

## *Annex A*

### **General information about the international surveys reviewed**

*This annex presents general information about the main characteristics of the reviewed large-scale assessments. A summary table is presented first, and more detailed descriptions are provided in the sections that follow the table.*

Table A.1 Overview of the reviewed assessments

		Years	Countries	Target Population	Sampling (size and design)	Contextual data collection instruments	Cognitive Assessments	Mode of delivery
Large-Scale International Surveys	PISA OECD	2000, 2003, 2006, 2009, 2012, 2015	65, including all 34 OECD-countries	15-year-old students (min. grade 7)	Minimum 4 500 students per country  Two-stage stratified: (1) schools sampled with probability proportional to size (PPS); (2) students randomly sampled.	Questionnaires for students, principals; optional for parents and teachers (2015)	Reading, Mathematics, Science; optional computer based assessment: CBAS 2006, ERA 2009, CBR/CBM/CPS 2012, computer delivery from 2015 for all new science and collaborative problem-solving items	Questionnaire: Paper-and-pencil (up to 2012), computer-based from 2015  Cognitive: Paper and pencil (up to 2012), CBAS 2006, ERA 2009, CBR/CBM/CPS 2012, computer delivery from 2015 for all new science and collaborative problem-solving items, group setting
	PIRLS/ PrePIRLS/ IEA	PIRLS: 2001, 2006, 2011, 2016 PrePIRLS: 2011, 2016	PrePIRLS: 3 (South Africa, Botswana, Colombia) PIRLS 2011: 49	PIRLS: Students (grade 4); PrePIRLS: Students (grades 4, 5 or 6)	Minimum 150 schools with 4 000 students per country  Three-stage stratified cluster sampling: (1) schools sampled with PPS; (2) classes randomly sampled; (3) all students within the sampled classes	Questionnaires for students, parents, teachers, principals, national curriculum	Literacy	Questionnaire: paper-and pencil; optional online for teacher and principal  Cognitive: Paper-and-pencil, group setting

		Years	Countries	Target Population	Sampling (size and design)	Contextual data collection instruments	Cognitive Assessments	Mode of delivery
<b>Large-Scale International Surveys</b> (cont.)	<b>TIMSS/ TIMSS-Numeracy IEA</b>	TIMSS: 1995, 1999, 2003, 2007, 2011 TIMSS Numeracy: 2015	77 countries, states and school systems in 2011	TIMSS: Students (grades 4 and 8, or grade 11 for advanced module) TIMSS Numeracy: Students (grades 4, 5 or 6)	Minimum 150 schools with 4 000 students per country  Three-stage stratified cluster sampling: (1) schools sampled with PPS; (2) classes randomly sampled; (3) all students within the sampled classes	Questionnaires for students, parents (2011), teachers, principals, national curriculum	Mathematics and Science	Questionnaire: paper-and pencil; optional online for teacher and principal Cognitive: Paper-and-pencil, group setting
	<b>SACMEQ SACMEQ, UNESCO- IIEP</b>	1999, 2004, 2011, 2014	SACMEQ III: 15 Southern and Eastern African countries, including Tanzania and Zambia	Students (grade 6), teachers	Minimum 25 students per selected school.  Two-stage stratified: (1) schools sampled with PPS; (2) students randomly sampled.	Questionnaires for students, teachers, principals	Literacy, numeracy, health	Questionnaire: Paper-and-pencil  Cognitive: Paper-and-pencil, group setting
	<b>PASEC CONFEMEN</b>	Every year between 1993 and 2010; 2014	10 (Benin, Burkina Faso, Burundi, Cameroon, Ivory Coast, Congo, Niger, Senegal, Chad, Togo) in 2014. Prior to 2014, Senegal took part in 1995, 1998 and 2006. Cambodia participated in 2012. (See CONFEMEN, 2014.)	Students (grades 2, 5/6)	Two-stage stratified: (1) schools sampled with PPS; (2) students randomly sampled within the same classroom (also randomly selected from the available classroom).	Questionnaires for students, teachers, principals	Literacy, numeracy	Questionnaire: Paper-and-pencil  Cognitive: Paper- and-pencil, group setting
	<b>LLECE UNESCO- OREALC</b>	PERCE: 1997, SERCE: 2006, TERCE: 2013	PERCE: 13 SERCE: 16 TERCE: 15 (Guatemala and Ecuador took part in SERCE and TERCE)	Students (grades 3 and 6)	Two-stage stratified: (1) schools sampled with PPS; (2) intact classes randomly sampled	Questionnaires for students, teachers, principals, parents	Literacy, numeracy, natural sciences SERCE: Reading, mathematics, sciences, writing	Questionnaire: Paper-and-pencil  Cognitive: Paper-and-pencil, group setting

