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Education as a Driver of Sustainable Change

Education & the Sustainable Development Goals

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INTRODUCTION

Overview

The year 2015 saw the end-date of the Millennium Development Goals (MDGs) come and go without the MDGs being met, and the drafting of a new set of 17 ambitious new Sustainable Development Goals (SDGs) and 169 accompanying targets. If current trends persist, the world will see significant progress towards meeting some of the SDG targets but for others, we will fall short or, worse, regress.[1] One of the targets the international community will fall short on if extra efforts are not made is the achievement of universal secondary education. It is our contention that making these extra efforts towards this target and the other educational targets is not only in keeping with people's own priorities,[2] but it also will contribute in significant ways to the achievement of the other SDGs. The purpose of this literature review is to attempt to give an overview of the current state of the evidence on education's impact on other key sectors of development, including inclusive economic growth, inclusive social development, environmental sustainability, and governance and peaceful, just, inclusive societies. To contextualise these synergies, it begins with a snapshot of key global inequalities and population dynamics, and concludes with a discussion of the spatial dimensions of sustainable development. This review will contribute to the discourse around interlinkages between the different SDGs and also informs the development of our different scenarios as we attempt to project what progress will be made towards the other SDGs given the achievement of the different educational SDG targets.

Background

The 2030 Agenda for Sustainable Development has been in the works for a number of years, once it became clear that the MDGs would not be met. A draft agenda and a number of accompanying documents, including reports, reviews, and analyses, were released throughout 2015, but the SDGs were officially decided upon from 25-27 September when Heads of State and Government and High Representatives met at United Nations (UN) Headquarters for the UN's 70th anniversary. The 17 new goals and 169 accompanying targets officially came into effect on January 1, 2016. The UN describes the targets as "aspirational and global, with each government setting its own national targets guided by the global level of ambition but taking into account national circumstances. Each government will also decide how these aspirational and global targets should be incorporated in national planning processes, policies and strategies."[3] It is important to note the aspirational and relative nature of these targets, as it does suggest that success in one context may look different than in another.

Rationale

The recent report *Review of Targets for the Sustainable Development Goals: The Science Perspective* states that there is research evidence demonstrating the importance of education and learning when it comes to driving positive change in ensuring environmental and sustainable development

and overall human well-being.[4] According to the evidence, education programmes (particularly non-formal programmes), when widely accessible to women and girls, have had far-reaching positive impacts, including but not limited to, improved reproductive health, family planning, and mortality, social equity, social cohesion, and political stability, economic development, poverty reduction, food security, better health, and better management of natural resources. In fact, it is widely understood that there *is* a positive relationship between education and other dimensions of sustainable development,[5][6] and yet education remains an under-financed, under-prioritised sector, with many development experts dismissing it as less important than other sectors.[7]

One possible reason for this neglect is that the pathways of impact for education on other sectors of development are not well understood – researchers know *that* there is a relationship, but there are few studies in the mainstream literature that demonstrate *how* that relationship works. However, as they point out, what is not really emphasised in the current goals and targets is how education can act as a **driver of sustainable change**, as change that is owned by the stakeholders themselves. Indeed, respondents consistently ranked "a good education" as the most important issue that would make a difference in their life, ahead of better healthcare and job opportunities, in a global survey by the United Nations,[8] and this is true for both women and men, all age groups, at all levels of national development, and all levels of individual education. We do not, however, wish to take part in the unfortunate "jockeying for a central position" on the SDG agenda that is beginning to take place, pitching goals against each other in terms of their relative importance. Indeed, we show that education stands in a *reciprocal* relationship with many other goals. This is partly because education is intrinsically an intergenerational process, and partly because education affects other dimensions of sustainable development both directly (through increased awareness and capacity) and indirectly (through improved job opportunities). Education is both an end, a goal in itself, but also a *means* through which other goals are to be met. Part of reducing inequality *is* to reduce disparities in education; part of reducing poverty *is* to equip people with the skills for more productive livelihoods. Moreover, even with respect to initiatives that have no concern with learning, the education *system* is often the only feasible channel through which to reach mass populations.

Below, SDG 4[9] (which relates to education) is reproduced in full, with its accompanying targets:

SDG 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

→ **4.1:** By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes

→ **4.2:** By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education

→ **4.3:** By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university

→ **4.4:** By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship

→ **4.5:** By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations

→ **4.6:** By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy

→ **4.7:** By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development

→ **4.a**: Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all

→ **4.b**: By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries

→ **4.c:** By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States

Conceptual Framework & the 5 Ps of Sustainable Development

According to the framing document for the SDGs, *Transforming our world: the 2030 Agenda for Sustainable Development*:

> This Agenda is a plan of action for **people**, **planet** and **prosperity**. It also seeks to strengthen universal **peace** in larger freedom. We recognise that eradicating poverty in all its forms and dimensions, including extreme poverty, is the greatest global challenge and an indispensable requirement for sustainable development. All countries and all stakeholders, acting in collaborative **partnership**, will implement this plan. We are resolved to free the human race from the tyranny of poverty and want and to heal and secure our planet. We are determined to take the bold and transformative steps which are urgently needed to shift the world onto a sustainable and resilient path. As we embark on this collective journey, we pledge that no one will be left behind. The 17 Sustainable Development Goals and 169 targets which we are announcing today demonstrate the scale and ambition of this new universal Agenda. They seek to build on the Millennium Development Goals and complete what these did not achieve. They seek to realize the human rights of all and to achieve gender equality and the empowerment of all women and girls. They are integrated and indivisible and balance the three dimensions of sustainable development: the economic, social and environmental.
> (UN, 2015, p.3)

The official release of the SDGs and accompanying targets has triggered much debate and discussion over if and how these targets will be attained. One emerging criticism of the agenda is that, in spite of the insistence that the SDGs are "integrated and indivisible and balance the three dimensions of sustainable development" (as indicated above), the way the agenda is set out encourages silo-thinking within the different goals rather than the building of reciprocal linkages between them. It is our contention that an analysis of the role education currently plays in relation to "the 5 Ps of sustainable development" – people, planet, prosperity, peace, and partnership – can contribute to a better understanding of how to build and strengthen linkages between the different SDGs, thus bringing us closer to realising the ambitious SDG vision.

Methods

The review conducted here is not a "systematic review" in the technical sense, with a fixed set of search and selection criteria applied to a defined set of potential sources. One of the aims was of this review was to capture insights from across a large range of disciplines, many of which use their own language and terminology for phenomena that are educational in fact but not in name. In addition, in the area of educational development itself, "grey" literature is common, which ordinarily would not be included in a scientific review. Accordingly, we proceeded through a combination of "snowball" sampling, starting from key studies or review articles, purposive searching to close specific gaps (or to verify the absence of evidence), and by consulting our extensive professional networks.[1] This approach allowed us to identify a diverse range of important items, which would have been missed had we taken a more systematic, scientific approach.

