The Future Of Our Children:

Lifelong, Multi-Generational Learning

For

Sustainable Development

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Prepared by

Thematic Group 4

(Early Childhood Development, Education And Transition To Work)

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Authorship

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1. Introduction and context

Educating children and enabling them to be productive, fulfilled individuals who can live life to their full potential is the first responsibility of every society. The global education community has long recognized both, the inequities that arise from denying children access to high quality education, and the slow pace of its spread across the world. Starting from the World Declaration on Education for All, the United Nations system and its member countries have adopted and reiterated their commitment to the goal of universal education for all.[1]The Millennium Declaration recognized this as an unfinished task of the new age, asking each country to "*ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling and thatgirls and boys will have equal access to all levels of education*".[2]

This two decade long global effort has yielded real results- with access to primary education expanding rapidly across the world during this time. Enrolment and literacy rates have improved, and there has been a gradual movement towards convergence of access-mostly between girls and boys- but also across linguistic, cultural, ethnic, class, and geographic disparities. Yet, the improvement is greatly uneven and we are not even close to being able to provide every child with the quality of education she or he needs to participate effectively in our society. As the world moves towards the Millennium Development Goals (MDG) deadline of 2015 and begins to ponder on the next set of global objectives, the challenge of enabling every child to access the right to universal quality education remains.

Several inter-governmental processes are underway that are helping define the post-2015 development agenda. Many of these efforts reflect wide ranging consultations with civil society organizations, in-country conversations with policy makers, children, educationists and political leaders. Many reflect the experiences of the past five decades of goal setting and global policy discussions around education. All have produced valuable insights on the state of education, and the immediate priorities of the coming decades. A few such efforts are particularly relevant for the goals related to children and young adults: The Report of the High Level Panel of Eminent Persons on the Post 2015 Development Agenda called for a global consensus around a single sustainable development agenda, with a specific focus on quality education and lifelong learning.[3]The report of the Global Thematic Consultation on Education has proposed a similar focus on equitable and quality education and lifelong learning.[4] The UN Global Education First Initiative calls on countries to prioritize putting every child in school, to improve quality of learning, and to foster global citizenship[5].

The Sustainable Development Solutions Network (SDSN) is a collaborative network launched by UN Secretary-General Ban Ki-moon to accelerate practical problem solving for sustainable development and to support the framing of the development objectives for the next two decades. This report has been prepared by the Thematic Group on Education as an input to the ongoing global policy dialogue. It focuses on how best education interacts with both the challenges, and the solutions for sustainable development. It offers a departure from some of the other reports by focusing on all children and adults, especially in their earliest years. Like some other reports, it emphasizes the need to focus on a broad set of learning outcomes to guide policy design and performance. It hopes to inject a sense of urgency in efforts to reach all young people, and focuses especially on innovations in learning content, delivery channels and quality improvements, arguing strongly for well-funded high quality educational systems that focus on improved outcomes for children, be they in the space of early cognitive and physical development, better and more relevant learning, or preparedness for work and life.

1.1 Making the Case

1.1.1 Education as a Fundamental Right

Education is an important right in itself. The right to education has been recognised since the Universal Declaration of Human Rights in 1948. Article 26 of the Declaration stated that "*Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education shall be compulsory…education shall be directed to the full development of human personality and to the strengthening of respect for human rights and fundamental freedoms".*[6]Subsequently, the right to education was reiterated in several international conventions such as the International Covenant on Economic, Social and Cultural Rights (ICESCR, 1966), the Convention on the Elimination of all Forms of Discrimination against Women (CEDAW, 1979), the Convention on the Rights of the Child (CRC, 1989), and the Convention on the Rights of Persons with Disabilities (2006). Today, many countries, drawing from the international treaties, have established the right to education as a basic right within their national constitutions.[7]

1.1.2 Education for Sustainable Development

The SDSN fully supports the Rio+20 vision of sustainable development as a holistic concept addressing four dimensions of society:[1]economic development (including the end of extreme poverty), social inclusion, environmental sustainability, and good governance including peace and security.Societies

[1] The Rio+20 outcome document refers to three dimensions of sustainable development (economic, social, and environmental) and good governance, which is sometimes described as the foundation of sustainable development. For simplicity we refer to the four societal objectives as dimensions of sustainable development.

aim to achieve all four dimensions. Failures in one area, such as environmental sustainability or gender equality, can undermine progress in others, such as the eradication of poverty.Poor governance and insecurity can all too easily undermine progress on economic, social, and environmental objectives.[8]

Dimensions of sustainable development: economic development

Education at all ages is a critical element of achieving sustainable development in all its dimensions. A good quality education is the basic weapon to end extreme poverty and its inter-generational transmission; and long-term economic growth depends on an educated and healthy population. Other aspects of extreme poverty- such as improvement in health outcomes-are intrinsically linked with behaviour change-brought about in large part through public and community education. The large number of the world's children that start life at severe risk – over 200 million -- threatens the global goals of poverty eradication, sustainable development and social stability.[9] Available benefit-cost evidence suggests that early childhood development (ECD) interventions of sufficient quality could reduce that number and thereby contribute substantially to a nation's future workforce and its active participation in community and society. Existing research shows three types of ECD interventions with evidence of cost effectiveness: a) health interventions shown to reduce maternal and infant mortality; b) parent-directed programs for 0-3 year olds with a combined focus on breastfeeding, complementary feeding and nutrition, and early stimulation and responsiveness; and c) pre-primary education. Parent-directed interventions for disadvantaged mothers with at-risk children showed evidence of cost-effectiveness.[10] Quality pre-primary education in high-, low- and middle-income countries is associated with large benefit-cost ratios, estimated as 6 or larger in recent studies.[11] This happens in several ways: first, investment in ECD programs and policies, coordinated across education, health, and social protection, raises the ceiling of developmental potential at the individual, community and national levels. Second, because effective ECD requires building the capacity of health, education, and protection systems, and across private and public sectors, it can form the basis for integrated approaches to sustainable development.

There is substantial evidence to show that countries with better educational outcomes have improved demographic and health indicators. A higher level of education, especially among women, has been shown to contribute positively to demographic change- it increases the age of marriage and child survival, and improves awareness of forms of contraception, leading to lower levels of fertility and overall rates of population growth.[12] Increased levels of education are also linked to improved health outcomes, as measured by falls in mortality rates, risk reduction of chronic non communicable diseases such as diabetes and heart disease, and a fall in morbidity-related work days; in most studies, the effect

of improved education on health is the greatest in the low and middle income countries.[13] Additionally, there is a strong inter-generational effect of education, both in terms of healthier children, but also in terms of better educational outcomes for second-generation learners.[14].

Dimensions of sustainable development: social inclusion

Education enables children at all agesto learn far more than basic literacies- to learn values of civic behaviour, social justice, global citizenship, and skills of critical reasoning, innovative thinking, interpretation, socialization, self-direction, and creativity; making them more likely to form communities that are economically and socially inclusive- thereby building the social capital for a sustainable future.

Moreover, quality ECD services can reduce inequality. Across many studies, the positive impacts of ECD on child outcomes are strongest for the most disadvantaged; this suggests that ECD can be an effective approach to reducing social and educational inequality.[15] A recent estimate, based on data from 73 low- and middle-income countries, indicated that $196 billion in lost productivity was associated with the educational attainment gap for 15-19 year olds between the richest and poorest quintiles. In low-income countries, these estimates suggest that this attainment gap could be cut in half by increasing pre-primary enrolment to 50% (i.e., from the current average of 15% to 50%).[16]

Dimensions of sustainable development: environmental sustainability

Support for learning in early childhood can create participatory processes of children and adults for ecosystem conservation and innovations in care for the environment. In all aspects of implementation of ECD programs and policies, protecting the natural and cultural diversity of environments can be integrated with curricula, standards and practice. The future of our planet depends on investments in research to develop new technologies, use of renewable energy, ways of reducing greenhouse emissions, and better management of our forests, ecosystems, and oceans. Preparing scientists who can undertake this research and push the frontiers of sustainable scientific inquiry will depend on investments in higher education.

Conversely, sustainable development policies can play a transformative role in child and human development. For example, environmental toxins can wreak especially potent damage on life-course health in the first years of life, when neuronal development is at its most rapid and plasticity, or the sensitivity of growth and development to external influence, is highest.[17] Efforts to reduce environmental toxins can benefit growth and development.

Dimensions of sustainable development: good governance (including peace and security)

Sustainable development is impossible without good governance; including peace and security, but going far beyond, to create a society that governs itself in a transparent, rules-based manner, and where its members have a common understanding of its shared objectives and collectively uphold the rule of law. Education is a vital element of a strategy to build governance structures that are effective, fair and sustainable.

The empirical experience of developed countries illustrates more clearly what the economic literature is attempting to show: investments in large scale public education have nurtured and sustained economic growth and well governed societies. The more recent examples of East Asia have been widely discussed in the development literature and show the consistent economic and social rewards that East Asian countries (starting with Japan in the late 19th century, and including South Korea, and more recently China) have reaped from an early focus on creating an educated population.[18]

Most of today's education systems are not truly designed to ensure the breadth of learning that will be needed for sustainable development. In order for learning to achieve impact on societal sustainability, it has to spill over multiple contexts and age groups. In this report we present a vision of education that is based on the right of every child, parent and adult to access quality learning opportunities across their life span to build a common and better future for their societies.

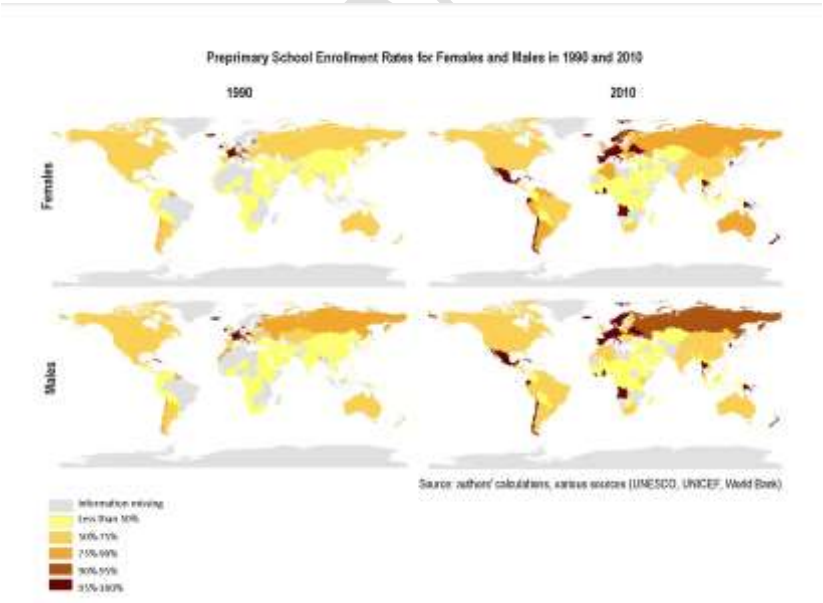
2. A Global Report Card

2.1 Trends across enrolment and completion at different levels of education, 1990 and 2010

Pre-primary enrolment rates across the developing world are low and scattered (Map 1). Rates are marginally higher for boys as compared to girls, with an improvement especially in middle income countries since 1990. Yet fully 85% of children in low-income countries had no access to pre-primary education in 2010. Regionally, 83% lacked access in sub-Saharan Africa and 78% in the Arab states. Levels of public spending on pre-primary education, expressed as a percentage of public spending on education, were less than 5% in over 50% of countries with available data in the 2000's.[19]

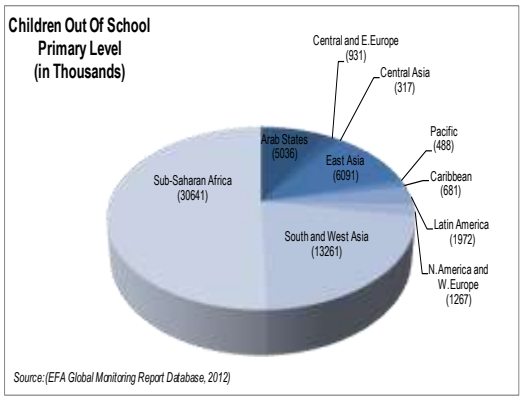
As for other indicators of early childhood development available across the majority of the world's countries, there have been notable declines in absolute poverty for children under 5 in the South Asia, East Asia, and Latin America / Caribbean regions, with some exceptions, but declines have been much smaller since the 1990's in other regions. The highest rates of young child absolute poverty are in sub-Saharan Africa (46% in 2006).[20]The story is somewhat similar regionally for stunting by age 5, with substantial declines in South Asia, East Asia and Latin America / Caribbean, and rates in 2010 highest in South Asia (36%), Southeast Asia (27%) and sub-Saharan Africa (45% in eastern Africa; 39% in middle Africa).[21]

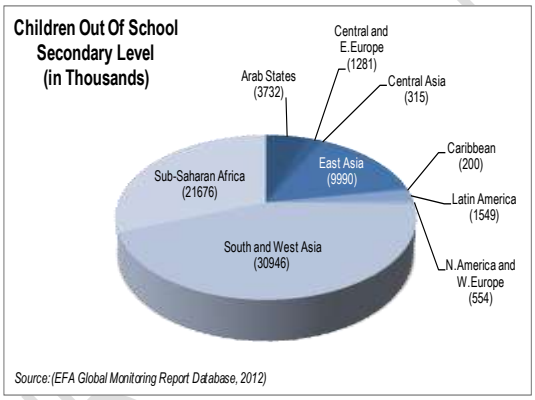
Map 1: Gross enrolment rates for girls and boys, pre-primary levels, 1990, 2010[22]



Over 60 million children are out of primary school today, with half of them in sub-Saharan Africa, and about 13 million in South and West Asia. Of these, 53% are girls, totalling 16 million in sub-Saharan Africa, and 7 million in South and West Asia. At the secondary level, there are 70.5 million adolescents out of school, with nearly 31 million in South and West Asia, and over 21 million in sub-Saharan Africa.

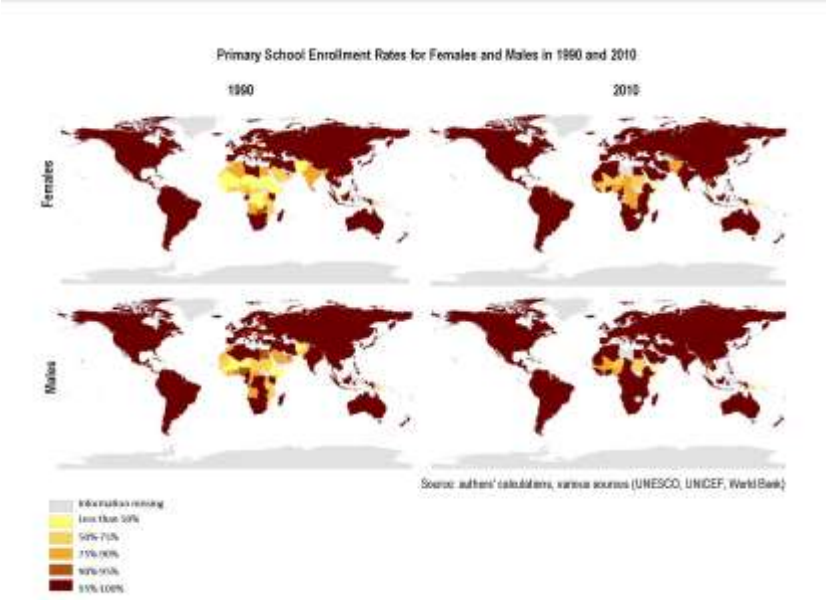
Figure 1: Out of School Children by Region





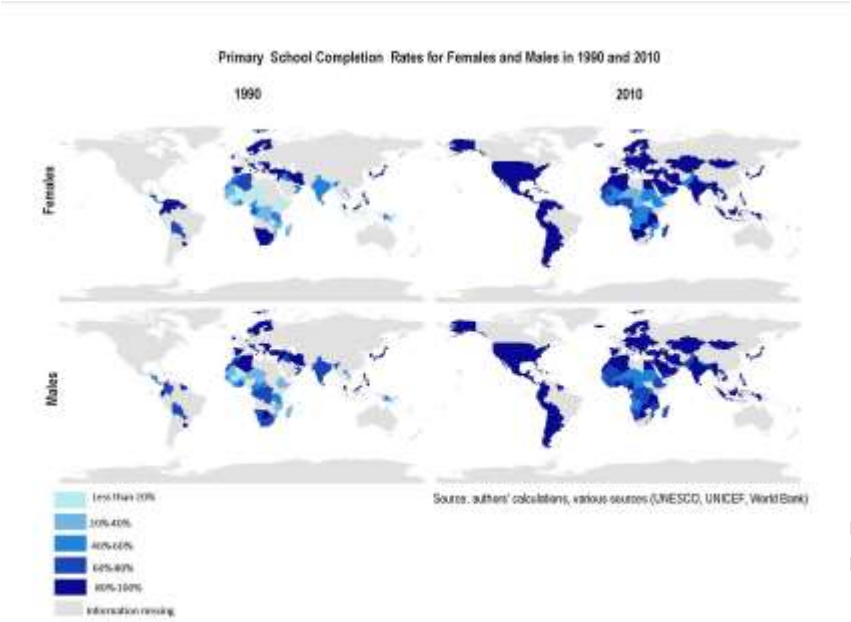
Primary enrolment rates reflect the real success of education policies over the past 2 decades (Map 2); they have expanded rapidly in sub-Saharan Africa and South Asia, for boys and girls since 1990.

Map 2: Gross Enrolment Rates for girls and boys, primary levels, 1990 and 2010.



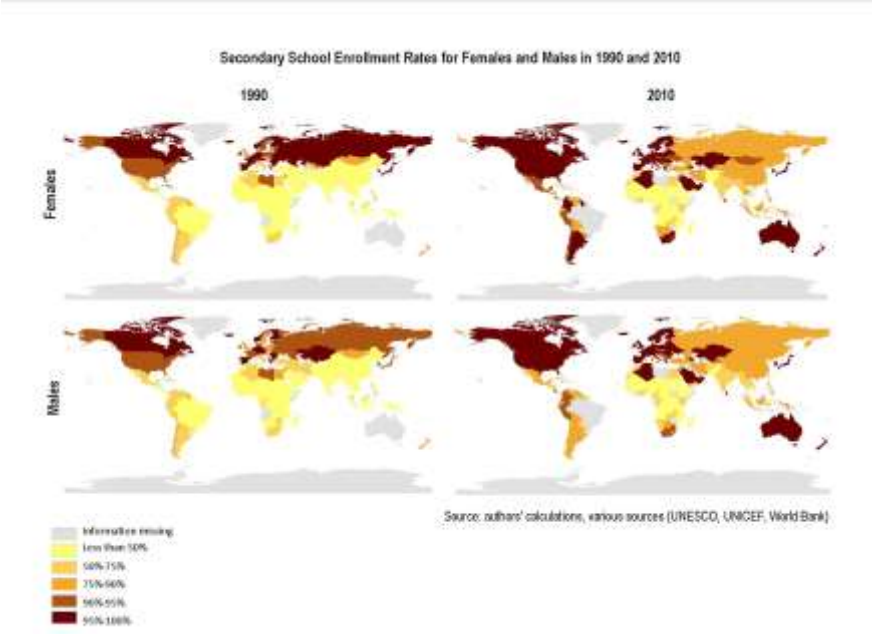
Since 1990, there has been a marked improvement in completion rates for girls and boys at the primary level. The largest gains are in sub-Saharan Africa and parts of South and West Asia (Map 3).

Map 3: Completion rates for girls and boys, primary level, 1990 and 2010



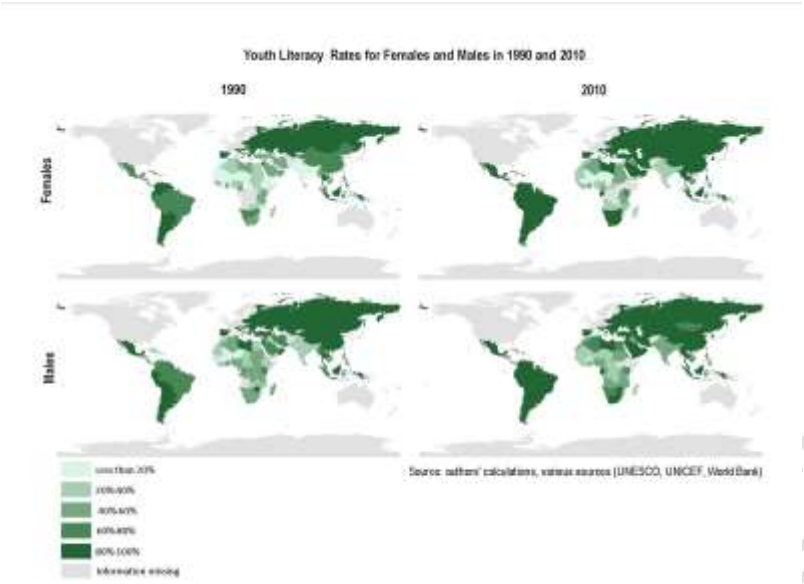
Secondary enrolment rates have improved but because of low primary completion, remain low in most of the developing world- pointing to high drop outs and low transition rates from primary.