		Years	Countries	Target Population	Sampling (size and design)	Contextual data collection instruments	Cognitive Assessments	Mode of delivery
<b>Large-Scale International Surveys</b> (cont.)	<b>WEI-SPS OECD, UNESCO- UIS</b>	2005, 2006	11 (Argentina, Brazil, Chile, India, Malaysia, Paraguay, Peru, the Philippines, Sri Lanka, Tunisia and Uruguay)	Primary schools with students in grade 4, teachers	Minimum 400 schools per country.  Single-stage stratified (India used two-stage stratified). Schools sampled from a list of eligible schools.	Questionnaires for teachers, principals, national curriculum	ONLY CONTEXTUAL	Questionnaire: Paper-and-pencil
<b>School-based Surveys</b>	<b>EGRA/ EGMA RTI</b>	EGRA: started in 2007; EGMA: started in 2009	EGRA: 59 as of August 2014, including Cambodia, Guatemala, Senegal, Tanzania and Zambia Table 1. EGMA: 22 as of March 2014, including Tanzania and Zambia	EGRA and EGMA: Students (grades 1–3)	EGRA: Typically three-stage sampling (1) schools sampled; (2) classes selected; (3) students selected.  EGMA: Typically three-stage sampling (1) regions selected; (2) schools sampled; (3) students selected.	Optional interview with student, teacher, principal, and classroom observation	EGRA: reading; EGMA: numeracy	Paper-and-pencil Interview and observation  Cognitive: Oral, in an one-on-one setting
<b>Household-based Surveys</b>	<b>PIAAC OECD</b>	2011, 2012, 2014	23 in 2011/12	Adults (16–65)	Minimum 5 000 respondents per country  Stratified multi-stage clustered area sampling	Interview with the participant (individual in the household).	Literacy (including reading components), numeracy, problem-solving in technology-rich environments	Computer-assisted personal interview  Cognitive: Computer-based-assessment (paper-and-pencil as an option), one-on-one

		Years	Countries	Target Population	Sampling (size and design)	Contextual data collection instruments	Cognitive Assessments	Mode of delivery
Household-based Surveys (cont.)	STEP World Bank	2011, 2012, 2014	6 (Armenia, Azerbaijan, Georgia, Ghana, Kenya, Macedonia) in 2012	Adults (15–64)	Household survey: Minimum 6 000 households. Three-stage sampling: (1) small territorial areas, (2) households ; (3) random selection of the main respondent Employer survey: 300 to 500 workplaces.	Interview with the participant (individual in the household; employer)	Reading literacy (as part of the household survey)	Household survey: Paper-and-pencil or computer-assisted personal interview Employer survey: Paper-and-pencil Interview  Cognitive: Paper-and-pencil, in an one-on-one setting
	LAMP UNESCO-UIS	2003	Mongolia (2010), Jordan (2011), Palestinian autonomous territories (2011), Paraguay (2011), and Lao PDR (2014)	Adults (15+)	Typically two-stage sampling: (1) household (2) individual in the household.	Interview with the participant (individual in the household)	Literacy, numeracy	Paper-and-pencil Interview  Cognitive: Oral, in an one-on-one setting
	ASER Pratham	Annually since 2005	India	Children and teenagers living in rural areas in India, ages 3–16 for enrolment and background information, ages 5–16 for assessment	Two-stage sampling: (1) 30 villages per rural district; (2) 20 households sampled from each village. All children in the target population in a sampled household are assessed.	Interview and observation. Household survey sheet (interview with head of household), school survey sheet (interview with head master), village observation sheet	Reading, arithmetic	Paper-and-pencil Interview and observation Cognitive: Oral, in an one-on-one setting

		Years	Countries	Target Population	Sampling (size and design)	Contextual data collection instruments	Cognitive Assessments	Mode of delivery
Household-based Surveys (cont.)	UWEZO Twaweza, supported by the Humanist Institute for Cooperation (Hivos)	2009, 2010, 2011, 2012, 2013	3 (Kenya, Tanzania, Uganda)	Children and teenagers (6–16)	Three-stage sampling: (1) districts randomly sampled; (2) villages selected with PPS; (3) 30 households selected from each sampled village. Within the household all children in the target population are surveyed.	Interview and observation. Household survey sheet (interview with head of household), school survey sheet (interview with head of teachers), village survey sheet (interview with local council chairperson/ village chief)	Literacy, numeracy	Paper-and-pencil Interview and observation Cognitive: Oral, in an one-on-one setting

## Main characteristics of the surveys

### Large-scale international surveys

#### *PISA*

The Programme for International Student Assessment (PISA) was initiated in 1997 by the OECD and its member countries in order to obtain internationally comparable data about the quality of the education systems in the member countries. Since the first main study in 2000, over 65 countries worldwide have participated in PISA.

#### *Purpose*

The main purpose of PISA is to measure and internationally compare student achievement near the end of their period of compulsory schooling, in three domains of literacy – reading, mathematics and science – to gain regular data about the quality of education systems. The combination of high quality assessments and contextual information at the student and school level helps to describe the relationship between students' performance and their contexts, thus identifying the different systems' strengths and weaknesses.

#### *Target population and sampling*

PISA's target population is 15-year-old students at grade 7 or higher. To be eligible for inclusion in the international database, data on at least 4 500 students per country need to be collected (if a country is smaller, a census is tested).

PISA uses a two-stage stratified sampling design to obtain a representative sample. In stage 1, schools are sampled with PPS (probability proportional to size) within country-defined strata. In stage 2, eligible students are randomly selected within schools (OECD, 2014a).

