4 percent completion in Romania (signifying the high number of inappropriately-aged students).

Although no countries fall into the vulnerable categories, more than half of the countries for which data is available (14 out of 25) have experienced negative growth or declines in the primary school completion rate over the 2000-2007 period, with the most precipitous drop in Belarus (9%).   In contrast, several countries enjoyed positive growth rates, with the most striking in Azerbaijan (27%) and Romania (18%).

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[18] The formula used to calculate gross completion rates may somewhat overstate the percentage, as its numerator includes over-and under-aged children and its denominator limits the age group to children of official graduation age.

Table III.C.1: Primary Completion Rate (Attainment Indicator 1)

Vulnerability Rank (worst case =1)	Countries	Primary Completion Rate (2007)	Average Annual Rate of Change (2000-2007)	Total Change (2000-2007)
2 SD below mean		84.4		
	No Countries			
1 SD below mean		91.2		
	No Countries			
1	Moldova	91.5	0.00	0.01
2	Republic of Macedonia	92.3	-0.01	-0.07
3	Georgia	92.4	-0.01	-0.07
4	Belarus	92.4	-0.01	-0.09
5	Kyrgyz Republic	93.9	0.00	0.01
6	Slovak Republic	94.1	0.00	-0.03
7	Russia	94.2	0.00	0.00
8	Czech Republic	94.3	-0.01	0.06
9	Albania*	94.5	-0.02	-0.07
10	Hungary	94.6	0.00	-0.03
11	Tajikistan	94.8	0.00	0.00
12	Latvia	95.4	0.00	-0.01
13	Lithuania	95.9	0.00	-0.03
14	Poland	96.3	0.00	-0.01
15	Uzbekistan	96.4	0.00	0.01
16	Armenia	97.9	0.00	-0.03
17	Bulgaria	98.2	0.00	-0.01
18	Slovenia**	98.9	0.02	0.03
19	Estonia	100.2	0.02	0.11
20	Serbia	100.5	n/a	n/a
21	Kazakhstan	100.6	0.01	0.07
22	Ukraine	101.6	0.01	0.10
23	Croatia	101.6	0.02	0.11
24	Azerbaijan	113.3	0.04	0.27
25	Romania	120.4	0.03	0.18
No data	Bosnia and Herzegovina			
No data	Montenegro			
No data	Turkmenistan			
	EE Regional Mean	98.0	0.00	0.02
	Standard deviation	6.8	0.12	0.81
	World	88.8	0.01	0.08
	Least developed countries	62.3	0.02	0.14
	Low income (LI)	65.7	0.02	0.11
	Lower-middle income (LMI)	92.1	0.01	0.09
	Low & middle income	87.8	0.01	0.09
	Middle income	93.6	0.01	0.09
	Upper middle income (UMI)	99.9	0.01	0.04
No data	High income (HI)			
Pillar 2 Student Outcomes - Attainment Indicator Data source: World Bank EdStats 2010				

*latest data from 2004, ** latest data from 2003

2. *School Life Expectancy*

In 2007, the regional average for the number of years a student was expected (i.e., predicted) to attend school and university (including repeated years) was 13.9, surpassing that of upper-middle income

countries and exhibiting a positive average annual growth rate (.01) for an average increase of 10 percent over the 2000-2007 period.

Like other indicators, school life expectancy (SLE) is somewhat ambiguous if not placed in context. One way of doing so is to compare the years of school life expectancy with the years of compulsory education. If compulsory education years exceed school life expectancy years, then it is likely that the education system is not meeting the standards it set for itself, meaning its students are not spending as many years in school as is required to complete the compulsory grade level (assuming no repetition or skipping grades). In the 26 countries for which data is available, the SLE exceeds the duration of compulsory education, sometimes by as much eight years (e.g., Slovenia). While this could indicate progression to higher levels of education, it may also signal grade repetition. Review of the enrollment and repetition indicators suggest both progression to higher levels of education and grade repetition are at play, although the modest repetition rates for most countries (see next section) implies the greater influence of grade progression.

Seven countries (Tajikistan, Albania, Uzbekistan, Moldova, Armenia, Republic of Macedonia, and the Kyrgyz Republic) are rated vulnerable, scoring 1 SD below the regional mean for SLE. The lowest ranked performer—Tajikistan—has had a growth rate over the 2000-2007 timeframe that exceeds the regional average, although it has not yet reached parity with the duration of its compulsory education. Other vulnerable countries have more modest growth rates for the period, falling below the regional mean. All the vulnerable countries not only surpass the SLE average for the comparable low and lower-middle income countries, but they exceed the global average for middle income countries as well.

Table III.C.2: School Life Expectancy in Years (Attainment Indicator 2)

Vulnerability Rank (worst case =1)	Countries	School Life Expectancy (2007)	Average Annual Rate of Change (2000-2007)	Total Change (2000-2007)	Compulsory Education Years	Difference in Years between SLE and Compulsory Ed.
2 SD below mean		10.8				
	No countries					
1 SD below mean		12.4				
1	Tajikistan (LI)	11.0	0.02	0.12	9	+2.0
2	Albania* (LMI)	11.3	0.00	0.02	8	+3.3
3	Uzbekistan (LI)	11.5	0.01	0.07	11	+0.5
4	Moldova (LMI)	11.8	0.01	0.05	9	+2.8
5	Armenia (LMI)	11.9	0.01	0.09	8	+3.9
6	Republic of Macedonia (LMI)	12.3	0.01	0.03	8	+4.3
7	Kyrgyz Republic (LI)	12.4	0.01	0.05	9	+3.4
8	Azerbaijan	12.8	0.02	0.15	11	+1.8
9	Georgia	13.0	0.02	0.11	9	+4.0
10	Bosnia and Herzegovina	13.0	n/a	n/a	n/a	n/a
11	Serbia	13.6	n/a	n/a	8	+5.6
12	Bulgaria	13.7	0.01	0.05	8	+5.7
13	Russia	13.8	0.01	0.05	10	+3.8
14	Croatia	13.8	0.02	0.14	8	+5.8
15	Romania	14.3	0.03	0.19	8	+6.3
16	Ukraine	14.6	0.02	0.13	12	+2.6
17	Belarus	14.6	0.01	0.05	9	+5.6
18	Slovak Republic	14.7	0.02	0.11	10	+4.7
19	Kazakhstan	15.0	0.03	0.22	11	+4.0
20	Czech Republic	15.2	0.01	0.09	10	+5.2
21	Poland	15.2	0.01	0.04	9	+6.2
22	Hungary	15.3	0.01	0.08	10	+5.3
23	Latvia	15.4	0.01	0.08	9	+6.4
24	Estonia	15.8	0.01	0.06	9	+6.8
25	Lithuania	15.9	0.01	0.09	9	+6.9
26	Slovenia	16.7	0.02	0.14	9	+7.7
No data	Montenegro					
No data	Turkmenistan					
	EE Regional Mean	13.9	0.01	0.10		
	Standard deviation	1.5	0.00	0.01		
	World	10.9	0.01	0.10		
No data	Least developed countries					
	Low income (LI)	8.4	0.02	0.14		
	Lower-middle income (LMI)	10.2	0.02	0.12		
	Low & middle income	10.4	0.02	0.12		
	Middle income	11.0	0.02	0.12		
	Upper middle income (UMI)	13.6	0.01	0.05		
	High income (HI)	15.7	0.00	0.03		
Pillar 2 Student Outcomes- Attainment Indicator Source: World Bank EdStats 2010						

* latest data from 2004, **latest data from 2006

3. Attainment Summary

Table III.C.3a (below) summarizes the countries that fall 1 or 2 SD from the mean for educational attainment, and are considered vulnerable or highly vulnerable. Those countries appearing in bold-face type also show undesirable directions of change.

Seven countries are classified as vulnerable, although all fall under one indicator only. None are classified as highly vulnerable nor exhibit undesirable directions of change. Conceptually, there should be a positive relationship between the two indicators. That no countries are rated as vulnerable for primary completion is consistent with the fact that the SLE for all vulnerable countries exceeds the number of years mandated as compulsory in each country.

Table III.C.3a: Highly Vulnerable and Vulnerable Countries for Attainment in Education

	Primary Completion Rate (2007)	School Life Expectancy (2007)
Highly vulnerable	--	
Vulnerable	--	Tajikistan (LI)
		Albania* (LMI)
		Uzbekistan (LI)
		Moldova (LMI)
		Armenia (LMI)
		Republic of Macedonia (LMI)
		Kyrgyz Republic (LI)
Missing Data	Bosnia and Herzegovina	Montenegro
	Montenegro	Turkmenistan
	Turkmenistan	
Pillar 2 Student Outcomes- Attainment Indicator Sources: EdStats and WDI 2010.		