Map 4: Gross Enrolment rates for girls and boys, secondary level, 1990 and 2010.



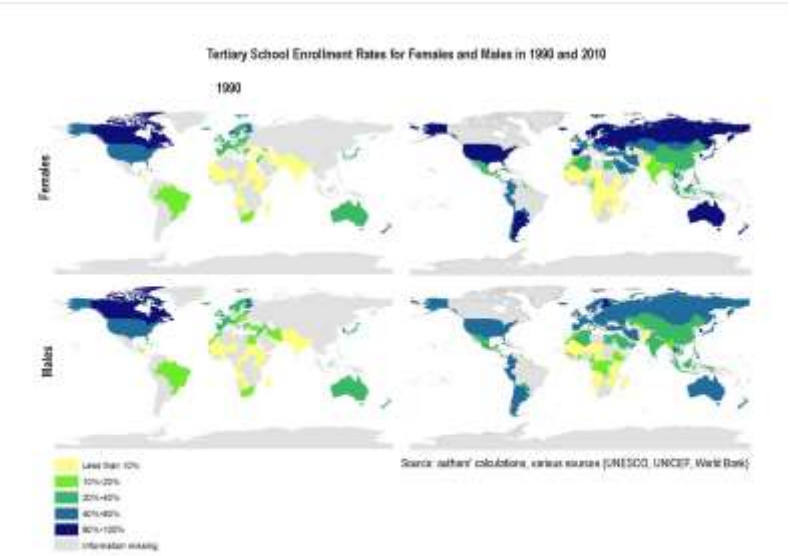
More young people are literate than ever before. Most of the gains are in Latin America and East Asia, and the highest proportion of illiterate youth remains in sub-Saharan Africa.

Map 5: Literacy rates, young women and men (15-24 years), 1990 and 2010.



The expansion of tertiary education has been slow and levels remain much behind the developed world (Map 6), where current average enrolment is 67 percent. In developing countries, the corresponding rate is 18 percent.[23] This is the stage where the majority of young people, both men and women drop out of the formal education system. Gender gaps begin to widen enormously. In sub-Saharan Africa, gross enrolment rates among women at the tertiary level are 4 percent (compared to 7 percent for men) and in South and West Asia, these rates are 10 percent for women (as compared to 13 percent for men).

Map 6: Enrolment rates for young women and men, tertiary level, 1990 and 2010



2.2 What Does Shifting Away from Business As Usual Mean?

What does a shift from a Business As Usual (BAU) Scenario mean? There are three different ways of thinking about shifting away from Business As Usual. First, in its most literal sense, business as usual would imply a scenario where countries continue with historical policies, investments, and programs that lead to incremental changes in overall outcomes of access and quality. The first shift from business as usual would therefore imply a break from historical trends and norms; this was the scenario that the Millennium Development Goals aimed to bring about- by urging countries to accelerate progress in access and completion of primary education. This first shift from BAU focused mainly on primary education and the challenges of creating an inclusive, publicly funded, high quality education system that brought all children into the schooling system. As the previous section showed, over two decades of effort in this direction has yielded significant improvements in enrolment and completion. Yet, several of the original challenges remain. Public education systems remain severely underfunded in many countries, making it impossible to make the basic investments in infrastructure, teachers, and learning materials that are needed. Millions of children still remain outside of the schooling system. In many countries as the previous section maps show, completion and transition to post primary education remains very low. The first path away from Business As Usual therefore, will require completing, with a renewed focus, the promise of universal primary education.

The second, related shift away from Business As Usual will need to focus on the *quality and reach* of the *overall* education system.[2]Most countries have equated the opening of schools and appointing of teachers with ensuring access. Yet the agenda of universal access is not complete until learning occurs universally. At the primary level this means a much stronger emphasis on what children are learning from teachers and peers in classrooms. Evidence shows that national learning indicators move slowly, even in relatively high performing countries.[24] This requires not just ensuring that children are physically in school, but focusing on the way teachers are trained, the content of the curriculum and learning materials that students are expected to learn, and the pedagogical tools teachers employ to help children achieve learning outcomes.

At the post-primary level, children in many low- and middle-income countries are not able to complete a full course of basic and secondary education and reach a level of learning where they are ready to enter tertiary education. Access to secondary education is also much poorer- in much of South Asia and sub-Saharan Africa, enrolment rates are less than 50 percent. Secondary education is much more expensive than primary- required investments per child are estimated at two to three times those at the primary.[25] The level of training of teachers and the quality of infrastructure is also much higher and more specialized. The tertiary education system is out of bounds for most children in developing countries today. Studying countries that have trend data on learning outcomes show that half of developing countries with learning data from standardized tests such as PISA would take over 30 years to achieve OECD learning levels. In the case of selected sub-Saharan African countries, reaching OECD levels would take over 130 years (Table 1).

[2]The six EFA goals highlighted the pathways for exactly such a shift towards comprehensive, quality education across all level of the system.

Table 1: Catching up to OECD levels for PISA and SACMEQ tests, selected countries

PISA scores improvement (2000-2009)				
Country (year if not 2000)	**Reading**		**Mathematics**	
	Points per year gain (loss if neg)	Years to reach score of 500	Points per year gain (loss if neg)	Years to reach score of 500
Argentina	-2.22	Forever	n/a	n/a
Brazil	1.75	51	4.97	23
Chile	4.42	11	n/a	n/a
Indonesia	3.45	28	1.86	69
Mexico	0.37	204	5.55	15
Peru	4.73	28	n/a	n/a
Thailand	-1.03	Forever	0.27	304
Tunisia (2003)	4.84	20	2.13	60
Turkey (2003)	3.87	9	3.67	15
Uruguay (2003)	-1.36	Forever	0.77	95
Median	**2.6**	**32**	**2.13**	**38**
SACMEQ scores improvement (2000-2007)				
Botswana	1.93	80	1.09	155
Kenya (1995)	-0.02	Forever	-0.9	Forever
Lesotho	2.39	92	4.24	50
Malawi (1995)	-2.43	Forever	2.01	120
Mauritius (1995)	1.94	59	5.53	12
Mozambique	-5.81	Forever	-6.6	Forever
Namibia (1995)	1.99	96	5.73	38
Seychelles	-0.99	Forever	-0.51	Forever
South Africa	0.37	521	1.24	156
Swaziland	2.83	49	3.47	43
Tanzania	4.56	24	4.33	31
Uganda	-0.53	Forever	-3.49	Forever
Zambia (1995)	-3.59	Forever	0	Forever
Zanzibar (1995)	3.97	38	1.69	118
Median	**1.15**	**150**	**1.46**	**134**

Modified and reproduced from Beatty and Pritchett 2012

This second shift away from Business As Usual would therefore require two components: a focus on improving learning at the primary level, and learning from the experience of primary expansion to think about post-primary expansion in a way that combines the twin objectives of learning and access.

But as we saw in Chapter 1, even if these two shifts from Business As Usual occurred, they would not necessarily create an education system that prepared children and young adults for the world that we are entering into. The challenges of sustainable development require a population that is trained not just in basic numeracy and literacy, but in advanced cognitive skills, in analytical skills, and in social, cultural, civic and emotional skills; it requires a population that invests in children at birth-long before they enter schools; it requires a productive and skilled workforce that can respond to the needs of a

sustainable society; and it requires a society that regularly upgrades and reinvests in its own people at all ages to build new competencies. Table 2 shows that even economically prosperous countries today are not entirely ready for these challenges. While education systems respond to the challenges of primary, secondary, and tertiary access and learning, they do not respond systematically to the need to prepare young infants for life, or prepare young adolescents and adults for work or citizenship, or adults for lifelong learning. Some of these new challenges can be addressed through existing structures- but some will require innovations in design and delivery models.

Table 2: The Business As Usual Scenario

Region/	North America	Latin America, Caribbean	Europe and Central Asia	Arab World	Sub-Saharan Africa	South Asia	East Asia & Pacific
Early childhood development: Stunting	No change from low base	Substantial declines but highest prevalence continues to be Central America	Little change from low base in Europe; declines in Central Asia (28% 1990 to 20% 2010)	Considerable variation with some higher-income nations with higher rates	Small declines 1990 to 2010 in 2010 45% in East Africa and 39% in Middle Africa	Substantial declines but still high prevalence in 2010 (36% south-central Asia; 27% South-eastern Asia)	Large declines from 36% (1990) to 12% (2010) in East Asia; very little decline in Oceania
Early childhood development: Absolute poverty	Some increase in 1990s and 2000s from very low base	Declines, 1990s and 2000s, to 10% in 2006	Low base; stagnant	Little change; 4% in 2006	Small declines to 46% in 2006	Declines in 1990s and 2000s to 27% in 2006	Substantial declines in 1990s, 2000s to 11% in 2006
Early childhood development: Preprimary enrollment	Modest increase between 1990 and 2010	Large increase in the region from 41% in 1990 to 71% in 2010	Modest increases in Europe from relatively high base; in central Asia large decline following dissolution of the Soviet Union followed by slow recovery	Increase from very low base (13%) in 1990 to 24% in 2010	Increase from 10% (1990) to 17% (2010)	Increase from 14% (1990) to 49% (2010) but concerns about quality	Large increase from 23% (1990) to 57% (2010)
Primary completion and learning	Near universal completion, with most children achieving minimum stage appropriate learning outcomes	Very high completion, with pockets of inequality of access, variable quality	completion and achievement of learning outcomes, with some reversals in Central Asia due to falling investments	completion and achievement of learning outcomes, with narrowing gender based inequalities	but nearly 30% percent still drop out of primary, mostly girls in rural areas from poor households; emerging evidence shows poor results on learning outcomes	Improvements in completion, with large pockets of inequality, regression in stage appropriate learning outcomes	High rates of completion and learning outcomes, with difficulties of access in small island countries
Post-primary completion and learning	Near universal completion, with high but variable quality of learning outcomes achieved	High completion rates, with girls outperforming boys, and lower access and completion rates in the Caribbean	Near universal completion, with variable quality of learning outcomes in Central Asia	Less than three quarters enrolment, with inadequate data on completion and learning	Less than thirty percent enrolment with inadequate data on completion; recent assessments show poor learning outcomes	Less than 50% enrolment with inadequate data on completion; recent assessments show poor learning outcomes	High (over three quarters) rates of enrollment with inadequate data on completion. Learning outcomes are variable
Basic literacy and numeracy skills	High	High	High	Medium	Low	Low	High
Comprehensive skills*	Not systematically addressed	Not systematically addressed	Not systematically addressed	Not systematically addressed	Not systematically addressed	Not systematically addressed	Not systematically addressed
Vocational Skills	Not systematically addressed	Not systematically addressed	Not systematically addressed	Not systematically addressed	Not systematically addressed	Not systematically addressed	Not systematically addressed
Skills for non formal work and livelihoods	Not systematically addressed	Not systematically addressed	Not systematically addressed	Not systematically addressed	Not systematically addressed	Not systematically addressed	Not systematically addressed
Skills for formal employment/tertiary education	High rates of participation, challenge of evolving economic needs	Low rates of participation, challenge of evolving economic needs	High rates of participation in Europe, lower rates in Central Asia	Low rates of participation, challenge of appropriate preparation for work	Very poor rates of participation, poor preparedness for work	Low rates of participation and preparedness	Low rates of participation, challenge of evolving economic needs
Lifelong learning	Not systematically addressed	Not systematically addressed	Not systematically addressed	Not systematically addressed	Not systematically addressed	Not systematically addressed	Not systematically addressed

**comprehensive skills refers to the broader set of 21st century skills: science and math competencies, together with teamwork, organizational skills, analytical skills, self-learning, creativity, innovation, social and emotional maturity*

In the next chapter, we lay out the emerging challenges that countries will face over the next fifteen years. We argue that they require a much broader and faster set of actions than in the past, and will need for educationists, policy makers, civil society, parents, and communities to come together build a sustainable future.

3. Upcoming challenges: the scale and scope of problems

Despite the diversity in cultural and economic contexts, education systems across the world have followed a remarkably similar structure for the last 2 centuries: they open their doors to children between the ages of 4 and 7 years, adopt similar systems designed to transfer knowledge across 5-6 subjects spanning language, arithmetic, basic sciences, and social studies for the next 12 years.This knowledge is transferred from the teachers to students through a similar set of pedagogical tools in classroom groupings ranging from 20 to over 100 students. Teachers are identified throughpen and paper exams and trained to have subject matter knowledge and pedagogicalexpertise to varying degrees. In most countries teachers are also *de facto* role models for young children, introducing them to norms of social and cultural behaviour and values. Schools provide safe havens to children for 6-8 hours a day, where they are sorted by age, and are exposed to academic studies, to sports, and to varying degrees, social skill building activities. Standardized exams at the end of the schooling cycle then test children for their knowledge and preparation for higher education. Tertiary systems of education are also remarkably similar. Students either prepare for professional degrees, or liberal arts and natural sciences, or vocational skills (not available everywhere) that sort them for the occupational specializations of a post agricultural, largely industrial society.

This description, though crude, approximates reality across countries in the world today. It underlines the greatest purported value of education systems – theoffer of a level playing field, and the promise of social and economic mobility. They help create a large pool of labor with common skills. They have proven to be resilient and effective ways of bringing in massive numbers of children from diverse backgrounds together for a common socialization process. These systems have been replicated across the world, starting from a base in Northern Europe in the 1700s, and today form a mostly unquestioned core edifice of society. Today over 1.2 billion children are enrolled in formal systems of schooling worldwide- the largest number and the highest proportion of children ever in the history of humankind[26].

The differences across education systems in different countries are also significant. The first difference is that of resources: estimates show that countries in North America and Western Europe spent approximately US$7,900 per pupil as compared to US$263 per pupil in South and West Asia, and US$134 per pupil in sub-Saharan Africa in primary education in 2010 (PPP adjusted constant 2009 prices).[27]The second difference is in the way teachers are identified, trained, supported, and treated by their employers, their community and the parents of the children they teach. Finally, there are significant differences in how curricula are designed, how learning is assessed, and how standards are

determined and maintained. All of these differences explain to varying degrees, the wide variation in educational outcomes across countries.

Looking forward towards the next fifteen years, there are four societal changes that can affect education systems. First, a growing young population in much of the Arab World, South Asia and Sub-Saharan Africa, among other regions, is a challenge when coupled with growing aspirations of the population that is more literate and getting increasingly familiar with economic growth. Not only will more children need more primary schools but as they complete primary education, there will be much greater demand for secondary, vocational, and tertiary education.

Second, in most parts of the world, people are becoming more mobile and urban. Higher rates of mobility are becoming the norm not only within countries, but also across countries. This means that planning for educational expansion will require taking into account forecasts of rapidly shifting populations, and differential shifting rates by demographic structures.

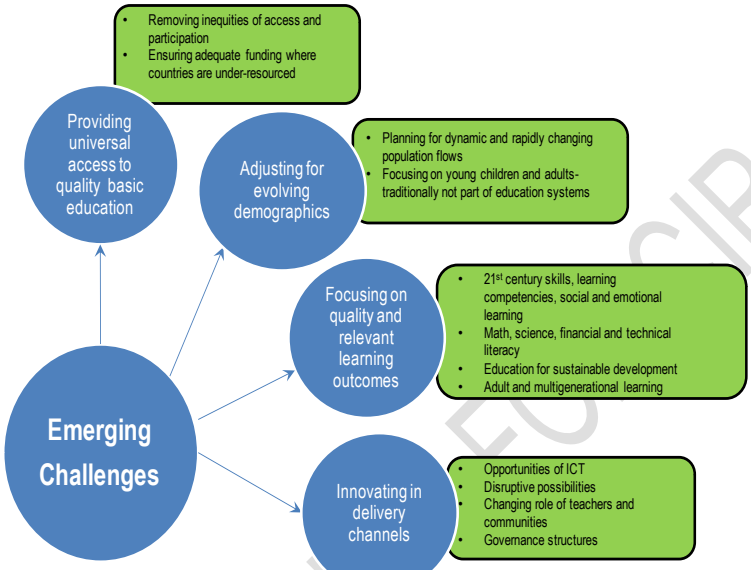
Third, the old definitions of literacy of simple ability to read and count are no more sufficient. Of course there is enough evidence from different parts of the world that indicate that even this basic literacy is not imparted effectively. But going beyond basic numeracy and literacy, there are several other types of basic literacies that are critical. Digital literacy and financial literacy are becoming essential to participate in globalizing economies. Health and safety hazards come in many forms now not only in public places but at home too. Science literacy and Math literacy are a growing need for all ages.

Fourth, technology is changing our individual and collective lives dramatically in all its aspects – economic, political, and social- to varying degrees around the world. The communication revolution has created immense possibilities, but it is also throwing challenges of making judicious choices in a deluge of information. As degrees of individual freedom grow, it is important to learn to become individually and collectively responsible for sustainable growth at all levels of human society. Information and communication technology can be an important ally in expanding access and improving quality. However, to equate this with merely placing computers in classrooms will be a grave error. The essence of the ICT revolution is that it allows free flow of information and knowledge which is also characterized by random access to it. As more and more children, adults, and parents seek access to the massive human collection of knowledge, we need to consider systemic barriers to access to knowledge and how the population, especially in the developing world can be enabled to overcome these barriers. The world of education is already experimenting with new tools (such as online learning, flip classrooms, and MOOCs). For now, this is largely in the domain of the more academic sphere of

learning. In the developing world, there is relatively little understanding of the ways in which technology can serve to improve educational outcomes in practical and immediate ways.

Finally, as we work towards creating sustainable development goals, the complex web of problems that will need resolution will require skills, knowledge and contributions that exceed the current capacities of most education systems- both in the developed and developing worlds. In the next section, we highlight the four broad challenges that emerge from the societal shifts described above (Figure 2). They reflect, both, the unfulfilled agenda of the Millennium Development Goals, and the new responsibilities of creating global citizens that can continually participate in learning.

Figure 2: Schema of Emerging Challenges



3.1 Continuing inequalities of access and participation:

Over the last few decades, despite expansion, education systems have not been able to reach out to the most marginalized and vulnerable children-who in fact are likely to be their biggest beneficiaries. Children do not enter the schooling system on an equal footing- their gender, social and political environments, family background and income levels, location and access to schools, and ethnicity, all play a role in determining not just access but also how well they are able to learn and cope in formal schools. In many countries, education systems are systematically under-funded-making it difficult for them to garner the additional resources needed to reach every girl and boy and retain them in school.

Girls face systemic challenges…

Evidence shows that despite recent progress, gender matters immensely. In most developing countries girls face significant domestic responsibilities, ranging from caring for siblings and sick relatives, to collecting firewood and water, often requiring several hours of walking a day, to helping in domestic tasks of cooking and cleaning, leaving them with much less time to attend school. Even if attendance is high at the primary level, once girls reach puberty, schools often cease to be safe places for them. Separate toilets, access to sanitary towels, and safe routes to and from school are largely absent. Parents are much more reluctant to send girls to school through their adolescent years. Consequently, girls are systematically less likely to continue on to secondary school than boys; in 2010, the enrolment ratio of girls to boys was 97% at the primary level, compared to 27% at the secondary level in sub-Saharan Africa. For South and West Asia the girls-to-boys enrolment ratio was 105% at the primary level, compared to 43 % at the secondary level.[28]

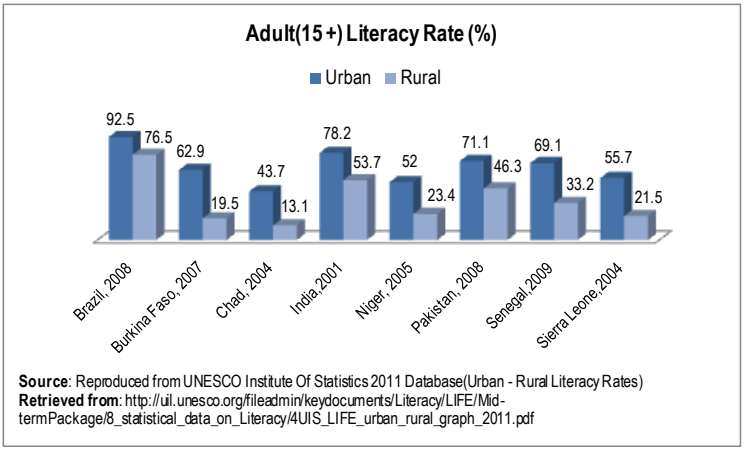
Children in conflict settings face huge disruptions in access to schooling…

Of the 60 million out-of-school children, nearly half (28 million) live in conflict or post-conflict situations where they face multiple barriers- apart from lack of access, they face physical danger in their quest for education; psychological damage from proximity to, and often forced participation in violence affects cognitive and emotional development; and the uncertainty of war disrupts education even when it is available, leading to interrupted learning. On average, the primary enrolment rate falls by 9% while the secondary enrolment rate falls by 29% in countries that face conflict.[29]Children in post conflict and fragile states need special attention and resources. The state education systems in these countries do not have the resources to create these additional facilities (for example, regular counselling, remedial programs for children who have missed school, etc.).

Access to education is harder in rural areas…

Physical location matters- children that do not have a school in proximity to their homes, or do not have safe transportation paths are often unable to attend with regularity. Twice as many children in rural areas are likely to be out of school than children in urban areas, and adult literacy rates are significantly lower in rural areas as compared to urban areas (Figures 3,4).