#### *Administration*

PISA was originally designed as a paper-and-pencil assessment. Since the year 2006, computer-based components were included in the assessment in response to the increasing relevance of new information and communication technologies for education. This started with a computer-based science assessment in 2006, followed by an electronic reading assessment in 2009, which was carried forward in 2012 together with a computer-based assessment of mathematics and problem-solving, and online administration of the school questionnaire. 2015 will see the first complete computer-based PISA assessment, including computer-based administration of the student and school questionnaires. A paper-based option with items that are linked to former PISA cycles is available for countries where a complete electronic assessment is not feasible. However, the newly developed items in science and collaborative problem solving are only part of the computer-based assessment.

#### *Cycle and participating countries*

PISA has been administered in a triennial cycle since the first main study in 2000. The 2015 assessment will be the sixth administration, with more than 65 countries participating worldwide (34 OECD countries plus partner countries and economies).

### ***PIRLS/prePIRLS and TIMSS/TIMSS Numeracy***

Progress in International Reading Literacy Study (PIRLS) and Trends in International Mathematics and Science Study (TIMSS) are studies by the International Association for the Evaluation of Educational Achievement (IEA).

#### ***Purpose***

The aim of PIRLS and TIMSS is to collect internationally comparable data by administering cognitive assessments in reading and mathematics (TIMSS and PIRLS International Study Center and IEA, n.d.), and contextual questionnaires to assist participating countries in making informed choices to improve reading, mathematics and science teaching and learning. The context questionnaires collect information from students, parents (TIMSS did this for the first time in 2011, administered jointly with PIRLS), teachers, school principals, and curriculum experts. Information on a national and community level is also collected and reported in the PIRLS and TIMSS encyclopaedias.

PrePIRLS was introduced in 2011, and can be described as a pre-stage to participating in PIRLS for developing countries. It provides a way to assess basic reading skills at the end of the primary school cycle that are a prerequisite for success in PIRLS. PrePIRLS reflects the same conception of reading as PIRLS, except it is shorter and less difficult (Mullis and Martin, 2013: 4). Thus prePIRLS permits learners from lower achieving countries to be measured more precisely than was the case on a longer and harder assessment such as PIRLS (Howie, et al., 2012: 22).

Introduced with the upcoming assessment cycle, TIMSS 2015 also has a new, less difficult mathematics assessment called TIMSS Numeracy, for countries where most children are still developing fundamental mathematics skills. TIMSS Numeracy assesses fundamental mathematical knowledge, procedures, and problem-solving strategies that are prerequisites for success on TIMSS. TIMSS Numeracy asks students at the end of the primary school cycle to answer questions and work out problems similar to TIMSS, except with easier numbers and more straightforward procedures (Mullis and Martin, 2013: 7-8).

Together with IEA's prePIRLS reading assessment, TIMSS Numeracy is intended to respond to the needs of the global education community and efforts to work towards universal learning for all children. The contextual questionnaires are the same as in regular PIRLS and TIMSS.

#### ***Target population and sampling***

PIRLS and TIMSS define their international target populations in terms of the amount of schooling students have received. The number of years of formal schooling is the basis of comparison among participating countries. Thus, the international target population for PIRLS and TIMSS at the lower grade is all students in their fourth year of formal schooling, and for TIMSS at the upper grade, all students in their eighth year of formal schooling. Both studies recommend assessing the next higher grade if, for fourth grade students, the average age at the time of testing would be less than 9.5 years and, for eighth grade students, less than 13.5 years (Mullis and Martin, 2013: 4) (Joncas and Foy, 2012: 3-4).

PrePIRLS and TIMSS Numeracy are designed for students at the end of the primary school cycle. Depending on a country's educational development, prePIRLS can be given at the fourth, fifth, or sixth grade (Mullis and Martin, 2013: 7-8).



Sampling designs for PIRLS and TIMSS require the participation of at least 150 schools with the assessment of 4 000 students (Joncas and Foy, 2012). A three-stage stratified cluster sampling design is employed in both studies. During the first stage, schools were sampled with PPS, while during the second stage classrooms were randomly selected; all students within a classroom form the third sampling unit (Joncas and Foy, 2012).

### *Administration*

PIRLS and TIMSS are administered in paper-and-pencil form. Since 2011, countries can elect to complete the teacher and school questionnaires either via paper and pencil or online (Mullis et al., 2012: 15-16). In 2016, a computer-based assessment of online reading (ePIRLS) will be available for participating countries as an extension to PIRLS.

### *Cycle and participating countries*

TIMSS follows a four-year cycle, and was first conducted in 1995. 2015 will mark the sixth TIMSS implementation. PIRLS follows a five-year interval with assessments in 2001, 2006, 2011 and 2016. PrePIRLS was first conducted in 2011, and TIMSS Numeracy starts in 2015. In 2011 PIRLS and TIMSS were administered together.

PIRLS 2011 had 49 participating countries, and Botswana, Colombia and South Africa took part in prePIRLS. In TIMSS 2011, 77 countries participated.

### **SACMEQ**

The Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) carries out large-scale cross-national research studies in member countries in southern and eastern Africa (SACMEQ, n.d.-a).

### *Purpose*

SACMEQ aims to assess schooling conditions and performance levels of students and teachers in the areas of literacy and numeracy in southern and eastern Africa (SACMEQ, n.d.-a). In addition to the cognitive assessment in reading and mathematics for students and teachers, contextual information is collected from students, teachers and school principals. SACMEQ's data are used for in-country and cross-country analyses of results.