An important limitation is that a review of the present scope and ambition can never be fully comprehensive, and that the selection and choices made inevitably partly reflect our own particular areas of expertise and interest, as well as a certain amount of chance. In addition, the timing of the work relative to the SDG process means that only the draft targets were available when we began our review, and also that keeping up to date with other related efforts has been a "moving target". Around the formal adoption of the SDGs, relevant documents, reports, and data were published almost on a daily basis. At the same time, one strength of our approach has been precisely to be able to take advantage of our networks and social media to learn of such publications almost immediately.

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[1] We sympathise with McGrath's (2014, see Introduction Sources) observation of how this "requires an interesting traversing of the boundary between the institutional and the personal, with some of the blogs being written in personal capacities but being of potential importance because of the institutional positions of their authors; others being on official sites but 'not official positions' and others still officially representing organisational positions and identities. Such a process is necessarily about adopting a snowballing technique and hoping that rigorous pursuit of leads can bring about representative coverage of points and positions. However, scientific levels of representativity [sic] are not possible in such an approach." (p. 5)

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PART 1: SETTING THE SCENE – AN UNEQUAL WORLD

1.1: Introduction

The contribution of education, in particular formal schooling, to reducing inequality is a highly contested question. On the one hand, one of the prime arguments that has been made for mass education ever since the establishment of systems of public mass education has been precisely that education would raise people out of poverty (notwithstanding the other competing goals). This line of reasoning, and more strongly focused on 'levelling the playing field', repeated itself in the second half of the twentieth century when the first period of 'massification' of higher education occurred. More recently, Thomas Piketty, around whose book *Capital in the Twentieth Century* the re-emergence of inequality as a central notion in mainstream academic and policy debates has crystallised, emphasises education as one of the key strategies for more equitable social development. Indeed, given the strong correlation between education and overall socioeconomic status (SES), including income, it seems common sense that increasing participation of children from low SES backgrounds would improve their lot and therefore reduce overall inequality. On the other hand, there is substantial evidence that this relationship is rather complicated, operating through both direct and indirect channels, being strongly linked both to current cross-sectional inequality (comprising both 'vertical' and 'horizontal' dimensions) and the intergenerational reproduction of inequality, an being subject to a large variety of different interpretations.

A fairly detailed discussion of inequality in the context of education and the SDGs is appropriate because explicit calls for lower inequality and equitable outcomes are a significant distinction of the SDGs over their precursors, the MDGs. In the lead-up to the new goals, their very credibility has been argued to depend on their treatment of inequality.[1] The success of the MDG and Education for All (EFA) agenda in achieving *equitable* progress has been mixed at best, and this limitation of unequal progress partly blamed for the failure to meet the goals overall. The argument is that, rather than representing an equity-efficiency trade-off, 'interventions targeted at marginalised groups and at areas characterised by intensive disadvantage – such as urban slums and remote rural regions – can *accelerate* overall progress' [emphasis added].[2] Indeed, inequality has received more prominent mention in the SDGs, but as an undefined qualifier. Further, the 'bottom 40%' has been added as a target group, in addition to the absolutely poor (see also analysis of educational expansion in those terms later in this report).

This chapter proceeds as follows. Conceptual distinctions between different notions of inequality, as well as important differences in how they apply to economic respectively educational inequality, are clarified. At some point, all definitions of inequality must be operationalised in order to be measured. With respect to inequality measurement, even seemingly minor technical details can have a large impact on the estimated values, and cannot be disentangled from the underlying philosophical questions. Subsequently, the direct effects on educational inequality of general socioeconomic inequality are outlined, and vice-versa. The perspective on the latter direction, the

contribution of inequality in education to overall inequality, is then expanded to include indirect mechanisms.

1.2: Concepts and measurement

We must distinguish between the question of the dimension along which (in)equality is considered from the question of what inequality along a given dimension is taken to mean. Consideration of the first question results in distinctions between inequality between countries, cross-generational inequality, and inequality within a given cross-sectional population.[a] The second question concerns the exact distinctions between the concepts of poverty, inequality of outcomes, inequality of opportunity, and equity.

In the present context, the first question is more straightforward. Strictly in terms of the SDGs, the time horizon of 15 years is too short for intergenerational considerations. Note that this does not mean that inequality among children according to parental resources is not considered, because it is, but that only the distribution of household resources from the perspective of the children matters, not the comparison between inequality in the parent and child generation (including non-parents!) at the same point in their lifecycle. Inequalities between countries also play only a minor role in the SDG agenda (with the exception of some of the 'means of implementation' goals), although arguably the EFA 'Fast Track' initiative and its successors represent an attempt at creating 'equality of opportunity' (in a narrow sense, see below) between countries. Finally, much educational development literature has been written about trends in educational disparities between and within different population groups, defined by gender, disability status, urban/rural residence, ethnicity, religion, migration status, socioeconomic status, or other characteristics. This is not the place to summarise this extensive literature, but salient points worth repeating are that examples of educational inequalities along all these dimensions are common and that disadvantages frequently intersect, and that the case can be made that educational disparities by socioeconomic status are emerging as some of the largest differentials that can be observed almost everywhere, and even where gender differences, that received by far the most attention in the MDG/EFA agenda, have been substantially reduced.

The second question – what do we mean by 'inequality'? – is more contentious, with added potential for confusion due to a mismatch between the usage of the term among educationalists and economists. A first distinction is that between poverty and inequality. The former term refers to falling below some defined threshold, while the latter refers to the entire distribution. Comparable to the poverty-reduction focus in development economics on the 'absolute poor' living below a certain daily income, educational development has a long tradition of examining which children do not benefit from even a minimal amount schooling (or, more recently, learning). In fact, falling below the threshold of four completed years of primary schooling has now become explicitly labelled as 'education poverty'. In this sense, whether an individual is economically or educationally poor is an individual experience.

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[a] Cross-sectional population is sometimes further divided into 'vertical' inequality along hierarchical status, and 'horizontal' inequality between different groups

By contrast, inequality can only be understood in relation to the distribution of resources across the population as a whole. With respect to education, inequality can be examined even before considering any of the background characteristics mentioned above, purely by studying the distribution of, for example, years of schooling in the population or a single cohort.[3] While this approach is not uncommon in economic analyses, especially those examining the effects of education on economic performance at the aggregate level, it is rarely pursued in the field of educational development itself. The reason, presumably, is that there is little discussion and consensus around what an 'ideal' distribution of educational outcomes would be, over and above the principles of eliminating educational poverty and non-discrimination. To the extent that discussion does occur, it addresses the question of "What kind of education for whom?" and not the quantitative distribution of educational outcomes. Where the question of *how many* people 'ought' to have secondary, or tertiary, education is addressed at all, it is by economists in terms of the economic returns (see below.

