

ADVOCACY FOR THE DEVELOPMENT OF PRE-SCHOOLING IN WEST AND CENTRAL AFRICAN COUNTRIES

Technical document





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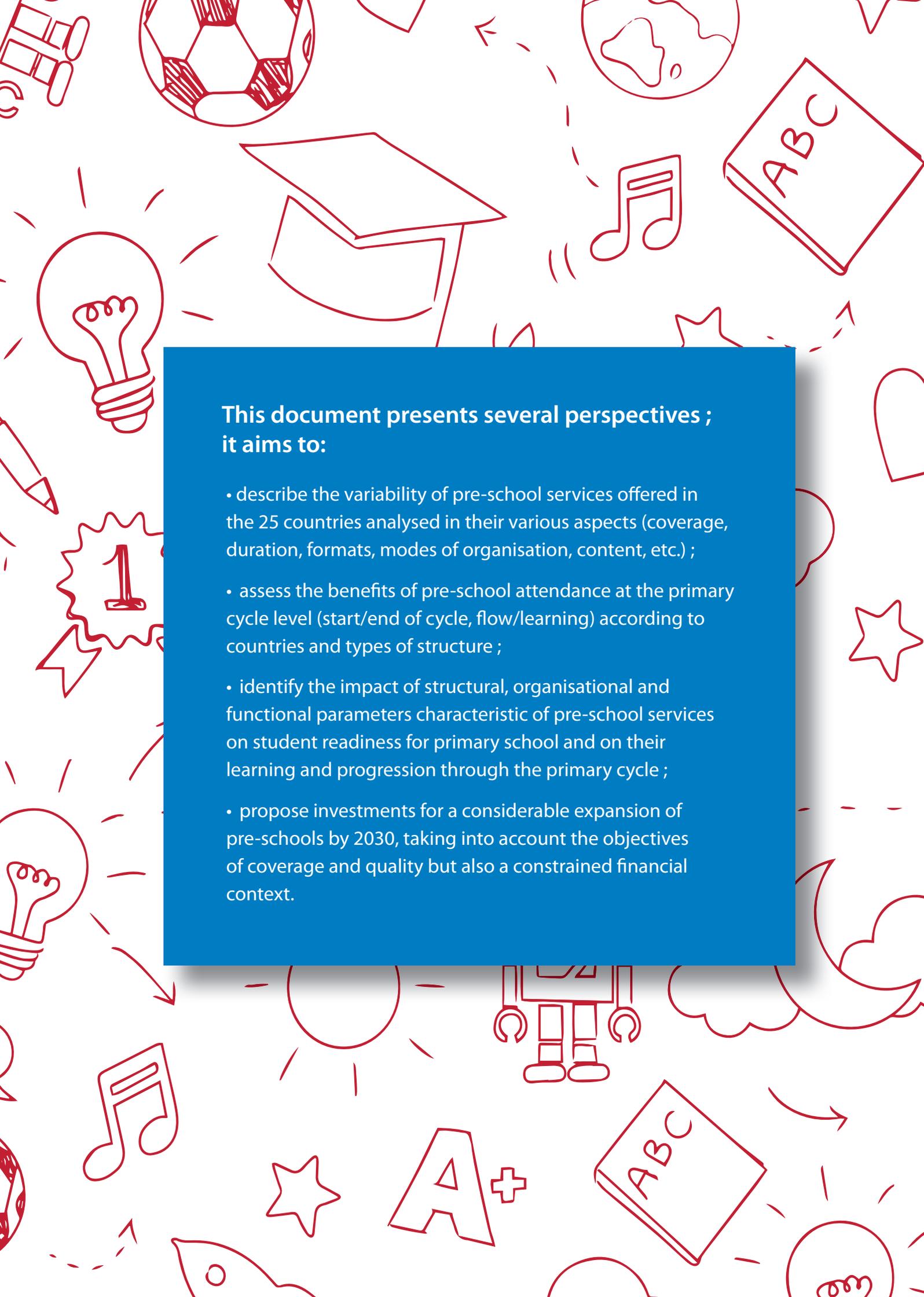
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**This document presents several perspectives ;
it aims to:**

- describe the variability of pre-school services offered in the 25 countries analysed in their various aspects (coverage, duration, formats, modes of organisation, content, etc.) ;
- assess the benefits of pre-school attendance at the primary cycle level (start/end of cycle, flow/learning) according to countries and types of structure ;
- identify the impact of structural, organisational and functional parameters characteristic of pre-school services on student readiness for primary school and on their learning and progression through the primary cycle ;
- propose investments for a considerable expansion of pre-schools by 2030, taking into account the objectives of coverage and quality but also a constrained financial context.

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LIST OF ABBREVIATIONS AND ACRONYMS

CONFEMEN	Conference of Ministers of Education of the States and Governments of the Francophonie
UIS	UNESCO Institute for Statistics
PASEC	CONFEMEN Educational System Analysis Programme
GDP	Gross Domestic Product
GDP per capita	Gross domestic product per capita
PIRLS	Progress in International Reading Literacy Study
PISA	Programme for International Student Assessment
DRC	Democratic Republic of Congo
PTR	Pupil-teacher ratio
GER	Gross enrolment rate
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund

INTRODUCTION

With the development of schooling in the XIXth century in the countries of the North, the idea that it was relevant for children to have had some preparation prior to their schooling in the primary cycle became fairly quickly established. This formulation makes it clear that this preparation is not exactly school-based (otherwise it would have been easier to integrate it into the primary cycle). This period is, in a way, a hybrid between objectives concerning the development of the child in their various dimensions (emotional, social, cognitive, etc.) and more functional objectives associated with the facilitation of later academic achievements, particularly in the primary cycle. These two objectives are obviously distinct and complementary. Without ignoring this distinction and complementarity, the focus here is on the impact of pre-school on the primary cycle, and its expected benefits for both students and the education system.

Pre-school is also especially important to consider in sub-Saharan Africa, including Central and West African countries, for two more reasons :

- The first is that in many countries in this region, a proportion of children (particularly those living in poverty, but also those above it) do not live in a context that is conducive to their preparation for school. Organised pre-school activities therefore have a particular potential role to play in these countries, where they are on average the least developed compared to other regions of the world.
- The second reason is that, in most of the countries considered, the average level of student learning at primary level, both in empirical comparative assessments and in the more qualitative and normative judgements of most experts, is low, and that this deficiency is resistant to the standard policy actions to improve it. While school coverage has improved significantly over the past 20 years, the quality of educational services and student learning has little improvement

On this last point, the analyses show that acting on the major classic structural parameters - including in the first place and at the global level on the financial resources mobilised per student - proves to be rather ineffective¹. Recent analyses show that the average level of student learning at primary level in a country is mainly due to three elements. The first is the impact of the cultural characteristics of its adult population ; this is exogenous. The second concerns the quality of the pedagogical monitoring of the system in order to regulate the behaviour and practices of the stakeholders at local level; this point is endogenous and, although there are notable differences between the countries in the region, it is generally at a fairly low level. The third element is the coverage and quality of preparation of students when they access this study cycle; this report focuses on the latter.

In this context, it is important that :

- empirically validated arguments in favour of pre-schooling in the group of countries considered are provided ;
- it is demonstrated that significant progress in the development of pre-school services is both practically possible and financially sustainable in the diversity of each of these countries.

That said, it is essential to remember that pre-school, like many aspects of social and school organisation, refers both to *one* generic concept *and* to sometimes very different *ways* of implementing it. The aim is therefore not to develop pre-school *without qualifications*, but to develop these activities in preparation for later schooling with the organisational methods and practices that have been identified as effective, i.e., that produce the expected qualitative results, without using more resources than necessary².

¹ Thus, there is very little relationship between the resources mobilised per student (both at the country level and at the level of the schools in a given country) and the learning of the latter.

² This last point is essential to ensure that as many children as possible can benefit from quality pre-school services in a context of tight State budgets.

01

Child development and improving the education system at the heart of pre-school planning

1.1 The development of children between 0 and 6 years

The period between birth and the age of 6 years is crucial for the physical, cognitive, social and emotional development of the child. Care and supervision during this period have powerful effects, visible first in schooling and then in adulthood. This is an especially opportune time for the acquisition of certain skills that will have an impact on people's lives. If these windows of opportunity are not used, the acquisition of these skills will become more difficult and often incomplete.

These windows of opportunity are especially important, as the brain develops particularly during this period. At birth, a child has about 100 billion neurons (this is its genetic base). Most of these cells are not yet linked and cannot function on their own. In the absence of appropriate stimuli, these neurons disappear; their stimulation, on the other hand, through the experiences that the child faces (the role of the environment³), contributes to their organisation in networks (synapses) that will strengthen and allow the brain to function better and really build the basis of what will be the human being. By the age of 6, the child's brain is about 90% as developed as it will be as an adult.

During the first years of life, these bonds are formed by stimuli coming first from the mother and more widely from interactions in the family environment. The nutritional aspect is also very important: nutritional deficiencies before the age of 3 can create damage to brain development which can manifest itself in cognitive and behavioural deficits, slower language and motor skills development. These deficits are difficult to overcome.

During the period from birth to 3 or 4 years of age, the family environment is crucial, as it is here that the child will build both their ability to learn and to control their emotions, as well as their sense of well-being, which promotes brain development. It is also during this period of their life that the child will build the foundations of their language, spatial and psychomotor skills. These skills will of course develop over a longer period of time but the basics are fundamental and a stable and supportive family environment is essential.

That said, the primacy of the role of the family does not mean that public interventions are unnecessary. On the contrary, they are doubly important :

- complementarity in areas where there is a specific technical dimension (birth registration, neonatal health, child health monitoring, including immunisation, children with special needs, etc.) ;
- substitution when the family could be partly defaulting.

In the latter respect, there is a tendency to associate these failures with specific social situations, including extreme poverty (or even climatic conditions that generate food shortages). Certainly, these situations exist and appropriate action must sometimes be taken, as children are always on the front line when these difficulties exist. But observations of current parenting practices in ordinary circumstances show that they tend not to be spontaneously in line with what would be desirable and that parenting education often does not have the place it should have in the 25 countries considered⁴.

³ In the XIXth century, for example, horses born at the bottom of a mine were found to be blind; this was not due to a lack of genetic potential, but rather to a lack of stimulation.

⁴ Thus, child nutrition issues can also often be found when families are not economically at risk, suggesting that deficiencies in child nutrition may not be due to poverty. Similarly, practices relating to children's language development can sometimes be found with comparable intensity in rather well-off or rather socially disadvantaged families.

1.2 The importance of the pre-school stage

The primary setting for child development in the first three to four years of life is therefore the family, but public interventions for children at these ages are also important. It would therefore be justified to strengthen them, in particular to ensure that parenting practices are oriented towards what is relevant for the child's development.

Around the age of 3 or 4, the need for activities to nurture the child's development changes and diversifies. One aspect of these changes concerns their socialisation in a wider context than the family and their emotional, behavioural and relational construction to ensure their gradual integration into a less protected universe. A second aspect of their evolution concerns the development of more complex cognitive abilities (spatial, temporal, comparative, interpretative, operative, argumentative, etc.) which will enable them to understand and act in a more structured way in a wider and more competitive environment. For this, the family will of course continue to have an important role, but grouping with other children, in structures organised to facilitate these developments, clearly seems to play a significant role.

These structures were initially called 'nursery schools' to reflect the situation of transition and gradual hybridisation between the family, which has the primary role in the very first years of the child's life, and the primary school to which the child will later have access (around the age of 6). The term 'pre-school' is now tending to replace *nursery school*, suggesting a stronger interest in the school-based side of these structures.

Given their *intermediary* position, it is not surprising that there are heterogeneous opinions on what should be aimed at as objectives and activities in these structures, on the one hand, and on the other, on the appropriate pedagogical approaches to implement them. For example, there may be differences in the relative weight given to the behavioural, social and emotional dimensions of the child on the one hand, and to learning in the narrower sense of the term on the other. No doubt very few people would argue that there should be an exclusive binary choice in this respect; but there are opinions and practices that favour one or the other.

Similarly, while there may be agreement that an objective of pre-school is to facilitate later formal learning in primary school, opinions may differ on what this means in practice. The contention is then between a formal perspective of the school type knowledge (at most, we see preschool as primary school on a *reduced scale*) and a perspective oriented towards the development of individual cognitive skills which, in turn, will equip the students to acquire the targeted knowledge. Both perspectives are always present, but it may be that in a particular country or type of structure, priority is given to one rather than the other⁵.

All in all, we can only support James Heckman (Nobel Prize in Economics in 2000) who points out that major public investments in youth often only start at the age of 6, whereas investments before this age have the specificity, unequalled among public investments, of presenting a very strong economic and social profitability, while contributing in an extraordinary way to equality between the members of a generation. But as mentioned, there can be significant variations under the generic name of 'early childhood services' and even more so for 'pre-schooling'. It is important to look beyond the labels and examine the actual characteristics of the *product* and the results associated with them.

Section 2 of this paper will look at the variability of pre-school characteristics in the 25 countries of West and Central Africa. Section 3 will examine what can be learned from the impact analyses on pre-school on primary education. Evidence on the situation in each country will be provided in a box at the end of Section 3. Section 4 will seek to identify the most effective and efficient organisational methods and practices. Finally, Section 5 will present the basis for a simplified simulation tool, which can be built for each country and would allow for different perspectives to be considered in order to maximise the progress that can be made in the provision of quality pre-schooling by 2030, with limited budgetary resources.

⁵ Thus, one might anticipate that some private schools, having to meet parents' expectations for *visible* preparation for primary school, will place more emphasis than public schools on the first of the two objectives (other private schools may make different choices). The same may be true where primary schools, employing primary teachers who operate with primary pedagogical practices, offer pre-school services within their schools.

BOX 1.

Available data, its limitations and use

The data needs and the information used vary according to the subject matter.

For the general and structural description of pre-school services provided in the 25 countries, the basic source is the UNESCO Institute for Statistics (UIS). It should be noted that the data available is limited and does not often extend beyond 2018, as for the 25 countries concerned the data available may be older (sometimes very old) and measurement and/or internal consistency errors are sometimes identified. Estimates, using a variety of procedures, were therefore necessary. For 23 of the 25 countries, analysis of household surveys was useful, with the information calibrated to fit with 2018.

For a more detailed description of the pre-school services offered (actual duration, organisation, content and practices), the skills assessments of students entering primary school conducted under the aegis of the United Nations Children's Fund (UNICEF) were mobilised. These surveys also identify the impact of these characteristics on children's readiness for primary school. However, this information is only available for 12 of the 25 countries covered.

To assess the impact of pre-school attendance on the quality of primary schooling (learning and flow), two data sources were used. The first is a fairly broad basis for international comparison for all countries in the world, made by the authors. The second is the basis for the 2019 CONFEMEN Programme for the Analysis of Education Systems (PASEC) surveys on primary education (14 countries) on individual data (learning in grades 2 and 6 and repetition indicators) which contains information on attendance and type of preschool. It required the use of specific evaluation procedures to check for population characteristics, selection bias in access to pre-school and the type (public/private) of primary school attended.

For the simulation tool, the uncertainties in the data are for the base year only; they can be modified if countries think it is necessary. But it should be remembered that some inaccuracy in the base year data does not affect the 2030 vision that is of primary interest.

02 Pre-school services in the 25 countries considered in 2018

There are significant differences in the pre-school services offered amongst the 25 countries considered, in all the dimensions that characterise them:

- the pre-school coverage they offer to their young population and the social differentiations associated with it;
- the institutional framework in which these services are organised;
- the organisational aspects of the operation of the institutions;
- the selected designs (content, pedagogical approaches);
- the resources mobilised, overall and per student;
- the degree of primary school readiness of pre-school students.

We shall take a look at these different points.

2.1 Pre-school coverage and social disparities

One convention for assessing school coverage is to use the gross enrolment ratio (GER). The limitations of this indicator are well known and it has now been largely replaced by an approach based on the evaluation of schooling profiles. Indeed, the problems associated with the use of the GER are compounded when it comes to pre-school (see Box 2).

BOX 2.

Limitations of the use of GER in pre-schooling

The issue here is not one of repetition and drop-out as in the school cycles. Indeed, the very notion of a cycle in pre-school is *unclear*. Not all countries officially have the same cycle length (which would be manageable), but more importantly a number of countries have, at any one time, several formats whose durations may differ. Furthermore, the notion of the beginning and end of a cycle, if formally identifiable, is, unlike school cycles, compatible with entries after the beginning of the cycle and/or exits before its end. In most countries, with an official three-year cycle, it is not uncommon for children to enter pre-school in grade 2, and for others to leave and enter primary school without having completed the final grade. Thus, the variable duration of the formats and *opportunistic* family behaviours in relation to pre-school make the GER lose both its conceptual integrity and its relevance for thinking about educational policy.