### *Target population and sampling*

SACMEQ's target population are students in Grade 6.

The sample is stratified and drawn in two stages. In stage 1, schools are sampled with PPS within country-defined strata. In stage 2, students are randomly selected from each school on site by the test administrator. The minimum number of students per selected school is 25 in SACMEQ III (SACMEQ, 2007a).

For the assessment of teachers, those teachers who teach relevant subjects in the three largest Grade 6 classes are selected by the test administrator from each selected school (SACMEQ, 2007a).

The approximate sample size of each SACMEQ project was as follows: SACMEQ I – 1 000 schools, 20 000 students, 3 000 teachers; SACMEQ II – 2 000 schools,

40 000 students, 5 300 teachers, and SACMEQ III – 2 800 schools, 61 000 students, 8 000 teachers (SACMEQ, n.d.-b).

### *Administration*

SACMEQ is administered in paper-and-pencil mode in a group setting at school.

### *Cycle and participating countries*

To date, the SACMEQ Consortium has completed three cycles at five to six-year intervals – SACMEQ I (1995-1999), SACMEQ II (1998-2004) and SACMEQ III (2005-2010). The fourth cycle is currently being implemented. Zambia, a PISA for Development (PISA-D) country, is among the countries participating in SACMEQ (SACMEQ, n.d.-a).

### **PASEC**

The CONFEMEN Programme for the Analysis of Education Systems (PASEC) was established by the Conference of the Ministers of Education of French-speaking countries (CONFEMEN) in 1991 (CONFEMEN, 2013).

### *Purpose*

PASEC's main aim is to inform member countries of the French-speaking community on the development of their education systems, to provide inspiration on topics of common interest and reforms, and to facilitate dialogue between ministers and experts to support policy development in education (CONFEMEN, 2013).

PASEC assesses students in primary education (and the end of lower secondary, as of 2016) in reading, writing and numeracy. Contextual information is collected from students, teachers and school principals (CONFEMEN, 2012).

PASEC's data allow for in-country and cross-country analyses (CONFEMEN, 2013).

### *Target population and sampling*

Prior to 2014, PASEC's target population was children at the start of primary school (Grade 2) and the end (Grade 5). From 2014, the target population is children at the start of primary school (Grade 2), at the end (Grade 6) and, as of 2016, at the end of lower secondary.

The sample is stratified and drawn in two stages. From 2014, in stage 1, schools are sampled with PPS within defined explicit strata (administrative division and school type, for example). Implicit strata are used to make sure that the sample is representative. In stage 2, 10 students are selected randomly from one Grade 2 class, and 20 students are selected from one Grade 6 class (if there is more than one Grade 2 or Grade 5 class, then one class is sampled randomly prior to sampling students) (CONFEMEN, 2012).

### *Administration*

PASEC is administered in written format, in a group setting in school, twice for both target grades: at the beginning and at the end of the school year.

### *Cycle and participating countries*

PASEC was first implemented in the Central African Republic, the Democratic Republic of the Congo, Djibouti, Mali and Senegal from 1993 to 1995. Since then it has been implemented in more than twenty education systems in Africa, the Indian Ocean and Southeast Asia.

In 2012, PASEC undertook a major review and changes will take place in its implementation. The new wave of PASEC assessments are expected to take place every four to five years, with the first major assessment in this new wave in 2014 (CONFEMEN, n.d.).

### **LLECE**

The Latin American Laboratory for Assessment of the Quality of Education (LLECE) has been established in 1994 by the ministers of education in the region, and is co-ordinated by UNESCO's regional office (the Regional Bureau for Education in Latin America and the Caribbean – OREALC) (UNESCO, 2013).

### *Purpose*

LLECE's main purpose is to provide data on the quality of education within and across countries in Latin America, and to guide decision making in public education policies (UNESCO, 2013).

LLECE consists of a curriculum-based assessment in reading, mathematics, science and writing. Contextual information is collected from students, teachers, school principals and parents (ACER, 2014).

### *Target population and sampling*

LLECE's target population are students in Grade 3 (reading, mathematics and writing) and in Grade 6 (reading, mathematics, writing, and science) (M. Bilagher, personal communication, 11 November 2013).

A representative sample of students is tested in each country, using a two-stage stratified sampling design. In stage 1, schools are sampled with PPS within two strata (school location and type). In stage 2, one intact class per grade is randomly selected from each sampled school (LLECE, 2010, 2013).

### *Administration*

LLECE is administered in written format, in a group setting in school (ACER, 2014).

### *Cycle and participating countries*

LLECE was first implemented in 13 Latin American countries in 1997 (the First Regional Comparative and Explanatory Study – PERCE), followed by the Second Regional Comparative and Explanatory Study (SERCE) in 2006 and the Third Regional Comparative and Explanatory Study (TERCE) in 2013. As of November 2013, there is no defined frequency for LLECE assessments. Due to substantial changes after the first cycle, SERCE and TERCE are not comparable with PERCE (ACER, 2014).