D. Performance

Learning outcomes are generally considered the best indicator of an effective education system that produces students with the desired skills and competencies. Unfortunately, most countries in the region lack standardized achievement tests or do not report the data. Although some countries have been included in international testing programs (e.g., TIMMS, PISA, PIRLS), not enough have participated, the data is out-of-date, and the test years are staggered. Two proxy indicators have been used for this cluster: the youth literacy rate (YLR) and the primary repetition rate. The YLR shows the percentage of young people ages 15 to 24 who are able to read a short, simple statement. Given the high basic education GERs in the region, it can be assumed many have attended school. The primary repetition rate presents the percentage of students who are enrolled in the same grade as the previous year. It must be noted that this indicator may be a better measure of system efficiency than learning, particularly if automatic promotion policies are in effect. Moreover, it captures students that have had to drop out mid-year and re-enrolled the following year. Nevertheless, general practice is to retain students in the same grade in upper primary if it is thought that they have not mastered the material.

1. Youth Literacy Rate

In 2007, basic literacy among the 15-24 age group in the region was almost universal: 99.4 percent of this population group was able to read a simple statement. This result surpasses the YLR for upper middle income countries (98.1%) and approaches that of high income countries (99.6%). Given the extraordinarily high levels of literacy attainment in most countries in the 2000 base year, the rate has remained stable (little growth or decline) over the 2000-2007 period. Indeed, the two countries with negative (or declining) growth rates still report literacy rates of over 97 percent. There are, however,

poorer performers: Romania and Bulgaria fall into the highly vulnerable category (2 SD below the regional mean), and the Hungary falls into the vulnerable category (1 SD below the regional mean). However, the rates they exhibit are very high--between 97.4 percent and 98.5 percent. Because the YLR is a lagged indicator, it captures the effects of schooling up to 10 years ago for the older members of the age cohort.

There appears to be no direct relationship to country income status. None of the low income countries are vulnerable, and two of them, Tajikistan and Uzbekistan, rank in the upper 50 percent of countries in the region. While the YLR for all three vulnerable countries exceeds comparable income group averages, these countries include upper-middle income Hungary and Romania and lower middle income Bulgaria (with the latter two exhibiting declining change or negative growth rates).

Table III.D.1: Youth Literacy Rate (Performance Indicator 1)

Vulnerability Rank (worst case =1)	Countries	Youth Literacy Rate (2007)	Average Annual Rate of Change (2000-2007)	Total Change (2000-2007)
2 SD below mean		97.92		
1	Romania (UMI)	97.42	-0.01	-0.02
2	Bulgaria (LMI)	97.48	-0.01	-0.02
1 SD below mean		98.67		
3	Hungary (UMI)	98.55	0.00	0.00
4	Republic of Macedonia	98.72	n/a	n/a
5	Albania	99.38	0.01	0.02
6	Poland	99.47	0.00	0.00
7	Kyrgyz Republic	99.60	n/a	n/a
8	Croatia	99.65	0.00	0.00
9	Moldova	99.69	0.00	0.00
10	Russia	99.70	0.00	0.00
11	Latvia	99.72	0.00	0.00
12	Lithuania	99.77	0.00	0.00
13	Armenia	99.77	0.00	0.00
14	Belarus	99.78	0.00	0.00
15	Ukraine	99.79	0.00	0.00
16	Estonia	99.79	0.00	0.00
17	Bosnia and Herzegovina*	99.60	n/a	n/a
18	Uzbekistan*	99.80	0.00	0.00
19	Turkmenistan	99.82	n/a	n/a
20	Kazakhstan	99.82	0.00	0.00
21	Slovenia	99.85	0.00	0.00
22	Tajikistan	99.86	0.00	0.00
23	Azerbaijan	100.00	n/a	n/a
No data	Czech Republic			
No data	Georgia			
No data	Montenegro			
No data	Serbia			
No data	Slovak Republic			
	EE Regional Mean	99.41	0.00	0.00
	Standard deviation	0.74	0.08	0.53
	World	89.08	0.003	0.023
	Least developed countries*	60.79	n/a	n/a
	Low income (LI)	74.02	0.008	0.058
	Lower-middle income (LMI)	91.17	0.005	0.032
	Low & middle income	87.74	0.004	0.028
	Middle income	92.43	0.004	0.025
	Upper middle income (UMI)	98.07	0.001	0.005
	High income (HI)	99.62	0.000	0.001
Pillar 2 Student Outcomes- Performance Indicator Data source: EdStats 2010				

*Latest data from 2000

2. *Primary Repetition Rate*

Again, the E&E region compares favorably with other income groups around the world. In fact, the average regional repetition rate (0.7%) is one-third that of the best performing income comparison group (3.1%) and has decreased by 42 percent between 2000 and 2007. In 11 of the 16 countries where the repetition rate has fallen, the decreases have been even more dramatic, ranging from 46 to 96

percent. However, in absolute terms, the decreases have been small given the relatively low repetition rates at the beginning of the period.

There are poorer performers, however. Latvia ranks as a highly vulnerable country with a repetition rate of 3.2 percent, followed by vulnerable countries Slovak Republic, Bulgaria, Albania, Estonia, and Hungary, whose rates range between 1.9 percent and 2.7 percent, all lower than their respective comparable income groups.   Only Latvia and Slovak Republic have experienced increases in the repetition rates over the 2000-2007 period, with repetition in Latvia growing at eight percent per year. Only the Republic of Macedonia exceeds this; its very low repetition rate is growing 13 percent annually, on average. Georgia and Armenia also exhibit annual increases in the repetition rate.

Table III.D.2: Primary Repetition Rate (Performance Indicator 2)

Vulnerability Rank (worst case =1)	Countries	Primary Repetition Rate (2007/08)	Average Annual Rate of Change (2000/01-2007/08)	Total Change (2000/01-2007/08)
2 SD above mean		2.8		
1	Latvia (UMI)	3.2	0.09	0.62
1 SD above mean		1.8		
2	Slovak Republic (UMI)	2.7	0.02	0.12
3	Bulgaria (LMI)	2.2	-0.04	-0.31
4	Albania* (LMI)	2.2	-0.09	-0.45
5	Estonia** (UMI)	2.1	-0.01	-0.09
6	Hungary (UMI)	1.9	-0.01	-0.09
7	Romania	1.3	-0.09	-0.62
8	Poland	0.7	-0.02	-0.16
9	Lithuania	0.7	-0.02	-0.15
10	Serbia	0.6	nd	nd
11	Czech Republic	0.6	-0.07	-0.48
12	Bosnia and Herzegovina	0.5	nd	nd
13	Russia	0.5	-0.08	-0.59
14	Slovenia	0.5	-0.07	-0.49
15	Georgia	0.4	0.06	0.41
16	Croatia	0.3	-0.05	-0.37
17	Azerbaijan	0.3	-0.05	-0.37
18	Tajikistan	0.2	-0.07	-0.46
19	Armenia	0.2	0.08	0.47
20	Moldova	0.1	-0.12	-0.86
21	Ukraine	0.1	-0.12	-0.83
22	Republic of Macedonia	0.1	0.13	0.91
23	Kyrgyz Republic	0.1	-0.10	-0.68
24	Kazakhstan	0.1	-0.10	-0.68
25	Belarus	0.1	-0.13	-0.91
26	Uzbekistan	0.01	-0.12	-0.96
No data	Montenegro			
	EE Regional Mean	0.7	-0.06	-0.42
	Standard deviation	0.9	0.03	0.22
	World*	4.4	-0.10	-0.19
	Least developed countries	10.7	-0.04	-0.22
	Low income (LI)**	9.5	-0.05	-0.19
	Lower-middle income (LMI)*	3.1	0.00	-0.02
	Low & middle income	4.5	-0.04	-0.19
	Middle income	3.3	-0.05	-0.25
	Upper middle income (UMI)	4.5	-0.08	-0.58
	High income (HI)	0.6	-0.02	-0.12

Pillar 2 Student Outcomes- Performance Indicator   Country data source: EdStats 2010 Aggregate data source : World Bank Development Indicators 2010

*Latest data from 2004, **latest data from 2006

3. *Performance Summary*

Table III.D.3a (below) summarizes the countries that fall 1 or 2 SD from the mean for primary school repetition and are considered vulnerable or highly vulnerable. Eight countries are classified as highly vulnerable and vulnerable for one or more of the indicators. Only Hungary and Bulgaria are vulnerable

for each indicator. Those countries appearing in bold-face type also show undesirable directions of change.