In these circumstances, what is important for characterising pre-school coverage is, on the one hand, to know what proportion of primary school entrants have been (or will be) able to benefit from some form of pre-schooling, and on the other hand, to know the distribution of the pre-schooling formats that they have followed (or will be able to follow).

Data published by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) on pre-school coverage is limited to GER. The use of secondary analyses of household surveys, however, has made it possible to document the proportion of primary school entrants who have received some form of pre-school⁶ in 21 of the 25 target countries⁷.

While there is a statistical relationship between the GER and the proportion of primary school entrants, it is not surprising that the proportion of primary school entrants with pre-schooling is always higher than the GER, and that the difference between the two statistics is very different from one country to another. On average for the 25 countries, the GER is 29%, while the proportion of primary school entrants who have received pre-schooling is 39%.

Table 1 shows the indicators obtained on this basis, supplemented by other information.

⁶ It should be noted that pre-schooling patterns are not well documented in the UNESCO DATABASE; nor are they (or their duration) in the main household surveys (Multiple Indicator Cluster Surveys, Demographic and Health Surveys).

⁷ Two types of work were required as a result of the secondary analyses carried out. For the 21 countries, adjustments (recalibration) had to be made to make the statistics valid for our reference year (2018); for the other countries, the adjustment of the statistic sought was based on an estimate of the GER and on the average relationship between the GER and the statistic sought in the 21 countries.

Table 1.

Pre-school GER, proportion of primary entrants with pre-school, primary access rate in the 25 countries

COUNTRY	PRE-SCHOOL GER	% OF PRIMARY SCHOOL ENTRANTS WHO HAVE ATTENDED PRE-SCHOOL	PRIMARY SCHOOL ACCESS RATE
BENIN	23.9%	29.7 %	92.2 %
BURKINA FASO	4.1 %	8.0 %	79.3 %
BURUNDI	6.6 %	10.5 %	92.1 %
CAPE VERDE	73.0 %	92.7 %	97.0 %
CAMEROON	34.2 %	49.0 %	84.5 %
CENTRAL AFRICAN REPUBLIC	8.0 %	18.4 %	83.6 %
CONGO	17.7 %	30.5 %	79.4 %
IVORY COAST	8.0 %	18.5 %	82.1 %
GABON	43.0 %	66.4 %	98.3 %
GAMBIA	49.0 %	60.0 %	80.8 %
GHANA	112.0 %	99.4 %	97.0 %
GUINEA	21.5 %	35.4 %	75.9 %
GUINEA-BISSAU	20.7 %	30.5 %	85.9 %
EQUATORIAL GUINEA	44.5 %	49.1 %	98.4 %
LIBERIA	55.7 %	90.0 %	90.0 %
MALI	6.6 %	18.4 %	58.1 %
MAURITANIA	10.0 %	17.5 %	82.2 %
NIGER	11.4 %	22.1 %	57.4 %
NIGERIA	43.0 %	62.2 %	69.1 %
DRC	5.3 %	10.3 %	91.4 %
SAO TOME AND PRINCIPE	54.3 %	73.2 %	86.7 %
SENEGAL	16.8 %	28.8 %	68.0 %
SIERRA LEONE	14.1 %	18.2 %	89.4 %
CHAD	1.3 %	2.7 %	61.0 %
TOGO	34.1 %	44.9 %	91.0 %
ENSEMBLE (MOYENNE)	28.8 %	39.5 %	82.8 %

Source : Household surveys, UIS, country statistical directories, authors' calculations and estimates.

The coverage of pre-schools in the 25 countries considered varies greatly. In Chad, 3% of primary school entrants were pre-schooling ; in Burkina Faso, the figure is only 8% and close to 10% ; in Burundi and the Democratic Republic of Congo (DRC), while the same statistic is 90% or more in Cape Verde or Ghana (over 70% in Sao Tome and Principe)

In view of this great variability in the coverage of the pre-school system, there are also strong differences between countries in the level of social disparities between population groups (see Table 2).

Table 2.
Personal, social and geographical disparities in access to pre-schooling

Country	Overall	Gender			Residential environment			Family living conditions					Child disability		
		Boys	Girls	B/G	Urban	Rural	U/R	Q1.	Q2	Q3	Q4	Q5.	Q4-5/Q1-2	No	Yes
Benin	24.2	22.4	26.3	0.85	33.9	16.3	2.08	10.6	11.5	19.7	26.7	24.2	1.63		
Burkina Faso	1.7	1.2	2.3	0.52	8.6	0.5	17.20	0.0	0.0	0.9	0.3	10.5	12.00		
Burundi	5.2	5.0	5.5	0.91	35.1	2.3	15.26	0.2	0.9	0.7	2.4	26.8	26.55		
Cape Verde*															
Cameroon	44.5	43.2	45.8	0.94	69.0	27.7	2.49	6.6	30.9	49.4	73.4	89.2	4.34		
Central Africa*	14.3	14.0	14.6	0.96	33.4	4.9	6.82	4.6	4.5	7.4	17.0	46.2	6.95	14.4	13.4
Congo	30.5	30.5	30.5	1.00	46.9	10.1	4.64	7.6	16.6	33.9	54.6	70.0	2.47		
DRC	10.3	9.1	11.6	0.78	22.1	1.5	14.73	0.7	1.5	2.4	6.0	47.0	24.09	9.9	16.7
Ivory coast	18.4	17.6	19.2	0.92	32.3	8.9	3.63	9.2	8.5	15.1	26.0	46.7	4.11		
Gabon	46.4	49.6	43.5	1.14	51.2	22.5	2.28	26.1	44.0	59.9	46.2	60.3	1.03		
Gambia	72.7	71.3	74.0	0.96	74.0	70.3	1.05	69.8	71.0	68.6	74.5	81.7	1.12	72.6	77.4
Ghana	96.4	97.0	95.7	1.01	97.9	95.3	1.03	91.4	97.1	98.6	99.5	97.1	1.00	96.5	95.6
Guinea	36.0	35.8	36.1	0.99	64.5	16.0	4.03	7.6	20.5	18.2	47.8	76.6	4.43		
Guinea-Bissau	49.4	48.4	50.5	0.96	71.8	38.2	1.88	33.5	33.4	45.7	61.8	78.0	2.09	48.8	58.7
Equ.* guinea															
Liberia	54.8	53.0	56.9	0.93	66.3	42.5	1.56	37.0	42.4	55.3	76.7	81.9	1.62		
Mali	18.4	18.6	18.0	1.03	32.8	12.7	2.58	9.1	7.6	7.8	12.1	41.6	3.22		
Mauritania	3.7	3.7	3.7	1.00	8.7	0.7	12.43	0.2	0.8	1.2	6.8	15.2	11.00		
Niger	6.1	6.4	5.9	1.08	23.0	3.7	6.22	1.6	2.0	4.4	6.2	19.3	3.98		
Nigeria	68.5	67.8	69.3	0.98	84.1	58.9	1.43	32.3	48.3	61.8	82.6	93.7	2.19		
Sao Tome and- Principe	88.7	88.3	89.0	0.99	91.2	82.4	1.11	80.7	85.9	85.0	93.4	98.7	1.15	89.3	80.7
Senegal	12.2	11.8	12.6	0.94	19.3	7.3	2.64	3.9	8.2	14.4	16.9	21.0	1.68	12.3	11.2
Sierra Leone	15.5	15.4	15.7	0.98	36.5	5.3	6.89	4.0	3.6	9.5	26.0	54.3	10.57	15.8	13.0
Chad	2.6	2.8	2.3	1.22	12.1	0.5	24.20	0.6	0.4	0.5	0.7	9.4	11.22	2.6	3.1
Togo	43.5	44.9	42.0	1.07	60.3	34.6	1.74	24.6	27.2	47.9	59.7	70.3	1.73	43.9	40.5
Average	33.2	32.9	33.5	0.98	46.7	24.5	1.91	20.1	24.6	30.8	39.9	54.8	2.12	40.6	41.0

Notes : Green : figures calculated from a household survey in which the proportion of primary school entrants with pre-schooling could be calculated (17 countries); Blue : for these five countries, the survey data did not allow for a calculation of the target statistic, so the figures were calculated with reference to the pre-school age population. Quintile 1 (Q1) contains the poorest 20% while quintile 5 (Q5) contains the richest 20%.

*There are no recent household surveys in these two countries.

Source: Household surveys, authors' calculations and estimates.

Gender differences are very small overall, with girls showing a small advantage over boys, 33.5% and 32.9% respectively.

This is not the case for place of residence, with rural children less likely to have access to pre-school than urban children. Thus, across all countries, the average value for access to pre-school is 47% for urban dwellers and only 24% for rural dwellers (i.e., almost twice as low). However, the situation varies greatly from one country to another, with disparities according to place of residence being particularly marked in Burkina Faso, Burundi, Mauritania, the DRC and Chad, and much more moderate in Gambia, Ghana, Guinea-Bissau, Liberia, Nigeria, Sao Tome and Principe and Togo.

Disparities by living condition quintile are also very intense, more so than by place of residence. Between the two wealthiest quintiles (quintiles 4 and 5) and the most disadvantaged (quintiles 1 and 2), the figures are 47% and 22% respectively, showing a ratio of 2.12 (compared to 1.91 for urban-rural disparities⁸). There is a correlation ($R^2 = 0.61$) between being rural and having worse living conditions. However, the analyses carried out on individual data show that beyond the joint effect of the two variables, the specific impact of the standard of living prevails over that of the place of residence.

Finally, children identified as having personal difficulties with sight, hearing or mobility (variables available only in some of the surveys analysed) do not differ from their counterparts with none of these difficulties in terms of their chances of accessing pre-school.

To conclude this section on disparities in access to pre-school, it is interesting to look again at the two variables that show the greatest differences (place of residence and family living conditions). Countries differ greatly in terms of the intensity of social disparities; it would obviously be desirable for countries with high social disparities to reduce them.

Without denying that countries have cultural and social traditions that could be used to explain why social disparities are high here and low there, it is first interesting to refer to an important law of sociology, which states that when a good (something desirable) is scarce, it is the most privileged populations that appropriate it. A transposition of this *universal* law suggests that in countries with low coverage, social disparities are likely to be high and that these would gradually reduce with the expansion of coverage.

The comparison of the two indicators of disparities in the countries in our sample with the coverage of the system in Figure 1 lends considerable credence to this conjecture. While not all countries are aligned with the red curve (for the same level of coverage, disparities may vary a little from one country to another), this line does show the very significant tendency for the intensity of disparities not to resist the overall quantitative expansion of the system.



⁸ The gaps would have been even wider if, instead of opposing the two poorest quintiles to the two richest quintiles, the opposition had been between the two extreme quintiles (a gap of 2.72, instead of 2.12).

Table 3.
An attempt to describe pre-school structures/formats in the 25 countries

Country	Format 1 year (% primary education entrants with pre-schooling)	Official duration	Formats > 1 year		
			Public	Private	Community
Benin	-	2	69.1 %	30.9 %	-
Burkina Faso	-	3	7.7 %	67.8 %	24.5 %
Burundi	-	2	53.6 %	31.3 %	15.1 %
Cape Verde	-	3	41.3 %	20.7 %	38.0 %
Cameroon	-	2	33.1 %	64.0 %	2.9 %
Central African	-	3	33.8 %	66.2 %	-
Congo	-	3	16.4 %	83.6 %	-
DRC	9.0 %	3	46.0 %	50.8 %	3.2 %
Ivory Coast	-	3	72.5 %	27.2 %	0.3 %
Gabon	-	3	15.0 %	85.0 %	-
Gambia	-	3	1.4 %	73.0 %	25.6 %
Ghana	-	2	70.3 %	29.7 %	-
Guinea	-	3	10.2 %	79.9 %	9.9 %
Guinea-Bissau	-	3	55.0 %	45.0 %	-
Equatorial Guinea	-	3	36.2 %	63.8 %	-
Liberia	-	3	32.9 %	53.2 %	13.9 %
Mali	-	3	53.5 %	12.1 %	34.4 %
Mauritania	-	3	4.9 %	65.5 %	29.6 %
Niger	-	3	83.8 %	10.2 %	6.0 %
Nigeria	62.7 %	3	60.6 %	36.3 %	3.1 %
Sao Tome-and-Principe	0.9 %	3	86.8 %	13.2 %	-
Senegal	10.0 %	3	49.5 %	24.3 %	26.2 %
Sierra Leone	-	3	65.2 %	12.9 %	21.9 %
Chad	-	3	18.0 %	54.0 %	28.0 %
Togo	-	3	68.1 %	23.1 %	8.8 %
Average	3.3 %	-	42.6 %	43.1 %	14.3 %

Source : Household surveys, UIS, country statistical yearbooks, specific questionnaire sent to relevant ministries, authors' calculations and estimates.

Despite the approximations, this table probably gives a good overall picture of the variety of structural situations in terms of pre-school in the 25 countries. Overall, the proportion of private and public schools is fairly similar (with 43% for each of them), with community schools accounting for about 14% of pre-school enrolment. On the other hand, with only 3% of primary school entrants attending pre-school, the one-year format is of limited proportion.

But these figures are very unevenly distributed across countries. Thus, the proportion of public education in pre-school enrolment (with an average of 42%) varies from just over 1% in Gambia (5% in Mauritania, 8% in Burkina Faso) to 87% in Sao Tome (around 84% in Niger, close to 70% in Benin, Ivory Coast, Ghana or Togo). Similarly, with regard to the community format (in its diversity), which represents an average of 14% of the 25 countries, it can be observed that it is more or less absent in half of the countries, whereas it represents significant figures in others, notably in Cape Verde (38%), Mali (34%), Mauritania (30%), Chad (28%), Senegal and the Gambia (26%) or Sierra Leone (22%).

The information available to us regarding the one-year pre-school format is not very good in terms of quality; however, it seems that this format is not very common in 2018, although it is known that this idea was often discussed at the time. Only two countries have been identified as having implemented this approach (DRC and Senegal). In these countries, this format enrolls about 4% of students, which is quite low, but about 10% of primary school entrants have received preparation, which is more significant. Nigeria is a special case in the region: almost two-thirds (63%) of primary school entrants were enrolled in a one-year system, which is in fact the official duration of the cycle.

Finally, with regard to the official length of pre-school cycles in the various countries, three years is by far the most common figure. Only Benin, Burundi, Cameroon and Ghana operate on a two-year cycle. The situation was less clear in Niger, where the decision seems to have been made to take two years, but with implementation still ongoing⁹.

While the official length of cycles should of course be considered, it is useful, as a counterpoint, to consider *the actual time that children have been in pre-school* when they enter primary school. Several parameters come into play. The official length of cycles is obviously one, but the number of hours in the school year (which may vary according to the type of pre-school format and the country) as well as parents' practices regarding pre-school services (late access/early exit) have potentially very strong implications.

This type of varied information is not collected in school statistics. However, an illustration of the phenomenon under consideration can be obtained from the sample of countries in which a skills assessment of primary school entrants has recently been carried out, under the auspices of UNICEF (see Table 4).

⁹ When a country decides to change the format, implementation seems to take some time, as at some point you may find public schools operating under the new format and others under the old. Finally, it seems that when a country makes a change from three to two years, it is more likely (at least initially) for public schools, with private schools tending to continue with the three-year format; Cameroon in particular is partly in this case.

Table 4.
Evidence on effective pre-schooling time in a sample of 11 countries

Country	Average number of hours of pre-school services over the year			Actual number of years of pre-schooling for primary school entrants								Overall number of effective hours of pre-schooling		
	Public	Private	Community	Public				Private				Public	Private	Comm-unity
				1 year	2 years	3 years	Average	1 year	2 years	3 years	Average			
Cameroon	676	699	654	14 %	78 %	9 %	1.95	7 %	66 %	27 %	2.19	1 338	1 547	1 227
Congo	788	766	-	10 %	31 %	60 %	2.51	6 %	29 %	65 %	2.59	1 906	1 989	-
DRC	534	607	442	47 %	18 %	35 %	1.89	28 %	22 %	50 %	2.23	1 010	1 341	933
Ivory Coast	640	698	691	47 %	39 %	14 %	1.66	39 %	41 %	20 %	1.81	1 090	1 250	1 006
Gambia	625	706	716	8 %	43 %	49 %	2.41	5 %	17 %	78 %	2.73	1 628	1 975	1 838
Guinea	600	501	412	0 %	6 %	94 %	2.94	13 %	36 %	51 %	2.39	1 802	1 189	838
Mali	567	583	633	15 %	24 %	61 %	2.46	9 %	15 %	76 %	2.67	1 421	1 542	1 249
Niger	560	510	459	25 %	63 %	13 %	1.88	21 %	61 %	17 %	1.96	1 051	1 010	780
Sao Tome-and-Principe	-	-	-	24 %	19 %	57 %	2.32	37 %	19 %	44 %	2.08	-	-	-
Senegal	531	530	485	11 %	22 %	67 %	2.56	11 %	14 %	75 %	2.64	1 350	1 462	1 373
Togo	-	-	-	28 %	63 %	9 %	1.81	31 %	68 %	1 %	1.69	-	-	-
Country average	613	622	562	21 %	37 %	43 %	2.15	19 %	35 %	46 %	2.26	1 400	1 478	1 156

Source : Primary School Entry Skills Survey databases (UNICEF), authors' calculations and estimates.