Figure 3: Adult literacy (15+years) by urban and rural populations for selected countries[30]

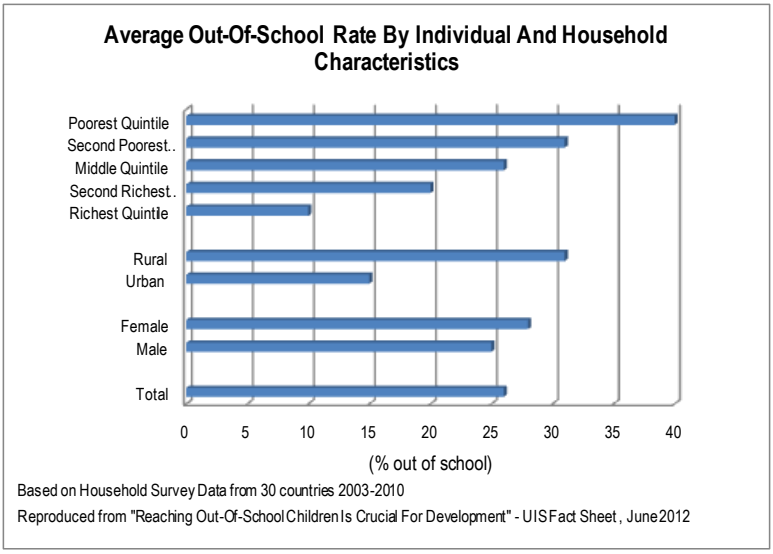


Source: Reproduced from UNESCO Institute Of Statistics 2011 Database(Urban - Rural Literacy Rates)
Retrieved from: http://uil.unesco.org/fileadmin/keydocuments/Literacy/LIFE/Mid-termPackage/8_statistical_data_on_Literacy/4UIS_LIFE_urban_rural_graph_2011.pdf

Children from poor and socially discriminated backgrounds are the hardest to reach…

Low family socio-economic conditions are the greatest barrier to access. Four times as many children from the poorest income quintile are likely to be out of school as compared to those in the top quintile (Figure 4). This is for several reasons; the most direct link is with affordability; in the absence of free schooling, parents struggle to afford to send their children to school. Financial vulnerability also increases the risk of drop out- and the ability of formal systems to bring back children who may temporarily have to leave for part of the school year (for example, during harvest times or seasonally for nomadic populations. Parents of children from low income homes have a higher probability of being poorly educated- leaving them both unable to communicate effectively with teachers, and to support their children when they struggle at school. Economic compulsions cause many children to drop out at secondary school level, in order to supplement family incomes. In such cases, children do not have the flexibility of distance learning or flexible hours of schooling at a high quality. Children from socially marginalized groups, tribal communities, or low castes are often marginalized within the education systems as well by teachers and their peers. Children from linguistic minorities face significant hurdles to learning. When the medium of instruction is in a language different from what children speak and learn at home, they face a double barrier--that of learning itself and of learning the language of learning.

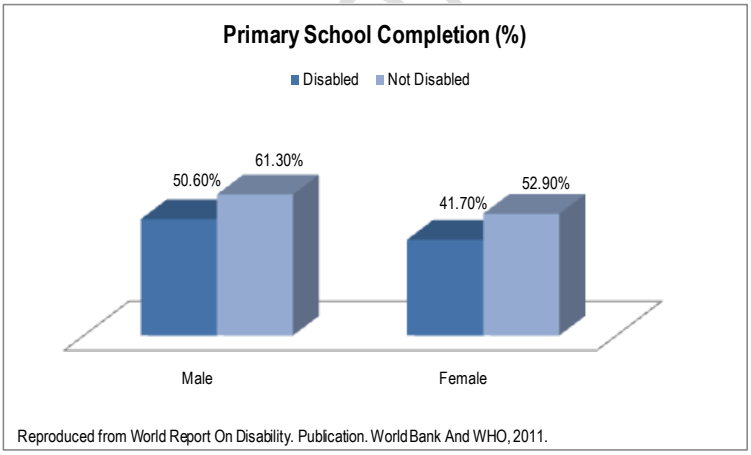
Figure 4: Economic profile of out of school children



Children with disabilities struggle to perform…

Children with special needs face tremendous odds in most developing countries. Schools are not built to allow easy access to children with physical disabilities; teachers are not trained to handle the learning requirements of children with cognitive challenges; formal systems of education have standardized curricula that children in these circumstances find hard to follow, and there are few cases where adaptation is easily possible and encouraged. As a result, the disparity between disabled and non-disabled children continues to be large

Figure 5: Differences in completion rates for disabled vs. non-disabled children



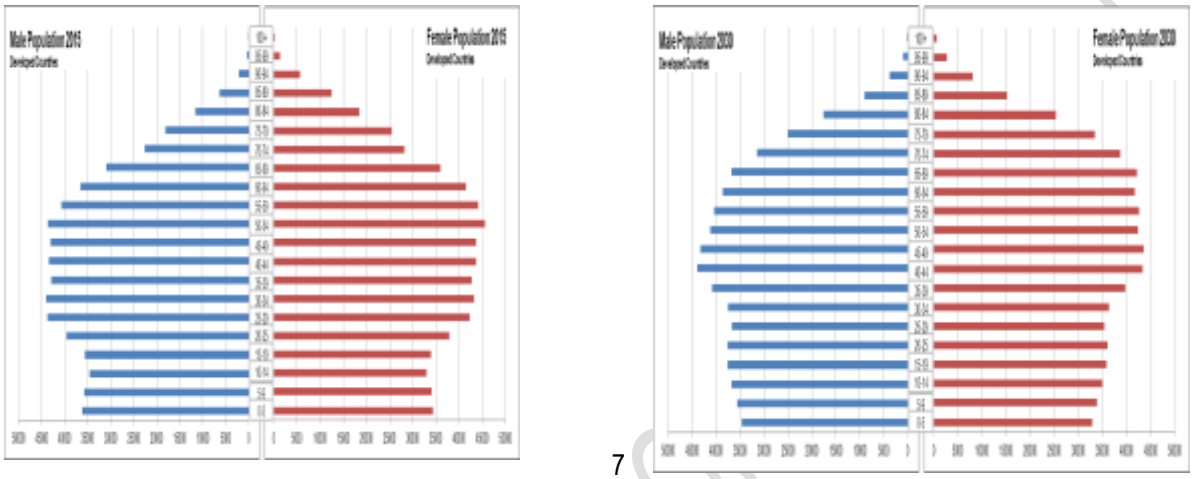
All of the barriers described above are possible to bring down- but they require a high level political commitment to reach every child, demonstrated by adequate financial resources to build a robust education system, and flexible, adaptable systems to reach out to children who are especially vulnerable.

3.2 The expanding target group for education

3.2.1 The implications of evolving demographics:

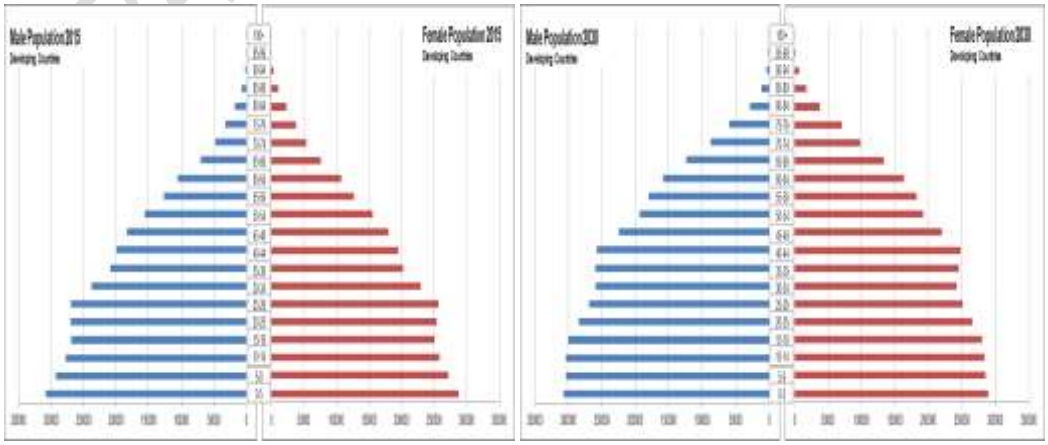
The demographic profiles of the developed and developing worlds are widely different (figures 6 and 7).[31]

Figure 6: Population structures in developed countries by gender, 2015 and 2030



The majority population in developed countries will be in the 40-70 years age groups by 2030. Of this population, nearly all will have gone through school education and nearly two-thirds will have gone through some form of vocational or higher education in its youth. This population will be part of a global work force competing with younger, more recently skilled workers from other countries. As society's needs evolve, its citizens will require new knowledge and skills to meet those needs. Yet, the largest share of the population in these countries does not currently have structured access to means of acquiring these skills over their working lifetimes.

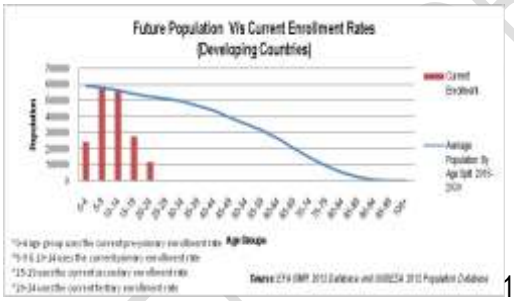
Figure 7: Population structures in developing countries by gender, 2015 and 2030



In comparison, by 2030, the majority of the developing world population will be in the 0-25 years age groups. The largest increases are estimated to be in 2 age categories: 0-25 years, and the 30-45 years age groups. In today's terms, this population comprises children ranging from those yet to be born to those who are currently 8-10 years of age; and those between 15-30 years of age. Both these age groups will determine the productivity, the social structures and the civic fabric of their societies.These demographic shifts are dramatic and have profound implications for the scale and nature of education needs that will emerge. They point to the need to not just prepare today's children, but create ways of enabling women and men of all age groups to acquire the tools necessary to be productive citizens.

Figure 8 demonstrates the gap in today's educational architecture: The current system (defined by the bars representing current enrolments) reaches only a quarter of the population, and in the case of developing countries, reaches less than half of the 0-4, and the 15-24 years population segments. In the case of the school going population, the figure camouflages the realities of inequitable access and poor quality- that despite the physical access-fail to deliver on the promise of education.

Figure 8: The limited reach of the education sector, 2015-2030



The implications of this gap are clear: first, the focus of education cannot be on the primary school age group alone (5-14 years). In developing countries, the 0-4 years age group, and the 15-24 years age groups are where the coverage gaps are highest over the 15 year period. In developed countries, while current coverage levels are high, the majority of the population will be in its late working age- without the means to acquire new, competitive skills. In both cases, systems of learning have to become more open to young children and adults.

3.2.2 The importance of early childhood learning and development:

Why does the 0-8 age group matter? Today,7 million children worldwide do not survive to their fifth birthday, and over 200 million children who do survive do not reach their developmental potential in early childhood, as indexed by either stunting or exposure to absolute poverty.[32] Risks such as

maternal undernutrition or poor mental health; lack of recommended breastfeeding; lack of access to clean water and sanitation; lack of learning opportunities; and exposure to violence lead to this loss of human potential.[33] Such experiences can get "under the skin," overwhelming the body's stress mechanisms and immune functions. These 200 million children are at high risk for school failure; early pregnancy; joblessness; and chronic and costly adult diseases.[34]The large number of the world's children starting life at severe risk and experiencing toxic stress threatens the goals of poverty eradication and sustainable development.[35]

Today, traditional systems of education are not designed for children below 5 years- most are dependent largely on household and informal care. They require support for their early cognitive, physical, social and emotional development, which is especially rapid in the years that the foundations of brain architecture and lifelong learning are being built. Because the kind of care needed at these ages is specialized and requires coordinated attention from health, education and social protection sectors, formal education systems cannot act alone to support early childhood development., Even if we consider only the constrained task of providing pre-primary education in centers, most formal education systems have been unable to integrate pre-primary care systematically into their structures.

3.2.3 The need for adult non-formal and continual education opportunities

Out of school children, illiterate men and women, or adults who dropped out of school are not targeted by formal education systems, in a systematic, high quality manner. While most countries have structures for non-formal and continuing education, the quality of curriculum and teaching, the effort towards outreach, and the flexibility offered to students is highly variable, with generally poor outcomes and extremely low coverage. And yet, adult learning (especially for women) is critical not just for its own sake, but because it has multiplier effects on households and communities. As described above, parental literacy is a significant predictor of student performance. Additionally, as the demographic forecasts show, the 15-30 years age group today will be the largest population cohort in 2030. Given low rates of secondary and tertiary enrolments, the majority of these men and women are not highly educated-the ability of countries to reach out to them through continual and remedial adult education will be critical to bring them into civic and economic activities, and to maximize their potential to contribute to sustainable development. In many countries this cohort may be larger than the cohort enrolled in primary and secondary schools. This will require a significant effort to scale up adult education, and most developing countries are not prepared for such an expansion.

3.3 What are children and adults learning?

Most formal systems of education focus on numeracy, reading and writing skills. They do not systematically measure or even recognize a broader, more ambitious set of learning outcomes. Skills of analysis and critical reasoning, innovative thinking, interpretation, and socialization are not recognized systematically as required and basic skills that students must acquire to complete their education. Learning is not just about math and literacy; it encompasses social and emotional learning and 21st century skills – teamwork; organizational skills; autonomous learning; self-direction; creativity; innovation; etc. These are the priorities not only for students, but for their teachers, their parents and all adults who come in contact with them. Learning also encompasses the much wider range of contexts and individuals – most importantly adults – parents, teachers, community members – in workplaces, households, community settings.

3.3.1 Low levels of basic numeracy and literacy skills

Estimates suggest that over 250 million children around the world lack the ability to read, write and count- despite being in school for four years or more[36]. The inability of governments to ensure basic literacy and numeracy skills at the primary school level, despite an unprecedented expansion in schooling *per se*, is the single greatest challenge facing basic education. While most countries have managed a significant and often rapid expansion in access to classrooms and teachers, this has not translated into improved learning levels. At the post primary level, the path is even steeper. The precedent of wealthy countries shows that average learning outcomes improve slowly at the national level, and based on the experience of wealthy countries, improving learning outcomes through the traditional route of increased expansion of formal schooling will take decades if not centuries[37].

3.3.2 Poor learning levels in emerging cross-country assessments at the secondary level

The evidence on learning outcomes across the developing world is scattered, but what we know is dramatic and worrying. There are still relatively few instruments of globally comparable assessments that we can to use to learning levels across countries. Since the first internationally comparable student achievement tests began through the First International Mathematics Study (FIMS) in 1964, just over 12 international tests have been conducted globally, culminating in the recent Trends in International Mathematics and Science Study (TIMSS) and the Programme for International Student Assessment (PISA) exams. These tests cover math, science and reading for 3 age/grade groups: primary education (ages 9-10), lower secondary education (ages 13-15) and the final year of secondary education (grade 12-13). Most of the countries in the PISA and TIMSS samples are high or middle income

countries.[38]Even within this limited set of countries, a few patterns are clear: first, among developed countries, there is a poor correlation between education spending and learning outcomes; second, most middle and low income countries rank consistently low in these tests (with the exception of parts of China and other East Asian countries); third, within developing countries, over half the children tested fail to clear the lowest level of the tests (as compared to less than 22 percent in average OECD countries). In the absence of data on a wider set of learning and well-being outcomes, these results are far from the final word on cross-country learning outcomes.[39] But they are an important first glimpse into the global competitiveness of developing country education systems.

Over the past few years a number of research and advocacy efforts around the world have turned the attention of educationists and policy makers to the question of learning outcomes and life skills that are critical to enable children to lead productive, fulfilling lives. The Learning Metrics Task Force is a global effort hosted by the Brookings Institute that is aiming to define learning and measurement standards for children around the world. The Task Force is in the process of defining a much broader concept of learning-characterized under seven domains of learning- that we return to later (see Chapter 6 for a more detailed discussion).

3.3.3 Basic numeracy and literacy skills for adult women and men

Just under half of all adult women and thirty percent of adult men in low and middle income countries are illiterate.[40] The inability to read and write hampers these women and men in multiple ways: it prevents them from engaging with the economy in any way other than basic manual work, thus limiting their lifelong earning potential; it exposes them to risks of exploitation it prevents them from exercising their basic rights as citizens and community members; it restricts their ability to be effective parents and provide their children with a learning environment; it hampers their ability to access public, financial, and other social services; and most importantly, it creates a crisis of confidence which holds them back from using their talents and skills to their maximum potential. National adult literacy programs have had limited success in reaching and teaching women in particular-creating an unsustainable gender imbalance. While women need basic numeracy and literacy, they are not sufficient by themselves. Transforming adult literacy programs into broader adult and continuing education programs with exposure to financial, health, and digital literacy is now essential.

3.3.4 Education for sustainable development:

The world will face new and more complex challenges over the coming decades. Global warming and its attendant consequences in the form of changing weather patterns, shifting agricultural production

and new health risks, together with burgeoning populations, rapid urbanization, and rapidly diminishing natural resources will bring in the need for new skills, especially in the developing world. These skills simply do not exist today-developing new technologies for managing alternate sources of energy, developing sustainable modes of living, developing sustainable models of food production, building and managing resilient urban infrastructure, protecting and adapting to natural disasters, preventing and treating new diseases are some examples. Higher education systems across the developing world are not prepared to provide these skills- and primary and secondary education systems are not prepared to build the foundation skills that support them. Understanding the needs of society for sustainable development and creating solutions that work will require working closely with policy makers, public organizations and private companies and to train people who can implement these solutions at scale.

As the global economy adapts to climate change, new "green" occupations will emerge. More and more jobs are expected to come up in renewable energies, environment and new technologies.The transition to a green economy will not only change the profile of the new labor demand, but will also change the scope and nature of existing jobs. Significant research is needed to assess the impact of greening economies on skill needs. The transformation, although slow, will affect skill needs in various ways, including through structural changes in the economy generated by the gradual shift to a green output, which will lead to new enterprises and to the technological change of existing ones. Certain jobs will disappear and new ones will emerge, and the education sector will need to adapt rapidly-through changes in content, qualification standards and training programs. All of these changes will require that education systems prepare ahead of the change peak in the real economy, anticipating needs and giving time to learning processes to properly empower new comers with knowledge and skills.

3.3.5 Preparing young people for work

Young women and men coming out of school do not have clear pathways to work. Remediation is a first challenge for those that have dropped out before completing school; 40 percent of the students enrolled in lower secondary drop out by the last grades of secondary school- and work in the informal sector.[41]Identifying ways in which they can be taught skills that allow them to earn a decent livelihood or be self employed will be an immediate challenge for most countries. Their inability to meet it will not just create an unfulfilled, potentially destabilizing large group of young people, it will forego the promise of a demographic dividend that would otherwise create the platform for social and economic prosperity.

Formal vocational or school-to-work programs reach a small fraction of young people between the ages of 15-24 years. Existing programs are designed for industrial and some service-sector work (technical vocational work such as plumbing, electricians, mechanical skills, or basic computer and language

skills). Yet a much wider set of skills will be needed for the kind of jobs that will emerge in the coming decades-skills that reflect the ability to work in teams, organize information, adapt to rapidly changing environments, solve problems, and be innovative. These skills cannot be taught in short after-school programs; they need to be embedded in education from early childhood onwards, and need to be continually renewed with lifelong learning.

3.3.6 Preparing adults for work in a globalized society

The costs of tertiary education are rising rapidly, making it increasingly unaffordable for middle and lower income students; at the same time, the content of tertiary education is failing to keep pace with the evolving needs of society and the economy. Difficult economic conditions point to a related paradox: a perceived shortage of job skills across the world combined with high unemployment rates among young people. In the developing world, gross enrolments are around 18 percent.[42] In the developed countries, there is a mismatch between the education provided, and the skills demanded by employers- over 40 percent employers blame skills shortages for entry level vacancies.[43] At the same time, over half of student graduates do not believe that their post-secondary education improved their employment opportunities.

Over the next decade and a half, these economic opportunities will evolve more rapidly than before. The world is more interconnected today than ever before- this means that contagion effects will be much stronger in the future- as already seen in the global economic slowdown since 2008. Countries will need to adapt rapidly to changing economic fortunes, and growth sectors within national economies will shift. The spread of information technology has fundamentally altered the profile of skills needed for different kinds of work. Knowledge accumulation no longer commands the premium that it did before the advent of the internet. Interpretation, analysis, and management of knowledge and its application to the world are much more valued skills. Increasing automation in manufacturing is another irreversible trend. Both of these together imply that the content of education at the secondary and tertiary levels will have to change, with an emphasis on building abilities to manage environments, technology, and people at different levels of complexity.

At the same time, developing countries need skills to manage food production and enhance farm productivity, to look after local and national natural resources, to manage heath needs of their population, and organize their societies' needs for energy, water and basic services. These skills are in short supply as well, and unlike in the formal economic sector, they cannot be easily imported. Traditional knowledge in these areas is kept out of formal education systems-but will be invaluable in preparing young people to take on community leadership roles.