Table III.D.3a: Highly Vulnerable and Vulnerable Countries for Performance in Education

	Youth Literacy Rate (2007)	Primary Repetition Rate (2007)
Highly vulnerable	**Romania (LMI)**	**Latvia (UMI)**
	Bulgaria (LMI)	
Vulnerable	Hungary (UMI)	**Slovak Republic (UMI)**
		Bulgaria (LMI)
		Albania (LMI)
		Estonia (UMI)
		Hungary (UMI)
Missing Data	Czech Republic	Montenegro
	Georgia	
	Montenegro	
	Serbia	
	Slovak Republic	
Pillar 2 Student Outcomes- Performance Indicator Sources: TransMONEE 2009 and EdStats 2010		

E. Summary for Pillar 2 (Student Outcomes)

Table III.E.I summarizes the countries that are most vulnerable in terms of student outcomes. Those countries appearing in bold-face type show undesirable directions of change.

Twenty-one of the 27 countries in the region have been rated as vulnerable or highly vulnerable for one or more of the indicators. Those that have not been so classified are: Croatia, the Czech Republic, Estonia, Poland, and Russia (missing data on one indicator), all upper-middle income countries. Appearing most frequently in the vulnerable or highly vulnerable categories are: Tajikistan (five times); Albania, Azerbaijan, and Turkmenistan (four times); Armenia, Bulgaria, Bosnia and Herzegovina, and Uzbekistan (three times); and the Republic of Macedonia, Kazakhstan, Kyrgyz Republic, Latvia, Moldova, and Romania (two times). Eight countries have appeared only once: Belarus, Georgia, Hungary, Lithuania, Slovak Republic, Slovenia, Ukraine, and Serbia and Montenegro. Missing data may mask the real degree of vulnerability; for example, the number of indicators on which Turkmenistan and Bosnia and Herzegovina are vulnerable could easily increase if data were available for four missing indicators.

Table III.E.1: Countries Rated as Vulnerable or Highly Vulnerable by Indicator (Pillar 2)

	A. Participation				B. Equity	C. Attainment		D. Performance	
	NER Pre-Primary	*GER Basic Education*	*GER Total Upper Secondary*	*GER Tertiary*	*Primary+ Secondary GER GPI*	*Primary Completion Rate*	*School Life Expectancy*	*Youth Literacy Rate*	*Primary Repetition Rate*
Highly vulnerable	--	Turkmenistan	Turkmenistan	Turkmenistan	Tajikistan	--	--	Romania	Latvia
								Bulgaria	
Vulnerable	Tajikistan	Albania	Kazakhstan	Uzbekistan	Armenia	--	Tajikistan	Hungary	Slovak Republic
	Bosnia and Herzegovina	Georgia	Moldova	Azerbaijan	Georgia		Albania		Bulgaria
	Kyrgyz Republic	Moldova	Kyrgyz Republic	Albania			Uzbekistan		Albania
	Azerbaijan	Bosnia and Herzegovina	Russia	Tajikistan			Moldova		Estonia
	Uzbekistan	Rep. Macedonia	Belarus				Armenia		Hungary
	Rep. Macedonia						Rep. Macedonia		
	Turkmenistan						Kyrgyz Republic		
Missing Data	--	--	--	Montenegro	Montenegro	Bosnia and Herzegovina	Montenegro	Czech Republic	Montenegro
					Turkmenistan	Montenegro	Turkmenistan	Georgia	
						Turkmenistan		Montenegro	
								Serbia	
								Slovak Republic	
Pillar 2 Student Outcomes Sources: TransMONEE 2009, EdStats 2010, and WDI 2010.									

Using the point methodology, Table III.E.2 (below) shows overall country scores for Pillar 2 indicators and relative ranking. Of the 20 countries that were rated vulnerable on at least one indicator, Turkmenistan scores the highest for vulnerability. Seven countries exhibited no vulnerability in this pillar. Due to insufficient data, Montenegro could not be ranked.

Table III.E.2: Relative Vulnerability Ranking for Pillar 2 (Student Outcomes)

No.	Country	Highly Vulnerable (x2 pts)	Vulnerable (x1 pt)	Undesirable Change (x0.5pt)	Points	Vulnerability Ranking
1	Turkmenistan	3	1	2	8.0	1
2	Tajikistan	1	4	1	6.5	2
3	Albania	0	4	1	4.5	3
4	Rep. of Macedonia	0	3	2	4.0	4
5	Bulgaria	1	1	1	3.5	5
6	Uzbekistan	0	3	1	3.5	5
7	Kyrgyz Republic	0	3	0	3.0	6
8	Moldova	0	3	0	3.0	6
9	Armenia	0	2	1	2.5	7
10	Azerbaijan	0	2	1	2.5	7
11	Georgia	0	2	1	2.5	7
12	Latvia	1	0	1	2.5	7
13	Romania	1	0	1	2.5	7
14	Bosnia and Herzegovina	0	2	0	2.0	8
15	Hungary	0	2	0	2.0	8
16	Belarus	0	1	1	1.5	9
17	Kazakhstan	0	1	1	1.5	9
18	Russia	0	1	1	1.5	9
19	Slovak Republic	0	1	1	1.5	9
20	Estonia	0	1	0	1.0	10
21	Croatia	0	0	0	0	Not Vulnerable
22	Czech Republic	0	0	0	0	Not Vulnerable
23	Lithuania	0	0	0	0	Not Vulnerable
24	Poland	0	0	0	0	Not Vulnerable
25	Serbia	0	0	0	0	Not Vulnerable
26	Slovenia	0	0	0	0	Not Vulnerable
27	Ukraine	0	0	0	0	Not Vulnerable
28	Montenegro*					Not Rated
Total Frequencies		7	37	17		
Total Countries		5	18	16		
Pillar 2 Student Outcomes Sources: TransMONEE 2009, EdStats 2010, and WDI 2010.						

* Not rated due to insufficient data

IV. Pillar 3: System Capacity

Not only do effective education systems produce desirable student outcomes, but they provide services and inputs in the quantity and of the quality required to create a positive learning environment. Types of system-level inputs include: (i) access and availability (e.g., children per classroom, children per latrine post, school distance to population center); (ii) equity enhancement programs (e.g., tuition waivers or scholarships for at-risk groups); (iii) quality (teacher qualification, student-book ratio); (iv) efficiency (e.g., pupil-teacher ratio); and (v) resources and finance (e.g., per student expenditure, budget allocation). Unfortunately, several of these indicators are not included in the international data sets and the data for those that are included have proven elusive. Numerous indicators could not be used because data was available for only a very few countries. Ultimately, two indicators were employed: the student-teacher ratio and resources/finance.

A. Efficiency

There are several measures of system efficiency, some expressed in student units (e.g., repetition; see above) and some in system-specific units (e.g., cycle time or school years it takes to produce a graduate). This analysis has employed the primary education student-teacher ratio, due to its availability. Although more often used as an indicator of system quality (i.e., a high number of students per teacher is thought to reduce quality instruction), the actual situation in the E&E countries renders it more appropriate as an efficiency measure, as the student-teacher ratios are so low. Assuming that decreasing ratios (i.e., fewer students per teacher) is better, particularly when the student-teacher ratio falls below internationally-recognized threshold levels, is nonsensical. Since the highest ratio is 24 students per teacher (in the Kyrgyz Republic), it is more appropriate that it be evaluated for its proximity and movement toward the optimal ratio, generally set at 35 students per classroom teacher in the international literature. It should be noted that in all likelihood the number of teachers used in calculating this indicator is not limited solely to those who are classroom teachers, but probably includes those with administrative assignments as well. Consequently, actual class sizes are likely to be greater. Even if the number of teachers were to be reduced by half (an unlikely scenario), the student-teacher ratios for the countries in the region would still be strikingly small, with most falling below what many consider efficient class size.

1. Student-Teacher Ratio for Primary Education

The average student-teacher ratio for the region in 2007 was 16.3 students per teacher for primary education (generally grade 1 through 6). This ratio approaches the 15:1 student-teacher ratio for high income countries. Regionally, the student-teacher ratio has fallen since 2000, specifically in 20 of the 26 countries for which data is available. Although perhaps counterintuitive, this could be interpreted as moving in an unfavorable direction from an efficiency stand-point.

Five countries qualify as vulnerable, with student-teacher ratios falling below 13 students per teacher (1 SD). These are: Hungary, Poland, Azerbaijan, Latvia and Estonia. Each country exhibited decreasing ratios. In Azerbaijan and Latvia, the decreases over the 2000-2007 period are considerable, having declined by 38 percent and 22 percent respectively. Four of the countries are classified as upper middle income; one—Azerbaijan—is lower middle income. The student-teacher ratio for each of these countries is well below comparable income group countries.