In this sense, the notion of distributional inequality, in other words, of how 'spread out' educational participation is, is a *relational* indicator. The same can be said with regards to income, where there can be little debate that 'perfect equality' and 'perfect inequality' (i.e. a uniform distribution of incomes or complete concentration in the hands of a single individuum) could both in principle only be achieved with tremendous amounts of coercion, and arguably not even then. In between, there is little guidance to our thinking about what an appropriate *absolute* value would be. Instead, inequality measures, when applied to incomes, but also to wealth, are generally used to monitor changes over time, or to make comparisons between countries. Whatever one believes would provide a basis for equitable differences in incomes (say effort, for the sake of argument), if there is no reason to expect the distribution of effort in country A to differ dramatically from the distribution in similar countries, then observing a much larger inequality index is a cause for concern. Similarly, if there is a general consensus that income inequality is inequitably high (rather than inequitably low), then an upward trend in inequality indices is informative of the need for corrective policies. Neither case requires a commitment to a particular *absolute* level of distributional inequality that would be deemed desirable.

More central to educational debates has been the relationship between disparities in outcomes and various background characteristics, framed as a discussion of *inequality of outcomes* versus *inequality of opportunity*. At this point, it is worth recalling that even strict meritocracy does not imply reduced distributional inequality. The opportunity to rise significantly in individual social status through education does not make society as a whole more equal, as the historic example of the rigorous exams for positions in Imperial China's state bureaucracy illustrate (even leaving aside the fact that they were not open to all people, notably excluding women in particular). Indeed, the notion that 'equality of opportunity' should replace 'equality of outcomes' as the main standard of equity has been criticised as an attempt to blame the poor for their purported own failure to take advantage of their opportunities.[4] However, this objection arguably applies only to equality of opportunity in a narrow sense, where the very fact of having been admitted to school, for example, is taken to represent the same opportunity to all in the classroom, and where the burden to compensate for a home disadvantaged through extra effort is placed on the disadvantaged individual.

It is worth noting that operationalising the classical economic definition of equality of opportunity[5] is much more demanding, and even *defines* equality of opportunity as only being achieved when there is equality of educational outcomes (!) between groups. In other words, it equates equality of opportunity with the situation where not only the same amount of effort yields the same rewards, irrespective of irrelevant background characteristics, but where even the observed amounts of effort do not differ between the groups. The way that 'educational equity' is operationalised in international educational development, namely that it is violated when educational outcomes depend on characteristics such as ethnicity, social status, gender, etc., corresponds to equality of opportunity in this wider sense, then. Indeed, this operationalisation resonates with existing definitions of equity in health, as expressed by Whitehead (1992), for instance, who characterises health inequities as "differences … that are not only unnecessary and avoidable, but also unfair and unjust."[6] More generally, then, 'equitable' may be taken to also encompass unobserved (or, in any case, unmeasured) aspects of schooling, regardless of whether they affect the observed outcomes. Even if there is perfect gender parity in school participation, there may still be gender inequity if textbooks and/or teachers promote gender stereotypes, for example. In other words, educational equality of opportunity (in the wide sense) of outcomes is necessary, but not sufficient, for achieving equity.

Settling on a conceptual notion of inequality does not uniquely define the specific measure used to assess or monitor it. With respect to educational inequality, it does not determine whether the undesirable link between, for instance, gender and education is best captured through ratios of indicators (such as the Gender Parity Index [GPI] for primary enrolment), absolute percentage point gaps, or odds ratios. While emphasising different aspects, this choice does not, typically, alter the overall conclusions. Unfortunately, the same cannot be said about the different measures of distributional inequality (i.e., of inequality 'as such', independently of individual characteristics). In particular, there is ample opportunity in this context to misapply inequality measures from economics to education without paying due attention to the match between their technical characteristics and the way education differs from income. With respect to the well-known Gini coefficient, for example, it is at least questionable whether its property of greater sensitivity to changes in the middle of the distribution, compared to changes at the low or high ends, is a desirable property when applied to educational inequality. More importantly, while multiplicative invariance (where the value of the indicator does not depend on whether the outcomes are multiplied with a constant factor or not), is attractive when studying incomes (else 'inequality in cents' would be different than 'inequality in euros', for example), the same cannot be said in the context of education. Part of the problem is the large number of 'true zeros' in the distribution of education in places where a significant proportion of children did not go to school at all: it seems unlikely that many development professionals would consider inequality to have remained 'constant' (as the Gini index would have it) in a setting where half of each cohort remained out of school and the other half completed four years of primary schooling, and now still half of each cohort remain out of school, but the other half all attain university degrees. This property is also shared by the Theil index, the only other inequality index to be reasonably common in research on educational inequality (e.g. Saccone, 2008).[7] While the research boundary in the study of the mathematical properties of inequality indices is of a forbidding mathematical sophistication even for most economists, there is clearly room for applied research to examine educational distributions through the lens of some of the more straightforward alternative inequality measures.

1.3: Education and economic inequality

As mentioned above, socioeconomic inequalities in education may have seen less reduction over the past two decades than gender or other inequalities have. And while wealth or class disparities are not necessarily intrinsically more troublesome than educational inequality along other dimensions, they require special attention because socioeconomic status in turn is affected by education, potentially creating a feedback loop of persistent inequality. While there are cases where ethnic identities are reinforced or perhaps even created by the school system, there is generally less potential for such feedback effects with respect to other inequalities.

Links between economic inequality and educational inequality abound, at the aggregate, the institutional, and individual level. One line of research investigates the contribution of the distribution of educational capital, in addition to its overall level, to national economic performance. The relationship between income inequality and economic growth is considered to change during the late phase of economic development such that greater equality supports growth, largely because of the impact of income inequality and credit constraints on human capital investment, i.e. economic inequality affects economic growth *via* educational inequality.[8] The link between education inequality itself and growth confirms this pattern, in that higher inequality appears to dampen growth,[9] [10] [11] except at the lowest levels of overall educational development (where a certain amount of educational inequality is intuitively unavoidable, since at least some highly-qualified individuals are necessary to build a mass education system). At the institutional level, there is a risk that large disparities in economic resources result in an expansion of private provision that starve public education of the resources and political support to effectively counter educational inequalities. Even without overt discrimination, regressive differences in school funding and quality may arise from interactions with property markets,[12] or through local funding mechanisms, where all communities have the same opportunity in principle to improve the resources available to their children's school, but these mechanisms results in large disparities in input. The same principle, without the spatial constraint, applies to private schooling, of course.[13] While much has been written in recent years on the phenomenon of 'low-cost private schools' for the urban (but increasingly also rural) poor in developing countries, notably India, there is serious doubt that the optimism regarding their contribution to educational equity is well-founded.