3.4 Challenges of delivering education to children and adults

Are education systems geared towards lifelong learning?. The current centralized model of teaching is ill-equipped to enable the kind of learning required by different groups; in the case of children in the under 5 age group for example, integrated health, educational and social interventions require a combination of effort from the family, community and public services across sectors. At the school level, a focus on learning a broad set of skills will fundamentally change the role of the teacher; and training for work and higher studies will require close coordination with future employers.

3.4.1 The paucity of teachers and their changing role:

Successful education systems revolve around the teacher as critical for learning. Countries that are unable to deploy a cadre of highly skilled, motivated teachers struggle to achieve high quality. Challenges start from the point of selection- globally there is an estimated shortfall of 4.3 million teachers, of which 2 million pertains to sub-Saharan Africa alone.[44] Countries face different, yet equally critical issues –several lack selection systems that can identify, develop and support high quality teachers. In many countries, teaching was once a coveted and socially respected profession- with widening economic and social opportunities its role in the occupational hierarchy as declined. At the same time, in some countries, school teaching is seen as a stable, lucrative, and politically important profession, causing a distortion in the selection process and attracting candidates with little interest in teaching per se. Either way, the pool of candidates may not be chosen to reflect the best pool of instructors that the system could possibly have.

Teacher training institutions vary dramatically across countries, but share some common features: curriculum is infrequently revised, especially to keep pace with the rapid changes in the economic and social structures of society; the role of teachers is seen as transmitters of knowledge, not enablers of learning; teachers are not taught to cope with the variation in children's backgrounds and learning levels; and once teachers graduate, there is often little follow up once teachers enter the classroom, either through mentoring and support, or through continuing learning. Once teachers enter the schooling system, they often work in high stress environments-very often with large and multi-grade classes, with very poor supporting infrastructure. There is a large gap between the theoretical instructions provided to teachers during their training and the realities of the classroom that they struggle with each day. Further, as enrolments have risen rapidly in many countries, there is a large number of para-teachers with much lower qualifications and training than regular teachers. This has

raised the urgent need to expand training opportunities, innovate around training models, and have ways to continually support the professional development of teachers in the classroom.

Teacher pay varies across countries, but even where it is relatively high, there are few incentives (financial and non-financial) that reward efforts to improve learning outcomes for students[45]. More importantly, teachers systematically lack an enabling and supportive environment at work- one that encourages and rewards innovations in the classroom, that offers practical support for specific in-class challenges, that creates a mentoring system where new teachers can learn from their more experienced colleagues and one where the skills and knowledge base of teachers is continually upgraded. In most countries, teachers are also seen as the last mile providers of State services- in conducting surveys for example-which take away from their teaching obligations. Despite these challenges, most teachers perform heroically in the classroom.

Contributing to these teacher quality problems is a gap in education leadership, starting at the head master or principal level and including higher district to subnational levels. In many countries this position is attained solely through seniority. The competencies that make for effective school-level leadership are usually undefined in systems. The lack of specialized training and professional development for education leaders across dimensions of organizational, instructional and family and community leadership contributes to the lack of school-level supports for teachers to engage in their own learning and improvement.

3.4.2 A broader role for parents and communities

Most systems of education usually ignore the role of parents and communities, both in determining the content and purpose of education, and in their roles in its effective delivery. First generation learners have significantly lower learning outcomes, pointing to the potential of parents and families, with adequate support to create a nurturing environment for learning, and be a powerful lever for sustainable development.[46] A new generation of support that reflects models of inter-generational and adult learning is missing. Education systems do not yet recognize that learning takes place in home and school, and opportunities to structure learning across settings need to be created. A focus on a broad set of learning outcomes will require that parents participate in efforts to support learning. They can also evaluate teacher performance, demand greater accountability and participate in school decision-making. On their part, schools will need to engage networks of parents to spread learning that begins in school across villages, neighbourhoods, and communities.

More systematically, discussions of the purpose of education, the pedagogy and the curricula exclude parents and the wider community from where the students come. In the case of developing countries, the design and content of the education system has been imported from a Western model that is often at odds with the realities of societies and the traditional knowledge, skills, and modes of instruction of the communities that students come from. The first example of such a divergence occurs in the medium of instruction- when children learn in a language that is not their local dialect or mother tongue, it makes learning more difficult. The second example is in the context of the subject matter, which rarely refers to the realities of the children's lives. The third example is in the kind of skills that children are expected to learn which are often not referenced to the needs of their communities or families. These forms of disconnect also mean that education is a finite, static phenomenon that children enter into and exit from, without continuing it through the rest of their lives, without allowing for learning in adulthood, and without allowing for the lessons of adulthood to inform the learning experience.

3.4.3 The role of the State:

Traditionally the content and design of education has been the preserve of the public sector-partly because of its role as a basic public good; partly because of the State viewing it is as an instrument to build citizenship and common social values; and partly because of its potential as an avenue for social and economic mobility, requiring it to be accessible by all children regardless of ability to pay. Indeed, there is no example of a country with high educational outcomes where the provision of basic education has been in the private domain. The massive expansion of educational access across the developing world in the post colonialism era (starting from 1950) followed this pattern as well, as evidenced by patterns of public expenditures on education across the world. Much of the developed world spends approximately 5 percent of GDP on education (slightly lower or stagnant from 1970s levels); low income countries, by contrast spend approximately 3 percent of GDP on education (up from 2.5 percent of GDP in 1970).

The public domination of education is now under threat across several countries in the developing world. The expansion of publicly provided education is changing largely under pressure from the demand side; the poor quality of public education (especially for the poorer sections of populations) is leading to two separate phenomena: first, the mushrooming of private schools, to meet the demand for quality education across large parts of South Asia in particular. Second, there is a proliferation of after-school tuition classes that are privately arranged, in South and East Asia to supplement in-school learning. Both these phenomena find reflection in a rising share of the private sector enrolments especially at the secondary level (see Figure 9 below).

Figure 9: Growth of Proportion Privately Enrolled at Primary and Secondary Levels by Region

Regions	% privately enrolled (Primary)		% privately enrolled (Secondary)	
	1999	2010	1999	2010
Arab States	4	12	8	12
Central and Eastern Europe	0.3	0.8	0.6	1
Central Asia	0.3	0.9	0.1	1
East Asia and the Pacific	7	13	12	19
Latin America and the Caribbean	16	18	22	21
North America and Western Europe	7	7	8	11
South and West Asia	..	7	..	14
Sub-Saharan Africa	11	12	..	15

Source: EFA Global Monitoring Report Database 2012

Both these phenomena have led to several implications: first, in countries with significant private enrolments (private enrolment rates greater than 10 percent of total),an increasing proportion of teaching is now happening outside of the public schooling infrastructure- this means that any efforts at improving quality will have to engage the private sector. Second, parents are spending a significant share of their income on quality education-this has a substitution effect (creating further household impoverishment with corresponding reductions in household spending on either health or nutrition or other basic goods). Third, it leads to a reinforcing cycle of deteriorating quality within the public system, which ends up catering to only students from the most deprived households, or in the most remote regions that have no other options. Fourth, the development of a parallel commercial market for education is likely over time to milk the best resources out of the public system, leading to further deepening of inequalities in the provision of education. Fifth, the quality of private education is highly variable-evidence shows that private schools do tend to outperform public schools (but not after controlling for the socio-economic background of students and the level of autonomy enjoyed by private schools).[47]In the case of post secondary education, the State is still largely responsible for undergraduate education, while the private sector is becoming a significant player in vocational, technical and professional education. A basic challenge that will arise will be to balance the role of the State as the main provider of basic education, with a system that needs to go far beyond it. This will require systemic improvement in the quality of education provided by the State, through a combination of resources and better governance-a slowprocess that will need tremendous political foresight and will; it will require rebuilding trust in the quality of public schooling, not just amongst the poor, but amongst the middle and high income families as well. Finally, it will require imagination to create new and creative ways of reaching students with quality education regardless of their existing mode of instruction- a theme that we return to in section 6 in more detail.

4. Goals for the next two decades

4.1 Context:

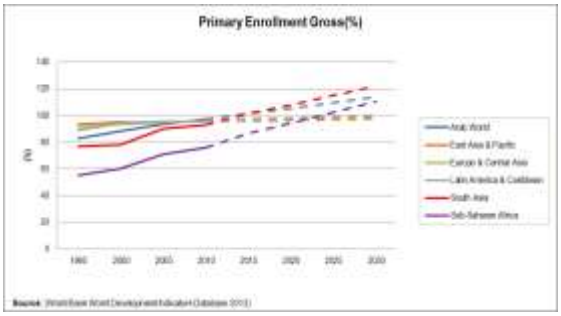
Since education was declared as a basic human right over six decades ago, many efforts have been launched to deliver this right to every child in the world. In 1990, over 150 governments came together to adopt the World Declaration on Education for All at Jomtein, Thailand to set global goals for education. Ten years later, 180 countries met at the World Education Forum in Dakar, Senegal and adopted six Education For All Goals. The Millennium Development Goals, set in 2000 were a broader set of goals with two that focused specifically on education (Table 3).

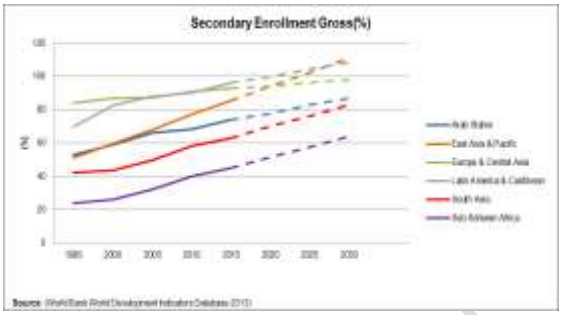
Table 3: International Education Goals (1990-2015)

Conference	Goals	Start Year	Target Year
Jomtein 1990	Goal 1: Universal access to learning	1990	2000
	Goal 2: Actions on equity	1990	2000
	Goal 3: Emphasis on learning outcomes	1990	2000
	Goal 4: Broadening the means and the scope of basic education	1990	2000
	Goal 5: Enhancing the environment for learning	1990	2000
	Goal 6: Strengthening partnerships for 2000	1990	2000
Dakar 2000	Goal 1: Expand and improve early childhood care and education, especially for the most vulnerable and disadvantaged children	2000	2015
	Goal 2: Ensuring that by 2015 all children, particularly girls, children in difficult circumstances and those belonging to ethnic minorities, have access to, and complete, free and compulsory primary education of good quality	2000	2015
	Goal 3: Ensuring that the learning needs of all young people and adults are met through equitable access to appropriate learning and life skills	2000	2015
	Goal 4: Achieving a 50 percent improvement in levels of adult literacy by 2015, especially for women, and equitable access to basic and continuing education for all adults	2000	2015
	Goal 5: Eliminating gender disparities in primary and secondary education by 2005, and achieving gender equality in education by 2015, with a focus on ensuring girls' full and equal access to and achievement in basic education of good quality	2000	2015
	Goal 6: Improving all aspects of the quality of education and ensuring excellence of all so that recognized and measurable learning outcomes are achieved by all, especially in literacy, numeracy and essential life skills	2000	2015
MDG	2. Achieve universal primary education	1990	2015
	Ensure that by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary school education		
	3. Promote gender equality and empower women	1990	2015
	Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015		

International goals aim to bring together political commitment, backed by policies, financing and legal frameworks so that the right to education can be actualized by every child. Global trends of educational enrolments have been improving steadily-with a distinct upturn in South and West Asia and sub-Saharan Africa since 2000. It is not possible to credit this upturn in both primary and secondary enrolments to the adoption of International Goals alone- improvements reflect rising demand for education, greater prioritization of education within countries, access to greater resources-and yet, the goals have helped bring about all of these factors as well (Figure 10).

Figure 10: Historical trends (and projections), 1995-2030





4.2 Post-2015 Development Agenda: Consensus on Quality and Lifelong Learning

As the post-2015 Development Agenda takes shape, there have been many proposed goals for education- all of which recognize the centrality of quality and learning as national objectives. The High Level Panel of Eminent Persons, in its report proposes the following Goal and Targets on education: "Provide Quality Educationand Lifelong Learning". Targets include: 3a. Increase by x% the proportion of children able to access and complete pre-primary education; 3b. Ensure every child, regardless of circumstance, completes primary education able to read, write andcount well enough to meet minimum learning standards; 3c. Ensure every child, regardless of circumstance, has access to lower secondary education and increase the proportion of adolescents who achieve recognized and measurable learning outcomes to x%; 3d. Increase the number of young and adult women and men with the skills, including technical and vocational, needed for work by x%. The Global Thematic Coalition on Education has proposed a similar goal on Equitable, Quality Education and Lifelong Learning for All.

4.3 SDSN Leadership Council Education Goals Recommendation

The SDSN Leadership Council has proposed an education goal and three accompanying targets as part of the next set of goals focused on the challenge of sustainable development, reflecting the emerging challenges discussed previously. The SDSN proposal differs from existing proposals on 3 counts: first, it recognizes the gap around early childhood development and the comprehensive nature of interventions that would be necessary to ensure that all children receive the support they need at the beginning of life; second, it emphasizes learning effectiveness as the central measure to define success at all ages; and third, it focuses not just on academic or employment related skills, but learning for the sake of creating citizens who can participate in thebuilding a sustainable world.

GOAL 3: ENSURE EFFECTIVE LEARNING FOR ALL CHILDREN AND YOUTH FOR LIFE AND LIVELIHOOD

All girls and boys complete affordable and high-quality early childhood development programs, and primary and secondary education to prepare them for the challenges of modern life and decent livelihoods. All youth and adults have access to continuous lifelong learning to acquire functional literacy, numeracy, and skills to earn a living through decent employment or self-employment. The SDSN Leadership Council has also proposed 3 targets to underline the goals:

Target 3A: All children under the age of 5 reach their developmental potential through access to quality early childhood development programs and policies.[3],[48]

Proposed Indicators:

- Proportion of children who suffer from pre-term births and low birth weight.[4]
- Proportion of children who suffer from stunted growth by age 2.
- Proportion of households with access to comprehensive family planning and, for those with children under 5, nutritional support and primary health care[5].
- Among families with children under the age of 3 receiving nutrition interventions and primary healthcare, proportion receiving integrated parenting support focused on responsiveness and stimulation.
- Among children under 5 who live in households with per capita incomes below national poverty lines, proportion with access to social and income supports, such as cash transfers, child care provision and parental leave policies.
- Rate of developmental delays in children from birth to 8 years.
- Proportion of children receiving at least one year of a quality pre-primary education program.
- Percentage of annual public spending on education to the pre-primary year(s).[6]
- Proportion of children achieving basic competencies, across cognitive, language and literacy, social, and emotional domains of skills, by age 8.

Target 3B.All girls and boys receive quality primary and secondary education that focuses on learning outcomes and on reducing the dropout rate to zero.

- Primary completion rates for girls and boys
- Secondary completion rates for girls and boys
- Proportion of girls and boys who master basic numeracy by age 8

[3]Developmental potential encompasses physical, cognitive, social and emotional domains of learning and development.
[4]Aiming for a 40 percent reduction by 2030.
[5]Incorporating sexual and reproductive healthcare; family planning; antenatal care; birth attendance; breastfeeding and supplemental feeding and nutrition interventions; immunizations; and prevention and treatment of communicable and non-communicable diseases
[6]Aiming for 10 percent of total public education spending by 2030

- Proportion of girls and boys who master basic literacy by age 8
- Proportion of girls and boys who achieve Minimum Learning standards at the beginning, middle and end of the schooling cycle (benchmarks to be developed)
- Proportion of girls and boys who master basic math, science, financial and technical literacy by age 14 (benchmarks to be developed)
- Adult literacy rates for women and men
- Government spending on education as a proportion of total GDP

Target 3C. Youth unemployment rate is below [10] percent[7].

- Youth unemployment rate
- Tertiary enrolment rates for girls and boys
- Proportion of adolescents (15-19 years) with access to school-to-work programs
- Proportion of adults participating in continuing education programs

Achieving these goals will not be easy. The previous Chapters outlined the challenges that need to be addressed, and this Chapter proposed the goals that would be required to guide the work of the education sector over the next decade and a half. In the subsequent 3 chapters, the report outlines the actions that will be required to achieve these goals-combining the evidence from programs and policies across the world, and matching the evidence to the kinds of research that will be required to allow countries to track indicators to measure progress towards the goal of education for a sustainable world.

[7]Defined as 15-24years age group

5. Supporting early childhood development for children from 0 to 8 years

Children are the common basis for all dimensions of sustainable development. No advances in sustainable development will occur in coming decades without multiple generations contributing to societal improvement. Moreover, beyond sheer survival, children have a right to thrive, develop to their full potential, and live in a sustainable world.[49]Children's health, learning and behavior during the early years are the foundation for later school success and completion, close nurturing relationships with peers andadults, and the capacity to participate in community, workplace and society. Young children's growth and development, in addition, is profoundly shaped by the opportunities for learning, education, resources and interactions provided byadults – whether they encounter these adults in home, care, service or community contexts. Early childhood is thus a critical stage of development -- it is a culmination of learning for one generation embodied in the beginning of a lifetime of learning for the next.

To address the growing challenges of environmental crises, poverty and inequality, and domestic and armed conflict, a transformative approach to learning – lifelong, inter-generational, and encompassing health, cognition and behavior– is required.[50]When we consider the learning life course in this way, the need for integrated approaches that include but are not limited to the traditional education sector becomes apparent. This life-course perspective also draws attention to the need for education for sustainable development with an emphasis upon global interdependence and civic responsibility starting early in life. In this section we synthesize the science of global early childhood development in order to identify how a focus on early childhood development can contribute to societal transformation and sustainability.

5.1 How Early Childhood Development Occurs

Definitions of early childhood vary in different countries and regions, according to local traditions and the organization of primary school systems. In some countries, the transition to primary school occurs soon after 4 years old. In other countries, this transition takes place at around 7 years old. We define early childhood as the period of human development from prenatal through the transition into the early primary grades, 0-8 years of age.[51] The subsequent section of this report covers education from 5 to 18 years of age; the overlap is intentional, as early primary education can benefit from extension of principles of effective, holistic early childhood development.

The foundations of brain architecture and functioning, and subsequent lifelong development, are laid down in early childhood in a process that is exquisitely sensitive to external influence. Early

experiences in the home, in other care settings, and in communities interact with genes to shape the developing nature and quality of the brain's architecture. The growth and then environmentally-based pruning of neuronal systems in the first years support a range of early skills, including cognitive (early receptive and expressive language, early literacy, numeracy and math), social and emotional (theory of mind or perspective taking, empathy, prosocial behaviors, self-regulation), and executive function (voluntary control of attention and behavior) skills.[52]In addition to health and physical development, each of these skills, measured in early childhood, is predictive of school success and completion; higher earnings; active, positive participation in communities and society; and reduced odds of delinquency, crime, and chronic and non-communicable disease.[53]

We define developmental potential to encompass indicators of physical, cognitive, social, and emotional development during early childhood. Later skills – in schooling; in employment; in family life -- build cumulatively upon these dimensions of developmental potential. Therefore, as the economist James Heckman has argued, investment in learning and development during early childhood results in greater cost savings than investment later in the life cycle.[54]The capacity of a nation to build sustainable systems and infrastructure, innovate and invest in technology, and grow while reducing impact on the earth's resources all depend on a workforce with the skills that are foundational to civic engagement, creativity and productivity. The period of early childhood is critical in this regard. There is a direct link between developmental potential in early childhood and a nation's potential for sustainable development.

Early childhood development (ECD) programs and policies have been defined as a comprehensive set of policies and programs for children from the prenatal period to eight years of age, their parents, their caregivers and their communities. Their purpose is to uphold the child's rights to develop his or her full cognitive, emotional, social and physical potential.[55] Investments in ECD programs and policies with essential quality features support these rights, and substantially increase the odds of children reaching their developmental potential.[56] With commitment and participation from the national to the local and community levels, and across government and civil society, such programs and policies can substantially add to a nation's social and economic potential.

In low-, middle-, and high-income countries alike, ECD programs and policies such as the ones we review below are some of the most cost-effective interventions for a range of long-term outcomes important to society, including completed schooling, higher lifelong earnings, and reduced violence and crime.[57]Many of the recommended maternal and infant health interventions from the prenatal to age 3 period show evidence of cost-effectiveness. The combination of nutritional (breastfeeding and

complementary feeding) and parenting support from birth to 3 years has produced long-term, life-course increases in educational attainment and earnings. And raising preschool enrollment to 50% in every country has been estimated to result in benefits of over $33 billion US, with a benefit-cost ratio of between 7.8 and 17.6, depending on the discount rate.[58]Such programs and policies can contribute substantially to a broader development agenda to fight poverty and inequality, and to ensure that all children reach their developmental potential.[59]

Despite the well-established promise of investing in the early years,7 million children worldwide do not survive to their fifth birthday, and over 200 million children who do survive experience severe risk, as indexed by either stunting or exposure to absolute poverty.[60] Risks such as exposure to environmental toxins; lack of access to clean water and sanitation;maternal under-nutrition; poor maternal mental health; lack of recommended breastfeeding; lack of learning opportunities; and exposure to violence lead to this loss of human potential.[61] Such experiences have lifelong consequences for health conditions and disease; school progress; employment; and the ability to participate in community and society.[62]

5.2 The Evidence Base on ECD Programs, Policies and Systems

Given the current status of the global evidence base, which interventions in the early years show the most promise of ensuring that *all* children reach their developmental potential in early childhood? How can they be implemented in the context of diverse communities and national systems in ways that fulfill that promise? We synthesize the evaluation literature and future directions across six major themes intended to support the achievement of Target 3A in the next 15 years: an integrative approach to health and learning; supporting parenting and early childhood education; social protection, workforce development and nonformal education; social inclusion for the most vulnerable; measuring early childhood development to track progress on Target 3A; and effective implementation of programs and policies to support the target.