Overall from an efficiency perspective, the low student-teacher ratios in the region indicate that the education systems of the countries in the region may be highly inefficient. Given the reported teacher shortages in the region (which such small class sizes would belie if all these teachers were actually

teaching full time), class sizes could be increased. If these data represent the true class sizes, then fewer teachers may be needed than thought, although deployment, workload and timetabling policies may need reconsideration. In either case, the impact of larger class sizes on quality may be worth the trade-off, as several international studies and meta-analyses have found class-size (up to about 40 students) to have little effect on student learning. Educational planners have generally adopted a norm of 35-40 pupils per class with one teacher in poor countries, which is why this paper has treated declining student-teacher ratios as an unfavorable direction of change. However, these conclusions are not universally accepted. The large body of literature pertaining to the effects of educational inputs on quality and student learning includes many studies that reach different conclusions about the effects of class size and optimal class size.

Table IV.A.1: Pupil-Teacher Ratio, Primary Education (Efficiency Indicator 1)

Vulnerability Rank (worst case = 1)	Countries	Primary Education Pupil-Teacher Ratio 2007/08	Average Annual Rate of Change (2000/01-2007/08)	Total Change (2000/01-2007/08)
2 SD below mean				
	No Countries			
1 SD below mean		13.0		
1	Hungary (UMI)	10.1	-0.01	-0.06
2	Poland (UMI)	10.6	-0.01	-0.06
3	Azerbaijan (LMI)	11.6	-0.05	-0.38
4	Latvia (UMI)**	11.8	-0.04	-0.22
5	Estonia (UMI)	12.8	-0.01	-0.10
6	Lithuania	13.3	-0.03	-0.19
7	Turkmenistan***	13.8	0.02	0.14
8	Georgia*	14.5	-0.03	-0.14
9	Slovakia	15.3	-0.02	-0.13
10	Slovenia	15.6	0.03	0.20
11	Bulgaria	15.9	-0.01	-0.05
12	Belarus	16.0	-0.02	-0.12
13	Moldova	16.3	-0.03	-0.22
14	Ukraine	16.3	-0.03	-0.18
15	Kazakhstan	16.5	-0.02	-0.12
16	Romania	16.5	-0.02	-0.11
17	Croatia	16.7	-0.02	-0.11
18	Serbia	17.0	n/a	n/a
19	Russia	17.1	0.01	0.03
20	Uzbekistan	18.2	-0.02	-0.15
21	Republic of Macedonia	18.3	-0.02	-0.15
22	Czech Republic	18.7	0.02	0.11
23	Armenia	19.3	-0.01	-0.05
24	Bosnia and Herzegovina***	21.4	0.00	0.00
25	Albania*	21.5	-0.01	-0.05
26	Tajikistan	21.6	0.00	-0.01
27	Kyrgyz Republic	24.2	0.00	0.00
No data	Montenegro			
	EE Regional Mean	16.3	-0.01	-0.09
	Standard deviation	3.3	-0.01	-0.04
	World	24.4	-0.03	-0.18
	Least developed countries	45.9	-0.02	-0.04
	Low income (LI)	42.0	-0.01	-0.05
	Lower-middle income (LMI)***	29.4	0.01	0.03
	Low & middle income	26.6	-0.01	-0.08
	Middle income	22.8	-0.03	-0.17
	Upper middle income (UMI)	21.9	-0.01	-0.05
	High income (HI)	15.2	-0.02	-0.10

Pillar 3 System Capacity – Efficiency Indicator   Country data source: EdStats 2010 Aggregate data source: World Bank Development Indicators 2010
NOTE: assume optimal efficiency is 35 pupils per teacher

*Latest data from 2004, ** latest data from 2006, ***latest data from 2004 for basic education (WDI 2007)

B. Resources and Finance

The resources a country dedicates to the education system can affect its ability to deliver quality services and produce positive student outcomes, as well as demonstrate both government and society's commitment to education. Several different measures are generally used in combination to determine how well-resourced a national education system is, including per student expenditure, percentage of national budget dedicated to education, percentage of education budget allocated to various levels of schooling, the percentage of recurrent budget allocated to non-salary expenditure, and percentage of GDP spent on public education. Unfortunately, it is only this last indicator for which there is data in a sufficient number of countries to permit analysis. While the percentage of GDP spent on education is a fundamental resource indicator, it does not inform about allocation among education levels, which in some countries can be skewed towards tertiary education, resulting in the under-funding of basic education. Moreover, in many countries, the lower percentage of public funds going to education means that households may have to make up the difference from their own pockets, with negative implications for children of poor and marginalized populations.

1. Public Education Expenditure (as percentage of GDP)

In 2007, the countries in the region spent, on average, about 4.5 percent of GDP on public education, with wide variation ranging from 2.6 percent to 8.0 percent. Average public education expenditure for the region has fallen from a high of 5.3 percent in 1991 to 4.3 percent in 2000, and increased slightly over the 2000-2007 period. However, not all countries followed the same pattern; 12 of the 26 countries for which there is data have increased percentage GDP expenditure over the period, from eight percent (Czech Republic and Ukraine) to 94 percent (Kyrgyz Republic). Moreover, several countries differ from their comparable income groups. For example, Kyrgyz Republic spends 6.6 percent in contrast to the low income group average of 3.4 percent; Moldova spends 8.0 percent in contrast to the lower-middle income group average of 4.0 percent; and Slovakia spends 3.8 percent in contrast to the upper-middle income group average of 4.6 percent.

Vulnerable countries, whose educational expenditure fall 1 SD below the mean, include Azerbaijan (2.6%), Georgia (2.8%), Kazakhstan (2.8%), and the Republic of Macedonia (2.9%). Among these, only Georgia has experienced positive growth (4% per annum). The GDP expenditure percentage for lowest-ranked Azerbaijan has decreased more than any other country—by five percent per year. The remaining three vulnerable countries have also experienced negative growth in the percentage of GDP spent on public education. All are lower-middle income countries with percentage expenditures not only well below the average (4.0%) for the comparable income group, but less than the average (3.3%) for least developed countries.

Table III.B.1: Public expenditure on education as % of GDP (Resource Indicator 1)

Vulnerability Rank (worst case = 1)	Countries	% GDP Spent on Education (2007)	Average Annual Rate of Change (2000-2007)	Total Change (2000-2007)
2 SD below mean				
	No countries			
1 SD below mean		3.0		
1	Azerbaijan (LMI)	2.6	-0.05	-0.32
2	Georgia (LMI)	2.8	0.04	0.27
3	Kazakhstan (LMI)	2.8	-0.02	-0.09
4	Republic of Macedonia ** (LMI)	2.9	-0.02	-0.10
5	Armenia	3.2	0.03	0.21
6	Serbia	3.3	-0.02	-0.13
7	Albania	3.4	0.01	0.10
8	Tajikistan	3.7	0.04	0.31
9	Slovakia**	3.8	0.00	-0.03
10	Bulgaria	3.9	-0.01	-0.09
11	Russia**	3.9	0.06	0.34
12	Czech Republic	4.3	0.01	0.08
13	Croatia*	4.5	0.00	0.00
14	Romania**	4.6	0.10	0.59
15	Hungary	4.8	-0.01	-0.06
16	Lithuania	4.9	-0.02	-0.13
17	Estonia ***	4.9	-0.04	-0.20
18	Belarus	5.2	-0.02	-0.15
19	Turkmenistan***	5.3	-0.03	-0.17
20	Poland	5.4	0.02	0.14
21	Slovenia**	5.7	-0.01	-0.04
22	Latvia	5.8	0.01	0.08
23	Ukraine	6.2	0.07	0.49
24	Uzbekistan****	6.3	-0.02	-0.06
25	Kyrgyz Republic	6.6	0.13	0.94
26	Moldova	8.0	0.11	0.77
No data	Bosnia and Herzegovina			
No data	Montenegro			
	EE Regional Mean	4.5	0.01	0.06
	Standard deviation	1.5	0.02	0.14
	World	4.6	0.019	0.115
	Least developed countries*****	3.3	0.086	0.086
	Low income (LI)*	3.4	0.094	0.094
	Lower-middle income (LMI)	4.0	-0.011	-0.064
	Low & middle income	4.0	0.005	0.033
	Middle income	4.5	0.009	0.055
	Upper middle income (UMI)	4.6	0.015	0.090
	High income (HI)	5.4	0.018	0.110

Pillar 3 System Capacity - Resources and Finance Indicator
Country data source: TransMONEE 2009. Aggregate data source World Bank Development Indicators 2010

* latest data from 2004 **latest data from 2006 ***latest data from 2005 ****latest data from 2003 ***** latest data from 2001

C. Summary for Pillar 3 (System Capacity)

Tables IV.E.1 summarizes the countries that are most vulnerable in terms of system capacity. Those countries appearing in bold-face type show unfavorable rates of growth. Based on standard deviation,

eight countries are classified as vulnerable for one or more of the indicators; none are highly vulnerable. There is, however, very little overlap among the countries between the two indicators. Only Azerbaijan is rated as vulnerable for both indicators. Conceptually, it is possible that the indicators are inversely related: the less spent on education, the greater the pupil-teacher ratio. To some extent this correlation appears to hold for six of the vulnerable countries. Hungary, Poland, Latvia and Estonia have low student-teacher ratios and relatively high GDP percentage expenditure on education. Similarly, Kazakhstan and the Republic of Macedonia spend a lower percentage of GDP on education and have higher student-teacher ratios.