Table 4 firstly identifies the impact of parents' behaviour on the use of pre-school services. Thus, on average, 21% of children who attended pre-school before entering primary school did so for only one year, some presumably because they attended a one-year format, but the majority because they entered pre-school late and/or left early. Almost 40% of children had two years of pre-schooling and 43% had three years. In total, the vast majority of children surveyed had been offered pre-schooling over three years, but had in fact attended just over two¹⁰.

The average duration of pre-school activities over the year, for all documented countries and pre-school options, is close to 600 hours. This figure varies little overall according to the format (562 hours in community education, 613 hours in public education and 622 hours in private education); it does, however, vary significantly from country to country, with 775 hours per year in Congo, around 680 hours in Cameroon, the Ivory Coast and Gambia, but only between 500 and 525 hours in Guinea, Niger, the DRC and Senegal.

¹⁰ This phenomenon of disjunction between the supply of services and their use is particularly pronounced in the Ivory Coast, Niger and Togo (average duration of 1.8 years); it is much less pronounced in Gambia, Mali and Senegal, with 2.6 years of effective pre-schooling.

The variability of the time spent on pre-school activities over the year and of the number of effective years of pre-schooling for students may, *a priori*, be the result of either compensatory situations or the accumulation and deepening of differences between countries. For the Republic of Congo, Niger and Gambia, the latter configuration is observed; with, on the one hand, an accumulation of short duration and a reduced number of years for the DRC and Niger, resulting in an overall pre-schooling time of 950 hours in Niger and 1,100 hours in the DRC, and, on the other hand, an accumulation of a high figure for both the duration over the year and the number of years in the Republic of Congo and Gambia, resulting in the highest overall pre-schooling times, respectively 1,950 and 1,850 hours.

For Senegal (around 1,400 hours, a figure close to that of Mali and Cameroon), the two parameters operate according to a compensation mechanism, insofar as more pre-school years mitigate the fact that the number of hours over the year is low. Guinea is in a more or less comparable situation.

This information on time therefore shows very different situations.

2.3 Differences in the way pre-school facilities are organised

The types of structures and pre-school time characterise different *choices* made by different countries, but the way in which pre-school services are concretely implemented further differentiates the countries. Structural parameters such as the type of teachers, the ratio of students to teachers or the number of consumables and small equipment used per student can be examined. In these respects, not all countries make homogeneous choices; there is great variability in these parameters between countries in general, and between the 25 countries considered here (see Table 5).



Table 5.
Some parameters of the organisation of pre-school services in the 25 countries ¹¹

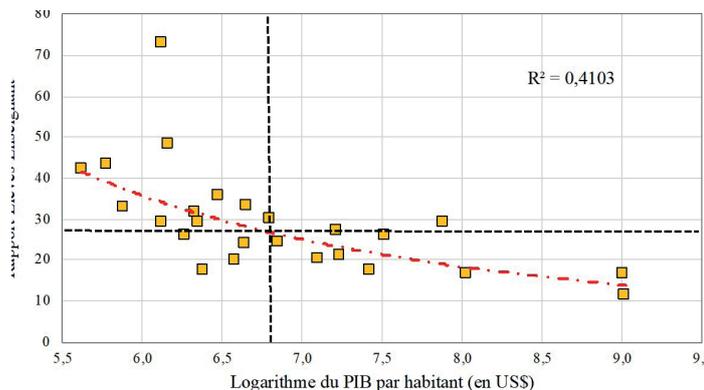
Country	Pupil-teacher ratio (public)	Public teacher salaries (GDP/per capita)		Consumables and small equipment/student in public education (% GDP/per capita)
		Pre-school	Primary	
Benin	24	2.19	3.69	
Burkina Faso	17	4.85	5.86	
Burundi	42	5.61	4.90	
Cape Verde	16	1.83	3.06	2.8 %
Cameroon	20	2.38	2.26	0.3 %
Central African Republic	43	2.88	2.95	
Congo	26	2.32	2.50	0.9 %
DRC	29	2.12	2.41	0.8 %
Ivory Coast	21	3.85	4.65	0.8 %
Gabon	11	1.13	1.40	
Gambia	48	3.53	3.07	0.3 %
Ghana	27	1.80	1.80	
Guinea	26	2.30	2.45	
Guinea-Bissau	29	2.16	2.60	
Equatorial Guinea	17	1.30	1.46	
Liberia	73	3.90	3.90	
Mali	20	4.40	4.80	0.9 %
Mauritania	24	2.20	2.20	
Niger	33	6.99	6.70	0.5 %
Nigeria	29	2.84	2.92	0.3 %
Sao Tome-and-Principe	17	1.40	3.27	0.2 %
Senegal	30	3.60	4.65	0.1 %
Sierra Leone	36	2.14	2.00	
Chad	33	2.93	4.00	
Togo	31	3.78	5.15	0.6 %
Country average	29	2.98	3.39	0.7 %

Source: UIS, Mingat (in progress), Primary School Entry Skills Survey databases (UNICEF), authors' calculations and estimates.

The average values of the pre-school pupil-teacher ratio by country range from 11 in Gabon to over 70 in Liberia, with an average of 29 out of the 25 countries. These variations, from 1 to over 7, are quite significant.

The pupil-teacher ratio does have a notable tendency to be lower in countries that are more advanced in their economic development, as can be seen in Figure 2 (red trend line). But there are wide variations on both sides of the overall trend line. This suggests that there is a strong national dimension to the definition of pupil-teacher ratios in pre-school, and that there are significant areas of freedom in this respect in the pre-school policy of each country.

¹¹ Some parameters could be documented or evaluated for all countries, while for others this is only the case for some of them (notably those for which specific work on pre-school has been carried out, in particular a skills assessment of primary school entrants).

Figure 2.**Pre-school pupil-teacher ratio by country GDP per capita**

Source: UIS, authors' calculations and estimates, World Bank.

Figure 3 also shows that there are wide variations between countries in teacher pay in public pre-schools. Its average value is 3 times the gross domestic product (GDP) per capita, but with variability within the group of 25 countries, ranging from less than 1.5 times GDP per capita in Gabon (1.1 GDP per capita) or Equatorial Guinea (1.3 GDP per capita), to more than 5 times GDP per capita in Burundi (5.6 GDP per capita) or Niger (6.99 GDP per capita).

The salary level of public primary school teachers is also calculated in Figure 3. The comparison with the level of pay in pre-school is interesting in two complementary ways:

- First, there is a fairly strong overall relationship ($R^2 = 0.80$) between the estimated pay levels of pre-school and primary school teachers. It is not surprising that, although the salary scales for public sector staff differ from one country to another, there is a fairly good degree of homogeneity within them, and above all, pre-school teachers are recruited in the same framework as primary school teachers.
- Secondly, this last point, while valid globally, does not necessarily apply to all countries. This is particularly the case in Benin, Cape Verde, Sao Tome and Principe and Togo, where the salaries of pre-school teachers are quite significantly lower than those of primary school teachers; it is also the case, albeit to a lesser extent, in Burkina Faso, the Ivory Coast, Chad and Senegal. This suggests that in these countries the practice of paying pre-school teachers at the same level as primary school teachers does not apply (or not completely); the general framework may be the same, but pre-school and primary school teachers do not necessarily have the same academic level in the public sector.

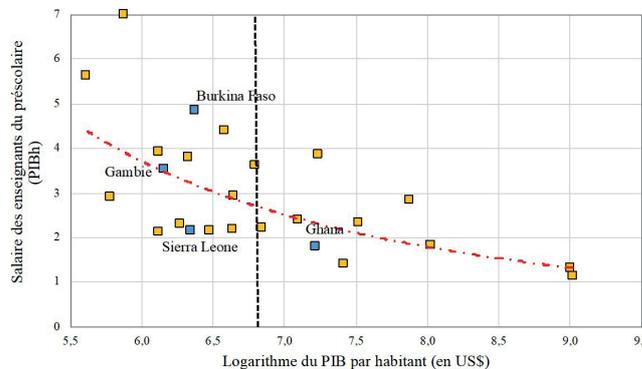
Finally, whether it is fully or partially linked to the remuneration of primary school teachers, the fact remains that the remuneration (expressed in units of GDP per capita) of pre-school teachers varies greatly within the 25 countries considered. This is necessarily a matter of interest for education policy, not least because high salaries are necessarily a constraint on recruiting the number of teachers needed to ensure good coverage and appropriate quality of pre-school services; this constraint is *a priori* more intense the greater the budgetary pressures and the poorer the countries.

In order to take forward the crucial issue of the level of teacher remuneration, it is interesting to compare the level of remuneration of pre-school teachers in different countries with their level of development (GDP per capita). This is shown in Figure 3.

The first observation is the wide dispersal of countries along the two lines. The existence of an average relationship (red line) between the two dimensions is also identified; this shows a downward trend in teacher salaries (expressed as a unit of GDP per capita) in countries more advanced in their economic development. This is because countries are developing their education systems faster than their production systems, so that as human capital becomes less scarce, its price tends to fall in relative terms.

Figure 3.

Average earnings of pre-school teachers in 25 countries by level of economic development



Source: Mingat (in progress).

This of course affects teachers, and the impact on their salaries is not insignificant. Thus, moving along the red curve in Figure 3, it is estimated that the salary of pre-school teachers in a country with a GDP per capita of \$500 (roughly Gambia or Guinea) would be 3.4 times the country's GDP per capita, whereas the salary of pre-school teachers in a country with a GDP per capita of \$1,400 (roughly Ivory Coast or Ghana) would be only 2.6 times the country's GDP per capita. *The cost of pre-school would therefore be structurally, all other things being equal and in relative terms, 31% higher in a country with a GDP per capita of \$500 than in one with a GDP per capita of \$1400.*

That said, however structurally valid this argument may be, the graph shows that actual country situations can sometimes be far from the global average relationship. This means that beyond the level of development, other factors (general and/or specific) are at work. These differences are not explained here, but their extent can be noted, and it can be anticipated that if developments are possible, the economic and social forces involved will tend to result in *a certain stratification of the existing situations.*

For example, the remuneration of pre-school teachers is estimated at 4.8 times GDP per capita in Burkina Faso (well above the benchmark in the group of 25 countries of 3 times GDP per capita), while the figure for Sierra Leone is only 2.1 times its GDP per capita. Although both countries are at more or less the same level of development, it is *a priori* easier to finance a quantitative expansion of pre-school for Sierra Leone than for Burkina Faso. For the same reasons, the prospects are better for Ghana than for the Ivory Coast, for Benin than for Mali.

In addition to the student teacher ratio and teacher remuneration, which are strong features of the pre-school services in the different countries (they also account for a substantial part of the expenditure per student), it is interesting to examine the expenditure on consumables and small equipment for students. This is not because this item represents a high proportion of public expenditure on pre-school; it is because the availability of these items plays a crucial role in pre-school, in relation to its specific pedagogical approach which involves handling by students for learning.

Information on per student expenditure on consumables and small teaching equipment is scarce. Calculations have been made for the 12 countries covered by the UNICEF-sponsored skills assessments conducted in recent years (see Table 5). For these countries, the average value of this indicator is 0.71% of GDP per capita in public pre-schools, with only in Cape Verde does this value (2.68%) exceed 1% of GDP per capita; and it is less than or equal to 0.5% of GDP per capita in half of the countries documented.

This expenditure is therefore generally low in public pre-schools, suggesting that the proportion of schools likely to implement a pedagogy in which students handle to develop their learning is low. This expenditure is higher overall in private institutions, with the same statistic standing at 1.16% of GDP per capita, whereas it is only 0.41% of GDP per capita in community-type institutions, again on average across the 12 countries.

2.4 Variations in organisational patterns and consequences for the cost of services and public expenditure on pre-school

Table 6 provides some relevant statistics that calculate the unit cost in public pre-schools and public expenditure on pre-schools in the 25 countries in our sample.

In total, current expenditure per student in public pre-school is estimated at 14% of GDP per capita (on average for the 25 countries). In addition to pre-school, Table 6 includes the unit cost in public primary education, which is not the focus here. However, a comparison of unit costs in these two cycles is illuminating. Indeed, it is important to be aware that the cost of a primary school student represents on average 10% of GDP per capita, which means that *the cost per student in pre-school is on average 42% higher than in primary school*. It is not much different from that of a secondary school student, as that is estimated on average (for the same countries) at 17% of GDP per capita.

Table 6.

Expenditure per student in public pre-school and public expenditure on pre-school in the 25 countries

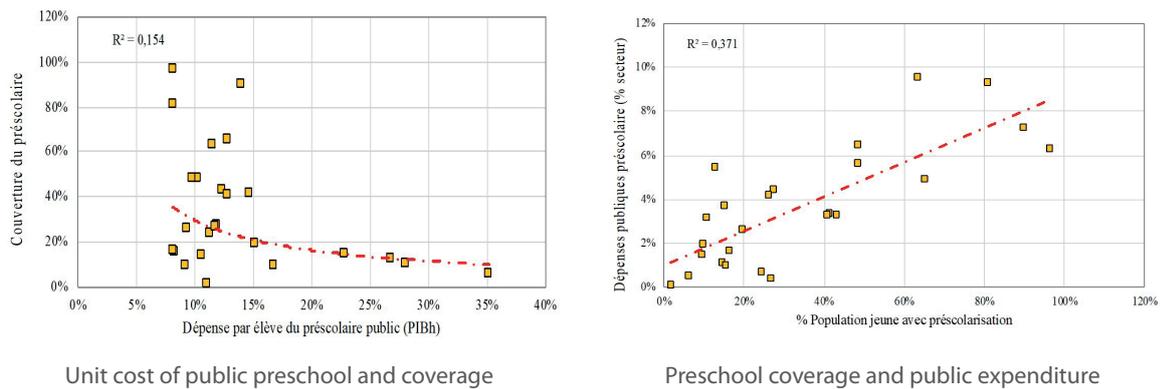
Country	Expenditure per student in the public sector (GDP/per capita)		Overall public expenditure on pre-school	
	Primary	Pre-school	% of GDP	% education expenditure
Benin	9.2 %	11.9 %	0.129 %	4.40 %
Burkina Faso	16.0 %	35.2 %	0.027 %	0.51 %
Burundi	12.8 %	16.7 %	0.097 %	1.91 %
Cape Verde	16.6 %	14.0 %	0.375 %	7.24 %
Cameroon	6.4 %	14.7 %	0.104 %	3.33 %
Central African Republic	4.8 %	8.3 %	0.020 %	0.99 %
Congo	6.8 %	11.3 %	0.024 %	0.67 %
DRC	7.2 %	9.2 %	0.027 %	1.46 %
Ivory Coast	13.5 %	22.8 %	0.119 %	3.65 %
Gabon	5.9 %	12.8 %	0.150 %	4.87 %
Gambia	9.5 %	10.2 %	0.140 %	5.64 %
Ghana	6.9 %	8.2 %	0.340 %	6.26 %
Guinea	6.8 %	11.8 %	0.010 %	0.36 %
Guinea-Bissau	5.8 %	9.3 %	0.097 %	4.19 %
Equatorial Guinea	7.8 %	9.8 %	0.129 %	6.47 %
Liberia	15.1 %	8.1 %	0.440 %	9.28 %
Mali	13.3 %	28.0 %	0.120 %	3.11 %
Mauritania	7.4 %	10.6 %	0.015 %	1.08 %
Niger	22.3 %	26.8 %	0.193 %	5.44 %
Nigeria	8.9 %	12.3 %	0.100 %	3.28 %
Sao Tome-and-Principe	10.9 %	11.5 %	0.490 %	9.56 %
Senegal	13.7 %	15.1 %	0.124 %	2.57 %
Sierra Leone	6.1 %	8.1 %	0.050 %	1.63 %
Chad	6.3 %	11.1 %	0.002 %	0.09 %
Togo	15.7 %	12.8 %	0.170 %	3.24 %
Country average	10.2 %	14.0 %	0.141 %	3.65 %

Source: Mingat (ongoing).