The effect of the overall level of income inequality on educational inequality does not appear to offer clear-cut, universally applicable conclusions. This is perhaps unsurprising, given that there are plausible mechanisms operating in different directions with respect to capacities and incentives. If there are high cost-barriers associated with higher levels of education, and economic resources are distributed with high inequality, this may contribute to inequality in educational outcomes. However, in institutional settings were either the dependence of incomes on education, or of education on incomes, is diminished, the dynamic could well reverse. Suppose income inequality is very low because incomes are not strongly associated with educational attainment; in this case participation in higher levels of schooling may be driven more by idiosyncratic tastes and preferences, resulting in higher diversity in outcomes. Conversely, if economic inequality is very high, but does not dictate access to schooling (even while it is likely to contribute to differential quality, content, etc.), everyone faces an incentive to seek similarly high levels of attainment. In the

next generation, educational inequality purely in terms of formal attainment may well be lower in this case, even if the expectations of its economic rewards are likely to be disappointed for many. Indeed, as pointed out by Green (1980):[14] whereas having some qualification carries a reward in the labour market and other social structures while it is no longer rare, but still in limited supply, by the time that the bottom SES groups catch up at said level it has ceased to be rewarded and, on the contrary, not having the qualification becomes an actual liability. In other words, disadvantaged groups must stay afloat of the rising tide of credentials simply to avoid falling further behind. Indeed, this expectation is borne out by the finding that the wage gap between those with higher education and workers with low levels of education has widened in the OECD over the past decade, despite the fact that the wages of the former have stagnated, because those of the latter group have actually declined in real terms.

This last observation reinforces the notion that the interplay of educational and economic inequality crucially depends on the economic returns to education. This issue is complicated by the fact that standard estimates of the 'returns to education' do not measure what many non-specialists think they measure. Some of the measurement challenges are well-understood, such as the difficulties of including incomes from informal employment and the self-employed, and of equating the returns to different cohorts with those observed cross-sectionally at one point in time. That typically only wage returns, at best taking into account unemployment risks etc., are considered in these calculations, but not non-monetary benefits, is also well-understood, and often criticised. However, in addition, the routinely published returns for different education levels refer to the benefit of *one additional year* at the given level, not the benefit of completing the next-highest level of schooling. In other words, even if 'the return to secondary schooling' in this sense is higher (lower) than 'the return to primary schooling', it is still possible for 'the return to completing secondary school' is lower (higher) than 'the return to completing primary school', simply because their duration differs. The distinction is consequential, for the conclusion to prioritise (for greatest economic benefit) the expansion of, say, primary schooling over secondary schooling may be misunderstood as a call to prioritise the production of primary *graduates* over the production of secondary *graduates*. In addition, it is recognised, but not accounted for, that some of the returns to secondary education, say, should accrue to primary education, which created the opportunity for seeking returns to secondary.[15]

Following this line of reasoning suggests that those with more education benefit more from additional education. It could also indicate some complementarity between home background and schooling is certainly plausible, i.e., that children from higher status families derive a greater benefit from a given school input. However, in addition to bringing more own resources to the table (reading lessons in school are likely to benefit from the availability of reading materials at home, for example), they may also benefit from discrimination. Content inequality that manifests in a 'hidden curriculum', whereby children from lower status backgrounds are systematically exposed to curricular content that provides fewer opportunities to learn skills required for further education. This phenomenon has long been observed,[16] and unfortunately continues to be the case: Schmidt et al. (2015) have recently shown that even in mathematics, children from low-SES strata are exposed to different content and teaching styles than their peers from higher-status backgrounds, and that these differences in curriculum substantially *increase* the SES differential in outcomes and account for a large share of the performance gap.[17] In general, however, tracking can reinforce[18] or reduce socioeconomic inequalities in education, depending on context.[19]

Indeed, one reason for the failure of education to decisively reduce income inequality may be poor quality, and the evidence suggests inequality in learning is at least as large as inequality in outcomes. However, the desire to focus on inequality of learning outcomes clashes with misgivings many educators have with respect to standardized assessments.[20]

Unfortunately, this reinforcement of income inequality through a failure of education happens all too frequently, ranging from – at best – incidental 'unintended consequence', at least at the level of public policy, to being a characteristic or even a (tacit) function of the school system by design. This need not be as overt as in colonial education. Indeed, South Africa provides an instructive example of how structural bias may carry (or be carried) over into a nominally equal system that is nevertheless far removed from offering a 'level playing field. So many options exist for the middle classes to uphold their social advantage vis-a-vis disadvantaged social groups even as the latter increase their participation in education, that inequality tends to remain as large as possible. Indeed, not only do they enjoy greater opportunities for 'policy capture' to benefit from given institutional settings (even ones that are intended to support disadvantaged groups), they also tend to enjoy greater leverage in influencing their design. Differences in streaming between general and vocational tracks are well-documented, as are other forms of 'internal differentiation' within nominally equivalent levels of schooling. As a result, intergenerational links between parental and child education tend to persist, so that in practice the disadvantaged mainly benefit from increasing overall levels of participation, not a reduction in inequality. Asserted as a tentative general principle by Raftery and Hout (1993),[21] this pattern appears to hold in developing countries too.[22]

In principle, educational inequality and overall level are independent (for example, Colclough, 2007,[23] cites the example of 'progress' towards gender parity having come about through larger enrolment *declines* for boys than for girls in some African countries during the 1990). However, in practice, poverty is affected both by redistribution and growth. An important difference between income inequality and education inequality is that inequality in the *stock* of education cannot be redistributed, so 'redistribution' can only take the form of an emphasis on different education levels. However, the effect of such redistribution of public resources on economic inequality is not straightforward: Adelman and Robinson (1989)[24] cite an example from Brazil, where a policy shift towards primary education contributed to "a shortage of educated manpower, leading to [a] widening gap in wages between skilled and unskilled labor" (p. 954-5).