Table IV.E.1: Highly-Vulnerable and Vulnerable Countries for Pillar 3 (System Capacity)

	A. Efficiency	B. Resources and Finance
	Primary Education Pupil-Teacher Ratio (2005)	% GDP spent on education (2005)
Highly vulnerable	--	--
Vulnerable	Hungary (UMI)	Azerbaijan (LMI)
	Poland (UMI)	Georgia (LMI)
	Azerbaijan (LMI)	Kazakhstan (LMI)
	Latvia (UMI)	Republic of Macedonia (LMI)
	Estonia (UMI)	
Missing Data	Montenegro	Bosnia and Herzegovina
		Montenegro
Pillar 3 System Capacity Sources: TransMONEE 2009 and WDI 2010.		

Using the point methodology, Table IV.E.2 shows overall country scores for Pillar 3 indicators and relative ranking. Of the eight countries that were rated vulnerable on at least one indicator, Azerbaijan scores the highest for vulnerability. Nineteen countries exhibited no vulnerability in this pillar. One country could not be ranked due to insufficient data.

Table IV.E.2: Relative Vulnerability Ranking for Pillar 3 (System Capacity)

No.	Country	Highly Vulnerable (x2 pts)	Vulnerable (x1 pt)	Undesirable Change (x0.5pt)	Points	Vulnerability Ranking
		Pillar 3				
1	Azerbaijan	0	2	2	3.0	1
2	Estonia	0	1	1	1.5	2
3	Hungary	0	1	1	1.5	2
4	Kazakhstan	0	1	1	1.5	2
5	Latvia	0	1	1	1.5	2
6	Poland	0	1	1	1.5	2
7	Rep. of Macedonia	0	1	1	1.5	2
8	Georgia	0	1	0	1.0	3
9	Albania	0	0	0	0	Not Vulnerable
10	Armenia	0	0	0	0	Not Vulnerable
11	Belarus	0	0	0	0	Not Vulnerable
12	Bosnia and Herzegovina	0	0	0	0	Not Vulnerable
13	Bulgaria	0	0	0	0	Not Vulnerable
14	Croatia	0	0	0	0	Not Vulnerable
15	Czech Republic	0	0	0	0	Not Vulnerable
16	Kyrgyz Republic	0	0	0	0	Not Vulnerable
17	Lithuania	0	0	0	0	Not Vulnerable
18	Moldova	0	0	0	0	Not Vulnerable
19	Romania	0	0	0	0	Not Vulnerable
20	Russia	0	0	0	0	Not Vulnerable
21	Serbia	0	0	0	0	Not Vulnerable
22	Slovak Republic	0	0	0	0	Not Vulnerable
23	Slovenia	0	0	0	0	Not Vulnerable
24	Tajikistan	0	0	0	0	Not Vulnerable
25	Turkmenistan	0	0	0	0	Not Vulnerable
26	Ukraine	0	0	0	0	Not Vulnerable
27	Uzbekistan	0	0	0	0	Not Vulnerable
28	Montenegro*					Not Rated
Total Frequencies		0	9	8		
Total Countries		0	8	7		
Pillar 3 System Capacity Sources: TransMONEE 2009 and WDI 2010.						

* Not rated due to insufficient data

V. Synthesis

This section summarizes and synthesizes the results of the preceding analysis (by pillar) in order to identify those countries that are most "vulnerable" in terms of being able to address the educational needs of their school-age population, as well as the areas of greatest vulnerability for education relative to the region. Pillars 1 (Context), 2 (Student Outcomes), and 3 (System Capacity) are used to determine vulnerability. As in the previous chapters, vulnerability is discussed by: (1) a summary of the frequency of vulnerability, and (2) the point ranking method of aggregation.

The reader should keep in mind that both the frequency of vulnerability and ranking of vulnerability are influenced by: (i) the number of indicators used, and (ii) the availability of data for a country. The frequency of vulnerability incidence is influenced by the number of indicators in a pillar (i.e., the more indicators the greater the probability for vulnerability). Selection of the indicators (described in Chapter 1) was based on the utility and availability of data. There is no prescribed or definitive list that would set internationally-recognized parameters for assessing vulnerability. Additionally, data was not available for all countries on all indicators, could have an impact on the country ranking. Fortunately, of the seven countries with incomplete data, four countries were lacking data for only one or two indicators. Data for three indicators were unavailable for Turkmenistan, so its ranking should be regarded with some caution. However, given the trends exhibited by the data that is available, it is not unlikely that its vulnerability level would increase (i.e., they would suffer greater vulnerability than is estimated by the available data.) Because Montenegro lacked data for eight of eleven indicators in Pillar 2 and Pillar 3, it was not ranked.

A. Summary of Vulnerability by Frequency

Tables V.A.1 (below) presents a summary of vulnerability by indicator and pillar.

Twenty-one of the 28 countries in the region were classified as vulnerable for one or more indicators, with six of these countries qualifying as "highly vulnerable" for at least one indicator.

Among the 21 countries qualifying as vulnerable or highly vulnerable on one or more indicators, the Kyrgyz Republic appears most often (seven times). Azerbaijan, Turkmenistan, and Tajikistan are rated vulnerable six times, and the latter two also figure most frequently in the highly vulnerable category (three times for Turkmenistan and two times for Tajikistan). They are followed by Azerbaijan and Moldova (five times each); Albania, Georgia, and the Republic of Macedonia (four times); Hungary and Kazakhstan (three times); Armenia, Bosnia and Herzegovina, Bulgaria, Bulgaria, Estonia, Latvia, and Romania (two times); and Belarus, Poland, Russia, and the Slovak Republic (one time).

Six countries that never fell within the vulnerability range (i.e., more than 1 SD from the mean) for any indicator in any pillar were Croatia, Czech Republic, Lithuania, Serbia, Slovenia, and Ukraine. It should be noted that, although data were available for only seven indicators, Montenegro was never classified as vulnerable.

Table V.A.1: Summary Vulnerability by Indicator and Pillar

Pillar 1: Context				Pillar 2: Student Outcomes									Pillar 3: System Capacity	
A. Economic Status	B. Population Pressure	C. Health	D. Corruption	A. Participation				B. Equity	C. Attainment	D. Performance			A. Efficiency	B. Resources
GDP per capita, PPP	Percent Population 0-14	Tuberculosis Incidence	Control of Corruption	Pre-Primary NER	Basic Education GER	Total Upper Secondary GER	Tertiary GER	Primary+ Secondary GER GPI	Primary Completion Rate	School Life Expect'y	Youth Literacy Rate	Primary Repetition Rate	Primary Pupil-Tchr Ratio	% GDP on education
Highly Vulnerable														
											Bulgaria			
		Kazakhstan												
												Latvia		
											Romania			
	Tajikistan							Tajikistan						
					Turkmenistan	Turkmenistan	**Turkmenistan**							
Vulnerable														
					Albania	Albania				Albania		Albania		
							Armenia			Armenia				
			Azerbaijan	Azerbaijan			**Azerbaijan**	Azerbaijan					**Azerbaijan**	**Azerbaijan**
						Belarus								
				Bosnia-Herz.	Bosnia-Herz.									
												Bulgaria		
													Estonia	**Estonia**
		Georgia				Georgia		**Georgia**						Georgia
											Hungary	Hungary	**Hungary**	
					Kazakhstan								**Kazakhstan**	
Kyrgyz Rep	Kyrgyz Rep.	Kyrgyz Rep.	**Kyrgyz Rep.**	Kyrgyz Rep.						Kyrgyz Rep				
												Latvia		
				Macedonia	**Macedonia**					Macedonia			Macedonia	**Macedonia**
Moldova		**Moldova**			Moldova	Moldova				Moldova				
												Poland		
		Romania												
						Russia								
												Slovak Rep		
Tajikistan				Tajikistan			Tajikistan			Tajikistan				
	Turkmenistan		**Turkmenistan**	Turkmenistan										
Uzbekistan	Uzbekistan		Uzbekistan	Uzbekistan			**Uzbekistan**			Uzbekistan				
Number of countries for which data is missing														
0	0	0	0	0	0	0	1	2	3	2	5	1	1	2
Number (vulnerable + highly vulnerable) and as Percentage (%) by Indicator of Countries classified as Vulnerable[19]														
0+4=4	1+3=4	1+4+5	0+4=4	0+7=7	1+5=6	1+5=6	1+4=5	1+2=3	0+0=0	0+7=7	2+1=3	1+5=6	0+5=5	0+4=4
19%	19%	24%	19%	33%	29%	29%	25%	16%	0	37%	19%	30%	25%	21%

Sources: TransMONEE 2009, WDI 2010, WGI 2009, EdStats 2010 and UIS 2010.