Table 6 shows that while the unit cost of pre-school represents on average 14% of GDP per capita, this value varies significantly from country to country: from 8 to 35% of GDP per capita. Given the general financial constraints of countries, it is clear that high unit costs of pre-school services do not facilitate workforce expansion. This point is, to some extent, *validated* by the overall pattern that emerges from the figure on the left in Figure 4. Country points are certainly widely dispersed, but this is because other variables explain coverage, such as the proportion of private pre-school enrolment, the organisation of the services offered and the overall budgetary effort made for public pre-school in the different countries.

Figure 4.

Unit costs, public expenditure and coverage of pre-school in the 25 countries



Source: Mingat (in progress).

The figure on the right, in Figure 4, illustrates the extent of the budgetary effort to account for pre-school coverage in a country. But the dispersed country points show that other aspects can explain the level of coverage achieved, the proportion of private education personnel in the workforce, but above all, as we shall return to, the fact that there are many ways, whether efficient or not, of organising pre-school services.

According to the information in the right-hand figure of Figure 4, countries would *need* to allocate, on average, 4.3% of public resources dedicated to the education sector to provide pre-school coverage to 40% of their population (7.8% for 80% coverage). But these figures apply to very different country situations with regard to the conditions and efficiency of the provision of pre-school services. It can be anticipated *a priori* that the *actual* public funding needed to ensure high coverage of efficiently organised pre-schools will be lower than what is shown in this figure.

2.5 Variations in provided content and teaching approaches

All the aspects previously mentioned in this section are obviously important. They characterise the structural, institutional, organisational and financial aspects of pre-school services offered in a country. But these, despite their importance, are only the framework of the reality of the services actually received by the students benefiting from them. The framework is especially important because it facilitates the activities carried out within it. Aspects such as the organisation of time and space, the content implemented, relational behaviour, pedagogical practices and approaches to which the students are exposed are *a priori* likely to play a very significant role in the development of what makes the effective value of the pre-school service they receive.

These *qualitative* aspects of the day-to-day and local dimension of the operation of pre-school services, which are absent from all regular information-gathering schemes, are very little documented in the countries covered by this report. The information collected in the context of the skills assessments of new entrants to primary education carried out in 12 of these countries makes it possible to understand these aspects to some extent, but it has two limitations: on the one hand, it considers only a few dimensions, and on the other hand, it is based on the declarations of the stakeholders, and not on actual classroom practices.

However, some interesting insights can be drawn from this.

A first overall result is that there is a very high degree of diversity in these areas, partly between countries, partly between the different formats within each country, and also between schools of the same format in the same country. Among the countries studied, it is difficult to identify the structuring and applied principles. While primary school is often considered to have low standardization, pre-school seems to have even lower levels of standardization.

The first aspect on which variability exists concerns the language used in pre-school. In most countries, the language to be used (albeit progressively) in primary school is a language - English, French or Portuguese - which is not the mother tongue of the vast majority of children (bearing in mind, moreover, that a number of countries are characterised by plurality in the latter respect). There is certainly a consensus that the mother tongue should be used in part in pre-school and that the primary language should also be introduced. But on this common basis, the emphasis given to these two perspectives can vary considerably. In some cases, primary language is only introduced in a *piecemeal* fashion, while in others, the primary language is used as the main focus. Different countries make different choices in this respect, with private structures within countries often choosing to focus strongly on the language used in primary education.

In addition to language, another area of variability concerns the content taught. Thus, while all the stakeholders stated that games, socialisation and the development of cognitive skills are part of the activities carried out in the school, about a quarter stated that, in terms of use of time, games and socialisation are predominant, while for another quarter, it is the orientation towards more formal learning that is predominant. About half claim a *balance* between the two extremes.

With regard to the more formal content, some emphasise that the focus should be on what will directly facilitate access to school, by introducing (on a *reduced scale*) learning provided at the start of the primary cycle, while others, from a more fundamental and longer-term perspective, place emphasis on cognitive learning. Generally speaking, all the stakeholders agree that both aims are good, but some stakeholders (some schools¹²) are pushing the cursor towards early primary learning, while others are targeting more fundamental cognitive learning.

At the level of practices and behaviours, there is also agreement that it is relevant both to give children autonomy and to teach them rules. Rules and control are often given more prominence, whereas for other stakeholders and schools this is an objective that should not be neglected but should be introduced in a flexible way, by explaining the rules before they are applied.

Practices and behaviours do not only concern the relational and social sphere, they also concern the pedagogical sphere; and this is obviously a crucial point to consider. In fact, perhaps the biggest difference between pre-school and school (especially primary) pedagogical approaches is the role of the teacher. In primary education, the acquisition of knowledge by the student is based on the teacher's words and his or her ability to find the didactic formulations and approaches that will enable the student to appropriate (and then apply) the targeted knowledge and skills. At the pre-school level, and without being fully aware of it, the pupil has a more central role in constructing by oneself and for oneself the learning to be achieved. The teacher's role is more to guide the progress of the students (in all their diversity) towards the targeted objectives by exposing them to situations (often games) in which the student is going to be the active participant in his or her learning. The teacher's role is then more one of mediation and accompaniment for the success of this ongoing alchemy. Here too, there is a lack of homogeneity in pedagogical practices and approaches among teachers and schools.

Beyond the structural, institutional and financial aspects, the articulation of these four areas of variability can result in pre-school structures that are quite different in tone, between countries, types of structures and schools at local level.

¹² Some private schools do this so that parents can see the 'good' preparation offered to their children who already know some reading, writing and counting. This trend is also naturally promoted in pre-school classes located within a primary school and led by primary school teachers.

2.6 Differences between countries and between population groups in the degree of primary school readiness of students

The idea is to bring together, in a single corpus, data on students' skills at the start of primary school in the 12 countries where such work has been carried out.

So far, these different knowledge assessments have been treated independently, calculating standardised scores with a mean of 100 and a standard deviation of 15 in all countries, without taking into account the fact that these averages could differ from one country to another. The aim was then to examine whether particular variables could have an impact on the overall score in the country, rather than to assess the extent to which the primary school readiness score might differ across countries, in general or on particular dimensions.

Table 7 offers this new perspective for the 12 countries where homogeneous information exists to assess the readiness of the 13,000 new primary school entrants as a single sample. The value of each score (overall and by subject) is also standardised with a mean of 100 and a standard deviation of 15, but these figures now apply globally to all pupils in the 12 countries, with those in each country deviating to a greater or lesser extent and being comparable between them.

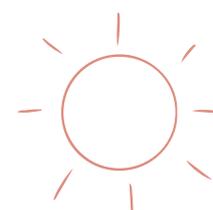
Table 7.
Primary school entrants' readiness score, overall and by domain, in the 12 countries

Country	Global factor score	Space time	Association	Graphics	Quantity Number	Rhythm	Memorization	Language Comprehension	Language-Expression	Behaviour
Cape Verde	115.1	99.4	120.6	91.9	96.2	119.1	118.1	117.4	105.8	103.6
Cameroon	96.2	96.5	93.5	102.9	102.8	93.8	97.9	96.4	100.5	97.1
Congo	108.0	99.5	97.8	109.6	104.6	105.1	100.3	110.1	109.4	105.1
DRC	96.9	96.4	95.8	98.8	104.5	99.3	97.7	97.1	97.5	98.5
Ivory Coast	94.2	95.9	93.1	94.8	92.3	92.3	96.4	100.5	103.5	97.0
Gambia	100.8	102.4	97.9	101.7	106.3	94.5	102.6	98.3	98.3	104.4
Guinea	97.6	104.3	101.0	96.2	101.5	97.6	97.9	95.8	99.6	95.2
Mali	93.2	100.8	97.7	92.6	100.7	95.7	98.5	91.0	90.6	99.0
Niger	101.2	104.1	102.9	105.7	102.1	99.2	102.3	94.6	95.5	102.8
Sao Tome	95.6	96.3	95.6	102.7	80.4	111.8	94.6	98.2	96.0	96.2
Senegal	104.8	105.6	103.9	108.5	105.2	102.5	97.5	99.4	102.5	103.5
Togo	94.7	98.5	99.6	97.3	97.1	95.5	94.4	97.9	95.6	96.8
Overall	100 (15)	100	100	100	100	100	100	100	100	100

Notes :

The highest scores are highlighted in red, while the lowest scores are highlighted in blue.

Source: Primary School Entry Skills Survey databases (UNICEF), authors' calculations and estimates.



The idea is not to make a ranking, especially because the number of countries is small. But it is interesting to note that the differences between countries can be substantial (in the sample studied but probably in general in the 25 countries). Thus, Mali (93), Ivory Coast (94) and Togo (95) have the lowest overall primary school readiness scores among the 12 countries, while Cape Verde (115) has the highest.

It can also be seen that in almost all countries there are strengths and weaknesses. Thus, for Cape Verde, graphics and number are at a rather low level, while its overall score is good compared to the other countries. Mali, whose overall score is low (and which is also characterised by very low language scores), nevertheless has good scores on the spatio-temporal dimension and the notion of number.

But these differences between countries may be due, on the one hand, to the variety of children's ordinary experiences in their national contexts and, on the other hand, to the variety in the overall and subject-specific performance of pre-schooling that some children have received in each of these countries. Table 8 provides an assessment of these two components in countries where the information is available.

It is particularly interesting (though not surprising) that in the various countries, children who have not attended pre-school have very different levels of overall skills for entering primary school. Thus, children in this category are identified as having an overall deficit in this area in Togo, Cameroon, Ivory Coast, Mali, and to a lesser extent, Sao Tome and Principe. In contrast, their counterparts in Cape Verde, the Republic of Congo and, to a lesser extent, Gambia and Senegal, show more favourable figures.

Table 8.

Disparities in national contexts and the impact of pre-school in the 12 countries

Subject areas	Overall		Space-time		Graphics		Quantity-numbers		Language comprehension		Language expression	
	Non-pre-school score	Impact of pre-school	Non-pre-school score	Impact of pre-school	Non-pre-school score	Impact of pre-school						
Cape Verde	110.5	9.4 %	99.1	5.1 %	83.7	11.4 %	92.1	5.2 %	115.2	5.0 %	97.8	9.5 %
Cameroon	88.2	10.4 %	91.8	5.8 %	94.9	10.6 %	98.1	6.0 %	92.9	3.3 %	97.8	3.4 %
Congo	100.8	5.3 %	95.9	4.3 %	104.3	6.5 %	102.6	2.5 %	106.6	1.8 %	106.0	4.1 %
DRC	97.2	-1.1 %	96.6	-0.7 %	98.6	0.2 %	106.0	-1.7 %	95.5	0.6 %	97.4	0.1 %
Ivory Coast	89.3	6.2 %	94.1	1.9 %	90.4	6.2 %	91.6	1.0 %	95.9	4.3 %	100.6	3.6 %
Gambia	98.8	1.5 %	101.5	0.5 %	101.6	0.1 %	105.7	0.6 %	95.7	1.7 %	94.9	4.1 %
Guinea	95.3	2.3 %	105.4	-1.7 %	94.8	1.8 %	101.9	-0.4 %	92.5	3.1 %	97.4	2.8 %
Mali	89.9	4.2 %	98.4	2.5 %	91.7	1.3 %	98.7	2.5 %	87.8	3.7 %	87.4	4.6 %
Niger	96.3	5.4 %	102.3	1.6 %	103.3	2.9 %	100.8	1.6 %	90.3	4.4 %	89.1	8.6 %
Sao Tome	92.1	10.3 %	92.6	4.7 %	95.7	9.4 %	73.1	12.8 %	115.7	0.4 %	91.9	5.8 %
Senegal	98.7	6.6 %	102.6	3.1 %	105.0	4.1 %	103.2	2.5 %	94.2	5.1 %	97.7	6.0 %
Togo	87.4	9.7 %	95.1	3.9 %	91.3	8.1 %	95.1	2.5 %	91.9	6.5 %	89.6	8.2 %
12 countries	94.9	6.7 %	97.7	2.9 %	96.3	4.8 %	98.0	2.6 %	97.1	3.7 %	96.3	4.7 %

Note:

The highest scores are highlighted in red, while the lowest scores are highlighted in blue.

Source: Primary School Entry Skills Survey databases (UNICEF), authors' calculations and estimates.

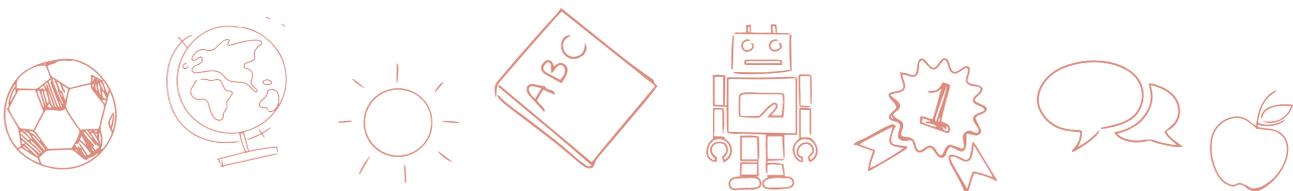
This overall *hierarchy* is only imperfectly reflected when targeting the various subject-based skills. In Cape Verde, for example, children who have not attended pre-school, who have an advantage in global terms, are left with a deficit in the area of graphics or the concept of number and quantity. In contrast, the situation is balanced for Cameroonian children who have not attended pre-school, who have an overall deficit in preparation for primary school but more favourable scores for graphics and the notion of number and quantity. The situation in Mali or Togo is more difficult, since they are characterised by an overall unfavourable figure, with no real strengths or relative deficits in graphics and language.

What is most interesting to note is that the degree of primary school readiness of children who have not received pre-schooling varies quite a lot from country to country. On this basis, investments in pre-schools of course have a potential impact. But it is also clear that, in this respect, variability predominates within the countries considered in Table 8. In fact, the gross impact of pre-schooling (without checking for the social or geographical characteristics of the populations that have or have not benefited from pre-schooling, which we have already seen to be highly significant) varies greatly from one country to another. Thus, this gross impact is identified as low in DRC or Gambia, while much more favourable figures are found in Cape Verde, Cameroon or Sao Tome and Principe. All in all, there is an offset, with the impacts of pre-school tending to be stronger in countries where the non-pre-school population is characterised by lower figures, but this trend is not very marked; the diversity of situations between countries predominates¹³.

2.7 Overall reflection on pre-school service provision in the 25 countries

The very influential picture that emerges from the description of the various aspects of pre-school services in the 25 countries in our sample, both between and within countries, is one of extreme diversity. This indicates that it is possible to *organise* pre-school services in different ways, which offers important room for manoeuvre for educational policy. It also suggests that not all of these options are equivalent in terms of both the cost of the services offered and the results achieved in terms of coverage, quality and arguably fairness, and therefore efficiency in the use of resources mobilised.

In this context, it is easy to see how useful it would be to have reference points for thinking efficiently about the development of pre-school education in the countries concerned. It is not a question of setting standards but rather of identifying elements, in the broadest sense, of *good practice*, which can be applied in a differentiated way in the various countries, according to their specificities, constraints and initial conditions. From this perspective, it is interesting to examine, empirically, the impacts of pre-school attendance (as it is in the countries) on the primary cycle.



¹³ It would be interesting to examine the extent to which an *offset* phenomenon might exist with the possibility that the impact of pre-schooling is more intense for individuals from disadvantaged social and/or geographical backgrounds.

03 The impact of pre-school on primary school operation

The justifications for pre-schooling concern *a priori* both the individual dimension (the child's personal development and his or her preparation for later success in life, in general, and in the school system, in particular, in the primary cycle) and the collective dimension on these same aspects.

With regard to non-academic aspects, the literature cites the positive effects of parental guidance activities on the development and social integration of young people from disadvantaged social backgrounds, as these activities have a compensatory effect on a somewhat deficient family environment. Work on these aspects is not available for the countries targeted in this note, but it is likely that their results are applicable to them. By contrast, for the impact of pre-schooling, there are more results, some of which are specific to 14 of the 25 countries covered, that can be mobilised.

3.1 Overall results based on international comparisons

A recent database of international comparisons¹⁴ makes it possible to measure the extent to which flows through the primary cycle (frequency of repetition¹⁵, retention during the cycle and cycle completion¹⁶) and the average level of learning¹⁷ of students at the end of the cycle, in a large number of countries, are statistically associated with the intensity of quantitative and qualitative investments made at the pre-school level.