## ***WEI-SPS***

The World Education Indicators-Survey of Primary Schools (WEI-SPS) was founded in 2002 as a special project within the context of the World Education Indicators (WEI) programme that was established jointly by the UIS and OECD in 1997 to consolidate and collect data on basic education statistics. WEI-SPS was designed and implemented jointly by the OECD and the UIS, supported by a network of consultants and international experts. All international survey costs and quality control costs were born by the OECD and the UIS, with financial support from the World Bank (UIS, 2009a: 7).

### *Purpose*

WEI-SPS focuses on education quality and equitable distribution among students by collecting internationally comparable data on indicators in primary education on a system, school and classroom level, to support changes in education systems and the communities they serve (UIS, 2009a: 7). Data were obtained through questionnaires for national curriculum experts (system level), primary school principals (school level) and Grade 4 mathematics/arithmetic or reading teachers (classroom level) about school functioning, teaching, instructional environment as well as opportunities to learn, learning conditions, and available resources (UIS, 2009a). Items from other surveys that had already been tested and validated in international contexts were sourced where possible, specifically from IEA, OECD, the School Achievement Indicators Program (Canada), the Schools and Staffing Survey (United States), SACMEQ, ZEBO (Self-Evaluation in Primary Education, the Netherlands), the Victorian Department of Education (Australia) and the Assessment Research Centre (Australia). Questions that could not be sourced from other surveys were created especially for WEI-SPS (UIS, 2009a). All survey instruments and operations were highly standardised to secure international comparability.

### *Target population and sampling*

The target population of WEI-SPS comprises two survey units: schools with pupils enrolled in the fourth grade, and teachers. A school was defined as an administrative unit or a school site (UIS, 2009a: 28). In some cases, for reasons of cost, it was decided to exclude remote schools (not to exceed 5% of the pupil population) (Zhang, Postlethwaite and Grisay, 2008: 21). The teacher target population includes all teachers within the school target population who teach the main language of instruction and/or mathematics/arithmetic to Grade 4 pupils (UIS, 2009a: 29).

The WEI-SPS study employed a stratified systematic sample design. All participating countries (except India) used a single-stage procedure, where the sample of schools was selected directly from a list of eligible schools that covered the entire country. India used a two-stage procedure with school districts in four states as primary sampling units (PSU), followed by the selection of sample schools from the list of eligible PSU schools. In each selected school, every teacher teaching language/reading and/or mathematics/arithmetic to Grade 4 students was included in the sample.

The effective sample size had to cover at least 400 schools, as well as a minimum standard for response rates on school and teacher level, set to 85% (Zhang, Postlethwaite and Grisay, 2008: 21).

One or more national curriculum experts per country completed the curriculum questionnaire.

### *Administration*

WEI-SPS implementation is highly standardised to secure international comparability. The survey material was distributed and collected by surveyors, who also ensured that data were correct and complete. The questionnaires were designed to be completed in less than one hour (UIS, 2009a: 9).

### *Cycle and participating countries*

WEI-SPS has been implemented in 11 out of 19 WEI countries (Argentina, Brazil, Chile, India, Malaysia, Paraguay, Peru, Philippines, Sri Lanka, Tunisia and Uruguay) over the years 2005 and 2006 towards the end of the school year (UIS, 2009a: 9). To date, there have been no other cycles of administration.

### **School-based surveys**

#### ***EGRA and EGMA***

The Early Grade Reading Assessment (EGRA) and the Early Grade Mathematics Assessment (EGMA) were developed by RTI through funding provided USAID and the World Bank (EGRA only) (Gove and Wetterberg, 2011), in addition to resources provided by RTI.

### *Purpose*

EGRA and EGMA aim to assess children's acquisition of basic literacy and numeracy skills in developing countries. EGRA and EGMA frameworks have been developed by RTI in consultation with various experts. Each implementing country adapts each of the EGRA/EGMA subtasks for its specific implementation, based on the EGRA and EGMA toolkits, and may add or remove one or two of the subtasks – typically not the ones considered most critical (RTI International, 2009, 2014). Collecting contextual information is optional, and it can be obtained from students, teachers, and school principals or by classroom observation. RTI provides guidelines for planning and implementing EGRA (RTI International and International Rescue Committee, 2011).

### *Target population and sampling*

The target population is students in Grades 1 to 3. Sampling follows a specific research design. For EGRA this is typically a three-stage sampling, consisting of: 1) schools selected; 2) classes selected from sampled schools; and 3) students selected from sampled classes. A typical three-stage sampling design for EGMA comprises: 1) regions or zones selected; 2) schools selected from sampled regions/zones; and 3) students selected from sampled schools. The sample size varies between the countries and the surveys.

### *Administration*

EGRA and EGMA are carried out orally and one-on-one in schools, and responses are scored at the time of the test administration. It takes about 15 to 20 minutes to administer EGRA or EGMA.

### *Cycle and participating countries*

EGRA was first implemented in the Gambia and Senegal in 2007 and has been implemented in more than 60 countries and in 100 languages to date. EGMA was first implemented in Kenya in 2009, and has been carried out in 14 countries to date. The administration cycle varies, depending on the country – countries choose when and how often they carry out EGRA/EGMA. Out of the countries involved in PISA-D, Cambodia, Guatemala, Senegal and Zambia participated in EGRA, while Zambia also participated in EGMA.