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[19] Percentages are calculated using a denominator based on the overall number of countries classified as vulnerable (21) less the number of countries for which data is missing for the individual indicator.

The frequencies of vulnerability suggest the areas of greatest vulnerability or poorest performance for the education sector. This can be examined by pillar and by indicator.

By pillar, the area of greatest vulnerability was in student outcomes (Pillar 2). Of the 21 countries qualifying as vulnerable or highly vulnerable on one or more indicators, 95 percent of them (20 countries) exhibited vulnerability in this pillar. Of these, 25 percent (5 countries) were highly vulnerable on at least one indicator. In contrast, only 43 percent of the countries (9 countries) were classified as vulnerable on one or more indicators for Pillar 1 (Context) and 38 percent (8 countries) for Pillar 3 (System Capacity). Two of the nine countries (22%) exhibiting vulnerability for Pillar 1 were highly vulnerable on a single indicator and none of the countries exhibiting vulnerability for Pillar 3 were highly vulnerable on any indicator.

Table VI.A.2 shows the frequency of country vulnerability by pillar. Only three countries "achieved" vulnerability status on at least one indicator in all three pillars: Azerbaijan, Georgia, and Kazakhstan. Relative to the region, this suggests that their under-performing (i.e., Pillar 2) and weak education systems (i.e., Pillar 3) were also threatened by contextual factors (i.e., Pillar 1). In contrast, education in six countries (Kyrgyz Republic, Moldova, Romania, Tajikistan, Turkmenistan, and Uzbekistan) appeared to suffer from poor student outcomes (Pillar 2) and contextual factors (Pillar 1), while education in four countries (Estonia, Republic of Macedonia, Hungary, and Latvia) faced relatively greater challenges in student outcomes and system capacity (pillar 3). Eight countries appeared vulnerable in only one area or pillar. Albania, Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Russia, and the Slovak Republic exhibited relative vulnerability in student outcomes (Pillar 2); Poland in system capacity (Pillar 3). While these frequencies may show general tendencies within the region, the reader is cautioned that this is not intended as diagnostic of the individual countries' education sectors.

Table V.A.2: Frequency of Country Vulnerability by Pillar

All 3 Pillars	Two Pillars Only			One Pillar Only		
	Pillars 1 and 2	*Pillars 2 and 3*	*Pillars 1 and 3*	*Pillar 1*	*Pillar 2*	*Pillar 3*
Azerbaijan	Kyrgyz Republic	Estonia	-	-	Albania	Poland
Georgia	Moldova	Rep. Macedonia			Armenia	
Kazakhstan	Romania	Hungary			Belarus	
	Tajikistan	Latvia			Bosnia and Herzegovina	
	Turkmenistan				Bulgaria	
	Uzbekistan				Russia	
					Slovak Republic	
Sources: TransMONEE 2009, WDI 2010, WGI 2009, EdStats 2010, and UIS 2010.						

By indicator, the areas of greatest relative weakness or vulnerability for more than 25 percent of the vulnerable countries were: SLE (37%), pre-primary NER (33%), primary repetition (30%), basic education GER (29%), total upper secondary GER (29%), tertiary education GER (25%), primary education pupil-teacher ratio (25%). Indicators with the lowest percentages of vulnerable countries, signifying the areas of least relative vulnerability, were the primary completion rate (0%) and the gender parity index (16%). Indicators for which more than 50 percent of vulnerable countries show unfavorable change over the period are: control of corruption (50%), basic education GER (50%), total upper secondary GER (50%), primary and secondary GER GPI (100%), youth literacy rate (66%), primary pupil-teacher ratio (80%), and percent of GDP spent on education (75%).

B. Ranking of Vulnerability

Table VI.B.1 presents an aggregation and synthesis of the countries' vulnerability, based on the point scoring method (described in Chapter 1), which assigns points for the number of times the country fell into a vulnerability category. Unlike simple frequencies, the point scoring method takes into account the degree of severity (vulnerable or highly vulnerable), as well as whether the direction of change during the 2000-2007 timeframe was undesirable, in order to produce a more nuanced vulnerability ranking.

Among the 27 ranked countries, there were 13 different aggregate scores (including 0), so country ranking ranges from one (most vulnerable) to 13 (not vulnerable). The point spread among the vulnerable countries ranged from 10.5 points to 1.5 points. Six countries were not vulnerable.

Turkmenistan ranks as the most vulnerable country. It has the highest aggregate score at 10.5 points, compared to the total (all countries) mean score at 3.4 points. Although it qualified as vulnerable in both Pillar 1 (context) and Pillar 2 (student outcomes), Turkmenistan was the highest scorer for only Pillar 2. (Kyrgyz Republic earned the highest score for Pillar 1 and Azerbaijan for Pillar 3.) Turkmenistan also received the highest score for undesirable direction of change (on three indicators), vying with Azerbaijan and Republic of Macedonia.

Second-ranked Tajikistan (9.5 points) qualified as vulnerable in two pillars—context (Pillar 1) and student outcomes (Pillar 2). It was received the second highest score for Pillar 2. However, on only one indicator—Gender Parity Index—did it move in an unfavorable direction. In contrast to Turkmenistan and several lower ranked countries, education conditions in Tajikistan appear to be improving. It figures among the 15 countries, rated vulnerable on one or more indicators, with the lowest number of incidences for undesirable change ,[20] with the exception of Bosnia and Herzegovina, which was the only non-zero scoring country experiencing no unfavorable directions of change for the two indicators on which it was rated vulnerable.

Separated by two points from Tajikistan—the largest point spread—is the third most vulnerable country, the Kyrgyz Republic at 7.5 points. It also qualified as vulnerable in Pillar 1 and Pillar 2, but "earned" most of its vulnerability points in context (Pillar 1). It was rated as vulnerable on all four of the Pillar 1 indicators, reflecting its low socio-economic situation. Surprisingly, despite this, it exhibited vulnerability on only three Pillar 3 (student outcome) indicators, below Turkmenistan, Tajikistan, and four other lower ranked vulnerable countries.

While aggregate scores indicate overall vulnerability, scores on the individual pillars show variation. As noted, the Kyrgyz Republic ranks most vulnerable in context (Pillar 1) at 4.5 points, followed by Tajikistan and Uzbekistan (3 points), and Turkmenistan and Moldova (2.5 points). In all, only nine of the 28 countries (32%) were vulnerable in the category, with only two countries showing change in undesirable directions, indicating a relatively favorable environment for education. Despite this, twelve countries which suffered no vulnerability for Pillar 1 exhibited vulnerability in education (Pillars 2 and 3). Overall, 19 countries are not vulnerable.

In contrast, 21 countries were vulnerable in student outcomes (Pillar 2). Highest scorers in Pillar 2 were Turkmenistan (8 points), Tajikistan (6.5 points), Albania (4.5 points), and the Republic of Macedonia (4 points). These latter two countries exhibited no vulnerability for Pillar 1. Overall, seven countries are not vulnerable.

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[20] Kyrgyz Republic, Uzbekistan, Moldova, Albania, Georgia, Bulgaria, Hungary, Romania, Armenia, Estonia, Belarus, Poland, Russia, and the Slovak Republic all had one incidence of undesirable change.