Identifying the impact of investment in pre-school distinguishes between, on the one hand, the quantitative dimension (measured here by the GER, an imperfect measure of coverage, but the only one available for many countries) and, on the other hand, the qualitative dimension (measured here by public expenditure per student in public pre-school facilities).

In addition, this identification is *inserted* in a multivariate modelling in which the social characteristics of the populations (percentage of rural populations and populations living in poverty) and the available characteristics of the primary cycle, i.e., the public expenditure per student and the pupil-teacher ratio, are taken into consideration. The inclusion of these two groups of explanatory variables is justified by the fact that they are likely to have an impact on the different variables (repetition, retention, completion, learning) and that they show a high degree of variability from one country to another. These provisions make it possible to assess the actual impact of pre-schooling in a more relevant way (see Table A.1 in the Appendix).

¹⁴ As part of a work in progress by A. Mingat, the provisional title of which is *Fresque quantitative et comparative des systèmes éducatifs des pays du monde ; apprendre de la comparaison* (Quantitative and Comparative Overview of Education Systems in the World; Learning by Comparison).

¹⁵ Source: UIS and the World Bank.

¹⁶ Source: UIS and the World Bank for explanatory variables, secondary analyses of 89 household surveys (Multiple Indicator Cluster Surveys/Demographic and Health Survey), 41 of which are in sub-Saharan Africa, for primary school retention and completion.

¹⁷ For the learning level modelling (99 countries with GDP/per capita below US\$12,000, 44 of which are in sub-Saharan Africa), the source of information is the UIS and the World Bank for the explanatory variables. A hybrid estimate is based on scores on international schemes – Programme for International Student Assessment (PISA), Progress in International Reading Literacy Study (PIRLS), International Study of Trends in Science and Mathematics Education) – and on the statistic of the number of years of schooling needed to ensure that 80 per cent of young adults 'can read' (evaluated through household surveys) for the learning score of students in different countries.

According to these findings, four main results stand out clearly:

- The first is that while the coefficients associated with pre-school have the expected signs, the impact of pre-school is not statistically significant on the frequency of repetition in the primary cycle; on the other hand, it is significant on the retention rate during the primary cycle, on the completion rate of this cycle and on the level of learning of students at the end of primary school.
- The second is that, in none of the different models assessed, does the number of resources per student in the public pre-school show a significant impact on the primary school outcome variables. However, it is conceivable that resources per student are not an indicator of the actual quality of the service, and that if resources do not have an impact, the methods of organisation, content and approach (which depend relatively little on resources) do. We will have the opportunity later to show that this hypothesis is empirically quite valid. This suggests that while it is not necessary to mobilise large levels of resources per pupil, it is important to ensure that they are used appropriately in practice to ensure efficiency.
- The third is that, overall, the impact of pre-schooling is rather higher in sub-Saharan African countries than in all low and middle-income countries.
- Finally, the fourth is that the impact of pre-school on primary school statistics, beyond being statistically significant, is also of notable intensity. Thus, in explaining retention in primary education among sub-Saharan African countries, the weight of the pre-school GER is at the same level as that of the primary school pupil-teacher ratio, and higher than that of rural education. In explaining the completion rate, the weight of the pre-school GER outweighs that of the primary school pupil-teacher ratio and that of rural areas. Finally, in explaining the level of student learning at the end of primary school, the pre-school GER weighs as much as the poverty of the population and the pupil-teacher ratio in primary school.

All in all, on the basis of international comparative data, particularly in sub-Saharan African countries, pre-school (even if limited to its quantitative component) is clearly identified as having significant positive impacts on the primary cycle, both in terms of student flows (retention of students, less repetition) and in terms of the level of learning of its students.

3.2 Results of specific analyses in 14 of the 25 target countries

The PASEC data, despite certain limitations (preschool is not their main objective), offer interesting complementary angles for analysing the impact of preschool on the primary cycle. They have the triple advantage of providing information of an individual nature (not aggregated like those used in the previous point), of distinguishing according to whether the pre-school was attended in a public or private structure, and for the latter case, whether it was secular or denominational, as well as distinguishing between the operation of the primary school at the beginning of the cycle (2nd year) and at the end of the cycle (last year). Furthermore, the PASEC database makes it possible to evaluate the impact of pre-school on the primary cycle both in terms of the level of student learning and, in a somewhat roundabout way, in terms of repetition (it does not, however, make it possible to evaluate the impact of pre-school on the risk of dropping out).

In view of the volume of aspects covered, the results are presented first for those concerning the beginning of the primary cycle and then for the last year of this cycle of study (distinguishing between the repetition and learning dimensions).

For each outcome area, we focus not on the gross impacts of pre-school (which greatly overestimate them) but on the net impacts, obtained in appropriate econometric specifications (see Box 3).

BOX 3.

Analyses of PASEC 2019 data: Methodological issues

1. A rough comparison of students who attended pre-school and those who did not is not relevant, as children who attended pre-school (especially when the system is underdeveloped) more often have characteristics (social and geographical background) that make them (even without pre-school) more successful at primary school. The gross comparison therefore overestimates the effect of pre-schooling. A net comparison is preferred which purges the gross comparison (statistical check) of the impact of these accompanying interfering variables.

2. But the need for statistical verification to obtain unbiased assessments of the impact of pre-school must go beyond checking for the interfering impact of these social factors. It is interesting to also include the possibility of selection bias related to the specific motivation of families to preschool their children. To illustrate the mechanism that may be at work, we can compare the objective situation of a young person aged 3 to 5, whose chances of having access to pre-schooling depend on the location and living conditions of his or her family, with the fact that he or she has or has not been pre-schooled (in a particular pre-school format).

If, given the characteristics of his or her family, a young person has, for example, a 60% objective chance of being enrolled in pre-school and is not, this suggests that his or her family has a low motivation for school (to go to pre-school and, no doubt, later to support the child's enrolment in primary school). As a counterpoint, the situation of a child who is pre-schooled when he or she had a low chance of being pre-schooled (e.g., 20%) may show a stronger motivation of the family for schooling. The existence of such a mechanism would lead to the actual impact of pre-schooling being lower than what could, at first sight, be assessed on the basis of the net statistical data of social factors (as in point 1 above). The approach developed by J. Heckman to deal with these selection biases has been implemented.

3. Finally, it is important to take into account that while socially advantaged students are more likely to attend pre-school (and more likely to attend private than public schools), they are also more likely to attend private primary schools (where learning is better overall). As the effects of pre-school on primary schooling are being assessed, the impact of these family behaviours in the primary cycle should also be monitored.

A priori appropriate (but one can never be sure that they are all perfectly appropriate) analytical arrangements exist in the statistical arsenal to deal with the various types of circumstances just described conceptually. They have been implemented in the analyses carried out in this work. They then make it possible to arrive at measures that are *free* of sources of overvaluation and selection bias and to arrive at measures of the *actual* impact of pre-school attendance on the performance of students in primary school.

3.2.1 The impact of pre-school on the results observed at the start of the primary cycle

With regard to the average level of student learning, Table A.2, in the Appendix, enables the following overall observations to be made:

- There are significant variations between countries, from 478 in Togo to 619 in Burundi, for an overall average value of 537 for the 14 countries considered.
- There are also differences according to the status of the primary school, with a figure of 525 in public schools and 567 in private schools, i.e., a difference of 42 points in favour of the latter.
- There are significant gross differences in the scores of primary school students based on their pre-school preparation. Thus, the average score is 572 for those who attended pre-school and 522 for those who did not (50 points difference). However, this differential varies greatly from country to country, with, on the one hand, low figures in Burundi (14 points), as well as in Madagascar and Senegal (30 points) and, on the other hand, much more favourable values in Congo and Cameroon (60 points) and especially in Burkina Faso (82 points) and Guinea (85 points).

There are also large differences between countries in terms of repetition (see Table A.3). Overall, in the 14 countries, a student in grade 2 of primary school has already lost an average of 0.35 years because he or she has repeated grade 1 of the cycle and/or is in the process of repeating grade 2. This repetition indicator ranges from 0.20 in Burkina Faso to 0.79 in Burundi.

There are also significant differences in the intensity of repetition at the beginning of the primary cycle according to the type of primary school attended. Thus, the statistic measuring it averages 0.37 in public schools and 0.25 in private schools across the 14 countries. This *advantage* of private schools is found in all the countries considered.

Students who have received pre-school preparation tend to repeat less at the beginning of primary school, but the difference is not significant, as the average statistic used across the 14 countries is 0.33 for those who have received pre-school preparation, compared to 0.36 for those who have not. In addition, it is noted that students who attended public preschool repeat more years (0.38) than those who did not attend preschool (0.33). The difference (0.05) is not large, but it is true for almost half the countries.

Repetition at the beginning of primary school, on the other hand, is significantly lower among students who attended private pre-school (0.25), and this advantage is found in the vast majority of countries. However, one should not jump to conclusions about the value of private pre-schools, as children who have attended them are, on average, from more privileged backgrounds and are more likely to attend primary school in private schools (where repetition is generally less frequent than in public schools).

But what we are most clearly interested in are not the gross differences according to the pre-schooling of students, the level of which inappropriately incorporates the impact of factors other than pre-school attendance, but the *net* value of these differences, after taking into account the geographical and social characteristics of the students, the status of the school attended at primary level and the selection biases in access to pre-schooling in general, and to its different formats in particular. The estimated net values of the impact of pre-school attendance on learning and repetition at the beginning of primary school are shown in Table 9.

On the basis of these *net* assessments, the first aspect that emerges is that of a very wide variance. The overall impacts of pre-school, as well as those associated with the different pre-school formats, vary greatly between countries, with variability remaining within each country and within each format (probably due to the variability that exists between pre-schools of the same format within each country, as has already been identified in the skills assessments).

Table 9.**Net impacts of pre-school attendance and type of pre-school on the student learning score in grade 2, as well as on repetition¹⁸ in the 14 countries**

Country	Net gains from pre-school on primary school grade 2 learning scores				Net gains of pre-school on the indicator of repetition of grade 1/2 (in % of year)			
	Global pre-school/no pre-school	Public pre-school/no pre-school	Private secular pre-school/no pre-school	Private denominational pre-school/no pre-school	Global pre-school/no pre-school	Public pre-school/no pre-school	Private secular pre-school/no pre-school	Private denominational pre-school/no pre-school
Benin	1.0	- 3.4	6.4	3.2	- 6.6 %	- 7.6 %	- 7.2 %	17.1 %
Burkina Faso	53.9	81.1	41.0	30.7	0.3 %	- 9.7 %	1.8 %	- 19.9 %
Burundi	3.5	7.1	14.9	-10.9	2.4 %	1.4 %	- 0.1 %	6.3 %
Cameroon	17.4	15.3	19.6	13.1	15.9 %	12.1 %	17.7 %	7.8 %
Congo	10.6	- 16.2	24.6	11.7	10.7 %	10.8 %	9.5 %	3.5 %
DRC	33.0	9.7	50.9	- 12.9	- 7.5 %	- 21.8 %	- 6.6 %	- 0.2 %
Ivory Coast	18.0	15.2	30.0	25.8	7.6 %	8.3 %	11.1 %	3.3 %
Gabon	25.6	9.0	27.9	14.8	13.4 %	8.5 %	8.7 %	15.2 %
Guinea	42.8	113.3	19.0	152.4	- 2.5 %	- 0.2 %	- 3.1 %	33.3 %
Madagascar	22.6	3.6	46.7	20.1	7.3 %	2.5 %	16.0 %	0.4 %
Niger	8.1	10.0	9.2	18.1	- 8.6 %	- 10.1 %	14.3 %	- 1.5 %
Senegal	7.0	- 5.1	36.1	4.6	3.9 %	8.0 %	3.0 %	11.4 %
Chad	21.4	- 11.3	11.5	29.9	- 5.8 %	- 26.0 %	0.3 %	- 8.6 %
Togo	13.7	9.8	38.8	- 16.6	9.4 %	6.9 %	13.3 %	14.1 %
Overall	15.7	5.4	28.9	11.0	2.8 %	0.1 %	5.5 %	4.1 %

Note :

Boxes with a red background correspond to situations where the net impacts of pre-school are not statistically significant; those with a blue background are for too small numbers of observations.

Source: PASEC surveys (2019), authors' calculations and estimates.

On average, across the 14 countries, there is a positive impact of pre-school attendance on the performance of students at the beginning of primary school. Indeed, the frequency of repetition is, all other things being equal, significantly lower for those who have attended some form of pre-school. Similarly, the learning score, as measured by common standardised tests, is significantly higher for students who attended pre-school before entering primary school.

This result, while positive, is somewhat *overshadowed* by the fact that the average gains from pre-school for the 14 countries (of 2.8% on the repetition indicator and 15.7 points on the learning score) are relatively *modest*. But the assessed impacts should be seen as a joint result of the fundamental value of the *pre-schooling* concept and the more or less relevant way in which it has been implemented. While it is not possible to separate these two components formally with the available data, the fact that these overall impacts differ significantly from country to country clearly illustrates that *not all countries are performing equally well in implementing the common pre-school concept*.

¹⁸ The indicator is based on the 2nd year students in the survey. It is 0 for those (70% of the students in the survey) who have not repeated the first year of primary school and who are in the 2nd year without having repeated it; it is 1 for those (25%) who have repeated the 1st year or are repeating the 2nd year; and it is 2 for those who have repeated the 1st year and are again repeating the 2nd year at the time of the survey.

Thus, we find countries such as Burkina Faso or Guinea, where the impact of pre-schooling is respectively 54 and 43 points, whereas in Benin and Burundi, the corresponding figures are respectively only 1 and 3.5 points, without even being statistically different from zero. In these circumstances, it is reasonable to assume that on the one hand, the poor performance of Benin and Burundi owes little to the concept of pre-schooling and much to failures in the way it has been implemented; and on the other hand, that the *value* of the concept at the beginning of the primary cycle is at least equal to 45 points, as it is likely that additional progress could also be made in Burkina Faso or Guinea.

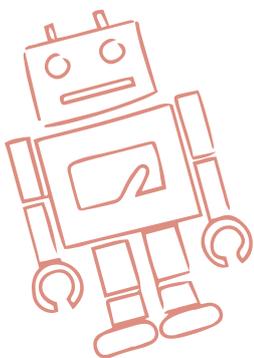
A similar situation is found for the impact on the reduction of repetition. It can then be assumed that the *value of the concept* of pre-schooling alone can reduce the frequency of repetition in the first two years of primary school by at least 40% compared to what is observed without pre-school preparation. The latter figures can be considered very satisfactory.

Finally, a major result of the analyses concerning the impact of pre-school on the results of students at the beginning of the primary cycle is the existence of profound differences according to the status (public, private secular or private denominational) of the structure in which the student was pre-schooled (for those who were).

The distinction between types of structure does not reflect favourably on public structures. Indeed, out of the 14 countries, the average net impact of pre-school on the learning score is only 5.4 points¹⁹ and the average net impact of pre-school on the frequency of repetition in the first two grades of primary school is almost zero (0.1%) and statistically insignificant. Only in six of the 14 countries is the impact of pre-school on repetition at the beginning of primary school positive (proof that *it is possible*).

As a counterpoint to this disappointing result, the private structures obtain much more satisfactory results, in particular the private secular structures, which have on average the highest performance, i.e., +29 points on the learning score and -5.5% on the repetition indicator (which means a reduction in repetition of the order of 1 in 6). With an average figure of +4.1%, the gain is slightly lower in the private denominational structures. But again, beyond the average figures (which mix situations where implementation is good or not), there are high figures, notably for Burkina Faso, Madagascar, DRC and Togo.

Furthermore, the fact that, in many countries, the ratio of private denominational schools is positive while not very significant shows *a priori* the existence of a fairly high degree of heterogeneity in these pre-schools, which are characterised, as the stakeholders of the system in the African context intuitively observe, by both schools of excellence and schools of more modest quality.



¹⁹ Knowing that in five of the 14 countries considered, pre-school attendance has no positive impact, or no statistically significant positive impact, on the level of student learning in grade two of primary school.

3.2.2 The impact of pre-school on the results observed at the end of the primary cycle

Based on the chosen methodology, Table 10 shows the results obtained with regard to the learning score of students in the last class of primary school and the intensity of repetition over the whole cycle.

Table 10.