### *Household-based surveys*

#### *PIAAC*

The Programme for the International Assessment of Adult Competencies (PIAAC) has been established by the OECD and implemented in 24 countries (OECD, n.d.-a). Further rounds of PIAAC are taking place. PIAAC is the latest in a series of adult competency assessments, going back to the International Adult Literacy Survey (IALS) in the 1990s.

#### *Purpose*

PIAAC aims to collect and analyse data that assist governments in assessing, monitoring and analysing the level and distribution of skills among their adult populations as well as the utilisation of skills in different contexts (OECD, n.d.-a).

PIAAC consists of three elements: 1) a cognitive assessment that evaluates the skills of adults in three fundamental domains – literacy, numeracy and problem-solving in technology-rich environments; 2) a background questionnaire that collects a range of information regarding the factors which influence the development and maintenance of skills such as education, social background, language, engagement with literacy, numeracy and ICTs; and 3) a module on skills use, which is part of the background questionnaire, and which asks adults about a number of generic skills they use in the workplace (OECD, n.d.-b).

For the purpose of PISA-D, PIAAC is not only relevant in terms of household-based sampling, but also because it is very similar to international large-scale surveys in conception, design and standardisation, with both surveys being established and managed by the OECD.

#### *Target population and sampling*

PIAAC's target population are adults, aged 16 to 65 (inclusive). Adults are to be included regardless of citizenship, nationality or language (OECD, 2014b: 35).

According to the PIAAC Technical Standards and Guidelines, the minimum sample size requirement is 5 000 completed cases (or respondents) per reporting language for the target population. PIAAC's standard sampling design is a stratified multi-stage clustered area sampling, but the Technical Standards and Guidelines allow each country to choose a sample design and selection approach that is optimal and the most cost effective, as long as the sample design applies full selection probability methods. Such a general approach is taken to allow for flexibility in the sampling design and to be adaptable to each country's best sampling scenario (OECD, 2014b: 43).

For example, the number of sampling stages during the first PIAAC implementation, from 2008 to 2013, ranged from one to four. With one-stage sampling designs, there was only one sample unit: persons. With two-stage sampling designs, the sampling units of stage 1 could be households, towns or municipalities while “persons” was always the sampling unit for stage 2. With three-stage sampling designs, municipalities or districts were the typical sampling units for stage 1, households as the sampling unit for stage 2, and persons for stage 3. With four-stage sampling designs, example sampling units for stage 1, 2, 3 and 4 could be: regions, settlements, dwelling units and persons, respectively. Sample selection methods varied, but most countries used either simple random sampling or systematic random sampling to choose respondents for the household survey (OECD, 2013a).

### *Administration*

The survey is administered under the supervision of trained interviewers in the respondent’s home. The background questionnaire is administered in a computer-aided personal interview format by the interviewer. The time taken to complete the questionnaire ranges between 30 and 45 minutes.

Following completion of the background questionnaire, the respondent undertakes the cognitive assessment either using the computer provided by the interviewer or by completing printed test booklets. On average, the respondents took 50 minutes to complete the cognitive assessment (OECD, 2013b: 26; OECD, 2013c: 55).

### *Cycle and participating countries*

Participants in PIAAC round 1 (2008–2013) include (\* indicates OECD partner countries): Australia, Austria, Belgium (Flanders), Canada, Czech Republic, Denmark, Estonia, Finland, France, Germany, Ireland, Italy, Japan, Korea, Netherlands, Norway, Poland, Russian Federation,\* Slovak Republic, Spain, Sweden, United Kingdom (England and Northern Ireland) and United States.

Countries implementing PIAAC round 2 (2012–2016): Chile, Greece, Indonesia,\* Israel, Lithuania,\* New Zealand, Singapore,\* Slovenia and Turkey.

PIAAC round 3 is planned to take place between 2014 and 2018 (OECD, n.d.-c).

### *STEP*

Skills Towards Employability and Productivity (STEP) is a skills measurement programme by the World Bank, tailored to low and middle-income country contexts.

### *Purpose*

STEP provides data about skill stocks and job demands in low and middle-income country contexts on both the national and international level, to identify policy and institutional implications in order to improve the effectiveness of education and training, and to help reduce mismatches between skills supply and demand.

The programme consists of household and employer surveys which both contain detailed measures of required education and experience and of the required skills in reading, writing, mathematics, problem-solving, interpersonal/socio-emotional traits, technology use, and manual work required by jobs (Pierre et al., 2014: 2, 9). Technical standards ensure a highly standardised implementation and ensure international comparability.

The STEP reading literacy assessment was developed by the Educational Testing Service (ETS) and the World Bank and is based on the PIAAC literacy scale. Items were either taken from the PIAAC paper-based assessment or were adapted from the PIAAC computer-based instruments; or had been administered in the IALS or the Adult Literacy and Life Skills Survey (ALL), which were linked to the PIAAC literacy scale. Apart from these common instruments, other measures ensured that the STEP literacy scale would be comparable to the PIAAC literacy scale: target populations – STEP as a subset of the adult population, ages 16-65, is included in the total population of PIAAC national samples; survey operations – test administration through an interviewer face-to-face at home or at a place most convenient for the respondent; and identical psychometric principles (Pierre et al., 2014: 45, 61).