The flip side to greater *returns* to higher levels of education are greater public expenditure on higher levels. Debates around the introduction and appropriate level of university tuition fees in many European countries in the past two decades have revolved—apart from the issue of the fundamental nature of higher education—not only around the balance between private and social benefits, but also around the key question whether public investment in higher education are actually socially regressive transfers to high-SES families. In higher education, despite the fact that the social returns are likely to be substantial enough to justify public funding as an *investment*,[25] the private returns that provide an incentive to potential entrants are sufficiently high in general that public funding may not be necessary to ensure a high level of overall participation. From such a perspective, counteracting inequality in access is the only rationale for state involvement in higher education funding.[26]

Some other ways in which biases or outright discrimination in the school system can contribute to inequality between cities and rural areas, between regions, or between ethnic or linguistic groups receive further mention in Section 2.2, and in Parts 5, 6, and 7 of this review. Another topic not developed further here is that of intergenerational equity in education. Despite the fact that the education of the young is more recent, and in many developing countries much greater, than that of their parent generation, youth unemployment is often higher.

A different kind of intergenerational equity question has received more attention, namely the ways in which education directly and indirectly reproduces one generation's inequalities in the next. The direct contribution of family background to educational outcomes has already been mentioned above, but in addition there are indirect mechanisms contributing to persistent inequality. There is some evidence that where a closing of the gender gap in attainment is accompanied by greater sorting of the marriage market according to education (educational 'homogamy'), this can result in greater socioeconomic polarisation of households.[27] [28] [29] This effect provides a striking example of how reducing inequality along one dimension (gender) can sustain, rather than help diminish, inequality along another dimension (socioeconomic status). Conversely, some research suggests that economic inequality encourages educational homogamy, and through this channel contributes further to educational inequality in the child generation, who then faces greater variation in home environments,[30] [31]unless intergenerational mobility is sufficiently large.[32] Differences in average fertility between education groups also potentially interact with intergenerational transmission of education between cohorts.[33] If the more educated have significantly fewer children, the contribution of transmission to educational growth in the child generation is diminished. This effect will be the stronger, the greater the fertility gap, which can be very large in least developed countries.

More could be said about additional aspects, notably the way that residential and school segregation implies that neighbourhood and peer effects create similar dynamics of reproducing existing inequalities (see Bowles et al., 2006[34] for example), and the way returns to education are driven by technological change.[35]

1.4: Conclusions

This discussion implies that educational expansion need not necessarily immediately lead to a reduction in educational inequality, or to lower socioeconomic inequality. Even the contribution to poverty reduction may be compromised if the universalisation of some school level reaches the poor too late to offer significant economic returns. Indeed, this may be one reason why the poverty-reduction effect of education is typically modelled (including in this project) as arising principally through its contribution to overall economic growth. In other words, education-driven growth is not assumed to be more 'pro poor' per se.

At the same time, the example of increasing returns to education acting as a *disincentive* to further education mentioned above, as well as the example of how targeting educational expansion to benefit the least well educated may increase income inequality, suggest that balanced educational

expansion may stand the best chance of making a positive contribution to poverty reduction and economic equality. From this perspective, the SDG approach of including secondary schooling on the agenda without 'waiting' for the universalisation of primary education makes considerable sense. These sobering caveats notwithstanding, educational expansion, and certainly greater educational equality, remain a key strategy of reducing other inequalities, notably health-related ones (WHO 2008).[36] Educational growth has not, on the whole, diminished the statistical health and survival advantages of the more educated and their children. This provides the rationale for focusing strongly on health outcomes in our projections. Moreover, even where education does not improve the observed economic conditions, it may make them more secure. In the case of micro-level shocks that are relatively frequent, and independent across individuals, such as the risk of unemployment, it is possible to observe and account for such differences. In other words, even if higher education came with a relatively small direct wage premium, but significantly reduced the risk of unemployment, this can be observed in cross-sectional survey data. However, inequalities in the vulnerability to rare events, will often remain invisible in standard household surveys, even in cases where SES status, including education, may literally determine the odds of life or death. An example might be where low status neighbourhoods are crowded in a flooding zone, while high status neighbourhoods hug the safe hills.

Against the backdrop of all the above, it is of crucial importance that the key targets for SDG 4 on education are for universal completion of education that is free, *equitable*, and of sufficient[b] quality. This means that in thinking through (and modelling) the potential benefits of meeting SDG 4, by assumption it is the kind of education that does reduce rather than increase inequality. It is not only a best case in terms of quantitative expansion, therefore, but also in terms of the nature of its impacts.

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[b] We presume, since the call for 'high' quality in the draft SDG targets got dropped in the final version adopted.

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PART 2: PEOPLE

People
We are determined to end poverty and hunger, in all their forms
and dimensions, and to ensure that all human beings can fulfil
their potential in dignity and equality and in a healthy
environment.
(UN, 2015, p.3)

2.1: Maximising Health and Wellbeing

2.1.1: Health, nutrition, and wellbeing

Given the 'within-sector' thinking that has dominated the development agenda to date, health professionals, researchers, and policymakers often fail to recognise that education can itself be a key health intervention.[1]

2.1.1.1: Common pathways for education to impact health and contribute to the health SDG targets

To better understand the different pathways through which education impacts the health sector and can contribute to the SDG targets, it is important to first have an understanding of the health sector as a whole in relation to equity, as conceptualised by one of the early architects of SDG #3, Carla AbouZahr, in the figure below:
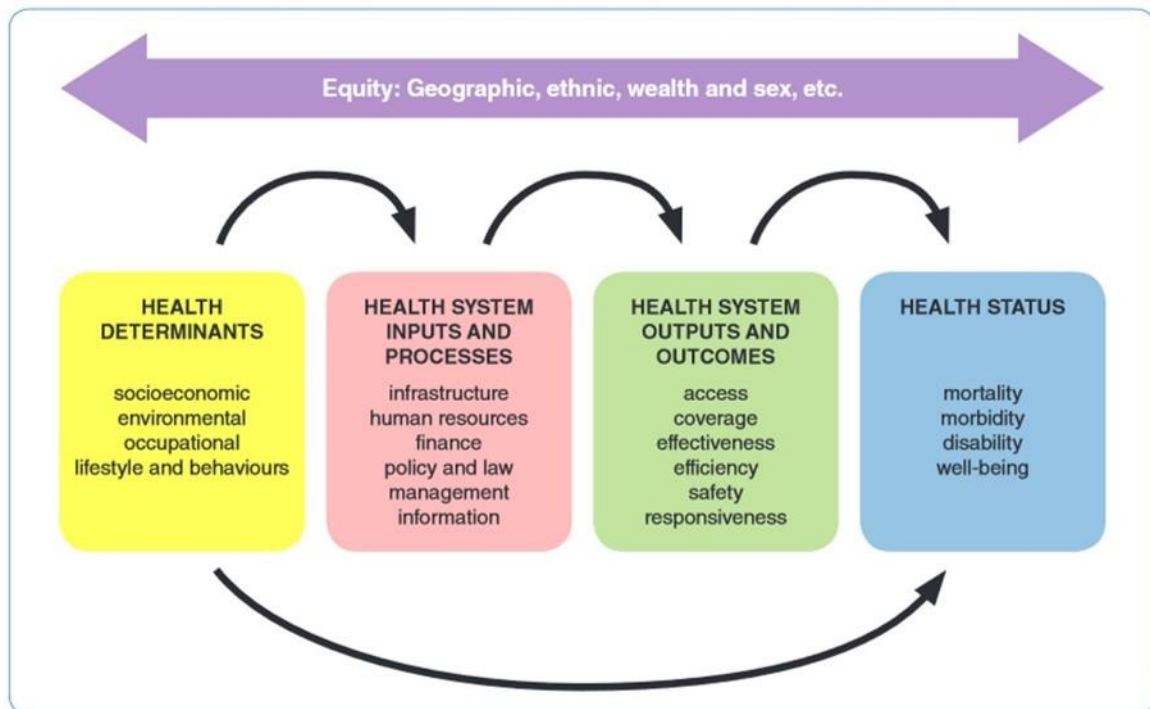