Achieving Target 3A through Integrative Health, Nutrition and Learning Interventions

5.2.1 Recommendation: Assure universal access to reproductive health care, including comprehensive prenatal screening, education and health care visits that include preparation for delivery, parenting support and family planning options.

5.2.2 1.2.2 Recommendation: Provide nutritional supports for pregnant and lactating mothers and appropriate breastfeeding and nutrition education (exclusive breastfeeding before 6 months of age and complementary feeding together with nutritional supplementation beyond 6 months of age).

5.2.3 Recommendation: Provide universal, regular immunisations; comprehensive child screening and treatment; and water, sanitation and hygiene interventions with education for all families.

An integrated approach to help young children not only survive, but thrive, has emerged recently in global health.[63] Key interventions in the areas of family planning; maternal and newborn health (antenatal care and birth attendance); immunisation (e.g. measles, BCG, diphtheria, pertussis, and tetanus); and preventive and curative care are the basis for maternal and child survival.[64] An integrated set of interventions, delivered beginning with intrapartum care in health centers / clinics, is the recommended approach.[65] Successful interventions can follow and supplement these services throughout the early childhood years in other settings, such as community- or center-based care settings.

Interventions to address maternal and child survival are increasingly supplemented with an emphasis on learning – both for the parent and for the growing child, through mechanisms such as promotion of stimulating and responsive interactions. An important and proven example is the combination of breastfeeding / nutritional supplementation interventions with parenting support. Programs to increase exclusive breastfeeding for the first 6 months followed by complementary feeding and nutrition supplementation after 6 months increase child micronutrient intake and health, and reduce infant mortality. Nutrition interventions from 0 to 3 years of this type not only reduce stunting, but also raise later school performance and even earnings.[66]When components targeting cognitive stimulation and responsiveness during feeding are added to nutritional supplementation interventions, positive effects on parents and on child health and cognitive outcomes are even stronger.[67]One intervention of this type in Jamaica had remarkable effects 20 years later, as participants reached young adulthood: reduced anxiety, depression, and violent behavior; and increased educational attainment, earnings and IQ.[68] The Care for Child Development of UNICEF and the WHO responds to this strong evidence base by embedding these practices within large-scale health and nutrition systems.[69] The key in effective parenting interventions is not so much the setting – effective models have been implemented in a huge variety of community settings as well as homes, health clinics and workplaces – but an emphasis on

rapport between the facilitator and the parent, and feedback with opportunities for modeling and practice with the child.[70]

Preventive and curative health services are critical components of ECD services, yet many show low coverage. All can benefit from coordination with education. Intermittent preventive treatment of malaria for pregnant women and the use of insecticide treated nets, for example, showed coverage rates averaging 11% in 37 nations with endemic malaria in 2010.[71]Advances in prevention of mother to child transmission of HIV (PMTCT) programs have produced impressive reductions in infant transmission (between 2000 and 2009, a 24% reduction of incidence in the 25 countries with highest incidence in 2000). Implementation of the WHO's 2010 guidelines for antiretroviral therapy (including extending ARV for both mothers and infants) would reduce incidence further by 79% and be highly cost-effective.[72]Food fortification and vitamin A, iron/folate and MMS supplementation; and interventions to prevent and treat diarrheal disease, such as hygiene interventions, deworming, and zinc supplementation, are also proven strategies to reduce health problems that can be integrated with children's care and learning programs, preprimary education, and family-and community-based interventions.[73] For example, since children of preprimary age very often have younger siblings,[74] the provision of programming to support the health of children birth to 5 can be integrated into preprimary education.

An important dimension of preventive services that can be integrated with universal health interventions in infancy and early childhood is screening for developmental delays. The identification of children with special health care needs in the first years of life includes attention to learning delays, not just physical health and behavioral delays.[75]Linking intervention to such screening results is vital to actual improvement of developmental potential for these children. Ensuring that children identified through screening receive effective services and access to ECD programs and policies, across health, education and social and child protection, will do much to advance the currently often deplorable abandonment, neglectand institutionalization of children with disabilities in early childhood.[76]

System and infrastructural improvements contribute not only to sustainability but also to child survival. WASH (water, sanitation and hygiene) interventions are effective in reducing risks for diarrhoea and attendant morbidity and mortality. A recent meta-analysis of program evaluations showed that water interventions of two types – those that create new clean water sources, and those that address water quality at the source or at the point of use – reduce diarrhoeal disease. Hygiene interventions, providing education and encouraging handwashing, and the provision of sanitation facilities similarly show positive effects on diarrhoeal as well as asthma and other respiratory diseases.[77] However, median

coverage of sanitation and diarrhea treatment was 41% in 68 countries with Demographic and Health or Multiple Indicator Cluster Survey (MICS) data in 2010.[78] Here again the integration of health and education is of great importance: Point of use interventions require effective education, which is particularly critical for pregnant mothers and parents with infants and young children.

5.3 Achieving Target 3A by Enriching Parenting and Early Childhood Care and Education

Learning is a multi-generational enterprise in early childhood. Regardless of the setting – the child's home; a village communal space; a social network of parents; a media-based interactive environment; or an out-of-home care or preprimary education setting – children's learning is largely built through interactions with caring adults and peers. These may be parents or other family members; caregivers in out-of-home care settings; other parents in the community; or teachers. Learning and development in early childhood are supported by the sum total of caring adult and peer interactions that a child encounters in the settings of daily life – home; child care; and early childhood education.[79] Only through attention to all the settings of early childhood can developmental potential, and subsequent sustainable development, be assured.

Supporting a young child's development is thus a community responsibility that requires and benefits from opportunities to increase adult learning. Four sets of adult caregiving roles and skills are causally related to growth in children's physical, cognitive, social and emotional development: adult and parent health and adequate nutrition; caregiving and parenting; adult and parent well-being and mental health; and skilled instruction in quality educational settings.[80] We reviewed programs targeting parent health and nutrition previously; here we review successful approaches targeting the other three factors, as well as future directions for innovation on these fronts.

Supporting caregiving and parenting skills. Parenting programs to support caregiving stimulation and other parenting skills show positive effects, given sufficient intensity and quality.[81]They may be particularly important when access to other forms of learning opportunities (e.g., early childhood education) is very low or nonexistent. Recent evidence suggests the benefits of encouraging caregiving roles and skills that are both culturally and developmentally specific. Although the developmental importance of responsive caregiving has been established across many cultures, for example, there is variation in the forms that reciprocal, responsive interactions in caregiving can take, depending on the developmental stage of the child, the specific settings of family and community life, and values and beliefs of what constitutes successful development.[82] For example, cultures vary in the extent to which interdependence vs. autonomy are encouraged in children's relations with one another and with adults.

Successful programs balance these foci in ways sensitive to the ecological and cultural context. A parenting program in Turkey with long-term effects intentionally integrated interdependence and autonomy with sensitivity to child needs in its parenting approach. This was done in accordance with the particular sociocultural and historical context of the low-income families and communities the program served.[83]

As children's behavioral and cognitive capacities become more complex over the first 5 years of life, their integration into family and community life changes in nature. Successful programs are contextually sensitive to these changes.[84] Programs to improve parents' or caregivers' interactions with preschool-aged children, for example, have emphasized to different degrees the reduction of acting-out or aggressive behaviors; the encouragement of autonomy and initiative; or the inclusion of those who are excluded from social interactions.[85]

5.3.1 Recommendation: Implement parenting programs that incorporate opportunities for practice with feedback; curricula; peer support; and ongoing training and supervision for facilitators.

Parenting programs are more effective when they incorporate curricula; ongoing training for facilitators; practice and feedback; and opportunities for peer support and community building.[86] Approaches to training and professional development for those who provide caregiving and parenting support to parents -- health educators, home visitors, community parents – are showing evidence of success. For example, an intensive, two-year professional development and education program for community mothers engaged in home-based care in Colombia produced increases in observed quality of caregiving as well as child health and behavior.[87] A program in Pakistan tailored the Care for Child Development module to provide intensive professional development and supervision to community health workers, encouraging responsiveness and stimulation in mothers' interactions with their children, in the health workers' interactions with the mothers; and even the interactions of the trainers with the health workers, many of whom had relatively low levels of education. Positive effects were observed on caregiving as well as children's cognitive, language, and motor skills at ages 12 and 24 months.[88] Intensity may also matter in parenting programs, with one meta-analysis in the U.S. showing few benefits for children when the number of visits or contacts was 3 or fewer.[89]Finally, effective programs often incorporate a peer support or community building emphasis. The building of community-level social capital can be an important outcome of parent-focused ECD programs.[90]

5.3.2 Recommendation: Assess and reduce rates of maternal depression with treatment and preventive interventions.

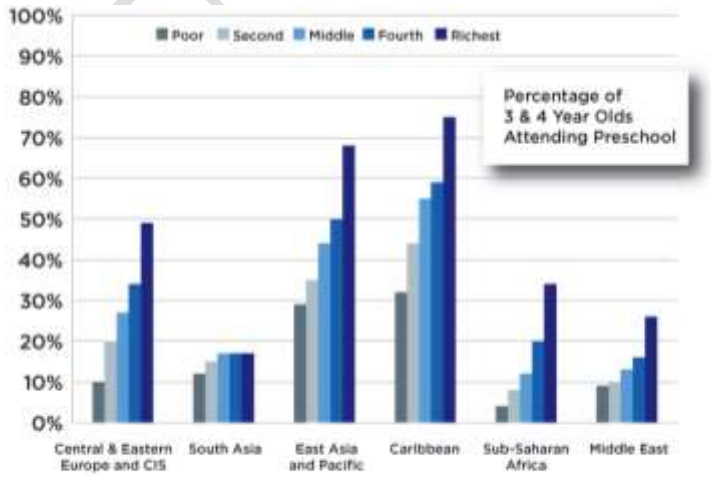
*Supporting parent mental health.*Parent mental health problems, especially perinatal and postnatal maternal depression, have severe consequences for very young children's nutrition, cognitive, and social and emotional development.[91] Depression is the leading cause of disease burden for women in high-, middle-, and low-income countries.[92] Few large-scale programs have been established to treat maternal depression in low- and middle-income countries. One recent intervention, providing training to community health workers to implement short cognitive-behavioral therapy-based intervention to mothers with postpartum depression in Pakistan, produced large reductions in rates of depression a year later.[93] Some early childhood interventions have produced long-term decreases in depression among participants followed up into adolescence and adulthood.[94] In addition, social protection programs and policies, which can reduce economic worries and stress and bolster parents' abilities to provide for their young children, may reduce levels of mothers' depressive symptoms in the short run.[95] Thus, prevention of parental depression may be possible through human capital and economic interventions.

5.3.3 Recommendation: Ensure that allchildren start school on time and acquire basic competencies by age 8, across cognitive, social, and emotional domains.

5.3.4 Recommendation: Assure safe and responsive caregiving arrangements for children under 3

5.3.5 Recommendation: Ensure quality in early childhood care and education, whether in centers, preschools, or daycare settings, through comprehensive standards and effective pre- and in-service, on-site professional development support for all caregivers and teachers.

Figure 11: Pre-school attendance by income quintile, by region, 2005



Proportion of young children attending preschool in 58 low-income and middle-income countries by income quintile within country summed across sample countries by region. Data are from UNICEF's 2005 Multiple Indicator Cluster Survey 3 for children aged 3 and 4 years.

*Increasing access to quality early childhood care and education settings with skilled instruction.*Access to preprimary education must be improved. As indicated previously in the Global Report Card section of this report, the gross enrollment rate in low-income countries barely budged from 11% to 15% between 1990 and 2010. There are large disparities in access by household socioeconomic status; in nearly all regions of the world children from the top income quintile are more than twice as likely as the bottom income quintile to experience preprimary education. In sub-Saharan Africa, the difference is a tenfold one in access (see Figure 11).

As important as access is, the quality of learning in early care and educational environments is determinedcentrally by the quality of interactions and instruction. Exposure to at least a year of high-quality preprimary education, for example, has consistent and positive short-term and long-term effects on children's development. In the short run, early cognitive skills, including reading and math skills, are positively affected by preprimary education.[96] In low- and middle-income countries, on-time primary school entry is increased through quality preprimary education.

High-quality preschool can produce lifelong benefits for society, with positive effects observed on years of completed schooling, secondary school completion, reduced crime, reduced early pregnancy, and increased earnings.These results encompass both small-scale demonstrations and large-scale programs, and are responsible for the impressive benefit-cost ratios for preschool (6 or larger, across high-, middle-, and low-income countries).[97]Preprimary education benefits all children, no matter their economic background, yet as with many other ECD services, those from the most disadvantaged backgrounds benefit the most.[98] Earlier than the preprimary year, exposure to child care settings outside the home can also lead to benefits for young children, as long as these settings emphasize quality. These positive impacts of quality child care are stronger for more disadvantaged children.[99] However, this literature on the child impacts of quality of care that supports parental employment comes from high-income countries, with almost no studies in low- and middle-income countries.

Standards in preprimary education and child care should encompass two kinds of quality features that are important for children's learning and development.[100]*Structural* quality features associated with greater gains in children's learning include safety and support for physical health, such as access to a clean water source; smaller group sizes and lower child / adult ratios; trained and qualified teachers; the institution of not only learning standards, but specific developmentally focused curricula to support them; and adequate variety of print material, toys and other play opportunities.[101] These structural resources help set the conditions for, but do not ensure, the core of preprimary education quality, which is *process* quality –=the instructional and interactive skills of the teacher or caregiver. The ability of

teachers and caregivers, in particular, to provide warm and responsive interactions with children and help children express themselves through culturally appropriate social interactions and elaborated language is central to educational quality in the preprimary setting.

Standards for quality should incorporate attention to cultural and linguistic contexts. For example, developmental expectations for young children within the religious and cultural context of Muslim East Africa informed the Islamic Preschool Curriculum of the Madrasa Early Childhood Development Program. That program showed positive effects on the African Child Intelligence Scale and the British Ability Scale in a controlled evaluation across Kenya, Uganda and Tanzania.[102] Support of both home language and second language in preprimary education can build both sets of language skills and attendant developmental benefits.[103] This is important given the disparities in many countries in outcomes between language-minority and language-majority populations, and the exclusion of language-minority populations from culturally appropriate educational supports.

How can both structural and process quality be improved? Improving the quality of early childhood care and education on both the structural and process dimensions shows important benefits for children, including efforts at scale to do so.[104] Investments are required in physical infrastructure, teacher training, and learning materials to ensure structural quality. Strategies to improve process quality and instruction include the integration of on-site or technology-facilitated observation and mentoring / coaching, in addition to pre-service training with opportunities for practice.[105] Despite this evidence, the vast majority of preprimary education is only supported by pre-service training without practice opportunities, and often of very low intensity. The end result can be low attendance and therefore low levels of exposure to the potential benefits of early childhood education.

Successful early learning programs are not limited to center-based preschool; media-based interventions such as those of the Sesame Workshop or radio-based instruction and communication have shown positive effects on cognitive and also social and emotional development in a variety of low-income countries, for example.[106] New developments in media technologies will provide huge opportunities to improve the early learning of children at scale, both in direct programs for children and in technology-supported professional development, especially in rural and remote areas (e.g., through increasingly sophisticated audio and video capture methods using cell phone technology).[107]

A key challenge in preprimary education is how to sustain the boost that high-quality preschool can provide to children's learning and early school success. The massive increase in access to primary education of the last 20 years has unfortunately not often been accompanied by increases in

educational quality or instruction.[108] Improvement in instructional quality of the early primary grades must follow quality preprimary education, or the gains from ECD may be lost.[109] Support in the early primary grades must facilitate basic competencies and learning across the cognitive, social, emotional and physical domains, as do the higher-quality early childhood care and education programs.

5.4 Achieving Target 3A ThroughSocial Protection, Workforce Development and Nonformal Education

Beyond adult and caregiving capacities, parent economic and educational factors have profound effects on children's learning and development. Social protection policies address the pervasive problems of low and fluctuating household incomes and their vulnerability to external forces such as natural disasters, climate change, famine and severe illness. They aim to increase economic stability among the poor, most commonly through cash transfers (whether conditioned on household behaviors or not) but also through efforts to promote human capital development as a long-term solution. Early childhood represents the developmental period in life when effects of poverty are most damaging and long-lasting.[110] In addition, it is the period during which children have the greatest dependence on household economic resources and the investments – of time, shelter, food, and learning opportunities – that resources can buy. Thus poverty eradication through social protection policies is especially urgent during early childhood.[111]

5.4.1 Recommendation: Integrate workforce development and nonformal education interventions for parents in ECD programs and policies.

Efforts to promote household economic stability and security include workforce development, nonformal education, cash transfer programs, and paid leave policies. Workforce development and nonformal education are overlooked approaches to enhancing children's outcomes for parents of young children, despite strong evidence concerning the causal role that parental education levels can play in improving the cognitive and schooling outcomes of children.[112] Even relatively short periods of participation in nonformal education were associated with improvements in children's school achievement, in one causal analysis.[113] In addition, improving the job skills of parents can lead to the kinds of jobs – those with adequate initial pay and opportunities for wage growth and advancement – that research shows increases children's own cognitive skills and later school success.[114] Although microfinance is an increasingly widespread approach to encouraging financial independence and entrepreneurship among the poor, the question of whether such programs have effects on children's learning or other outcomes is still unresolved, with very few studies examining such outcomes.[115]

Cash transfer programs are by far the most often implemented and evaluated social protection policies. Conditional cash transfer programs with conditions or benefits related to nutrition and child health have reduced stunting and underweight, and improved nutritional status in young children.[116] Such policies focused on nutrition and health, as well as those that condition on preprimaryenrollment, have resulted in improved cognitive and behavioral outcomes for children, with effects generally small but larger for mothers with very low levels of education.[117] Thus, social protection policies can play a critical role in supporting learning, health and behavior in the early years. Paid parental leave is a specific kind of cash transfer that serves as an important form of social protection in some countries to support families with infants and young children. It replaces lost wages for parents of infants, and provides flexibility for the increased costs associated with care for the very young.[118]

5.5 Achieving Target 3A through Social Inclusion and Support for the Most Vulnerable

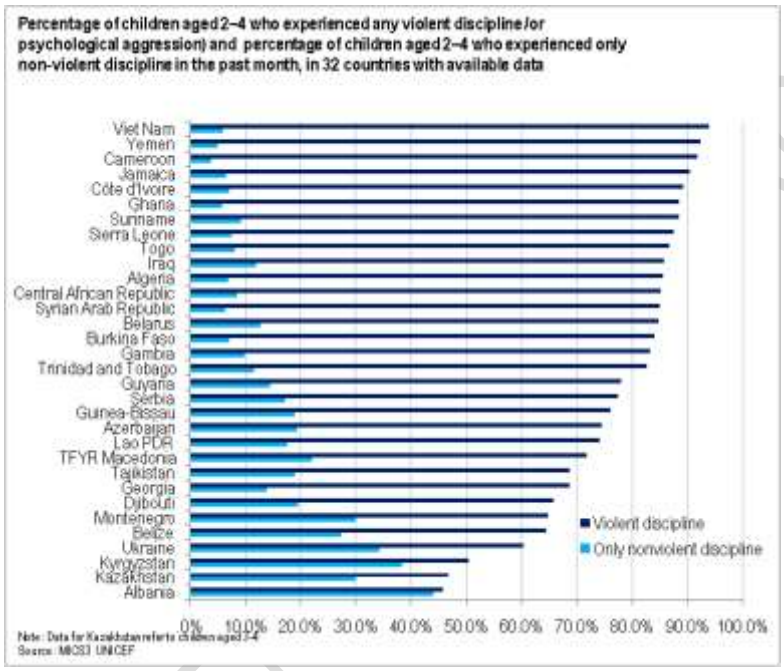
Disparities in access to quality ECD services are pervasive, acrossrural / urban origin, language majority / minority status, and household income levels across all regions of the world, with higher rates of provision in urban areas and higher participation among more economically advantaged families.[119] Girls show lower enrollment rates in many countries, with variation in region (the lowest disparities among low- and middle-income nations are in Latin America). Children with disabilities are excluded from many ECD programs and services, due to endemic discrimination as well as lack of preparation and training on the part of systems of provision and lack of enrollment.[120] Across the world, immigrants without full citizenship and residency rights experience lower access to education, health and protection, often by law – their children suffer as a result of their own and their parents' lack of rights, with lower cognitive and learning outcomes as early as in the first years of life.[121] These inequities must be addressed through policies that ensure equitable access to quality ECD services.

5.5.1 Recommendation: Eradicate exposure to neglect and violence in young children's homes and communities. Implement child protection programs that promote responsive, nurturing and positive early interactions between caregivers and young children living in impoverished, harsh and/or violent environments.