### *Target population and sampling*

The targeted population of STEP is urban adults aged 15 to 64, whether employed or not (World Bank, 2013: 49).<sup>1</sup> Sample sizes for the *household survey* vary from country to country and were determined, based on the scope of the survey and literacy rates, to ensure that a sufficient number of reading literacy booklets would be completed (Pierre et al., 2014: 61). According to the STEP Technical Standards, a preferred sample design consists of at least 6 000 households (such as a 3 000 initial sample and 3 400 reserve sample) and will be selected in three stages: 1) 200 small territorial areas or PMUs (see above); 2) systematic selection of 15 households in each selected PSU, plus 15 households as the reserve sample in each selected PSU; and 3) random selection of the main respondent in each visited household from among all household members aged 15 to 64 years (World Bank, 2013: 63).

For the survey of employers, firm registries were used as a sampling frame (Pierre et al., 2014: 64); sample size varies from about 300 to 500 workplaces. Response rates are low, ranging from 38% to 51%. According to Pierre et al. (2014: 67), employers lack time but are also wary of providing potentially sensitive information about their business to outsiders.

### *Administration*

The household questionnaire was administered through paper and pencil based on face-to-face interview in all countries except Colombia and Kenya, where computer-assisted personal interviews were carried out. The reading literacy assessment was administered as a paper-and-pencil test. The respondent was asked to sit alone and complete the assessment without any help from the interviewer (Pierre, et al., 2014: 34, 59).

The employer survey was carried out using paper and pencil (Pierre et al., 2014: 66).

### *Cycle and participating countries*

STEP was implemented in a first wave of seven countries in 2012: Bolivia, Colombia (household survey only), Lao PDR, Sri Lanka, Ukraine, Vietnam, and Yunnan Province of China; and a second wave of six countries in 2013: Armenia, Georgia, Macedonia; Ghana, Kenya – household survey only; Azerbaijan – employer survey only) (Pierre et al., 2014: 7, 8). Wave 3 started in 2014 (Acosta, 2014).



## **LAMP**

The Literacy Assessment and Monitoring Programme (LAMP) is a household-based assessment of adults' reading and numeracy skills, developed by the UIS.

### *Purpose*

The main purpose of LAMP is to regularly provide data on the distribution of reading and numeracy skills within the youth and adult populations of a country, in order to effectively plan and monitor initiatives to improve literacy skills. LAMP provides a global methodological standard for the assessment, to allow comparisons across countries at different stages of development and linguistic contexts (UIS, 2009b: 43). However, the focus lies on customised national implementation (country ownership of the programme) and on enabling countries to regularly generate and use LAMP data for monitoring.

The UIS has the main responsibility for the developmental work and the methodology. In addition, the UIS plays an important role in implementing LAMP on the national level. For example, it provides technical support to countries during implementation, through establishing technical advisory bodies in each region of the world to establish, monitor and guarantee quality standards (UIS, 2009b: 44, 45).

The LAMP framework is adapted from IALS/ALL. One third of the test items are from IALS and ALL (and belong to ETS/Statistics Canada), and participating countries also developed LAMP-specific items (B. Tay-Lim, personal communication, 13 November 2014). The LAMP source instruments are provided by the UIS.

LAMP consists of a background questionnaire adapted to the country context, and three adaptive literacy assessment components: 1) a filter test to establish if the respondent shows lower or higher levels of literacy skills; 2) a module for those with higher performance, supplementing the information produced by the filter test and establishing more precisely where the respondent stands in relation to the higher skill levels; and 3) a module for those with lower performance, composed of two instruments. The locator test supplements the information produced by the filter test and establishes more precisely where the respondent stands in relation to the lower skill levels. The reading components provide an in-depth exploration of the operations that might be preventing the respondent from achieving a better performance. Reading components are provided in English; however, each country implementing LAMP will develop a set of component measures unique to its language, script and culture, based on the guidelines specified in the reading component framework (UIS, 2009b). An unsolved question is how to link the reading components to each other and to the higher order skills (B. Tay-Lim, personal communication, 13 November 2014).

### *Target population and sampling*

LAMP's target population covers the whole population of adults aged 15 and over residing in a particular country. Every country makes its own sampling design (as part of the National Planning Report), which is validated by an independent consultant (Westat). Most countries choose a two-stage sampling design with 1) household; and 2) individual in the household. Mongolia chose a three-stage design including province (B. Tay-Lim, personal communication, 13 November 2014).

### *Administration*

LAMP is administered in paper-and-pencil mode by an interviewer.

### *Cycle and participating countries*

There is no common implementation cycle for LAMP. As a general rule, UIS advises countries to implement LAMP in cycles of five to ten years, unless circumstances change in a way that would have a significant impact on the “stock” of abilities among youth and adults (UIS, 2009b: 43).

To date, five countries have implemented LAMP as a main survey: Mongolia (2010), Jordan (2011), Palestinian autonomous territories (2011), Paraguay (2011), and Lao PDR (2014) (B. Tay-Lim, personal communication, 10 December 2014). El Salvador, Kenya, Morocco, and Niger participated in a pilot only (B. Tay-Lim, personal communication, 13 November 2014).

### **ASER**

The Annual Status of Education Report (ASER) survey is a household-based survey of school-aged children in all rural districts in India. The ASER Centre in New Delhi, an autonomous unit within the Pratham network (a non-governmental organisation), is responsible for instrument development and implementation.