Table V.B.1: Aggregate Vulnerability (Summary by Pillar)

No.	Country	Pillar 1				Pillar 2				Pillar 3				Synthesis			Total Pts	Rank
		Highly Vulner-able	Vulner-able	Undesir-able Change	Pts	Highly Vulner-able	Vulner-able	Undesir-able Change	Pts	Highly Vulner-able	Vulner-able	Undesir-able Change	Pts	Highly Vulner-able	Vulner-able	Undesir-able Change		
1	Turkmenistan	0	2	1	2.5	3	1	2	8.0	0	0	0	0	3	3	3	10.5	1
2	Tajikistan	1	1	0	3	1	4	1	6.5	0	0	0	0	2	5	1	9.5	2
3	Kyrgyz Republic	0	4	1	4.5	0	3	0	3.0	0	0	0	0	0	7	1	7.5	3
4	Azerbaijan	0	1	0	1	0	2	1	2.5	0	2	2	3.0	0	5	3	6.5	4
5	Uzbekistan	0	3	0	3	0	3	1	3.5	0	0	0	0	0	6	1	6.5	4
6	Moldova	0	2	1	2.5	0	3	0	3.0	0	0	0	0	0	5	1	5.5	5
7	Rep. of Macedonia	0	0	0	0	0	3	2	4.0	0	1	1	1.5	0	4	3	5.5	5
8	Kazakhstan	1	0	0	2	0	1	1	1.5	0	1	1	1.5	1	2	2	5.0	6
9	Albania	0	0	0	0	0	4	1	4.5	0	0	0	0	0	4	1	4.5	7
10	Georgia	0	1	0	1	0	2	1	2.5	0	1	0	1.0	0	4	1	4.5	7
11	Latvia	0	0	0	0	1	0	1	2.5	0	1	1	1.5	1	1	2	4.0	8
12	Bulgaria	0	0	0	0	1	1	1	3.5	0	0	0	0	1	1	1	3.5	9
13	Hungary	0	0	0	0	0	2	0	2.0	0	1	1	1.5	0	3	1	3.5	9
14	Romania	0	1	0	1	1	0	1	2.5	0	0	0	0	1	1	1	3.5	9
15	Armenia	0	0	0	0	0	2	1	2.5	0	0	0	0	0	2	1	2.5	10
16	Estonia	0	0	0	0	0	1	0	1.0	0	1	1	1.5	0	2	1	2.5	10
17	Bosnia and Herzegovina	0	0	0	0	0	2	0	2.0	0	0	0	0	0	2	0	2	11
18	Belarus	0	0	0	0	0	1	1	1.5	0	0	0	0	0	1	1	1.5	12
19	Poland	0	0	0	0	0	0	0	0	0	1	1	1.5	0	1	1	1.5	12
20	Russia	0	0	0	0	0	1	1	1.5	0	0	0	0	0	1	1	1.5	12
21	Slovak Republic	0	0	0	0	0	1	1	1.5	0	0	0	0	0	1	1	1.5	12
22	Croatia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NV
23	Czech Republic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NV
24	Lithuania	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NV
25	Serbia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NV
26	Slovenia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NV
27	Ukraine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	NV
28	Montenegro																	NR
Total Frequencies		2	15	3		7	37	17		0	9	8		9	61	28		
Total Countries		2	8	3		5	18	15		0	8	7		6	21	20		

Sources: TransMONEE 2009, WDI 2010, WGI 2009, EdStats 2010, and UIS 2010..

NV=not vulnerable   NR=not ranked due to insufficient data

Among the eight countries which were vulnerable for Pillar 3 (system capacity), fourth-ranked Azerbaijan scored highest (3 points), followed by six other countries with 1.5 points and one with 1 point. Overall, 19 countries are not vulnerable in this Pillar.

Interestingly, top-ranked Turkmenistan, Tajikistan, and Kyrgyz Republic were not vulnerable in this category. *So what is causing the vulnerability of* Turkmenistan, Tajikistan, and Kyrgyz Republic? It could be speculated that rather than supply-side problems (i.e., system capacity), the poor student outcomes they experience are due to demand-side problems (i.e., contextual factors). Each was rated vulnerable for at least two of the contextual (Pillar 1) indicators. The opposite could be argued about the Republic of Macedonia, Latvia, Hungary, and Estonia, whose vulnerability in student outcomes appear to be correlated with system capacity and not contextual factors.

Requiring more scrutiny (than the SD vulnerability methodology permits) are countries which are vulnerable neither from a context nor system capacity standpoint, such as Albania, Bulgaria, Armenia, Bosnia and Herzegovina, Belarus, Russia, and the Slovak Republic.

C. Comparison of Vulnerability Rankings (2007 versus 2005)

As noted in the Introduction, changes made in some indicator definitions and methodologies for population projections prevent the comparison of current (2007) with 2005 data for the TransMONEE, EdStats, and WDI data sets. However, assuming that these changes have been made consistently, it appears possible to compare the relative vulnerability rankings presented in this analysis with that of the previous 2008 analysis. In 2010, 78 percent of countries (21 out of 27) were classified as vulnerable on one or more indicators compared with 88 percent in 2008 (24 out of 27), although a higher percentage in 2010 (29%) fell into the highly vulnerable range than in 2008 (25%).

Table V.C.1 presents the two vulnerability rankings. In general, most countries maintained the same general ranking in 2010 as in 2008, staying at the same rank or within a rank or two of their 2008 status. For example, 2010's vulnerable countries—Turkmenistan, Tajikistan, the Kyrgyz Republic and Azerbaijan simply exchanged place among the top four countries. Uzbekistan moved to the 5th worst slot, replacing Albania which moved to 7th place.

Countries whose rank notably worsened (i.e., placing higher in vulnerably rankings) from 2008 to 2010 were: the Republic of Macedonia (from 10th ranked to 5th ranked), Hungary (from 13th to 9th), and Poland (from not vulnerable to 12th, albeit the least vulnerable ranking).

Countries whose rank notably improved i.e., placing lower in vulnerably rankings) from 2008 to 2010 were three countries which moved from slightly vulnerable to not vulnerable categories: Slovenia (previously 11th ranked), Serbia (12th) and Ukraine (12th).

Table V.C.1: Comparison of Aggregate Vulnerability (2007 and 2005 data)

No.	Rank	Country	Highly Vulnerable	Vulnerable	Undesirable Change	Total Points	Rank	Country	Highly Vulnerable	Vulnerable	Undesirable Change	Total Points
		2010 Synthesis (2007 data)						**2008 Synthesis (2005 data)[21]**				
1	1	Turkmenistan	3	3	3	10.5	1	Tajikistan	3	5	1	11.5
2	2	Tajikistan	2	5	1	9.5	2	Turkmenistan	1	5	4	9.0
3	3	Kyrgyz Republic	0	7	1	7.5	3	Azerbaijan	0	7	3	8.5
4	4	Azerbaijan	0	5	3	6.5	4	Kyrgyz Republic	0	6	3	7.5
5	4	Uzbekistan	0	6	1	6.5	5	Albania	0	6	2	7.0
6	5	Moldova	0	5	1	5.5	5	Uzbekistan	0	6	2	7.0
7	5	Rep. of Macedonia	0	4	3	5.5	6	Kazakhstan	1	3	2	6.0
8	6	Kazakhstan	1	2	2	5.0	6	Moldova	0	5	2	6.0
9	7	Albania	0	4	1	4.5	7	Georgia	0	4	2	5.0
10	7	Georgia	0	4	1	4.5	8	Armenia	0	4	1	4.5
11	8	Latvia	1	1	2	4.0	8	Bosnia and Herzegovina	0	3	3	4.5
12	9	Bulgaria	1	1	1	3.5	8	Bulgaria	1	2	1	4.5
13	9	Hungary	0	3	1	3.5	9	Latvia	1	1	2	4.0
14	9	Romania	1	1	1	3.5	9	Romania	1	2	0	4.0
15	10	Armenia	0	2	1	2.5	10	Republic of Macedonia	0	3	1	3.5
16	10	Estonia	0	2	1	2.5	11	Slovenia	0	2	2	3.0
17	11	Bosnia and Herzegovina	0	2	0	2	12	Belarus	0	1	1	1.5
18	12	Belarus	0	1	1	1.5	12	Estonia	0	1	1	1.5
19	12	Poland	0	1	1	1.5	12	Russia	0	1	1	1.5
20	12	Russia	0	1	1	1.5	12	Slovak Republic	0	1	1	1.5
21	12	Slovak Republic	0	1	1	1.5	12	Ukraine	0	1	1	1.5
22	NV	Croatia	0	0	0	0	12	Serbia and Montenegro[22]	0	1	1	1.5
23	NV	Czech Republic	0	0	0	0	13	Hungary	0	1	0	1.0
24	NV	Lithuania	0	0	0	0	13	Lithuania	0	1	0	1.0
25	NV	Serbia	0	0	0	0	NV	Croatia	0	0	0	0
26	NV	Slovenia	0	0	0	0	NV	Czech Republic	0	0	0	0
27	NV	Ukraine	0	0	0	0	NV	Poland	0	0	0	0
28	NR	Montenegro										
		Total Frequencies	9	61	28			**Total Frequencies**	8	72	37	
		Total Countries	6	21	20			**Total Countries**	6	24	21	

NV=not vulnerable   NR=not rated due to insufficient data

[21] *Education Vulnerability Analysis for the E&E Region,* USAID/E&E/DGST, 2008.
[22] In the 2008 *Education Vulnerability Analysis for the E&E Region,* which used the latest available 2005 data, the Union of Serbia and Montenegro (formerly Yugoslavia) was reported as a single country. It dissolved into two independent countries in 2006.