Figure A: Health Systems Equity (AbouZahr, n.d.)[2]

Though notably absent from the figure, indirect and direct educational interventions at the level of health determinants, health system inputs and processes, and health system outputs and outcomes have been shown to have positive impacts in terms of health status. First, at the level of **health determinants**, numerous studies have shown that education impacts lifestyle and behaviours, as well as occupation choice and success,[3][4] and that it can also have a positive impact on socioeconomic status (in the long-term) and care of the environment.[5] Second, at the level of **health system inputs and processes**, education primarily has an impact on human resource development (which will be discussed below) and production and dissemination of information (which will be discussed below). Third, at the level of **health system outputs and outcomes**, early childhood centres, schools, and other educational institutions can ensure better coverage of health services by providing useful delivery platforms for vaccination programmes, sexual and reproductive health services, counselling and other mental health programmes, etc.

Recent research has demonstrated a strong link between poor mental and physical health in adolescence and the disruption of educational attainment and employment pathways.[6] What is under-researched and consequently less well understood is how lack of access to education (or access to education of poor quality) impacts mental and physical health.

Globally, healthy life expectancy (HALE) is increasing, though more slowly than life expectancy, with number of healthy years lost to disability on the rise in most countries. While substantial progress has been made in the reduction of mortality in the last 20 years, little progress has been made combatting the overall effect of non-fatal disease, injury, etc. on the health of populations. HALE will be a useful indicator for monitoring health gains in relation to the SD agenda.[7] More and better research is needed, therefore, to demonstrate more concretely how education can contribute to an increase in HALE.

2.1.1.2: Promising educational interventions for improving health service delivery

The World Health Organization (WHO) estimates that there is a critical shortage of 7.2 million doctors, nurses, midwives and other health professionals around the world today. As our current health workforce is ageing, and advanced practitioners, midwives, and auxiliaries remain underutilised, by 2035, the world will be short of 12.9 million health-care workers unless drastic measures are taken.[8] This human resource crisis has been called one of the most pressing health issues facing the world today,[9] with over 60% of countries below the threshold of 59.4 skilled health professionals per 10,000 people.[10] The crisis is truly global in nature: while it is much more pronounced in Africa and parts of South-East Asia (where most countries with a density of skilled health professionals of less than 22.8 per 10,000 people and a coverage of births by skilled birth attendant coverage below 80% are located), high income countries are also affected, with the European Commission estimating a shortage of 2 million by 2020, and Japan and Australia both reporting problems with health systems staffing. Further, these shortages in HICs will compound problems with the health systems in LMICs through the so-called 'brain drain' phenomenon, where health workers choose to practice in a country other than their own, because they perceive there to be better working conditions in the destination country.[11] Currently, there are no medical schools in 11 countries in sub-Saharan Africa,[12] which means individuals from those countries who wish to train as health professionals have to move abroad, and once there, very few return to practice medicine

in their home countries. Within countries such as South Africa, disparities exist too, with rural areas bearing the brunt of shortages, and facing the challenge of brain drain of skilled workers to the urban areas.[13]

The education sector has a key role to play in countering this crisis and the other obstacles to meeting the sustainable development targets in a number of direct and indirect ways. First, the tertiary education subsector needs to engage with health sector, ensuring not only that higher and further education and training opportunities in health are available in all countries, in both urban and rural areas, but also that essential pedagogical and curricular reforms occur to improve the quality of health professional education, including community health worker training programmes.[14] [15] Second, according to the WHO, there is a shortage of trained researchers working in the area of health systems research, so new and innovative approaches to research training will need to be explored.[16] Third, the access to and quality of secondary education needs to be expanded to ensure that students leave secondary school with the necessary knowledge and skills to pursue further education as health professionals. Finally, schools and educational institutions can prove to be valuable partners in attempting to reach universal health coverage.[17] Examples of some of these types of promising educational innovations are discussed below.

Intervention 1: Innovative Partnerships for Health Professional Education

According to recent research by key health experts, health professional training initiatives in LICs have had limited impact for a number of reasons, including inefficient use of funding, lack of scale up, too little emphasis on practical skills acquisition, a lack of alignment with local priorities, and limited coordination. A more in-depth analysis of the educational component of these initiatives reveals some troubling findings: Many initiatives are dominated by more traditional pedagogies, such as short-term lectures and seminars, which do little to teach the diversity of skills necessary for health professionals today. Further, health curricula have tended to privilege individual learning over collabourative learning, which runs counter to the actual situation on the ground, where teamwork is essential. Finally, many initiatives focus on the training of clinicians, neglecting to educate other health professionals, including community health workers, midwives, public health professionals, health managers, and, importantly, researchers.[18] These health experts identify four recent innovative training initiatives in Africa, funded by the U.S. government: Medical Education Training Partnership Initiative (MEPI), the Nursing Training Partnership Initiative (NEPI), the Rwanda Human Resources for Health Program (HRH Program), and the Global Health Service Partnership (GHSP). They argue that the best practices adopted by these initiatives include country ownership and alignment to local priorities, institutional capacity strengthening and competency-based training through pedagogical and curricular reform, and sustainable partnerships with international stakeholders.