Net impact of pre-school attendance on student learning scores in the last grade of the primary cycle and repetition in the cycle

Country	Net gains of pre-school on the learning score of students in the last grade of primary school				Repetition indicator	Net gains from pre-school on the number of repetitions in the primary cycle			
	Pre-school	Secular pre-school	Secular pre-school	Denominational pre-school		Pre-school	Pre-school	Public pre-school	Secular pre-school
Benin	21.3	14.0	36.2	20.7	0.95	0.116	0.059	0.225	0.255
Burkina Faso	32.2	6.5	49.5	36.9	0.59	0.099	-0.040	0.168	0.218
Burundi	7.2	2.8	32.9	17.0	1.43	0.137	0.170	0.324	-0.248
Cameroon	22.4	10.9	42.8	14.3	0.61	0.088	0.022	0.216	-0.026
Congo	10.6	-13.7	24.4	-3.1	0.73	0.101	-0.029	0.169	0.106
DRC	6.2	-1.1	16.3	11.4	0.48	0.002	0.023	-0.010	-0.064
Ivory Coast	24.0	24.3	22.5	25.4	0.75	0.142	0.136	0.203	0.000
Gabon	11.8	12.0	11.1	10.6	1.44	0.266	0.132	0.431	0.268
Guinea	23.9	3.6	31.9	45.2	0.57	-0.087	-0.152	-0.034	-0.312
Madagascar	20.6	5.6	35.5	7.9	0.96	-0.123	-0.035	0.269	0.345
Niger	8.5	5.1	36.3	10.0	0.38	-0.028	-0.025	0.008	-0.060
Senegal	-6.0	-13.8	10.3	-10.8	0.64	-0.013	-0.029	0.028	-0.040
Chad	-7.0	-16.5	2.7	20.2	0.68	-0.349	-0.448	-0.302	0.134
Togo	14.4	2.3	39.0	4.5	0.74	0.156	0.164	0.129	0.483
Overall	13.8	3.4	30.2	12.2	(0.762)	0.001	-0.058	0.080	0.044

Notes :

Boxes with a red background correspond to situations where the benefits from pre-school are lowest, while those with a blue background correspond to situations where the benefits from pre-school are highest.

Source: PASEC surveys (2019), authors' calculations and estimates.

The focus on grade 6 (rather than grade 2) does not alter the fact that there is a wide variation in the impact of pre-school on primary schooling, both between countries and between pre-schooling options, both in terms of learning and repetition.

This being noted, a new and important aspect to highlight is that there are still *positive traces of pre-schooling on students' learning at the end of primary school*. This result is all the more important because:

- its average quantitative value is very close to that assessed in primary grade 2 (taking into account, among other things, that the scale of scores is such that its value is somewhat higher in grade 2);
- the gap between those who attended pre-school and those who did not is probably more strongly underestimated in grade 6 than in grade 2..

Pre-school can therefore have a significant and lasting impact on students' learning until the end of primary school (and most likely beyond). However, while this point is valid overall, it is not valid for two countries, Senegal and Chad, and only marginally valid for three others, Burundi, Niger and the DRC. However, as a counterpoint to this unsatisfactory result, the estimated net impacts are very significant in Benin, Burkina Faso, Cameroon, Ivory Coast, Guinea and Madagascar, proving that it is possible.

As was identified for grade 2, the type of pre-school structure makes substantial differentiations. Public structures still perform very poorly, with an overall gain over the 14 countries of only 3.4 points in terms of learning (there are eight countries out of 14 where the gain is not different from zero) and a net (and significant) deficit in the repetition of grades in primary school. The contrast is striking, especially with students who have attended secular pre-school. Indeed, the average gain is 30 points for private secular pre-school in terms of learning achievement (this applies with an even higher average intensity to nine of the 14 countries considered) and 5.8% on repetition²⁰. Again, the performance of private denominational pre-schools (+12 points on average) on the learning score, while much better than that of public pre-schools, remains below that of private secular pre-schools.

3.2.3 Conclusions on the impact of pre-school on primary education

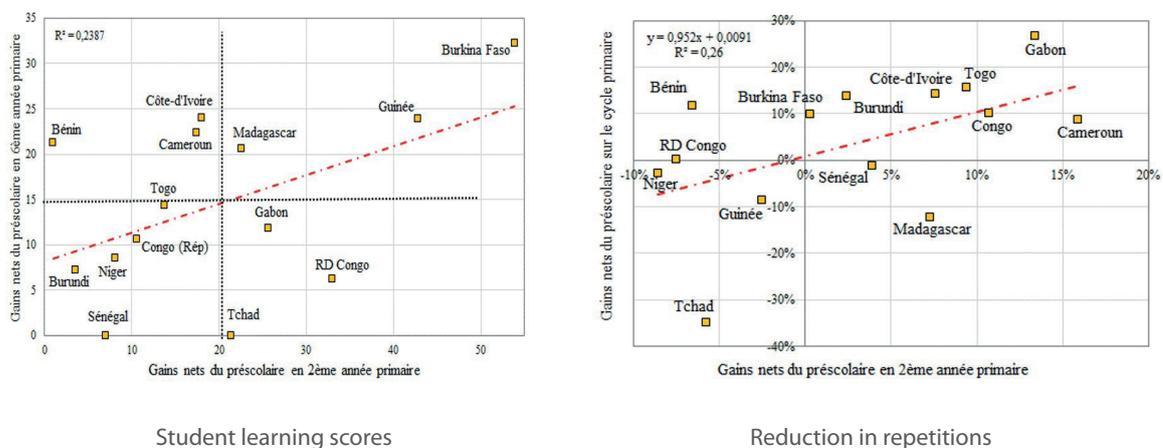
This more holistic view will follow a two-fold perspective. The first compares pre-school performance in different countries according to whether it is assessed in grade 2 or grade 6, and whether it concerns repetition or learning scores. The second is to assess the impact of pre-school on primary education in a country and to compare it with the level of resources mobilised per student.

Figure 5 compares the net impact of pre-school attendance on:

- the learning of students in grades 2 and 6 of primary school;
- repetitions in the first two years and in the primary cycle.

In each of these graphs, countries whose pre-schools perform better in the second year of primary school have a medium-intensity tendency to perform better in the rest of the cycle.

²⁰ This represents a reduction of around 8% in the number of repeaters over the cycle, bearing in mind that this effect was mainly achieved in the first years of primary school.

Figure 5.
Net impact of pre-school attendance on primary school results


Source: PASEC surveys (2019), authors' calculations and estimates.

The impact on the learning score (left graph) is particularly interesting. Several groups of countries can be seen :

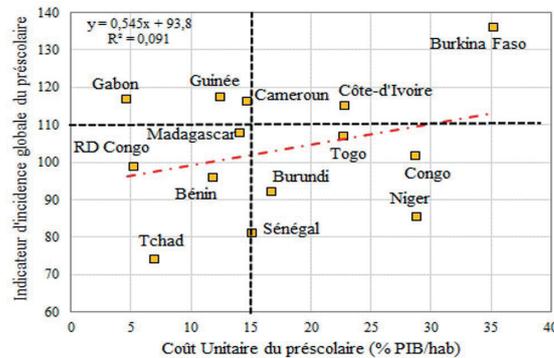
- Burkina Faso and Guinea are the best performing countries in that their pre-school services have a rather strong positive impact on learning throughout the primary cycle (beginning and end).
- Cameroon, Ivory Coast and Madagascar are also in a fairly favourable situation, with an average impact at the beginning of the primary cycle and a better-than-average impact at the end of the primary cycle.
- The performance of pre-schools in terms of learning in Gabon and Togo is in the middle of the 14 countries considered. Congo can be placed in the same category; the impact of pre-school on learning in primary school is certainly significant but remains below average both at the beginning of primary school and throughout the cycle.
- The situation in Benin, on the one hand, and Chad and the DRC, on the other, is more atypical, and therefore more interesting from a heuristic perspective. We noted earlier that the content of pre-school education could be based, on the one hand, on facilitating access to primary education and initial learning, or, on the other hand, on contributing to the child's personal and cognitive development in a longer and more fundamental perspective. It is often stressed that both perspectives are important and that a certain *balance* is desirable. That said, each country has different positions with regard to these two objectives. The positioning of Benin in the graph suggests that this country may have focused mainly on the latter (and been fairly successful in doing so), whereas the positioning of the DRC, and even more so of Chad, suggests that these two countries have focused heavily on early primary education, with little emphasis (especially in the case of Chad) on longer-term cognitive aspects.
- Finally, the analyses carried out show that the situation in Burundi, Niger and Senegal is difficult with regard to the impact of pre-school on primary education. The difficulty does not lie in the balance between the two objectives mentioned above, as the impact on each is very small.

With regard to the comparison of the expenditure incurred and the benefits obtained by the students, two aspects are considered. The first concerns efficiency in the production of pre-school services by asking to what extent a high volume of resources per student is necessary to have a quality system. The second is the structural justification of the budgets allocated to pre-school in the countries' education policy trade-offs.

In terms of the efficiency of pre-school services, it has been seen that the impact of pre-school activities varies substantially from country to country, as does their unit cost. It is interesting to compare these two elements, as shown in Figure 6.

Figure 6.

Unit costs and overall impact of pre-school on primary school (14 countries)



Source: Mingat (in progress), PASEC surveys (2019), authors' calculations and estimates.

This graph shows a very scattered landscape with very little statistical relationship between the level of expenditure per student in pre-school and the impacts achieved in primary school. Thus, the unit cost is close in Burundi, Cameroon, Guinea, Madagascar and Senegal, while the impacts on primary education are very different. Similarly, there is a comparable level of impact at primary level in countries such as Cameroon, Ivory Coast, Gabon, Guinea and Madagascar, although these countries are characterised by very different levels of per student expenditure in pre-school.

It would, of course, be an overstatement to suggest that any level of impact in primary education can be achieved with any level of spending per student in pre-school. But it does strongly suggest that a great deal of attention should be paid to ensuring that pre-school services do indeed generate significant impacts at primary level and that the organisation of these services leads to the lowest possible expenditure per student. The observation of the sample of countries analysed shows that this dual perspective is not spontaneously successful; it points to the need for progress and suggests that it is reasonably possible.

As for the more structural aspects, the basic question, which is necessarily a little difficult to address, is what conditions would make public spending on pre-school an effective investment.

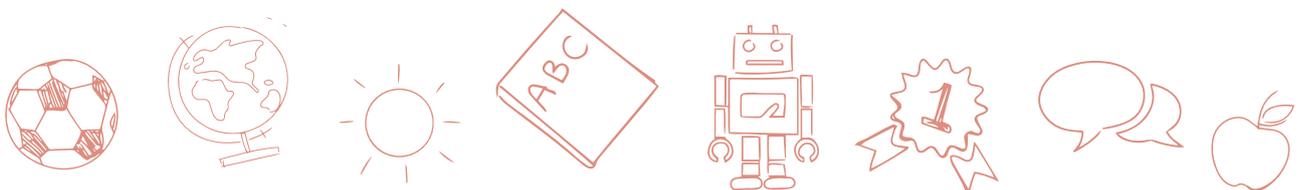
Resources to provide pre-school services, in general and in sub-Saharan Africa, are not insignificant; over two years they average 29% of GDP per capita. In contrast, six years of primary schooling costs about 62% of GDP per capita. Although it is known that the benefits of early childhood and pre-school activities are not limited to the primary level and encompass broader social dimensions, the impacts of pre-school on the primary level must be taken into consideration when justifying its funding.

In this respect, it is not enough to argue that benefits can be achieved in the first two primary years, as there is no justification for spending 29% of GDP per capita on pre-school to improve the use of the 21% of GDP per capita spent in the first two primary years. This reflection has potentially significant implications for the definition of pre-school activities: they can only be justified to the extent that pre-school has a sufficiently intense and long-lasting effect on people's lives until the end of their primary education. This has quite clear implications for the content of pre-school and the balance between those aimed at access to primary school (which are important) and those aimed at longer perspectives (which are therefore even more important).

The analyses presented in this section are certainly neither perfect nor complete, but they make it possible to draw some conclusions, undoubtedly provisional, which can be considered interesting from a knowledge perspective, and useful for reflection before taking action.

Firstly, it can be noted that pre-school has an impact on the careers of pupils in primary school, both in terms of learning and repetition. It should be noted, however, that this impact is not considerable; this is because there is a wide variance in the impact of pre-school on primary education, both between countries and between pre-schooling options. In this respect, private pre-schools are more effective than public pre-schools in all countries.

Secondly, it must be borne in mind that it is crucial, particularly in the context of advocacy for pre-school, that pre-school services generate significant impacts at primary level, but also that these impacts are sustainable and do not only affect the first years of the cycle.



04 Elements to consider for future developments in pre-school

On the basis of analyses that compare the variety of organisational methods, contents and practices encountered in the more than 1,200 pre-schools surveyed with the degree of preparation for primary school of the 13,000 new entrants in the 12 countries where a skills assessment has been carried out, it is possible to identify the most relevant and cost-effective ways of proceeding.

4.1 Structural elements of the system

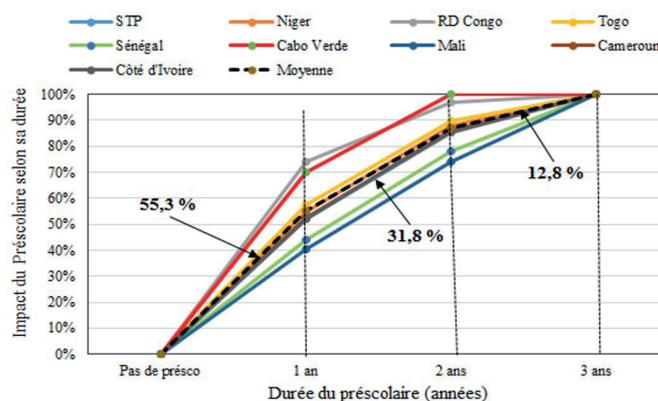
The first aspect to consider is quantitative and concerns the coverage of the system. In 2018, the proportion of primary school entrants who had received some form of pre-schooling exceeded 50% in nine of the 25 countries surveyed (and even 70% in six of them), while in four others this statistic was below or close to 10%. In these circumstances, the idea for the next 10 years is probably to aim for 100% for countries that already have 70% of primary school entrants who have been pre-schooled. But such an ambition is not plausible for the most backward countries. While all countries should anticipate the widest possible coverage, a minimum threshold of perhaps 25-30% by 2030 can be set to ensure that all have a structured and functioning pre-school system by that date, which would facilitate future developments.

A second aspect, of a structural nature, concerns the pre-school formats which it would be interesting to promote. In this respect, it is worth recalling that private facilities should not be neglected, as they can offer generally good quality pre-school places to a number of students (often urban and with parents who can afford to pay school fees), without burdening public funding. But public structures will have to play an essential role because, on the one hand, the expansion of private provision will follow its own dynamic, leaving a gradually greater role for the public sector and, on the other hand, the expansion of enrolment will gradually include more children from rural and socially disadvantaged areas.

A third aspect concerns the duration of pre-school services offered, for which a distinction can be made between the number of years of study and the number of hours of activities provided each year. On the number of years of pre-school education, in each country's sample there are pupils entering primary school, some of whom have not attended pre-school and some of whom have been there for one, two or three years. Using the variables constructed on this basis in the modelling of the individual primary school readiness score, it is possible to identify the impact of the duration of pre-school education on the degree of primary school readiness. Figure 7 illustrates the above results.

Figure 7.

Impact of pre-school by duration on student readiness for primary school



Source: Primary School Entry Skills Survey databases (UNICEF), authors' calculations and estimates.

The curve of the impact of the number of years of pre-school on the preparation of students for primary school has the same shape in the various countries considered. Overall, a longer duration of pre-school corresponds, all other things being equal, to a better preparation of students for primary school. But the pattern between the two variables is not linear.

Indeed, a single year of pre-school provides on average 55% of the skill level that three years of pre-school would have provided. With two years, this figure rises to 87%. This means that the specific impact (additional to a single year) of the second year is 32% of the total and the third year contributes only 13%.

We can therefore see that although a single year of pre-school does enable the production of skills for entry into primary school, this contribution is only partial. The second year builds on the contributions of the first year and achieves almost 90% of what pre-school can offer with three years. In these circumstances, a generic recommendation, based on the desire to use resources efficiently, is to stick to two years for the pre-school cycle. However, it is not irrelevant to also use (e.g., for a fraction of the population) the one-year format, especially if one wishes to focus on coverage, while accepting compromises on the quality of the preparation for the primary cycle.

Concerning the number of hours over the school year, the reference to 900 hours in primary school is inappropriate for pre-school where children are still very young. Analyses using the primary school readiness indicator show that students who had less than 500 hours of pre-school per year, over two years, had significantly lower scores than those who had 700 hours per year (again over two years). On the other hand, increasing the annual volume beyond 700 hours does not produce additional benefits. Aiming for this annual figure over two years therefore seems an appropriate format.