Children exposed to neglect and violence, whether at the community or family level, are at the very highest risk for immediate and long-term physical and mental health problems. Persistent exposure to physical punishment, psychological aggression in the home, neglect, community violence and other sources of toxic stress can create chronic states of anxiety and fear; overwhelm the developing body's natural defenses; and derail healthy development and the capacity to learn. Powerful longitudinal evidence shows the lifelong effects of such experiences in early childhood.[122]Solutions must address

the family and systems roots of neglect and violence, for example by changing social norms and public laws surrounding these issues; engaging men in parenting programs, particularly at the transition to fatherhood; and through more general efforts to strengthen families such as the approaches we reviewed above.[123]In particular, embedding family strengthening and violence prevention in systems with wide coverage, such as primary health care, parenting programs or early childhood care and education, as well as in child protection systems, holds great promise in reducing the incidence of children witnessing and experiencing violence.[124] For example, efforts to integrate a socio-emotional emphasis in preschool education through focused teacher training reduced levels of aggression and antisocial behavior in preschool-aged children in urban Jamaica at high risk of violence exposure.[125]

Figure 12: Exposure to violent and non-violent discipline, 32 country sample data



For children in emergency and post-conflict situations, who represent over half of children who are not in primary schooling and likely comparable proportions of children not in preprimary education, responsive implementation of early childhood family and learning supports is critical. Given the rapidity of growth during this developmental period, any months lost from the evidence based ECD supports reviewed here represent large costs to society and loss of developmental potential. The implementation of portable sets of learning materials (e.g., UNICEF's Early Childhood Development Kit), community participation and integration to organize space and conduct outreach, and capacity building and training are possible in these settings.[126]

For children in institutions, the provision of caring foster care homes and learning supports is also critical. Landmark studies from Romania and other countries show that the longer the delay of foster care placement out of custodial institutional care in the first years, the greater the possibility of irrevocable damage to physical, cognitive, social and emotional development.[127]

5.6 How to Achieve Target 3A through Effective Implementation in Communities and Service Systems

National policy planning in ECD has grown, with over 40 nations having passed national legislation and action plans, typically spanning the health, education, social protection and child protection sectors of services.When successful, these national efforts build on wide consultation, across government, civil society and local, national and international NGO's.[128] They effectively coordinate the elements of ECD across sectors, and across national to subnational and local levels.

5.6.1 Recommendation: Effective national policy making and action planning in ECD is supported through intersectoral coordination and wide government, civil society and community input.

5.6.2 Recommendation: Support national ECD action planning through subnational and local participation in governance, finance and implementation of ECD programs and policies.

Both policy planning and implementation in ECD benefit from coordination of the health, education, social protection and child protection sectors, yet such integration is difficult to achieve from the standpoints of governance, finance and implementation. Coordinating bodies such as multi-sectoral or cross-ministry ECD councils can aid tremendously in coordination, but only if they have the authority and trust of the various actors. Coordination must occur both horizontally (across sectors) and vertically (across national to subnational and local levels). A recent study in low-income countries showed that horizontal coordination, for example, may be particularly challenging at subnational levels (e.g., state, province, region or district, depending on the country's sociopolitical structure).[129]

Effective implementation of national policies and action plans in ECD, in addition, rests on the twin pillars of community participation and service-system development and capacity. Without the development of local capacity and service systems, ECD programs and policies themselves are not likely to be sustainable, let alone contribute to a sustainable society.[130] In expanding ECD, programs are often scaled up across cultures, communities and nations with reduced levels of resources per child and neglect of local culture, language or sources of expertise. Such scaling without local capacity building can reduce, not increase, the quality of services (as found in some national studies).[131] A pure

"replication" approach can result in neglect of local leadership development and buy-in, with consequences for implementation.[132]

What are solutions to these dilemmas of at-scale change in ECD? Community participation in ECD can encompass innovation in service development; in implementation; and in local governance and financing.[133] The integration of ECD with local norms regarding vision for child development and adult participation; local preferences for modality and content of services; and local capacity for governance is often stated in national ECD policies, but not very often realized. Innovations on this front include local budget control and decision-making in social-sector spending that explicitly includes ECD; integration of broad consultation in development of national curricula and standards; and "bottom-up," not just "top-down," approaches, to assuring quality of implementation at local levels.[134] Partnerships between civil-society organizations, research institutions and government, at levels from the local to the national, can set the stage for these forms of capacity building. Successful regional approaches to leadership capacity building include the Early Childhood Development Virtual University in sub-Saharan Africa.[135]

In increasing large-scale ECD system capacity – whether in health, education, social protection or child protection -- the implementation of training supports that integrate on-site with pre-service training has produced positive impacts on children, relative to pre-service only models.[136] Continuous quality improvement approaches – in which learning communities including families, providers, and local and regional NGO and government staff define and then measure quality indicators – have been used successfully to improve health care systems, but until recently rarely in ECD. This approach, applied to the Chilean public preschool system, has been successful in engaging multiple stakeholders (parents, teachers, school directors, regional ministry staff) in coordinated quality measure development, tracking and systems improvement.[137]

These efforts to build ECD systems at scale benefit from effective mass communication of the benefits of early childhood development for families and society. Communications research in recent years resulted in the dissemination worldwide, for example, of core ideas such as the rapid development of brain architecture in early childhood, the economic benefits of public investment in early childhood, and the harmful lifelong effects of toxic stress in the first years. Effective messages may differ by country, cultural and linguistic context and must be accompanied by outreach through media, community and peer channels.[138]

5.6.3 *Recommendation: Supplement public investment in early childhood development by investing at least 15% of international education aid into preprimary and early childhood education programs.*

The available data on public or private spending in ECD is most extensive for preprimary education, and even there data are missing for many countries. Comparisons are difficult due to different financing patterns and cost structures for preprimary education across nations. The vast majority of countries with available data in 2009 spent less than 7 percent of their public education budgets on preprimary education; this targe could begin to achieve parity with spending on primary education. Among regions with multiple nations contributing data, only Central and Eastern Europe, Latin America / the Caribbean, and Western Europe were regions that included more than a couple nations spending over 7 percent.[139] In international education aid, early childhood education is severely under-represented as well.[140]

Public financing of ECD can incorporate local participation. ECD is an explicit category for discretionary local budget planning and allocation in some low-income countries (at the municipality or village level).[141] ECD finance can therefore play a role in national efforts in participatory governance. Effective local budget planning can be supported through capacity building and professional development. None of these approaches, however, should entail charging fees to recipients – such an action would risk excluding the most vulnerable children from ECD programs.

5.7 Measuring Early Childhood Development to Track Progress on Target 3A

Currently, measures of young children's developmental potential, encompassing physical, cognitive, social and emotional dimensions, exist and are being implemented across regions (for example, in the UNICEF MICS or Multiple Indicator Cluster Surveys). Thus Target 3A of ensuring that all children reach their developmental potential can be monitored with existing data collection efforts.

These large-scale, cross-national efforts, however, cannot replace the need for locally developed and culturally relevant measures of children's development that are country-specific. Such measures are more likely to include culturally specific outcomes and milestones. Regardless of the type of assessment, measures should be developed with input from a variety of stakeholders – across caregivers, parents, and practitioners, as well as across ethnic and linguistic groups.[142]

5.7.1 Recommendation: Two kinds of measures of child development – 1) assessment tools appropriate for monitoring population-level child development and tracking developmental growth over time; and 2) screening tools to identify individual need for services -- should be developed for country, regional and global use, with input from multiple stakeholder groups and attention to cultural relevance.

5.7.2 Recommendation: Data systems in ECD should be strengthened – encompassing complete birth registration and measures of service quality that predict children's learning and development.

Measures of children's development. Two kinds of children's assessments, distinguished by their purposes, can inform and be integrated with ECD programs and policies.[143] The first can achieve the goal of population-wide assessment of children's progress across different areas of development, capturing a "snapshot" – whether national or subnational / regional – of children's development. These measures should encompass attention to the physical, cognitive, and socio-emotional domains of children's development, in keeping with a comprehensive definition of developmental potential. UNICEF's MICS (Multiple Indicator Cluster Surveys) includes an early childhood development module that asks caregivers and parents about their children's physical, cognitive (language / pre-literacy, numeracy), and socio-emotional development (approaches to learning such as engagement and curiosity) and thus reaches over 60 countries capturing multiple domains of young children's development. Other measures of caregiver- or parent-reported young child development exist or are under development, including the Early Development Instrument and the Index of Early Human Capability, which incorporate items representing each of these domains and are being used across high-, middle-, and low-income countries.[144]Important supplements to this form of measure are those assessments that can capture developmental growth in specific areas over time (e.g., growth in language or emotional skills).

The second form of child assessment is the screening tool, which can serve to identify difficulties in development. Although data from screening tools can also be summarized across entire populations, these have the added function of enabling individual-level identification of need for further diagnostic tests and intervention. Among recent instruments of this type is the Guide for Monitoring Child Development (GMCD).[145]

The next challenge in measuring the development of young children for both of these purposes is to supplement adult-reported measures with locally developed direct child assessments, covering a range of domains of development, that are short and feasible to implement. Several regional and global efforts are proceeding currently to conceptualize, develop and implement such child assessments;

advances should be incorporated in coming years to monitor progress on global ECD indicators.[146] Measures of social and emotional development, self-regulation, and executive function skills, in particular, are lacking, reflecting the lack of emphasis in the field on non-cognitive skills with important life-course consequences.

Measures of ECD program quality and policy implementation. Measures of service quality, ranging from those for center-based early education programs to the wider variety of services settings in home-based and community-based programs, are urgently needed.[147] Without better monitoring of such contexts with measures of quality that show adequate prediction to children's learning, health and behavior, investments in ECD will fail to deliver promised results. Center-based measures of quality have been developed in specific nations as well as regionally, with some applied in multiple countries. However, most ECD systems still do not use measures of service quality that have been shown to predict children's learning and development. Beyond the level of services, the regular collection and sharing of systematic information on governance and policy approaches in ECD is beginning. For example, the World Bank's SABER project provides comparative data on the policy elements of ECD across countries.

Finally, there is a great need to improve data system capacity in ECD. For example, birth registration systems are the foundation on which population-based estimates of children's health, progress and supports for ECD can be ascertained. Yet more than 100 countries do not have fully functioning civil registration systems. Sub-Saharan Africa and Southeast Asia are at particular risk, with 75% of unaccounted births and deaths in the world from these regions.[148]

Conclusion

Despite the extraordinary promise of ECD to address both human and societal development, millions of children have no access to ECD services. For example, 85% of children in low-income countries had no access to preprimary education in 2010. Regionally, 83% lacked access in sub-Saharan Africa and 78% in the Arab states. Levels of public spending on pre-primary education, expressed as a percentage of public spending on education, were less than 5% in over 50% of countries with available data in the 2000's.[149] The costs of business as usual, given the proven value of quality ECD programs and policies, are very high. Attention to a child-centered perspective in all sustainable development policies will benefit growth and development, not just for individual children and families, but for entire societies and the world.

6. Education for children between 5 and 18 years of age

6.1 Achieving Target 3B by ensuring universal access to free, quality basic education

The accelerated effort at primary school expansion of the last two decades means that the remaining out of school children are truly at the margins of society-in remote geographic locations; in areas wracked by, or just recovering from conflict; belonging to the poorest or most discriminated against families; or are children who have special needs. The marginal cost of including these children is high, and reaching them will require both a special outreach effort, and a creative, flexible approach. Of the 60 million children out of school, over 25 million are concentrated in 10 countries. Nigeria is the only country where over 10 million children are estimated to be out of primary school. Pakistan (5 million), Ethiopia (2.3 million), India (2.2 million), Philippines (1.4 million), and Burkina Faso, Cote d'Ivoire, Kenya, Niger, and the United States (estimated 1 million) follow next(UNESCO Institute of Statistics 2010). Many other countries have several hundreds of thousands of children out of school but overall numbers are smaller due to differences in population size. In all of these countries, the out of school children represent a mix-not all of them are completely disengaged from the education system. Many of these children will have enrolled and even probably attended for some time; but the system is unable to keep them inside classrooms for all of their primary school years.

There is a rich policy and academic literature on interventions to increase enrolment and retention. In this report, we highlight three efforts that have been shown to be catalytic in bringing about change. Some of these interventions have been implemented at scale, others are still relatively new; together they represent a "big push" to allow every child to access learning and education. In some cases they draw children into the system, in other cases, they are designed to follow children and bring education to them, wherever they may be. We urge all countries to consider these efforts to universalize education.

6.1.1 Recommendation: Strong support for universal free basic education for all children as a prerequisite for universal enrolment, including financial support as needed.

Globally, elimination of user fees has been overwhelmingly important in pushing forward enrolment rates, especially amongst the poor. The cases of Guatemala, Kenya, Malawi, Tanzania and Uganda, among other countries, have shown that removing user fees can increase enrolments by up to 70 percent (Kattan and Burnett 2004). Apart from formal school fees, parents incur several other types of financial costs: fees for textbooks, uniforms, extra classes, sports facilities etc. within the school context and private tuitions after school. These costs add up fairly quickly; today such charges account for over

20 percent of education spending, very often leading to impoverishment or routine indebtedness of families. In many cases children (typically girls) tend to drop out after a few years. Removing user fees creates a separate set of challenges for any education system-governments need to quickly identify alternate sources of financing, and cope with increased demand, both of which put pressure on the supply side. Countries with a large proportion of private enrolments face more difficult challenges-parents see fees as a price signal of quality, even if they struggle to pay. In such cases, the focus will need to be on simultaneously building the quality of public education, while financially supporting the poorest families in exercising their choice for a high quality education.

Not all out of school children are outside of the schooling system itself. Many enrol, but drop out. Some are unable to attend regularly, and lose their place. Others are unable to cope academically or need to work to supplement family incomes. Yet others are either not accessed by the state system, or are in settings with very poor quality instruction. In such cases, the state can provide financing so that private organizations can provide education with governmental aid and regulation. For such children, who are at the periphery of the education system, conditional cash transfers can help in facilitating access to the system. Conditional cash transfers (CCTs) have had a fairly successful record of inducing rises in primary education enrolment, especially in Latin America (Das et al 2005). Such programs do not work as well in places where the main challenge is supply side delivery of education. CCTs would most likely work in urban or peri-urban areas where schools and teachers are already present, and where children are unable to attend for financial or other family reasons. If targeted carefully at the poorest children in specific underserved communities, CCTs could be an effective intervention to encourage participation for a large sub-set of the out of school child population.

6.1.2 Recommendation: Provision of adequate, long-term and predictable budgetary allocations for universal basic education, including through increased tax base and external assistance in those countries where education systems are under-resourced.

The recommendation calling for universal free basic education depends on adequate funding for education. Two benchmarks are widely used: countries spend 6 percent of GNP and 20 percent of national budgets on public education[8]. In reality, there is wide variation in actual spending levels. Developing countries spent 4.7 percent of GNP on education as compared with 5.5 percent spent by developed countries in 2010[150]. For the same year, developing countries spent 16 percent of total expenditure on public education; the corresponding share for developed countries was lower at 12

[8] Both these benchmarks are based on a World Bank study that correlated a range of educational inputs including spending to educational outcomes across 49 low income countries (Bruns et al 2003).

percent.[9] For countries that are severely underfunded, an increase in resources dedicated to quality education provision is essential to achieve Target 3B. Budgetary benchmarks also allow citizens and parents to hold their governments accountable to uphold their commitments to the right to education. Beyond these benchmarks, macroeconomic policies that enable long-term, predictable funding of the largest costs (typically teachers' salaries) are essential to sustain educational expansion.

In cases where tax revenues are inadequate, development assistance needs to increase to close the gap. UNESCO estimated the total external assistance needed to fund MDG 2 for primary completion at $36 billion. The Global Partnership for Education, a multilateral fund aimed at directing development assistance to support over 60 national educational plans has an estimated unmet external funding gap of US$8 billion by 2014. International and domestic finances need to be allocated quickly to those countries that are severely underfunded. As official assistance has declined, a number of new innovative financing mechanisms are also available (see Box 1).

Box 1: Innovative Financing in Education

Education remains underfunded in most of the developing world. As population grows faster in emerging markets and fragile states, quality of education is severely affected by the scarcity of resources and the insufficient public investment in the system. With international assistance continuing to decline and education needs growing, countries are turning to innovative financing, and raising funds from the market. The concept of innovative financing was first introduced by the UN Monterrey Consensus of 2002, and since then, both sovereign donors and private actors have championed a broad range of initiatives meant to mobilize more resources for development. To date, 18 debt-for-education swaps have been used in 14 countries, predominantly in Latin American debtor nations where creditors agreed to forego part of the interest rate and the principal conditional upon investing in education of an agreed amount by the debtor government. The World Bank International Development Assistance (IDA) has also utilized credit "buy-downs" and converted credits into grants retroactively should certain development goals in education and other essential services have been achieved. Debt conversions have had a random approach, based on the agreement of creditors and debtors to pursue them, but also depending on the availability of hard currency, the latter excluding most of the Highly Indebted Poor Countries (HIPC) and Least Developed Countries (LDC). Giving more consideration to this potential funding instrument for education in the future may yield more significant results. The Leading Group report of 2010 has advanced a series of other proposals for generating funds for development such as taxes on international financial transactions and on sports revenues as well as micro-donations on individual bank transactions in which credit card users allow banks to round up their transactions and transfer resulting amounts to education.

[9] Both benchmarks are imperfect since they do not control for variations in sizes of economies and populations; typically poorer countries may spend a larger share of GDP which translate into lower absolute per student spending. Comparable per student costs are harder to estimate, though estimates of $40-60 per student per year were estimated in 2003-04 by various authors (Bruns et al 2003, UN Millennium Project 2005).

Pursuing alternative paths including through special development bonds or expanding international solidarity levy mechanisms on online air tickets, hotel bookings and mobile phone calls could provide additional funds for education to overcome declining aid and insufficient domestic resources.

Source: UNDP 2012. *Innovative Financing For Development: A New Model for Development Finance?* New York.

6.1.3 Recommendation: Country-specific outreach strategies to target the particularly hard-to-reach children in a "mission" mode and create solutions to address the specific barriers to participation in the schooling system

In addition to the above measures, some communities and families will need to be approached in a targeted manner. Options include: identifying local "education champions" or role models within the community, who can form a bridge to the system to see how family constraints can be accommodated; ensuring implementation of guidelines for basic physical infrastructure of the school where it is lacking and becomes a barrier (girls' bathrooms, safe and secure routes to and from school, residential facilities for nomadic populations etc.); ensuring that incentives for teachers, principals and school administrators are designed in ways that encourage them to overcome social prejudices and create a welcoming environment for these children; and encouraging linguistic diversity, that allows for children to learn in the language closest to their native tongue. If that is not possible, time should be specifically budgeted for learning a second language, and the curricular expectations from the child revised accordingly to ensure that she or he is not seen as a failure.There are several other country-specific interventions that can work- some have been tried in pilot projects, others have been scaled up with varying degrees of success. We encourage each country to commit to a detailed, specific and targeted strategy to reach its out of school children- and to creatively adapt its own systems for different target groups that need to be reached.

6.2 Achieving Target 3B by ensuring universal access to quality secondary education

Over 70.5 million children of secondary school age are not attending school. The big gains of enrolment at the basic education level have not translated into corresponding changes at the secondary level. Evidence suggests that the returns to schooling increase at the secondary level as compared to primary levels. At the secondary level, the return for every additional year of schooling can be 10 percent, and at the tertiary level, as high as 18 percent. This means that the difference in incomes between a primary and secondary school graduate is 77 percent, and that between a primary and college graduate can be up to 240 percent.[151] In the case of girls, the positive externalities are even higher. Additional years of

schooling are strongly correlated with smaller family sizes and with 5-10 percent reductions in infant mortality rates.[152] Countries are beginning to expand access to secondary education and it is critical that this expansion is done in a way that is consistent with high quality outcomes on learning and preparing young women and men to be productive citizens of their societies.

6.2.1 Recommendation: Countries focus on universal completion of learning at the secondary school level

6.2.2 Recommendation: If children cannot come to school, take schools to children: Invest in high-quality open schooling to accelerate reach

The lesson of primary expansion of the past 2 decades has been that it is not enough to expand access to education-quality improvement has to take place simultaneously for access to be truly meaningful. It is critical therefore, to aim for universalizing secondary schooling by ensuring that children learn to standards of secondary schooling, whether they are physically inside school premises or not.

Despite the $1.5 trillion being spent on education today, the 70.5 million secondary school-age children not in schooland their families represent the failure of years of traditional state led education delivery. Even though this number is in long term decline, it is still an affront to the years of effort put in by governments, civil society, and local communities around the world.