Of these initiatives, the Human Resources for Health Programme in Rwanda (launched in 2012) deserves special mention for the reciprocal nature of the partnership between a lower income country and a higher income country. It deploys approximately 100 faculty members from different schools in the United States to Rwanda every year to partner with Rwandan faculty-member counterparts in direct academic and clinical teaching through a 'twinning' model, which facilitates curriculum development, clinical pedagogy, service delivery, and research capacity.[19] This model

enables scholarly collaborations between Rwanda and the United States, which creates a space for learning on both sides for clinical innovation and service delivery.

Intervention 2: Curricular and Pedagogical Reform

South Africa faces serious health worker shortages, particularly in the rural areas and public sectors and there are major problems with health sciences education. According to Burch and Reid (2011),[20] a number of key reforms within health education would ensure that rural health care centres are staffed by well-qualified health professionals. One such reform is replacing short placements with longitudinal placements, a strategy which has proved successful according to emerging evidence from Australia, Canada and the United States. Such placements are an important pedagogical tool, allowing students to integrate their knowledge and skills.[21] Further, general education research has demonstrated the importance of coherence between curriculum (what is taught), pedagogy (how it is taught), and assessment (how learning is measured).[22] In South Africa (and in health education programmes around the world), there is often a disconnect between what is taught (skills in district-level facilities) and how it is assessed (assessments are conducted tertiary teaching hospitals), which undermines the overall learning experience.[23]

Problem-based learning (PBL) is becoming increasingly popular in medical schools around the world.[24] Typically, PBL involves small-group tutorials facilitated by tutors/experts who emphasise not only subject knowledge, but skills such as teamwork, communication, critical thinking and reasoning, and information literacy. PBL has proven effective in improving medical student results in a number of contexts, there is definitely a need for further research to determine the most effective pedagogical approaches for health professional education.

Finally, it is worth mentioning the growing field of Health Literacy Studies, a field which aims to support health professionals aiming to improve the quality of health care services by helping to empower patients (and prospective patients) to make informed decisions about their own and their families' health. This area will be discussed further below, but one key resource in this burgeoning field is the Harvard School of Public Health (HSPH) Health Literacy website, which was the first academic site to provide support for health professionals interested in this line of study.[25]

Intervention 3: Training Community Health Workers & Midwives

There is a dearth of evidence about what types of Community Health Worker (CHW) training strategies are most effective, and a number of key scholars have called for different approaches to pre-service and in-service training of CHWs to be included in effectiveness trials, which aim to shed light on the relationship between CHW education and performance improvement.[26] However, WHO does describe a number of key initiatives to expand the health workforce by training community health workers and midwives, including a Health Extension Program in Ethiopia, a hub-and-spoke programme for training midwives in Bangladesh, eLearning initiatives in Rwanda, and a stepladder curriculum for health professional education in the Philippines.[27]

The Health Service Extension Program in Ethiopia was launched in 2003. It deployed over 30,000 government-salaried female health extension workers who focused on outreach, including organising communities to participate in expanding health services, conducting household visits, and

educating families to adopt healthy lifestyles and serve as model families. A study conducted in 2013 found that the Program was effective in improving knowledge of and practices in maternal and newborn healthcare at scale.

BRAC University's innovative hub-and-spoke diploma [Midwifery Programme at the James P. Grant School of Public Health](#) in Bangladesh is an example of an attempt to scale up education for midwives to practise in underserved areas. This model involves a University-based hub that provides faculty training, educational support, and a standardised curriculum to seven training sites in remote areas. Through this model, 200 midwives per year can be trained locally and be awarded diplomas, thus increasing services in remote areas.

The [School of Health Sciences at the University of the Philippines](#) attempts to address health workforce shortages in the country through a competency-based and community-based single, sequential and continuous stepladder curriculum. Each student starts at the same point but exits with varying competencies (first as a community health worker/midwife, then as a nurse, then as a nurse practitioner, and finally as a doctor). There are scholarships for deserving secondary school leavers from rural communities, who are bound by contract and committed to returning to their communities. This model has been used by a number of community-based training programmes worldwide.

Finally, the Government of Rwanda is currently using eLearning initiatives to attempt to build capacity of health workers through an [eLearning Portal](#) for nurse training (and ultimately physicians) and a Massive Open Online Course (MOOC), which is available free of charge via the internet and aims to encourage large-scale participation. While these initiatives show promise, as with all aspects of CHW training, more research is needed to determine effectiveness and cost-effectiveness.

Intervention 4: Building Research Capacity

There are some exciting initiatives aimed at building research capacity at higher education institutions of health in low and middle income countries. Examples include the Malaria Capacity Development Consortium (MCDC), a consortium of five African and four European universities, aiming to improve malaria research capacity in Africa[28] and the Royal Society-DFID Africa Capacity Building Initiative, a scheme which aims to strengthen the research capacity of universities and research institutions in sub-Saharan Africa by supporting the development of sustainable research networks.[29] Such interventions will play a key role in combating the brain drain discussed earlier.

Intervention 5: Health Promoting Schools

There is a recent, growing body of evidence suggesting that Health Promoting Schools (HPS) are an effective, low-cost way to improve health outcomes among school-age populations and their families and communities.[30] The WHO strategies for HPS in 32 African countries are based on the premise that schools are one of the most effective and efficient ways to reach large portions of the population with positive health messages and health and nutrition interventions (ibid).
Further, new research from Uganda suggests that HPS can play a key role as a training area for health workers to learn health advocacy, particularly when it comes to health promotion and disease prevention.[31] Relationships between HPS and health training facilities are mutually beneficial: as

health workers learn health advocacy, they promote better health behaviours and resilience among students.

2.1.1.3: Early Childhood Programmes as centres of health and education provision

A number of studies have demonstrated that cognitive delays in early childhood caused in part by poor nutrition during the first 1000 days (the 1000 days between a woman's pregnancy and her child's second birthday) which leaves children prone to health risks, can quickly accumulate among the most vulnerable children, including the poorest.[32] Conversely, researchers (most notably Nobel Prize winning economist, James Heckman) have shown that high quality early childhood services have very high rates of return, particularly for the most disadvantaged, because they target the most sensitive periods of child development and consequently set strong foundations for childhood, adolescence, and ultimately adulthood.[33] Some of the most effective early childhood policies and practices (targeting children from birth to age 8) over the past few decades have been guided by a number of theoretical models, which take into account the dynamic interplay between risk factors and protective factors at different societal levels – individual, family community, and the wider socioeconomic and cultural context.[34] According to the literature, well-designed programmes recognise the reciprocal relationship between children and adults, and develop the capacity of both primary caregivers and the children themselves to play an active role in children's development (ibid). Further, they are based on the idea that learning begins at birth.[35] In the United States, a number of early intervention programmes for children from disadvantaged circumstances (mostly living in poverty), which provide enriched learning opportunities for children, and support services and education on parenting for caregivers in community-based centres (and/or the family home) have had positive impacts on long-term outcomes, including a reduction in referrals to special education, and increase in secondary school completion and adult income, and decreases in welfare dependence, incarceration, etc., all of which have important impacts on overall health.[36]