Furthermore, regarding the nature of the structures, while the majority of students could benefit from formal services, it is interesting to consider community-type formats, especially in rural areas. However, this can only be achieved if appropriate arrangements are made to ensure their sustainability and to ensure that the quality of services offered in these facilities is comparable to that of formal public institutions. This implies in the first place that community monitors receive regular compensation from public funding (even if this is only a fraction of the salary of an educator in the formal public sector) to ensure the sustainability of the structures. This also implies that they receive the training and pedagogical support necessary to transmit the targeted content, and finally that the students have the same consumables and small equipment as their counterparts in the formal public sector, so that the quality of learning is reasonably homogeneous with that of the public pre-school.

4.2 Resources and ways of organising the services offered

Three characteristics associated with the organisation and level of expenditure per student in pre-school services need to be considered.

4.2.1 Teacher training

The most important resource of the pre-school is its teachers, and there is a need to ensure that their academic level and training, both at the beginning of their career and in-service, are appropriate. In terms of their academic level, there is great variability across the 1,200 or so schools in our sample, from teachers with only eight years of education to those with over 15. The higher the academic level of a teacher in the public sector, the higher the salary level. But while the primary school readiness score increases with the number of years of education of teachers, this effect saturates around 11 to 12 years of education. Above this empirical threshold, wage costs increase, but not the benefits to children. It would therefore be appropriate to stick to an academic level corresponding to 11 or 12 years of study.

The initial training of pre-school teachers varies greatly. Sometimes the teacher has had no such activity, sometimes he or she has been trained for three or even four years. The comparison with the impacts shows, overall, a low impact of initial training (which may be due to the fact that what is counted as initial training is not necessarily in line with the needs of the preschool teacher). Therefore, there seems to be no need for initial training of pre-school teachers lasting more than one year. On the other hand, in-service training (and in-service teacher support, which is a particular form of in-service training) has proven benefits.

4.2.2 Student supervision

Another feature is the intensity with which teachers are used. A first aspect of this intensity is the duration of the school year, with figures of 530 hours in the DRC or Senegal and 790 in the Republic of Congo; we have indicated that an annual duration of the order of 600 to 650 hours (over two years) was appropriate for a good preparation for the primary cycle. But another aspect of the intensity of the teacher's work must also take into account the fact that he or she is responsible for an average of 17 students in Burkina Faso, 28 students in Togo, 37 in Liberia or 48 in Gambia²¹. Certainly, there is no doubt that the unit cost of pre-school is, all other things being equal, lower when the pupil-teacher ratio is 40 rather than 20 (i.e., a wider coverage of pre-school for the same budget can be achieved in the former country than in the latter). But there is a legitimate concern that the quality of pre-school services may be lower with 40 students in the classroom than with 20. With strong effects on quantity and possibly negative effects on quality, the selection of the pupil-teacher ratio is crucial for pre-school education policy.

Everyone evidently has an opinion on this topic, but an objective empirical answer to the question posed is to be preferred to subjective opinions. The empirical analyses carried out in the 12 countries where skills assessments have been carried out show converging results: *there is no significant difference in the primary school readiness test score when the pupil-teacher ratio is between 20 and 35 students*. On this basis, both efficiency and equality considerations advocate in favour of setting the pupil-teacher ratio at the top end of this range²².

4.2.3 Consumables and small equipment for pre-school students

Finally, let us examine the impact of spending on consumables and small equipment for pre-school students on their readiness for primary school. Among the countries where this analysis could be conducted, the results are clear and convergent: there is a significant, positive and substantial relationship between the two variables. This strong relationship is likely to be related to the fact that countries that adopt more intensive involvement of students in building cognitive skills spend more on consumables/small equipment and that this pedagogical approach is more effective in imparting these skills to students. While many schools (especially public ones) spend very little on these items, there are nonetheless structures (more often private) in which spending on these items is high (it can reach between 5 and 6% of GDP/per capita). It is identified that a per-student expenditure on these items of 2.5-3.5% of GDP/ per capita allows for the establishment of pedagogical arrangements conducive to the acquisition by students of the skills needed for successful primary education.

4.3 Languages, content, teaching approaches and governance

The issue of language is of great importance in the education systems of many countries. Nor is it negligible at pre-school level in the context of most of the 25 countries considered here, particularly because of the tension between the use of the child's mother tongue and that of the language to be used at primary level. Both are essential and a balance is needed; the question is therefore where to place the cursor and this is a matter for the political decision-maker. However, analysis shows that this choice has implications for children's readiness for primary school. They unambiguously identify that in order to promote access and learning in primary school, it is important to give a significant place to the language of the primary school in the preschool.

In addition to the use of languages and language learning, the targeted content of the programmes offered to pre-school students must also be carefully considered. In general terms, the content of pre-school education revolves around two main areas: the socialisation of the child and the development of more formal knowledge and skills, particularly with a view to the primary cycle. The interpretation of this second block can be structured between, on the one hand, learning (pre-reading, pre-numbering, writing and graphics) close to that which will be built at the start of the primary cycle and, on the other hand, more general cognitive learning, which can be mobilised at the start of the primary cycle but also beyond. These types of content are targeted in the 12 countries in which analyses could be carried out, but this is probably more widely valid for the 25 countries.

²¹ This range would be much wider if the situation of individual pre-schools in the 25 countries were compared, not national averages.

²² With support staff in pre-school structures.

It is difficult to make overly specific recommendations. However, the results of the countries where a skills assessment has been carried out and of the countries that participated in the 2019 wave of PASEC make it possible to identify trends and watch-points that it would be relevant to examine in each of the 25 countries in order to identify possible adjustments. Thus, in the countries that have had a skills assessment of primary school entrants, the tendency is to place the cursor more on the side of socialisation, whereas an intensification of the time allocated to more formal learning would have enabled students to be better prepared for primary school. Furthermore, the information collected by PASEC suggests that some countries tend to favour the learning of targeted school knowledge at the beginning of primary school (without necessarily succeeding in doing so), while neglecting the development of more fundamental cognitive skills, which could cover the whole of primary schooling (including the first years of the cycle). These results suggest that it might be appropriate to give a significant place to cognitive content and not to focus solely on formal learning transmitted at the very beginning of the primary cycle. It would be useful for these aspects to be explored in the diagnostic carried out by the countries when defining the contents to be aimed for in the development of their pre-school system in the years to come.

While the content must be appropriately defined, the pedagogical approaches chosen to convey it in practice are an important link in the chain that leads to tangible results for pupils. In this respect, pre-school systems combine activities in which the teacher is the provider of the knowledge to be transmitted and activities in which it is the pupil who builds his or her knowledge and skills. On this last aspect, two categories can be distinguished. The first is characterised by immediacy and simplicity; the student can draw, dance, sing. The second concerns activities in which the student is exposed to situations and games in which he or she is called upon, in the broadest sense, to mobilise cognitive mechanisms; in so doing, he or she will progressively build cognitive skills that are transferable to various situations, including those that are at the basis of knowing how to read, knowing how to count and knowing how to solve problems.

The analyses carried out clearly suggest that the content is better acquired when the student's activity is involved, and above all when this activity is included in situations proposed by the teacher²³, according to a controlled progression, so that the student builds, by oneself and for oneself, the operational and cognitive competences aimed at in the programmes.

Finally, the analysis of the skills assessments (and to a lesser extent the PASEC surveys) clearly underlines the great variances in the functioning and results obtained between the different structures offering pre-school services in a country. Differences are observed on average between the formats, with results often better in private than in public structures, even after taking into account the social characteristics of their students, as well as the material and human resources mobilised. There are also considerable differences (in operation and results) between the structures under the same format (both public and private). This heterogeneity (particularly between the same types of structure) reveals significant shortcomings in the governance and management of systems, particularly public ones.

In each country, discussions could be held to identify the forms, methods and instruments that could be used for regular and more structured monitoring of the various aspects of the operation of public pre-schools (role of school heads and inspectorates). Regular (not necessarily annual) measurements of student learning after pre-school could also be considered. Progressive measures (ranging from support to penalties) to be taken in the event of shortcomings, both in the service operation and in the results obtained by students, could be discussed and applied in a positive and transparent manner, with a mechanism for evaluating their effective application.

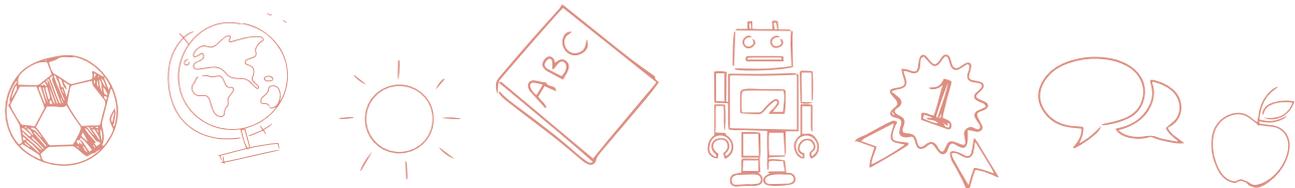
²³ The teacher can then have at his or her disposal a bank of such situations with the material that goes with them; and be trained to implement the pedagogical approach in question in a relevant way.

05 What can each of the 25 countries reasonably achieve by 2030 ?

Based on the initial situation (year 2018) of pre-school education in each of the 25 countries and on the possible adjustments to improve its effectiveness and efficiency, it is possible to construct a *simplified*²⁴ simulation tool, which would make it possible to propose, for each country, a few scenarios to illustrate the progress that could be made between now and 2030, while remaining within a contained volume of public resources in order to ensure that the developments remain sustainable.

This instrument would not be a substitute for more in-depth, specific or detailed work that may be undertaken in any of the 25 countries on the theme; work that could, of course, make use of a more detailed and specific simulation instrument. That said, we are convinced that a version of this instrument could already provide an outline of the main options available in each country for the development of pre-schools over the next 10 years; and that this could stimulate reflection and trigger work that would determine its contours more precisely.

The tool would allow the construction of scenarios that would articulate the main characteristics of the pre-school services that would be offered in 2030 in each country and to estimate their needs in terms of public funding. The main parameters of pre-school services that could be taken into account in the instrument could be those summarised in Table 11²⁵.



²⁴ The architecture would be common, as well as the best practices, but the simulation tool will be specific to each country for the other aspects (context, initial values, etc.).

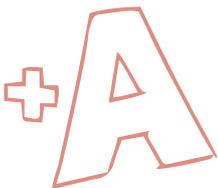
²⁵ The instrument would also incorporate demographic and macroeconomic information (United Nations and World Bank).

Table 11.
Main parameters of pre-school services that could be taken into account in a simplified simulation tool

	Target year 2030
Number of students	
Overall target for pre-school coverage	% of primary school entrants with some form of pre-school
For primary school entrants with pre-schooling	% with only one year of pre-schooling
	Duration of the pre-school cycle for those with more than one year of pre-schooling
For students with over one year of pre-school education	% of students in the community format
	Calculation of the number of students who could be pre-schooled in private schools
	Calculation of the number of students who should be pre-schooled in public schools
Services offered in public pre-schools	
Quantitative supervision of students	Pupil-teacher ratio
Statutory category of teachers	Selection between: 1) primary school teachers; and 2) pre-school educators at baccalaureate level
Remuneration for educators	Pre-school teachers' salaries as % of primary school teachers' salaries
Pedagogical support for teachers	% of teachers' salaries
Availability of consumables per student	% GDP per capita
Non-teaching support staff (total)	Salary package as % of teachers' salary
Services offered in community pre-schools (supported)	
Quantitative supervision of students	Pupil-teacher ratio: (90) % of that of the formal public
Public cost of instructors	% of that of formal public-school teachers
Non-teaching support staff (total)	Half of the corresponding expenditure in the formal public
Pedagogical support for educators and consumables for students	Same for the formal public
Financial aspects	
Sector expenditure as % of GDP	Assessment on the basis of sectoral programmes
Unit costs of services/public expenditure	Calculations based on service characteristics and staffing parameters
Judging the sustainability of the programme	Based on public spending on pre-school as % of sector spending

Numerical values of the parameters involved in the operation of the simulation tool were estimated for each of the 25 countries considered for 2018, as a basis for various projection options for 2030. Despite significant efforts to test the validity and consistency of these estimates, it would of course be possible for countries to come up with better figures when it becomes apparent that those we have used need to be changed.

Finally, as not everyone is familiar with these simulation tools, the instrument would include, in order to make it as easy as possible for technicians and decision-makers in the countries' education policies to use it, a piloting window (see Table 12) in which it would be possible to vary the structural parameters of the 2030 vision of each country's pre-school system, and to evaluate, in real time, the consequences in terms of coverage and financial needs²⁶.



²⁶ The parameters would be expressed as a percentage of the sector's resources in 2030 for pre-school, to show the extent to which the choices made for pre-school can reasonably be accommodated within the resources mobilised by each country for its education system at that time.

Table 12.
Monitoring window for the simplified simulation instrument

Monitoring block	2018	2030 values			
		Sc1*	Sc2*	Sc3*	Sc4*
GDP growth rate					
Education expenditure as % of GDP					
Objectives					
Numbers					
% Primary access					
% Primary education entrants with pre-schooling					
% With one year of pre-schooling					
Number of years of pre-schooling if > 1 year					
% Primary education entrants with pre-schooling > 1 Year in the community format					
Services					
Formal public					
Pupil-teacher ratio (PTR)					
Statutory category of teachers					
Remuneration for educators in % of primary school teachers					
% of total payroll for pedagogical monitoring					
Expenditure on consumables/small equipment per pupil (GDP/per capita)					
% support staff expenditure					
Community format					
The PTR reduction rate in relation to the formal public					
Remuneration of community instructors (% of formal audience)					
Current total public expenditure on pre-school					
% of GDP					
% of current expenditure in the education sector					
Memo items					
Numbers					
Primary school entrants with pre-schooling					
In the public format in one year					
In the formal public format > 1 year					
Numbers in the formal public (format > 1 year)					
Numbers in the community format					
Expenditure per student (GDP/per capita)					
In the formal public					
In the community format					

* Sc stands for scenario.

Appendices

Appendix 1. Additional tables

Table A.1. Impacts of pre-school on primary school flows and learning (international comparisons)

	Primary school repetition rate		Retention rate in primary education		Primary school completion rate		Learning level at the end of primary school (PISA scale)	
	Countries with GDP/per capita < \$ 12.000	Sub-Saharan African countries	Countries with GDP/per capita < \$ 12.000	Sub-Saharan African countries	Countries with GDP/per capita < \$ 12.000	Sub-Saharan African countries	Countries with GDP/per capita < \$ 12.000	Sub-Saharan African countries
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
National context								
% rural population	- 0.085**	- 0.142**	0.051 (ns)	- 0.139* (0.22)	- 0.096* (0.13)	- 0.270** (0.31)	0.221 (ns)	- 0.101 (ns)
% poor population	- 0.141***	- 0.076 (ns)	0.078* (0.16)	0.016 (ns)	0.065 (ns)	0.018* (0.22)	- 0.118 (ns)	0.527* (0.28)
Pre-schooling								
GER (%)	- 0.023 (ns)	- 0.027 (ns)	0.086*** (0.24)	0.159** (0.35)	0.158*** (0.31)	0.318*** (0.53)	0.391** (0.23)	0.379* (0.27)
Unit cost	- 0.056 (ns)	- 0.97 (ns)	0.046 (ns)	0.090 (ns)	0.077 (ns)	0.152 (ns)	0.121 (ns)	0.158 (ns)
Primary cycle								
Unit cost (GDP/per capita)	- (ns)	- (ns)	- (ns)	- (ns)	- (ns)	- (ns)	- (ns)	- (ns)
PTR	0.160**	0.168*	- 0.363*** (0.45)	- 0.344** (0.36)	- 0.521*** (0.45)	- 0.434** (0.34)	- 1.701*** (0.43)	- 0.992* (0.32)
Constant	4.7	11.9	100.4	98.2	99.0	89.0	410.9	375.1
R²	42.3 %	19.1 %	61.3 %	40.3 %	64.9 %	51.0 %	33.6 %	15.1 %
Number of countries	102	44	89	41	89	41	99	44

Notes :

*** indicates statistical significance at the 1% level; ** at the 5% level and * at the 10% level; (ns) for not significant. The figures in brackets are the β coefficients (standardised impacts); they allow the specific impact of different variables to be compared within the same model.

Source: PASEC surveys (2019), authors' calculations and estimates.