Table V.C.2 compares the distribution of country vulnerability from the current (2010) and previous (2008) analyses. In 2010, the same percentage of vulnerable countries were vulnerable in Pillar 1 (43% in each year), a higher percentage of vulnerable countries were vulnerable for Pillar 2 (increasing from 91% to 95%), and a lower percentage of vulnerable countries were vulnerable for Pillar 3 (falling from 43% to 38%).

There were no uniform improvements within each Pillar. In Pillar 1, while the percentages of vulnerable countries fell for economic, population and corruption status from 2008 to 2010, the percentage of countries vulnerable due to tuberculosis grew from 17 percent to 24 percent.

In Pillar 2, the percentage of countries made vulnerable in the Participation category grew (i.e., worsened) in 2010 in all indicators except for Total Upper Secondary GER. A lower percentage of countries in 2010 were vulnerable in the Equity category than 2008. In the Attainment category, the percentage of countries vulnerable decreased to zero (from 15%) on the primary completion rate in 2010, but increase to 37 percent (from 27%) for school life expectancy. In terms of Performance, a lesser percentage of counties were vulnerable due to youth literacy in 2010 with a slight increase in the percentage vulnerable due to primary repetition.

In Pillar 3, lower percentages of countries were made vulnerable by the pupil-teacher ratio and percentage of GDP spent on education.

Table V.C.2: Comparison of Vulnerability Areas by Pillar (2007 and 2005 data)

	2010 Analysis (2007 data)	2008 Analysis (2005 data)
	Percentage of Highly Vulnerable and Vulnerable Countries	
Pillar 1: Context	43%	43%
A. Economic Status		
• GDP per capita, PPP	19%	22%
B. Population Pressure		
• Percent Population 0-14	19%	21%
C. Health		
• Tuberculosis Incidence	24%	17%
D. Corruption		
• Control of Corruption	19%	25%
Pillar 2: Student Outcomes	95%	91%
A. Participation		
• Pre-Primary NER	33%	29%
• Basic Education GER	29%	21%
• Total Upper Secondary GER	29%	33%
• Tertiary GER	25%	21%
B. Equity		
• Primary + Secondary GER GPI	16%	27%
C. Attainment		
• Primary Completion Rate	0%	15%
• School Life Expectancy	37%	27%
D. Performance		
• Youth Literacy Rate	19%	23%
• Primary Repetition Rate	30%	29%
Pillar 3: System Capacity	38%	43%
A. Efficiency		
• Basic Education Pupil-Teacher Ratio	25%	26%
B. Resources		
• % GDP on education	21%	26%

VI. Conclusions

Between 2000 and 2007, countries in the E&E region generally experienced improvement in most the education indicators examined in this study, at the same time displaying considerable intra-regional variation. The focus of this study was on identifying *relative* vulnerability among countries, identifying countries that deviated significantly from their E&E peers.

Twenty-one of the 27 ranked[23] E&E countries, or 78 percent, exhibit vulnerability on one or more indicators. Of these vulnerable countries, six countries, or 29 percent, were rated highly vulnerable on one or more indicators. Based on the point scoring system developed for aggregate ranking, the worst case of vulnerability is Turkmenistan, which not only had the highest score, but also had the greatest number of incidences of high vulnerability and undesirable directions of change. Tajikistan, the second most vulnerable country in terms of points, had the highest total number of incidences of vulnerability (tying with Azerbaijan) and high vulnerability.

Croatia, the Czech Republic, Lithuania, Serbia, Slovenia, and Ukraine are notable for showing no incidences of vulnerability; for all 15 indicators, these countries always fell within 1 SD of the mean. Although four of these six countries are either upper-middle income or high income countries, income status is not a guarantee of "invulnerability" in education. Both Serbia and Ukraine, which joined the "not vulnerable" ranks in 2010, are lower middle income countries. Poland, an upper-middle income country, qualified as vulnerable, as did several other upper-middle income countries. In general, however, vulnerability ranking appears to correlate—albeit imperfectly—with national per capita income: the three low-income countries in the region (Kyrgyz Republic, Tajikistan, and Uzbekistan) are all in the top range of vulnerability ranking, while most of the upper-middle income countries are in the lower range.

The greatest area of vulnerability among the countries is in student outcomes (Pillar 2): 74 percent of countries were vulnerable on one or more of the indicators, with the greatest percentage showing weakness in school life expectancy (37%), pre-primary NER (33%), and primary repetition rate (30%). Less than one-third (32% and 30% respectively) displayed vulnerability for both context indicators (Pillar 1) and system capacity indicators (Pillar 3).

A comparison of the 2010 and 2008 analyses of educational vulnerability suggests some improvement in the region in terms of vulnerability. The number of "not vulnerable" countries grew from three in 2008 to six in 2010, although most countries maintained the same general ranking. Fewer countries (78%) in 2010 were classified as vulnerable on one or more indicators compared with 2008 (88%), although a higher percentage in 2010 (29%) fell into the highly vulnerable range than in 2008 (25%).

The tentative recommendations, which are subject to several caveats and qualifications, for the region that emerge from the above observations and analysis remain unchanged from the 2008 analysis:

- Intervene with assistance to the education sector in the countries ranking among the most vulnerable, particularly those with notable incidences of undesirable directions of change.

- Planning, aligning, and conducting education programs with other sector programs (economic, growth, population, health, and democracy and governance) in countries with a high vulnerability ranking may reduce or control threats to the education system and its development.

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[23] Montenegro could not be ranked due to insufficient data.

- The goal or strategic objective for the education program in vulnerable countries should respond to the areas of weakness in student outcomes. System capacity building—to deal with both supply- and demand-side problems—is the most obvious and sustainable route, even though less than one-third of the countries displayed vulnerability on the two indicators in this pillar.

These recommendations, however, must be considered within the parameters of this study and the methodologies used. Considerations and cautions include:

- The E&E region countries are comparatively well-off in terms of context, student outcome, and system capacity indicators. Their vulnerability is relative to the region, not the world. The E&E regional means exceeded the world means on 100 percent of the 13 indicators for which comparative global data is available and never fell below the means for middle income countries.[24] Consequently, analysis of educational need should not be assessed based only on relative status in the region, but also on other comparable countries and internationally-accepted standards and levels for educational development.

- The ranking of country vulnerability may change according to the number and types of indicators selected. As described in Chapter 1, while indicator selection was informed by best practice, it was ultimately determined by data availability. In some instances, lack of data precluded use of the best indicators or resulted in an incomplete range of indicators.

- The national-level measures used may mask regional or population group disparities or problems. A country with robust educational indicators may also have groups or sub-groups that are underserved or performing poorly.

- The point scoring methodology did not weight the various indicators. Not all indicators are necessarily equal; some indicators may have more value in determining fundamental weakness in education than others. For example, several countries were ranked vulnerable for pre-primary NER, total upper secondary GER, and/or tertiary GER, but not for basic education GER. Arguably, basic education is the most important level of education. Should these countries be given priority in terms of USAID attention and funding?

This and other questions show the necessity of using multiple approaches and methods to analyze country need and make regional comparisons. This study provides a broad ranking of countries that gives general orientation to the degree of educational vulnerability of countries relative to their regional peers. As such, it can be used to identify countries that warrant further scrutiny, general areas of weakness or vulnerability that should be further investigated, and areas of strength that may be emulated or serve as a foundation for future action.

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[24] On only one indicator—the basic education GER—did the E&E regional mean fall below the world mean. However, it should be noted that the comparative data used was for primary education, which puts the E&E region at a disadvantage. Although no world mean was available for the perception of corruption indicator, the E&E region did fall far below the OECD mean.

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Annex 1

Income Classification	Countries (2007 GNI Per Capita)
Low Income	
$875 or less	Kyrgyz Republic
	Tajikistan
	Uzbekistan
Lower Middle Income	
$876 - $3,465	Albania
	Armenia
	Azerbaijan
	Belarus
	Bosnia Herzegovina
	Bulgaria
	Georgia
	Kazakhstan
	Moldova
	Republic of Macedonia
	Turkmenistan
	Serbia and Montenegro
	Ukraine
Upper Middle Income	
$3,456 - $10,725	Croatia
	Czech Republic
	Estonia
	Hungary
	Latvia
	Lithuania
	Poland
	Romania
	Russia
	Slovak Republic
High Income	
$10,726 or more	Slovenia
Source: World Bank, 2007 World Development Report	