Today, with over 5 decades of experience, it is critical to think differently about schooling itself. If these children are unable to come to school, it is time to take schooling and education to these children directly. The experience of open schooling has shown that it provides the framework for flexibility and inclusion- yet it has been neglected systematically by governments as an effective and preferred route of education provision.[153] Open schooling by definition offers pedagogical flexibility (individual pacing, selection of subjects, asynchronous learning), institutional flexibility (timing of enrolment, geographic and age flexibility, provisions for special needs students) and program flexibility (continuous enrolment, flexibility in examinations etc.). All of these features make it amenable to accommodating students who have needs that the formal system is unable to meet. Open schooling has so far been seen as a poor substitute for the in-classroom experience. We have relatively little evidence on its performance; yet what we do know through existing studies indicates similar academic performances of students of open schools when compared to those from traditional schools on average. Many countries lack a formal policy on open schooling and a regulatory structure that defines the outcomes of such a model. Such a high quality flexible medium of instruction through open schoolingshould be developed and first applied to children who are not part of traditional systems.

6.3 Achieving Target 3B by Focusing on Broad Learning Outcomes

Equity of access is necessary for universal education; but the success of an education system will eventually be measured not by how many children are in classrooms, but by the quality of education they receive while in or out of those classrooms. The underlying assumption of universalizing access over the past several decades (measured either through enrolment or completion rates) was that once children were in the classroom they were learning age-appropriate subject matter. We now know that assumption to be patently untrue. A series of studies over the past several years have shown that there is at best a tenuous link between classroom presence and learning.[154] This is a sobering finding. It calls into question over 6 decades of education policy worldwide that focused on expansion of access and provision of inputs. It has already provoked a shift in global emphasis to learning outcomes and how best to ensure that global and national education policy is refocused accordingly.

Traditionally, national governments in low and middle income countries have measured the success of their education policies through a combination of access and completion indicators, and through standardized exams at the end of each schooling system (typically grades 11-13, depending on the country) as an accepted proxy for learning. In several countries, stand alone efforts at measuring learning have shown that children fall behind so much earlier, that by the time the proxies are used, the majority of the children have already dropped out. In India, Pakistan and in some of the African countries, civil society-run surveys (ASER, ASER-Pakistan, UWEZO) have found a majority of students lag several years behind in their reading and math ability- a trend that is stubbornly static, and in some cases showing a decline over the past eight years in which these assessments have been done.[155]

6.3.1 Recommendation: Ensuring all children attain basic learning goals in primary segment

Every year, nearly 30 percent of children currently in primary school fail to complete the full primary cycle. In terms of attainment, the percentage is much higher. Many of them acquire some rudimentary skills, but are far below their age (and grade) appropriate learning levels. In fact, thecurrent system of age-appropriate enrolment in grades is often meaningless and the classes in large proportions are multi-level and multi-grade. It has been shown that grouping children by learning levels and teaching according to levels to bring all on par works when large numbers of children in primary grades lag behind several years in their basic learning. A focus on system-wide remediation will not just boost overall learning levels, it will give children an incentive to continue in school and give them additional attention, time, and resources to allow for the opportunity to close their learning gaps[156]. Evidence on the type and duration of remedial programs needed is sketchy, though preliminary data suggest that

rudimentary learning and comprehension gaps can be closed relatively quickly. For higher grades, and more complex topics, there is less information.

6.3.2 Recommendation: Countries set national learning goals in line with international norms at the beginning, middle and end of their schooling cycle.

The success of education policies is best measured against the outcome of learning. If children are learning well, they will be motivated to continue to study, and overall drop-out rates will fall. If they complete their full schooling cycle, they will be in a position to study further and acquire specific skills, contributing more effectively to the economy. Countries have so far shied away from focusing on learning. Clearly, it is much harder to focus on learning than focusing on inputs-which though important, are ultimatelyfactors that determine how a student performs and should be treated as such. While each country will set its own goals, there is tremendous merit in pegging national goals to international norms. Increasing global connectivity will continue to make more occupations mobile, and eventually students will need to be globally competent. We are beginning to see examples of this through a widening of the PISA tests for example (where Shanghai province in China prepares its students for international assessments).

6.3.3 Recommendation: A comprehensive framework of learning underlines the learning goals- one that fulfils basic numeracy and comprehension skills, but also prepares students for life and livelihoods.

What students learn will change fundamentally in the coming years. There are several global efforts to define the core set of skills that students need to master during their school years. The global Learning Metrics Task Force (LMTF) is a major global effort that has outlined a core set of skills for learning that encompasses the following seven domains as important for all children and youth, from early childhood through post-primary: physical well-being, social and emotional, culture and the arts, literacy and communication, learning approaches and cognition, numeracy and mathematics, and science and technology. These are critical life skills and will need to be detailed in context to national needs. Previously the Learning First Research Study identified an ambitious research agenda to inform policy issues around building a framework of learning.[157]

Today's young people are also going to be the generation that faces and manages the challenges of sustainable development; classrooms need to teach children systematically how to live and work in, and make their societies sustainable for themselves and future generations. Finally, navigating the transition from adolescence to adulthood is a set of skills that few education systems teach their

children; education systems have to provide a more structured pathway to work- either by preparing young people for further training, by fostering entrepreneurship skills that will allow them to earn their own livelihoods, or by preparing them immediately for work in their communities and local economies (Section 6).

6.3.4 Recommendation: Countries institute regular national sample assessments, conducted independently, drawing from the curriculum, but in line with global norms

Countries need to systematically measure how learning outcomes change over time, based on different pedagogical and structural interventions. Very few countries do so regularly today, but without this knowledge, it will be impossible to either set meaningful goals, or to make serious efforts at achieving them. Standardized national level examinations fail in this task. In most countries they draw too closely from the curriculum, and especially in large countries, are limited by the quality of evaluators and exam-setters, they rely on the ease of examining knowledge retention (and often replication of the prescribed text). Shifting the focus to a broad range of learning outcomes will be a big leap for most developing countries. Such a leap can begin by creating independent assessment bodies that are structurally autonomous from both the Ministries of Education, and the curriculum framing bodies. Such a body could draw on experts from within and outside the country to design ways of testing across a broad set of learning domains (as being defined above by the LMTF). Learning goals should inform a framework of assessment throughout the school cycle so that children's performance can be monitored periodically and where learning is not happening, steps can be taken immediately. The formative assessments by teachers in the classroom are critical to strengthen so that they can active contribute to improving learning, and empowering teachers to do better. At the same time, results of learning assessments are often unintelligible to lay people, especially parents. While it is important to have sophisticated detailed normative assessments, it is equally, if not more, important that parents of children learn about learning levels in a transparent manner. At the same time, it is important to note that not everything of importance in education can be easily measured and it is important to value a broad range of outcomes even those which are less easy to measure.

6.3.5 Recommendation: Priorities of teachers, school principals, administrators and the local community including pedagogy, budgets, performance incentives, and system guidelines, are refocused around learning goals for their children.

A focus on learning makes it possible to have a disruption in the systemic delivery of education. It allows for a realignment of the structures and incentives within the education system to focus on the child. The implications are significant: first, teacher training, support and performance will need to be measured against the trajectory of learning of his or her students. This is a fundamental shift from

current norms. It will be difficult to implement, but absolutely necessary for the learning goals to be achieved. Where teachers are not equipped to deal with poorly performing students, the system should supplement with additional training, and/or teaching assistants. Successful models exist that provide teachers with supports for their in-classroom practice, some of which leverage internet, social media, and smartphones and other technologies.

Second, students should systematically evaluate their teachers, principals, and administrators as part of the learning assessment. This feedback is rarely taken, and if it is, rarely factored into systemic reform. Research shows that students' evaluations of their teachers can be as predictive as assessment of teacher quality based on standardized tests, for example[158]. Third, pedagogical tools will need significant revision to cope with the changed metrics of the system. There is very poor capacity within education systems in most countries to revise or create new appropriate tools; building this capacity will be a central element of such an effort. Fourth, curricula need to be paced and designed in keeping with childrens' ability to learn; recent studies point to the role of rushed and overambitious curricula in poor learning outcomes[159]. Fifth, budgets, and by extension inputs of schooling will need to be modified based on what works best to help children learn. Sixth, data on learning should be collected periodically-more frequently than the national assessments, and enough times that they give real information on how each child is progressing. Where learning trajectories are flat or too slow, the system should receive enough information from schools to enable remedial action.

6.3.6 Recommendation: Countries move towards flexible education systems, especially beyond years of primary schooling, where differentiated paces of learning are possible.

Education systems are notoriously inflexible- and should continue to be just as inflexible in defining overall learning standards and outcomes. But much greater flexibility is required in how to get there. Many lessons can be learnt from the experience of open schools over the past 50 years. Some of these include:

- Children learn at different paces, depending on their pre-primary life experiences and training, their parental guidance, socio-economic background, and physical environment.. If there are predefined learning goals, children should be allowed to learn at a differentiated pace, within broad ranges.
- Children learn differently based on their cognitive skills, experiences etc.[160]. In some cases, children do better with linear, structured learning. In other cases, asynchronous learning works best. A variety of pedagogical styles should be encouraged within the same system to allow for children to self-pace and self-learn but towards a high, common standard of learning.

- Learning goals allow flexibility in timing of study: this allows the system to open up to children who may not be able to attend the formal 6-8 hours of time in school, but who can be allowed space and structure to learn more slowly as appropriate for them, without casting them out of the system altogether.
- Small-groups with activity-based instruction should supplement whole-group instruction. In such activities, mixed-ability grouping is more effective than grouping that segregates children of different ability levels.

6.4 Achieving Target 3B through Innovations in the Delivery of Education

A focus on learning will require a change in mindset on how education is to be delivered. Large education systems struggle with ensuring minimum performance standards; this becomes more difficult when effective learning is brought in as a goal. If governments are committed to improving learning outcomes, then countries need to invest in different mechanisms of delivery. The recommendations below highlight the crucial innovations necessary to ensure that learning goals are achieved at the national, regional and individual level for all children.

6.4.1 Recommendation: The local community is a core partner in the delivery of education, both through contributions in curriculum and pedagogical design, and evaluations, as well as structuring the delivery model itself

Most education systems are centrally designed, with little room for local communities to provide inputs. A focus on learning outcomes may allow for opening up the system to the local communities and parents of children to be part of the dialogue on how best to deliver education that creates the best learning environments for their children. Their inputs into pedagogical design (i.e. through examples of local occupations, community practices etc.) can contextualize learning and make it more immediately relevant for children and their families. Most countries have a rich tradition of native knowledge that is lost or excluded from the formal education system. Especially in the context of a broader set of learning skills, such as those of physical well-being, social and emotional, culture and the arts, and literacy and communication, parents and the local community can add to the content of learning, as well as assess learning outcomes. This way, they are in a better position to evaluate the progress of their children, and of the effectiveness of teachers and the school system as a whole. Opening up the learning domains has ancillary benefits for adult learning as well; it can foster a culture of learning within the community and remove some of the social barriers to adult education.

Finally, parents and communities also need to be more aware of education rights and mobilize and advocate for greater accountability from the education system. It is important to spread awareness of

such rights, that stem in part from the global goals that countries sign on to. When the new sustainable development goals come into force, there should be a major effort to popularize and spread ownership of the goals amongst parents and local communities so that the objectives of the goals inform the responsibilities of educators and parents. Action Aid and the Right to Education Project has created a charter of 10 core rights for all schools to respect (see Box 2). Such efforts will be needed to popularize the SDGs and the responsibility of the schooling system in achieving them.

Box 2: Empowering Communities through Rights

The charter of 10 rights defined by ActionAid and the Right to Education project describes what an ideal school that offers quality education looks like. It aims to support citizens' perspectives to prepare local, district and national reports on the state of education rights. Ultimately, the purpose is to strengthen the public school system.

Right to Free And Compulsory Education: There should be no charges,direct or indirect, for primary education. Education must gradually be made free at all levels.

Right to Non- Discrimination: Schools must not make any distinction in provision based on sex, race, colour, language, religion, political opinion, nationality, ethnicity, ability, or any other status.

Right to Adequate Infrastructure: There should be an appropriate number of classrooms, accessible to all, with adequate and separate sanitation facilities for girls and boys. Schools should be built with local materials and be resilient to natural risks and disasters.

Right to Quality Trained Teachers: Schools should have a sufficient number of trained teachers of whom a good proportion are female; teachers should receive good quality p re-service and in-service training with built-in components on gender sensitivity, nondiscrimination, and human rights. All teachers should be paid domestically competitive salaries.

Right to Safe And Non-Violent Environment: Children should be safe on route to and in school. Clear anti-bullying policies and confidential systems for reporting and addressing any form of abuse or violence should be in place.

Right to Relevant Education: The curriculum should not discriminate and should be relevant to the social, cultural, environmental, economic and linguistic context of learners.

Right to Know Your Rights: Schools should teach human rights education and children's rights in particular. Learning should include age-appropriate and accurate information on sexual and reproductive rights.

Right to Participate: Girls and boys have the right to participate in decision making processes in school. Appropriate mechanisms should be in place to enable the full, genuine and active participation of children.

Right to Transparent And Accountable Schools: Schools need to have transparent and effective monitoring systems. Both communities and children should be able to participate in accountable governing bodies, management committees and parents' groups.

Right to Quality Learning: Girls and boys have a right to a quality learning environment and to effective teaching processes so that they can develop their personality, talents and physical and mental abilities to their fullest potential.

Source: Promoting rights in schools: Providing quality public education. (2011). Report by Right to Education Project, ActionAidInternational .

6.4.2 Recommendation: The role of the teacher is re-imagined and countries invest in teachers to succeed.

Teachers are at the core of all systems of education. Eighty five percent of teachers in developing countries are categorized as "trained" though definitions and capacities are variable across countries.[161] In addition, there is an overall shortfall of teachers of 4 million, with specifically 2 million extra teachers needed in sub-Saharan Africa, where this need is the greatest. Two implications follow: first, despite the high proportion of trained teachers, learning outcomes are poor and have not improved. Second, the large number of new teachers needed across the developing world gives countries an opportunity to innovate around selection profiles, selection criteria, and training and support.

Teacher motivation and teacher preparation for the task on hand in local circumstances are two key constraints in making the system learning outcome oriented. Not only do schools work in isolation from the surrounding community without involving parents in the process of education of their children, but with urbanization reaching beyond the metros, often teachers are not a part of the school-community either. There is a need to end the isolation of the school and there is a need to look into possibilities of

creating community-based learning mentors who support the work of expert teachers so that parents become a part of the teaching-learning process.

The role of teachers in the coming decades will be significantly different from what it has been so far. First, their role as the custodians of knowledge has rapidly eroded. Knowledge is much more freely available than before and students have many ways to access it. Second, their role as navigators of this knowledge as well guides on interpreting and using it has become even more important. The majority of teachers are not trained for this role- yet it will be their greatest contribution in the future. The curriculum for teacher education will need to reflect this fundamental shift. Their training will likewise need to adapt significantly. Recent efforts at pre-service training that integrates in classroom practice, and in-service professional development are positive steps in this direction.

Teacher evaluation and incentives will also change- with a focus on learning outcomes, much more emphasis is needed on their ability to support children who are struggling; their ability to close the learning gaps within the classroom and between grades; and their ability to identify specific development needs within their student cohort. The evidence on the link between teacher performance and monetary rewards is mixed. Low teachers' salaries adversely affect the quality and performance of teachers. But if salaries are above a threshold, they cease to be a significant factor in performance; training, support, an enabling environment, and other similar factors determine performance.[162]The role of teachers as role models, life guides, motivators and as an inspiration for their students remains as important as ever. But in order for them to fulfil their roles, a serious investment will be needed to equip them for new challenges. Finally, there is enormous scope to open up the role of teaching and bring in young people from colleges, local communities, and even retired persons to be part of the process of educating the next generation. The teaching community can be expanded in innovative ways, especially with the need for a set of skills that formal teacher training doesn't yet prepare it for.

6.4.3 Recommendation: Use technology to open up the schooling system

The promise of technology to transform education has not yet translated into reality. Efforts to deploy information and communications technology (ICT) in education have had mixed results.[163] Yet the potential of technology as not just an enabler but as a bridge to reach out to children and fundamentally alter the way education is delivered, remains unparalleled. The spread of mobile technology and broadband connectivity have together created a set of circumstances that have simply not existed in the past: first, the increasing variety and decreasing cost of end use devices (ranging from desktop computers, laptops, netbooks, tablets and smart phones) have made them available to vast numbers of households, making them economically competitive as an education delivery platform. Second, the

spread of broadband connectivity and cloud computing allow for centralized virtual centers of learning with much greater ease than before. Third, improvements in learning software and instructional material have allowed for the possibility of multiple and in many cases pedagogically higher quality channels of learning.[164]Fourth, technology can remove geographic and time-related restrictions on learning- students can access teachers not just in their classes, but anywhere in the world, and at any time of the day, raising for the first time, the possibility of learning without walls and beyond the walls of the school as we know it, and truly equitable educational outcomes. Finally, the greatest gift of technology is that it is scalable and it is quick. Turning a large education system around will take years, if not decades. In the meanwhile, several generations of learners will lose out and a devastating crisis will be upon us. Technology offers the opportunity to bring about rapid improvements in learning outcomes for children- it is an opportunity that all countries should recognize and experiment with. It is important to note that bringing in the necessary hardware will not change outcomes. Technology can only work if there is a change in the whole mindset in how content is developed, how assessment/ examinations are conducted, how teachers roles change, etc. Refocusing the education system towards an individual, child-centered learning through effective use of technology will work; making technology serve our current linear, assembly-line-like, purely academic school system will not lead to significantly different results. For this reason, at this stage there is no one model of technological success, but greater innovation in this space has the potential to yield powerful results.

Many of these possibilities are theoretical right now. But there are multiple experiments underway that will over time change the way education is structured. It is also premature to predict whether over the long run technology will supplement, modify, or replace current models of formal schooling. In the short run however, there are two clear possibilities: first, technology can help reach children who are either outside of the schooling system or struggling within it. Second, technology can immediately begin improving the quality of learning for students in school. In both these cases, children can benefit significantly.

6.4.4 Recommendation: The State leads on universalizing learning, but engages on other channels of delivering education

While the public sector is the mainstay of education delivery for the poorest children in the world, the private sector is likely to continue to be a player in the delivery of educational content and services in most developing countries. There are inherent challenges of equity with a large private sector; yet its role in expanding access at a basic quality is a fact that has be dealt with. Its emergence itself as a

significant player in the K12 delivery space is testament to the failure of the State in many countries to fulfil basic educational aspirations of children.

Moving forward, a focus on learning can recalibrate the relationship between the State and other providers of education. The State has the responsibility for delivery of quality education to each and every child. A large centralized public delivery model of high quality education is the ideal to strive for- the state is the only actor that can ensure equity of opportunity and access. But it is not the only way in which education can be delivered. By focusing on learning, governments can open up various models of schools (publicly financed and run, publicly financed and privately run, or community-run schools, others) that are oriented around a consensus on learning goals for different cohorts. In this case, the government's role, apart from its core responsibility of expanding access, is to maintain fidelity to those learning goals, and to set the parameters by which progress towards those goals is measured.

In countries where the private sector is a significant provider of basic education, governments should ensure that the poorest of the poor are able to attend the best available schools (either through legislation, or through voucher schemes, or some combination thereof). In countries where the quality differential between public and private providers is significant, or where students supplement learning through private tuitions, the only long term solution is to reduce the quality gap as discussed above. In the short-term, a focus on bringing quality education to the most vulnerable and deprived children (who cannot afford private tuitions) is one way of reducing the inequities in the system.

Innovations in technology for education are likely to emerge from within technology companies; identifying ways of working with technology providers to create appropriate learning material, teacher training material, assessments and delivery mechanisms can be used to target the poorest, and promote access and equity. Finally, designing a curriculum that prepares high school students for work will require working closely with industry and working in partnership with it to identify necessary skills for employment.

6.4.5 Recommendation: Measure what we recognize; recognize what we cannot measure

How educational systems will evolve will depend in many ways on what they measure. We know now that access and equity matter; the Education for All Goals and the Millennium Development Goals helped identify specific indicators that would track how countries performed on both variables, and country efforts closely tracked those indicators. In Chapter 4, we have identifiedindicators that will help track if governments are meeting their commitments to deliver quality education to their children.

It is equally necessary to understand that there are important "unknowns" that we cannot yet measure. Despite years of research and analysis, we don't perfectly understand the alchemy that distinguishes a good learning experience from a poor one. We attribute teacher quality, early childhood preparation, parental influence, pedagogical tools, infrastructural factors and curriculum design to creating this mix in different magnitudes, but the "learning" production function is not fully understood yet.

Recent efforts in this context are beginning to yield rich data, for example through the use of direct observation tools (for example, Classroom Assessment Scoring Systems, Caregiver Interaction Scale, etc.). These tools are able to capture the social and emotional climate of classrooms and teaching, and not just cognitive instruction.[165]

Most countries struggle to fit children of different abilities and backgrounds into a common classroom setting. Despite years of such struggles, there is very poor understanding of how cognitive variation within a cohort can be brought to a common standard, or indeed, if that is possible for children with widely varying learning experiences. Specifically, for children that are behind 3-5 grade levels as compared to their cohort average, what are the best strategies for closing that gap? To what extent can such gaps be closed and how should such efforts be prioritized? Most education proponents, including the authors of this report believe implicitly in the ability of children to learn- at all ages, from all circumstances- but more research is needed to document and systematize the evidence around these abilities.