Table A.2. Grade 2 students' scores by pre-school attended, type of primary school attended and country

Country	Student learning scores in grade 2 of the primary cycle											
	Global	Depending on the pre-school attended						Depending on the type of primary school			Overall gross pre-school gain	
		No pre-school	Pre-school	Public pre-school	Private pre-school	Secular private pre-school	Denominational private pre-school	Public	Private	"Unknown and Others"	Points	% score
Benin	518.1	509.0	546.8	523.5	581.3	582.9	572.1	499.1	574.6		37.8	7 %
Burkina Faso	499.9	494.6	577.0	596.1	568.4	569.3	556.1	515.1	487.3	476.1	82.4	17 %
Burundi	619.3	616.1	630.5	631.0	632.9	642.8	620.6	614.1	637.3	627.4	14.3	2 %
Cameroon	526.8	492.4	559.6	536.7	583.8	590.0	531.8	500.7	586.4	485.7	67.2	13 %
Congo	578.8	560.7	625.9	584.5	635.2	643.7	608.1	555.1	609.2	533.5	65.2	11 %
DRC	543.8	536.4	578.3	558.4	590.0	602.6	557.6	538.4	552.9	549.3	41.9	8 %
Ivory Coast	514.8	503.9	552.9	545.6	578.3	580.0	574.4	506.7	556.9	494.4	49.0	10 %
Gabon	601.9	571.4	617.1	598.4	632.3	638.9	613.8	593.1	646.3	584.1	45.7	8 %
Guinea	485.3	464.5	549.5	605.2	541.4	536.3	670.7	466.7	524.5	497.7	84.9	18 %
Madagascar	563.2	551.2	581.6	558.7	608.1	609.6	594.8	553.6	579.0	623.5	30.4	5 %
Niger	552.1	535.0	586.4	583.7	606.0	616.9	572.6	547.9	624.8	490.8	51.5	9 %
Senegal	554.4	544.5	573.9	544.5	606.6	614.6	579.2	544.7	614.3	605.7	29.3	5 %
Chad	506.2	502.4	555.4	539.9	556.5	555.9	547.4	500.3	532.1	517.5	53.0	11 %
Togo	477.5	459.7	502.3	478.7	555.9	567.4	504.4	456.1	527.9	558.0	42.7	9 %
14 countries	537.0	522.1	572.3	552.1	595.6	599.0	578.7	525.2	567.4	551.6	50.2	9.3 %

Source: PASEC surveys (2019), authors' calculations and estimates.

Table A.3. Repetition indicator for grade 2 students by pre-school attended, type of primary school attended and country

Country	Repetition indicator for students in grade 2 of primary education											
	Overall	Depending on the pre-school attended					Depending on the type of primary school			Gross gain Overall pre-school		
		No pre-school	Pre-school	Public pre-school	Private pre-school	Secular private pre-school	Denominational private pre-school	Public	Private	"Unknown and Others"	Points	% score
Benin	31.7 %	30.9 %	34.3 %	38.2 %	28.2 %	30.5 %	11.1 %	34.9 %	22.2 %		- 3.4 %	- 11 %
Burkina Faso	20.0 %	20.3 %	14.9 %	27.6 %	11.2 %	12.0 %	0.0 %	20.1 %	17.9 %	22.5 %	5.4 %	27 %
Burundi	79.3 %	82.0 %	69.6 %	77.2 %	56.9 %	45.9 %	72.1 %	84.2 %	15.3 %	76.7 %	12.4 %	16 %
Cameroon	30.1 %	37.1 %	23.4 %	29.2 %	17.3 %	16.2 %	28.6 %	37.2 %	17.5 %	21.9 %	13.7 %	46 %
Congo	36.1 %	42.1 %	20.4 %	22.8 %	19.8 %	18.4 %	25.0 %	44.3 %	25.7 %	50.0 %	21.7 %	60 %
DRC	30.4 %	29.4 %	34.9 %	50.6 %	26.6 %	35.6 %	29.3 %	33.3 %	23.9 %	28.3 %	- 5.5 %	- 18 %
Ivory Coast	21.2 %	23.5 %	13.1 %	14.0 %	8.2 %	5.9 %	13.6 %	22.9 %	13.5 %	15.6 %	10.3 %	49 %
Gabon	50.6 %	60.9 %	45.5 %	51.3 %	40.5 %	41.2 %	38.5 %	55.9 %	31.2 %	51.3 %	15.4 %	30 %
Guinea	28.5 %	26.9 %	33.6 %	28.6 %	33.8 %	35.1 %	0.0 %	25.9 %	33.8 %	33.3 %	- 6.7 %	- 23 %
Madagascar	47.5 %	50.5 %	43.0 %	50.2 %	32.6 %	32.8 %	37 %	50.5 %	39.2 %	59.4 %	7.6 %	16 %
Niger	24.7 %	21.8 %	30.6 %	34.7 %	13.8 %	9.0 %	28.6 %	25.2 %	14.1 %	36.3 %	- 8.8 %	- 36 %
Senegal	30.1 %	31.3 %	27.7 %	25.2 %	26.5 %	28.0 %	20.8 %	30.7 %	22.4 %	66.7 %	3.6 %	12 %
Chad	33.9 %	33.2 %	43.5 %	67.6 %	36.7 %	39.4 %	50.0 %	33.2 %	26.4 %	40.0 %	- 10.4 %	- 31 %
Togo	30.8 %	34.0 %	26.4 %	29.4 %	20.9 %	21.4 %	18.4 %	33.2 %	23.7 %	39.6 %	7.6 %	25 %
14 countries	35.4 %	36.4 %	33.2 %	38.3 %	27.3 %	26.8 %	32.5 %	37.4 %	24.6 %	45.4 %	4.1 %	11.6 %

Source: PASEC surveys (2019), authors' calculations and estimates.

Table A.4. Grade 6 students' scores by pre-school attended, type of primary school attended and country

Country	Learning scores of students in the last class of the primary cycle											
	Overall	Depending on the pre-school attended						Depending on the type of primary school			Gross gain Overall pre-school	
		No pre-school	Pre-school	Public pre-school	Private pre-school	Secular private pre-school	Denominational private pre-school	Public	Private	"Unknown and Others"	Points	% score
Benin	549.6	531.0	580.0	556.0	612.5	613.7	569.9	530.3	602.4	544.7	49.0	9 %
Burkina Faso	544.8	540.6	587.9	564.8	600.9	606.6	571.2	548.9	539.3	530.2	47.3	9 %
Burundi	516.3	512.1	533.9	523.1	560.1	579.1	525.6	512.9	578.2	518.3	21.8	4 %
Cameroon	523.9	492.1	555.0	526.4	584.6	589.5	539.0	494.3	580.1	524.7	62.8	12 %
Congo	512.7	493.8	542.3	499.5	559.3	560.9	510.6	483.0	547.8	521.1	48.5	10 %
DRC	463.0	459.9	476.9	466.8	488.9	491.2	479.7	462.6	488.4	437.3	17.0	4 %
Ivory Coast	475.7	465.2	520.8	519.8	522.5	530.6	488.4	466.9	531.3	502.0	55.6	12 %
Gabon	604.3	590.8	612.3	610.9	613.8	613.9	610.4	602.7	612.0	602.6	21.5	4 %
Guinea	487.2	473.1	515.4	486.1	526.2	526.4	522.4	472.7	514.1	499.8	42.3	9 %
Madagascar	456.9	441.9	492.3	458.7	514.3	515.7	455.1	441.2	501.9	433.2	50.4	11 %
Niger	470.4	457.1	500.7	493.5	523.2	564.2	461.3	466.2	580.9	396.8	43.6	9 %
Senegal	559.9	555.9	566.9	550.5	583.6	597.7	540.4	553.2	615.1	609.3	11.0	2 %
Chad	447.1	445.8	452.4	436.4	474.3	476.1	467.8	437.5	509.7	442.4	6.5	2 %
Togo	489.0	468.1	533.6	497.4	582.4	585.1	516.7	461.7	556.7	551.0	65.5	13 %
14 countries	504.4	490.1	538.5	517.3	561.3	567.4	513.3	492.2	549.6	499.2	48.4	9,6 %

Source: PASEC surveys (2019), authors' calculations and estimates.

Table A.5. Repetition indicator for grade 6 students by pre-school attended, type of primary school attended and country

Country	Average number of repetitions in the cycle of students in the last primary grade											
	Overall	Depending on the pre-school attended						Depending on the type of primary school			Overall gross pre-school gain	
		No pre-school	Pre-school	Public pre-school	Private pre-school	Secular private pre-school	Denominational private pre-school	Public	Private	"Unknown and Others"	Points	% score
Benin	0.95	1.06	0.77	0.93	0.54	0.53	0.71	1.10	0.55	1.04	0.30	31 %
Burkina Faso	0.59	0.60	0.48	0.63	0.40	0.40	0.39	0.60	0.57	0.56	0.12	20 %
Burundi	1.43	1.48	1.25	1.29	1.15	0.81	1.76	1.42	0.60	1.54	0.23	16 %
Cameroon	0.61	0.71	0.53	0.67	0.37	0.34	0.67	0.74	0.38	0.49	0.18	29 %
Congo	0.73	0.87	0.53	0.78	0.42	0.42	0.68	0.99	0.44	0.63	0.34	46 %
DRC	0.48	0.48	0.49	0.48	0.51	0.50	0.57	0.51	0.37	0.43	- 0.02	- 4 %
Ivory Coast	0.75	0.81	0.49	0.52	0.44	0.35	0.82	0.81	0.32	0.90	0.32	42 %
Gabon	1.44	1.69	1.28	1.52	1.05	1.04	1.33	1.58	0.86	1.43	0.40	28 %
Guinea	0.58	0.56	0.59	0.71	0.55	0.53	0.86	0.62	0.46	0.70	- 0.03	- 5 %
Madagascar	0.96	1.03	0.79	1.06	0.62	0.62	0.71	1.04	0.72	1.12	0.23	24 %
Niger	0.38	0.37	0.40	0.41	0.34	0.29	0.43	0.38	0.21	0.61	- 0.03	- 8 %
Senegal	0.64	0.67	0.59	0.66	0.53	0.46	0.74	0.68	0.31	0.44	0.08	12 %
Chad	0.68	0.60	1.03	1.15	0.87	0.95	0.58	0.71	0.60	0.64	- 0.44	- 65 %
Togo	0.74	0.81	0.58	0.63	0.51	0.52	0.27	0.82	0.52	0.84	0.23	31 %
14 countries	0.76	0.79	0.70	0.82	0.57	0.55	0.75	0.81	0.51	0.97	0.09	11.4 %

Source: PASEC surveys (2019), authors' calculations and estimates.

Appendix 2. List of data used

List of used household surveys

Country	Programme	Year
Benin	MICS 5	2014
Burkina Faso	EMC	2014
Burundi	DHS	2016
Cape Verde	-	-
Central African Republic	MICS 6	2018
Cameroon	MICS 5	2014
Congo	MICS 5	2014
Ivory Coast	MICS 5	2016
Equatorial Guinea	-	-
DRC	MICS 6	2017
Gabon	DHS	2012
Gambia	MICS 6	2018
Ghana	MICS 6	2017
Guinea	MICS 5	2016
Guinea-Bissau	MICS 6	2018
Liberia	DHS	2019
Mali	MICS 5	2015
Mauritania	MICS 5	2015
Niger	DHS	2012
Nigeria	MICS 5	2016
Sao Tome and Principe	MICS 6	2019
Senegal	DHS	2018
Sierra Leone	MICS 6	2017
Chad	MICS 6	2019
Togo	MICS 6	2017

List of surveys for the “Skills assessment of new entrants to primary school”.

Country	Year
Cape Verde	2013
Cameroon	2016
Congo	2018
DRC	2018
Ivory Coast	2017
Gambia	2017
Guinea	2018
Mali	2017
Mauritania	2013
Niger	2016
Sao Tome and Principe	2015
Senegal	2015
Togo	2013

Notes :

In blue: in these two countries, the surveys were conducted by CONFEMEN.

In yellow: in these two countries, which were the pioneers of skills assessments, the surveys do not include the organisation of pre-school structures (nor the duration of pre-schooling in Mauritania).

List of countries covered by the PASEC 2019 surveys

Benin	Gabon
Burkina Faso	Guinea
Burundi	Madagascar
Cameroon	Niger
Chad	DRC
Congo	Senegal
Ivory Coast	Togo

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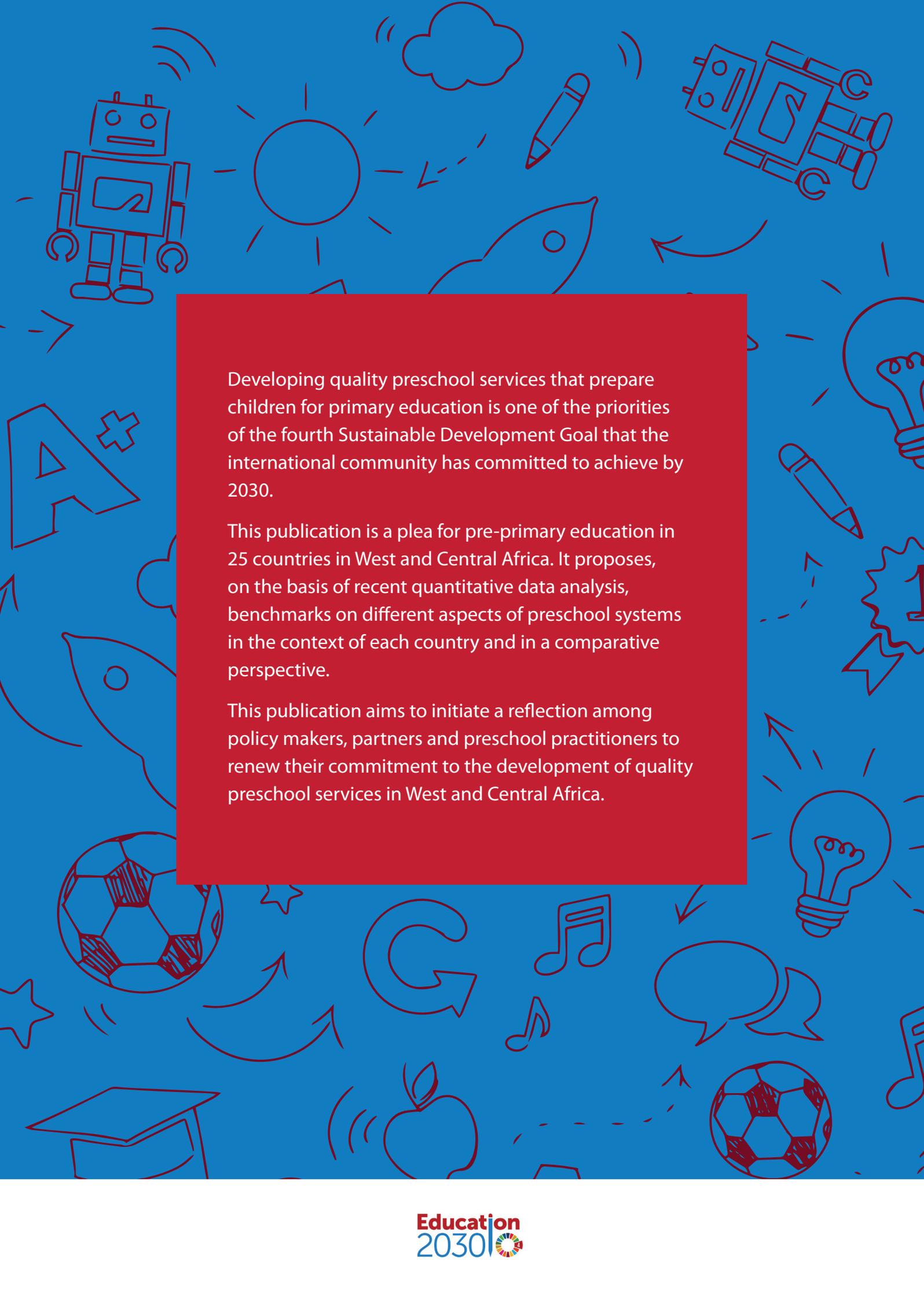
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Developing quality preschool services that prepare children for primary education is one of the priorities of the fourth Sustainable Development Goal that the international community has committed to achieve by 2030.

This publication is a plea for pre-primary education in 25 countries in West and Central Africa. It proposes, on the basis of recent quantitative data analysis, benchmarks on different aspects of preschool systems in the context of each country and in a comparative perspective.

This publication aims to initiate a reflection among policy makers, partners and preschool practitioners to renew their commitment to the development of quality preschool services in West and Central Africa.