### *Purpose*

ASER’s main purpose is to obtain reliable estimates of the status of children’s schooling and basic learning in reading and mathematics at the national and state level, and to measure the change in these basic learning and school statistics over time. Results can be compared across states.

The ASER assessment tools measure basic skills in reading and arithmetic. Their development was informed by the findings of an analysis of language and mathematics text books for early grades across all major Indian states in 2005 (ASER Centre, 2014: 45).

The reading assessment is developed separately in each of the different assessment languages – there were 20 languages in 2013 (R. Banerji, personal communication, 27 April 2014). The Hindi reading tool is developed at the ASER Centre in New Delhi, and the reading tools in all other languages are developed by the Pratham and ASER Centre state teams (ASER Centre, 2013; R. Banerji, personal communication, 27 April 2014). The development of the reading tool follows guidelines prepared in-house (R. Banerji, personal communication, 19 November 2013).

The arithmetic tool is developed at the ASER Centre in New Delhi and translated into other assessment languages where required (that is, where different languages use different numeral representations) (R. Banerji, personal communication, 19 November 2013).

The cognitive tools are adaptive, starting with a middle-difficulty task and moving either up or down depending on whether or not the child successfully completes that initial task.

Contextual information is collected about households, one government school in each sampled village, and the conditions of sampled villages.

### *Target population and sampling*

ASER's target population are children living in rural areas in India, ages 3 to 16 for enrolment and background information (both assessed in the contextual survey sheets), ages 5 to 16 for the assessment. ASER uses two-stage sampling; Stage 1 consists of a panel of 30 villages per rural district, which is replenished each year (ten new villages are selected by probability proportional to size, while ten villages are removed from the previous selection). Stage 2 consists of 20 households sampled from each village on site by a test administrator. All children in the target population in a sampled household are assessed.

### *Administration*

ASER is administered in homes using an oral and one-on-one setting.

### *Cycle and participating countries*

ASER has been implemented annually since it was first carried out in India in 2005. Since 2008 it has been implemented by the ASER centre (a unit in the Pratham network).

### *Uwezo*

Uwezo, meaning “capability” in Kiswahili, is a household survey to measure the basic literacy and numeracy skills of school-aged children in Kenya, Tanzania and Uganda. Currently, Uwezo is housed and managed by Twaweza, a citizen-centred organisation in East Africa legally managed by the Humanist Institute for Cooperation with Developing countries (Hivos) at SNV, the Netherlands Development Organisation (Twaweza, 2008; Uwezo, 2011a).<sup>2</sup> The work of Uwezo and Twaweza is funded by a consortium of donors including the William and Flora Hewlett Foundation, the UK Department for International Development, the Swedish International Development Agency, Hivos, the World Bank, and the Children's Investment Fund Foundation (Uwezo, 2014a).

### *Purpose*

The main aim of Uwezo is to obtain information about the basic literacy and numeracy skills of school-aged children in Kenya, Tanzania and Uganda in order to encourage changes in educational policy and practice, and as such contribute to the improvement of education quality (Twaweza, 2013; Uwezo, 2009, 2011b, 2014a).

Uwezo's methodology is based on ASER, but adapted to the East African context. Uwezo's literacy and numeracy assessments are aligned with the Grade 2 curriculum. As in ASER, the cognitive tools are adaptive, starting with a middle-difficulty task and moving either up or down depending on whether or not the child successfully completes that initial task. In addition to the assessment, Uwezo collects contextual information about children, households, villages and schools. The results are published via a report at the regional level (for East Africa) and reports at the national level, for districts and regions within the country.

### *Target population and sampling*

Uwezo's target population are children aged 6 to 16 living in urban and rural areas in Kenya, Tanzania and Uganda. There are contradictory statements about the lower age bound in the definition of the target population for Tanzania, ranging from 5 to 7

years (Uwezo, 2012: 4); (Uwezo, 2014b). In all the references we have seen, the upper bound is consistently given as 16 years old. Uwezo uses a three-stage sampling approach. At stage 1 a random sample of districts is selected; at stage 2 villages are selected with PPS from sampled districts, and at stage 3, 30 households are selected from each sampled village. Within the household all children in the target population are tested, whether they are in school or not.

### *Administration*

Like ASER, Uwezo is administered in homes, orally and one-on-one.

### *Cycle and participating countries*

Uwezo started in 2009/2010 with a pilot, and has been conducted annually since 2011.

## **Notes**

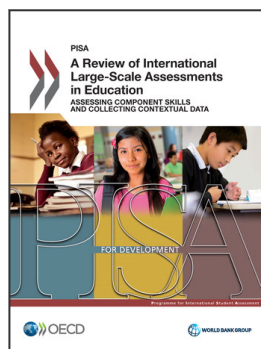
1. Georgia's National Survey Design Planning Report (NSDPR) is cited here because the STEP Technical Standards are embedded in the report. In fact, the STEP Technical Standards are embedded in all other NSDPRs for both Wave 1 and 2 countries, rather than being a stand-alone document. NSDPRs of Wave 2 countries will be cited throughout this review when referring to the STEP Technical Standards, as Wave 2 STEP surveys have been implemented more recently.
2. Twaweza plans to become a legally independent entity in 2014 (Twaweza, 2008, 2011).

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