Finally, are there ways of teaching children the full set of skills that they need different from the way schools are currently structured? We return to this theme repeatedly in this report not because the current structure of schooling is inappropriate, but because it is too large to change direction quickly. While we focus on improving the current systems, to not consider other ways of educating would be a grave injustice to children currently in low quality schools across much of the developing world. We owe it to them to encourage countries to innovate-especially for the children who are at margins of our society, and in whose investment countries face the greatest challenges.

7. Preparing children and adults for work

What do young boys and girls do after graduating from secondary school? What accounts for such a steep drop in enrolments at the tertiary level? The majority of young people in developing countries do not have access to institutions of tertiary learning that will significantly improve their skills and earning potential. Even after school, they do not have pathways to decent, sustainable work at a living wage. This section examines the role of tertiary education in those pathways, and the challenges of lifelong learning.

7.1 Achieving Target 3C through School to Work Transitions and Vocational Programs

How young girls and boys make the transition from life as a full-time student to life as a full-time worker determines their career trajectory. Yet, this path (or multiple paths) is not well understood or documented, especially for the developing world. The best evidence is from developed countries where the education system is able to retain most students through secondary school, and which have structured systems to guide students through this change towards formal employment.

For most young people in developing countries, there is no clear structural break between work and study. A small proportion continues to the formal tertiary sector. Many work while they study through high school- almost all do so in the informal economy, and in their communities and on their farms. Where the quality of schooling does not offer new opportunities, many gravitate naturally to their part-time work which then converts to full-time work. For many in rural areas, migration to cities offers the promise of a wider variety of work, though often in poor conditions and at low wages. Most young people either work on farm land, or for small and medium enterprises, start small informal businesses of their own, or join small family owned units, or work as casual labor in larger organizations. These are, for most part, forced choices, and do not allow students to leverage their years of study or the timing of their transition to work to improve their quality of life. Several factors create this challenge: the informality of the economy means that potential employers are not organized in ways that can interact with schools directly; even in the organized sector, employers are not connected to the schooling system at all; there is huge information asymmetry-students have little knowledge or guidance on work opportunities after school; there are few opportunities to develop local work in the community, and most governments are unable to design transition programs that sort for the two parallel (and often overlapping) needs: to prepare students for tertiary education, or to enable them to work on their terms.

There are different models of successful school to work and vocational programs in the developed world (Germany, Switzerland, Japan, Finland, among others). They are designed differently, but have

some common elements that make them function well, and have important lessons for other countries. It is important to note that this transition is difficult; it depends not just on the quality of primary and secondary schooling, but on labor markets, on macroeconomic conditions, and on the institutional design of the program itself. All countries, even the best performing ones, struggle with maintaining effective transition programs as these conditions change. The successful ones are able to adapt quickly to changing economic needs and keep the interests of students at the core of their programs.

7.1.1 Recommendation: Countries integrate vocational training into high school curriculum, including a component of full-time work

Successful school-to-work programs all over the world begin at the high school level, not after it. While students are in the 14-15 years age group, they are exposed to rigorous vocational education (sometimes as a compulsory subject, sometimes as a separate track). This recognizes the reality that not all high school students will study further, and that for many professions, they do not need to. Further, all successful vocational programs have a component of full-time work for part of the program. This requires a tie-in with industry for placements, ensuring that the curriculum remains relevant, but also exposes students to rigors of full-time work, and is an essential to preparing them for work and for life.

7.1.2 Recommendation: Academic and vocational tracks have multiple "bridge points" to students to cross over during high school and undergraduate programs

Successful school-to-work programs recognize that choosing between vocational and academic tracks is difficult for young people and that these choices may change as economic and employment opportunities change. If these systems are designed as entirely separate, students will select the ones with lowest risk, and higher "social" value, even if those ones are not helpful in making the transition to work. All successful programs incentivize students to both tracks by offering, at various stages (after school, after undergraduate degrees etc.) the opportunity to switch tracks. Such switches are contingent on performance, but their presence in the design of academic and vocational programs is a critical element in attracting students to all tracks of study, and lowering the costs of that choice. Such programs also succeed in integrating literacy, math and science applied to specific vocational courses.

7.1.3 Recommendation: Schools and Colleges have career counselling and guidance for students and communication and education for parents

Successful transition programs offer students and parents help in navigating the options for their future. In the case of developing countries, it is even more critical that students receive information and help in understanding the implications of their choices, since they often do not have access to general

information about the economy, location of different types of work and training requirements in different professions. Japan offers the best example of this kind of help, where teachers are directly responsible for developing links with employers and for mentoring students through their work experiences. In developing countries, high school teachers can form similar links with local industry, the local community, and with potential employers in the informal economy. Schools can work with parents and communities to identify social needs that can be fulfilled by young people and advise them on how working to fill such needs can be done in ways that allow young people to be economically stable.

7.1.4 Recommendation: Schools and Colleges invest in high quality and relevant training

In all cases where school to work transition programs work, the content of the education is extremely high quality and relevant both for potential employers and for students. In developing countries, this challenge is even greater, since the foundational skills of students are typically weaker. The realities of local economies point to specific elements in the curriculum that may not be as relevant for the developed world (localized entrepreneurship skills for example). These skills should encompass not just technical knowledge, but skills on organizing, building and managing communities, identifying local needs and fulfilling those needs, and fostering creativity, leadership, and innovation in students to solve their own problems. Finally attempts at transition programs fail if they are not continually updated in line with the changing requirements. A regular revision of the program is an essential element of all successful transition programs.

7.1.5 Recommendation: Formal Vocational Schemes are jointly designed with governments and with manufacturing and services industries

Successful school to work and vocational programs are those where the design is done jointly by the government and industry. In cases where industry is the primary initiator, programs are less successful.[166] This is because companies do not have incentives to prioritize student training and recruitment; neither do they have the ability or need to identify broader skills requirements for students (outside of their own specific needs). Governments are traditionally poor at designing such programs in isolation simply because they lack real-time market intelligence on jobs. The best performing systems across all developed countries are those where government guides students and sets the frame for engagement with industry, and where industry guides the curriculum and pedagogical design. Allowing market dynamics to document policy action will continue to facilitate transition to work and reduce youth unemployment and frictional unemployment more broadly. Policy innovation in skills development that involves a wide participatory process of governments, private sector operators and stakeholders is more likely to contribute to inclusive market growth. While governments will continue to play a primary

role in education policy formulation and in designing the architecture of national qualifications systems, markets can make a substantial contribution to empowerment and mobility of the labor force through informal skills development should such learning alternatives be recognized by the former.

7.1.6 Recommendation: National frameworks to recognize informal / alternative skills development

Poorly performing public vocational programs and a skills mismatch have not prevented businesses from growing and increasing their competitiveness in the marketplace. To overcome labor productivity shortfalls due to insufficient or absent relevant skills, firms have started to use informal skill development more than the formal alternative, finding that outcomes of the former are increasingly better. Peer learning and on-the-job-training will remain significant, considering that over 75% of the current labor force will continue to be in the labor market for the next 15 years, thus representing a remarkable source of knowledge and skills. National qualifications frameworks and formal training organizations have not yet found ways to recognize informal skills-and this hurts the mobility of the informally trained labor force. If private investment in informal skills development in all companies and in SMEs in particular is formally recognized, it will increase labor mobility, and allow individual career progression with informal skills treated as both work experience and learning processes. Policy makers, employers and employees' organizations should work together to build bridges between informal skills development and formal training programmes while recognizing informal skills in the national qualifications frameworks.

7.2 Achieving Target 3C by matching skills with emerging sustainable development needs

Tertiary education systems across the developing world have focused on the formal economy and have been poor at predicting and preparing for its economic and employment needs. Nearly 20 percent of all unemployed youth in low income countries are estimated to have a college degree.[167]Yet they are inadequately trained to do available jobs. After poor school education it becomes much harder to prepare young people for highly skilled.

Yet, there are many other ways of matching skills to work that needs to be done in society. First, it is clear that increasing mechanization will change the kind of work that is available in capital-intensive manufacturing. The implications of this are not clearly recognized at this stage, but low-skill manufacturing is likely to see a fall in labor intensity. This means that a traditional area of employment in manufacturing is shrinking rapidly-this is also one that currently employs the largest proportion of the medium to low skilled labor force.

Second, there are many areas in the informal and social economy where work can be created, and skills matched to serve those needs. These include self-employment on farms, small entrepreneurships, farm-based cooperative and producer organizations, localized services for water, and energy supply, services such as care for the elderly and infirm, community health worker needs, management of local forests and water bodies etc. Many of these are not monetized or seen as viable avenues of professional work for young people. With the appropriate skills sets, and dialogue within communities there are ways of ensuring that these social needs can be met, and that young people can earn economically sustainable livelihoods through them.

7.2.1 Recommendation: Countries match skills production with emerging economic and social needs, starting with specific sectors and design systems of continual engagement with potential employers

The macroeconomic profile of a country, its key industries and the extent of labor-intensity of those industries will determine the industry-specific skills that a country needs. Estimates indicate that by 2020, there will be a 15 percent shortfall in medium skilled workers in low income countries, translating into 45 million workers. This is likely to correspond to a surplus of 90-95 million low skilled workers globally; more than half will be in low income countries. [168] On the supply side, the developing world has seen a structural shift since 1980 when 60 percent of jobs were in the farming sector. Today that ratio is reversed, with over a billion jobs having been created in non-farm sectors. These jobs reflect structural shifts in their economies; middle-income and BRIC countries have seen dramatic shifts away from agriculture to services and manufacturing.

Tertiary education systems in low income countries need to prepare for these shifts; by working both with potential employers, and with local communities to identify emerging needs; second, the instructional material needs to keep pace with the demands of industry, and societal needs, so that graduates are aware and capable to responding to their work requirements; third, countries need to value their young people and invest in creating hospitable, decent and high quality living conditions for them.

7.2.2 Recommendation: Countries promote skills that enable young women and men to earn livelihoods in the informal sector with decent working conditions and living wages

Over 60 percent of the labor force in developing countries work in the informal sector or are self employed[169].Such graduates are either employed by unregulated small and medium enterprises, or are self-employed. The tertiary sector in most countries does not prepare students for informal or self employed work. Skills in opening and running small businesses, basic accounting, management, IT and

communication skills would allow young graduates to access capital and build their own enterprises at a much larger scale and with greater efficiency than they are in a position to do. Skills in social areas such as improved farming, negotiating with consumers, creating value by preserving local environmental assets, helping the local community manage its resources, and creating services for households with care needs can create sustainable, long term work. More effort is needed in understanding how such work can be compensated and supported by the government and private individuals.

7.2.3 Recommendation: Countries invest in creating human resources for sustainable development:

Over the next several decades the world will face significant development challenges. Already the needs are staggering: the world needs an incremental 4 million schoolteachers, of which 2.2 million are needed in sub-Saharan Africa; WHO estimates an additional 4.3 million community health workers will be needed in 57 priority countries alone to enable them to achieve the Millennium Development Goals; similar gaps exist in the case of urban planners, water and sanitation experts, climate change experts, agricultural extension workers and scientists, epidemiologists, energy scientists, transportation planners, engineers, etc. In a rapidly changing world, there is a huge paucity of skills on managing the transition of societies from rural to urban, poor to middle and high income, agricultural to service and manufacturing based in the context of climate change and sustainability issues. Developing countries have the numbers of young people needed to fill these roles, but they are not trained in such capacities as yet.

7.2.4 Recommendation: Invest in training for a green economy

Sustainable development will require choosing more inclusive and responsible business models to secure a better future for the global ecosystem[170]. Transformations in production (to reduce resource intensity, fuel source etc.) and in production (to improve health, preserve the quality of the environment) and to sustain growth will demand changes in skills that the education system will need to deliver. Countries need to begin planning to alter education and training content in keeping with the greening process of the global economy. Such complex transformations will need to go hand in hand with improvements in the capacity of new markets to serve the poor. Education and training for the new green culture should also target the lower yields of the income pyramid where greening practices are simply too expensive to be considered right now.[171]

7.2.5 Recommendation: Countries invest in continuing education for adult women and men

Extending adult literacy to all women and men is a first priority of all governments. Literacy is not just about the acquisition and use of reading, writing and numeracy skills- its direct consequence is the ability of adults to be active citizens, to have much greater voice and agency over their own lives, to improve their health, their livelihoods and to fight discrimination in all forms. The goals of literacy programmes should reflect this understanding. Further, literacy should be seen as a continuous process that requires sustained learning and application. All policies and programmes should be defined to encourage sustained participation and celebrate progressive achievement rather than focusing on one-off provision with a single end point. Adult learning programs, when designed with a clear link to empowerment, have been shown to be much more effective. The Reflect program for example, is one such effort and evaluations show that literacy achievement through this program has been double that of traditional programs as measured in El Salvador, Bangladesh and Uganda. Other consequences were seen in gender roles; improving health and hygiene; increasing school enrolment (especially of girls); strengthening productivity (e.g. diversifying crops, increasing cooperative practices) and increasing people's involvement in and control over community development programmes.[172]

7.2.6 Recommendation: Countries invest in adult learning and skill building opportunities to strengthen the capacity of caregivers and communities to support healthy child development and create the next generation of learners

As was outlined in chapter 5, young children need to have skilled and capable adults present in their lives on a consistent basis in order to provide appropriate enrichment opportunities and protection against severe adversity that are essential for healthy brain development. Three areas of adult capability that stand out as important, particularly in buffering children and building effective coping skills in the face of high levels of stress, are executive function and self-regulation skills, caregiver mental health, and family economic stability.[173] At the moment, there is a need for increasing investment in testing interventions in these areas that explicitly address how these capacities not only help adults succeed in the workforce and as citizens, but also in fostering a healthy next generation of learners.[174]

7.3 The Role of Universities in developing countries

Universities have traditionally played three roles in developing countries: first, as centers of knowledge production and dissemination across a range of subjects ranging from natural sciences, to economic,

and social issues to the expansion and the creation of the arts; second, as creators of high skilled individuals contributing to national and the global economy; and third, as the sources for human resources and knowledge for "nation building" for example, in areas of agriculture, medicine, urban planning, etc. There are five broad structural variations in such institutions: first, research universities, typically public and a few in number, that focus on basic knowledge creation; provincial or regional colleges that typically produce the majority of undergraduates in the country; professional colleges that specialize in specific, typically high skill occupations; vocational colleges; and distance learning institutions. In most developing countries research universities, colleges, and distance learning institutions have been publicly funded and provided, while professional and vocational institutions typically have a mix of public and private participation.

Universities across the developing world are facing similar circumstances. First, despite "islands of excellence" in some countries, on average universities are not able to compete with developed country universities, either in the quality of the research being produced and the teaching. Of the top 200 universities, less than 2 percent are from developing countries[175].In 2012, of the top 20 countries that applied for patents, only 2 were developing countries (India and China).[176]This picture is likely to change in the future as China in particular, and emerging economies in general, invests significantly in Research and Development (R&D). But for most countries in sub-Saharan Africa, Latin America and South Asia, there will be a huge difference in quality relative to global top performers.

Second, there is a trend towards privatization of higher education across the developing world. Latin America and Asia demonstrate this trend where private enrolments have surged in the past decades. Part of this trend is a response to burgeoning demand. Enrolments in developing countries have increased 67 percent over the past decade, with the fastest growth in East Asia and the Pacific, followed by South and West Asia and Latin America and the Caribbean.[177] Part of the trend is recognition of the individual returns to certain kinds of higher education, where the value of professional degrees can be quantified based on employment opportunities available afterwards. Part of the trend is because government funding to higher education has simply not kept pace with the increase in enrolments. Increased privatization brings its own set of challenges: the need to ensure quality, to manage the inequality that between elite private institutions and lower quality public institutions, and promote national research priorities.

Third, cross-border flows of knowledge, students and teachers are accelerating rapidly. Online education is spreading quickly across developed and developing countries, and while there are many questions on how virtual education will work, it is clear that traditional models of instruction will change.

In the three years since the advent of the Massive Open Online Courses (MOOCs), these courses are already garnering hundreds of thousands of students- a feat which took the largest traditional distance and open education universities decades to achieve. Technological advancement offers the opportunity of reducing costs and increasing access at a scale that was not possible before. Students in developing countries are likely to benefit the most from access to high quality courses, but there are clear cost and access benefits for students in the developed countries as well. Both students and faculty are mobile- with the institutions that are capable of offering the best research facilities, peer group and teaching able to attract the students and teachers from around the world.

Finally, the demographic transition is ensuring that the largest population cohorts in developing countries will be those in the 30-45 years age group. Over eighty percent of them have not had access to high quality tertiary education- and yet their ability to earn and be productive will depend on acquiring new skills and upgrading their current ones. Institutions of higher learning will need to offer ways for adults to re-engage with the learning process- either through distance education, or part-time courses, or specialized short-term programs. Technology can be a valuable enabler in this regard- but the structure of education needs to reflect and respond to this need so that women and men and access the tertiary education system throughout their lives. Japan is an example of a country with a well functioning lifelong learning program where its goal is to "create an enriching and dynamic society in the 21st century, forming a lifelong learning society in which people can freely choose learning opportunities at any time during their lives and in which proper recognition is accorded to those learning achievements".[178]

There are many aspects of higher education that developing countries need to deal with; a full discussion of all of them is outside of the scope of this report. In the next section, recommendations that would support an expansion of higher education to promote lifelong learning, and to meet the needs of a sustainable society are discussed.

7.3.1 Recommendation: Governments support universities to prioritize "research based solutions for sustainable development" as a core purpose

Universities are in a unique position to support society in evidence-based, scientific solutions to the problems of sustainable development. Cutting edge research on issues of climate change, solutions for adaptation and mitigation, alternate energy sources, public health challenges emerging from rising temperatures, management of water resources and ecosystems are being led by academic institutions today. It is however, concentrated in a few universities, largely in developed countries. Solutions for the complex interrelated ecological, social and economic problems that societies will face will need to be

developed locally. It is imperative that universities and research centers in developing countries claim the space of high quality, locally relevant research that will offer solutions to the cities and countries they are in. This will require prioritizing national and regional issues of ecology, demographic change, urbanization, public health, energy research and climatology within research, as well as developing mechanisms for engaging with policy makers, communities, and private companies to create application-based practical solutions.

7.3.2 Recommendation: Countries create enabling regulatory frameworks that encourage public sector-led growth of higher education in collaboration with the private sector

The public sector has a pivotal role in promoting basic research and knowledge production through high quality research universities. This role needs to be strengthened and funded adequately. However, it is clear that the public sector alone cannot meet the demands of higher education. It is important therefore to create an enabling regulatory framework that encourages the private sector to invest in higher education in the long run, not just in short-term, profitable professional courses, but in creating a large number of centers of excellence in different fields of research and expanding basic undergraduate and graduate programs to greaternumbers of young people. A range of institutional designs, from private philanthropy led endowment based universities, to other non-profit and for profit institutions will be needed to meet the academic and professional needs of students. Regulatory structures will need toallow for this kind of institutional diversity, and reward quality and innovation and create avenues, through Advisory Councils of Science that can channel the research into practical applications. The public sector also has an important responsibility to ensure equitable access to higher education, and therefore, affordability across public and private institutions.

7.3.3 Recommendation: Academic institutions use technology to expand access, promote affordability, and allow for lifelong learning

The expansion of higher education has simply not kept pace with demand- new institutions require large investments, and building a strong faculty takes time. Technology can be a powerful tool for expanding access more rapidly, and doing so at a significantly lower marginal cost. Internet connectivity is still poor in most low income countries- but it is expanding very quickly. Over the next decade and a half it is entirely possible that most large urban centers and a significant proportion of rural areas have access to broadband. In that case, blended programs of learning can allow for a much faster expansion of higher education. Countries have already begun to move in this direction (examples include Nigeria, China, India). Increasing access is important not just for school graduates, but also for adults looking to learn new skills and competencies. Universities have to prepare themselves to provide lifelong learning

to their adult populations- technology allows this through online courses, and if needed, specialized mid-career programs. Investing in such programs will allow for a continuous improvement of workforce productivity at a relatively low cost.

7.3.4 Recommendation: Universities across countries collaborate on research and teaching

With the free flow of knowledge across borders, there is great scope for cross-border collaboration between universities. Such collaborations make sense on several counts: it will allow universities to retain and build their faculty (by providing a varied and rich peer network without physical relocation); it will allow for joint funding for common research questions; joint programs of study will give students exposure to other student groups and teachers in different cultural context; it will enable a faster spread of better research and teaching practices; and allow leapfrogging in academic practices between established and new institutions.

8. Conclusion: Future Research Needs

The previous chapters laid out the imperatives for investing in high quality education systems across all age groups to create a sustainable society. In this chapter we identify areas of future research that will help countries identify ways in which education can contribute to sustainable development.

1. Determinants of learning for all ages, different contexts and backgrounds

2. Components of effective remedial programs on a large scale for children steeped in poor learning environments

3. Technological capabilities for self-learning, appropriate and effective ICT interventions

4. Effective roles and training for teachers for learning goals

5. Appropriate standards of curriculum for different stages of learning; ways of integrating traditional and local knowledge into school and college curricula

6. Role of communities in educating children, governing schools, monitoring learning outcomes

7. Skills (school to work programs) for informal workers and entrepreneurship skills

8. Financial models for work around sustainable development needs in local communities

9. Additional costs/reallocation of resources for investing in learning outcomes

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