However, while early childhood development is considered by many to be a powerful entry point for interventions that support the holistic development and wellbeing of children and their families, there is currently no common fiscal or policy space for early childhood issues, and very weak data systems.[37] [38] In fact, unfortunately, the current SDG agenda does little to lay the groundwork for a common space for early childhood. The only explicit reference to early childhood development is target 2 of SDG 4, which calls for "quality early childhood development, care and pre-primary education." Across the remainder of the SDGs, there are references to children under five, infant mortality, birth registration, etc. but no overt acknowledgement of the importance of taking a holistic approach to early childhood issues.[39]

2.1.1.4: Relationship between education and undernutrition over time

According to Nicolai et al. (2015), unless special measures are taken, the international community will fall short of the SDG target to end world hunger by 2030,[40] meaning that many of the world's children are in danger of facing the consequences of undernutrition and micronutrient deficiency: wasting, stunting, poor health, and death. Research has demonstrated that the health problems associated with undernutrition lead to problems with concentration, motivation, and overall cognitive development, which have obvious consequences for education.[41] In fact, undernutrition has been identified as one of the key reasons that there are 130 million children in school who are

failing to learn the basics of numeracy and literacy.[42] What is perhaps less well understood is how education can contribute to combatting undernutrition, though there is significant evidence showing that there is a positive correlation between maternal education and the health and nutritional status of children: better educated mothers have healthier, well-nourished children.[43] [44] Later in this section, the role of nutrition education in encouraging healthy behaviours and promoting overall wellbeing will be discussed.

Early childhood centres and primary and secondary schools are often convenient delivery platforms for nutrition-specific interventions, including school feeding, micronutrient supplementation, and deworming.[45] According to UNICEF (2014), numerous studies have demonstrated that the preschool years are the most effective (and cost-efficient) time to attempt to address the impact undernutrition has had on children's learning: if stunted children have access to quality nutrition, care, and stimulation in a formal educational environment, they can catch up to peers in social and analytical skills, and in IQ level.[46] According to Grantham-McGregor and Olney (2006), school feeding programmes (when carefully planned and of high quality) can benefit school performance for high-risk populations. Further, they found that the most frequent benefit of school feeding programmes worldwide is increased enrolment and attendance.[47] Recent research from South Africa indicates that well-run school food gardens can help to address food insecurity and undernutrition, while increasing students' interactions with nature, developing skills, and improving school performance and overall wellbeing.[48]

Regular deworming of children in schools in areas where helminth-infection is common has long been recommended by the WHO as an intervention with key health, nutrition, and societal benefits beyond worm removal.[49] However, a recent Cochrane review, analysing 45 trials on deworming through schools, found that while treating children known to be infected may have some nutritional benefits, there is now substantial evidence that mass treatment of all children in endemic areas does not improve average haemoglobin, nutritional status, survival or school performance (ibid).

2.1.1.5: Relationship between education and over-nutrition over time

Today, over-nutrition is becoming an increasing global problem, with more than 10% of school-age children currently categorised as overweight or obese.[50] These children risk a range of chronic diseases in adulthood, and are likely to have their work productivity, quality of life, and overall life expectancy severely compromised. Without access to key health messages (and nutritious meals) through schools, children and their families are learning unhealthy behaviours.

While there appears to be a negative correlation between educational attainment and obesity, the relationship is a complex one. According to research from the European Region, high levels of obesity and overweightness tend to be more common among countries with lower income, education levels and access to care, though in some countries, including Azerbaijan and Uzbekistan, obesity is a greater burden for people from higher socio-economic status levels.[51] Further, it found that socioeconomic status, gender, and national characteristics sometimes interact. In the Czech Republic, less educated men are more prone to obesity, while in the Russian Federation, the reverse is true. However, in both of these countries, less educated women are more prone to obesity (ibid).

Research on childhood obesity in Germany revealed high levels of obesity in some communities of recent immigration. These communities were found to exhibit a number of known risk factors for overweight, including low levels of education among mothers and watching more television. [52] In spite of emerging evidence of obesity risk among certain sub-groups, including recent immigrants to high income countries, there is a lack of targeted anti-obesity programming for these groups.[53]

Around the world, schools are putting more and more emphasis on academic tasks rather than physical activity. A systematic review of decades of research on the linkages between school-based activities and academic achievement found that physical activity can be added to the curriculum (by taking time from other subjects) without negatively impacting academic achievement and that adding time to more academic subjects (by taking time from physical education) does not improve academic achievement.[54] Further, participating in physical activity in school settings seems to have a positive impact on physical and mental health, and may result in small absolute gains in academic performance.

Schools do have the potential to mitigate overweightness and obesity. According to Peel (2015), while obesity is on the rise worldwide, Japan is one of the few countries that has been able to reduce its obesity rates since 2003, largely because the government was an early adopter of food education that emphasised the building of knowledge, skills, attitudes and healthy behaviours among schoolchildren.[55] What is clear is that there is a need for further research on how to maximise the effectiveness of anti-obesity interventions in terms of delivery platform and context-specificity. [56]

2.1.1.6: Role of education in encouraging healthy nutrition and healthy behaviours and in containing non-communicable diseases (NCDs)

One of the key roles education can play in encouraging healthy nutrition and healthy behaviours is by building **health literacy** among children and adults. Health literacy is functional literacy which "focuses on the skills adults need in order to make use of health resources, make health decisions, and take actions for their own and their families' wellbeing." As such, it is a broad concept that extends beyond an ability to read and follow medical instructions to choosing between different health options, communicating problems and needs effectively to a health professional, and advocating for safe work and school environments and dignified treatment.[57]

Conventional wisdom suggests that health education interventions that focus on increasing access to information about health risks that potentially lead to NCDs (such as over-eating, smoking, alcohol consumption, etc.) are an effective way to prevent NCDs. However, recent research suggests that health education campaigns are not effective on their own, and that more consideration needs to be given to other socio-economic and behavioural factors when designing interventions.[58] [59]

According to some key health education experts, current dominant approaches to health education focus on promoting fear of poor health and disease and a sense of individual responsibility and self-surveillance. They argue that what is needed for effective health education is a more critical and nuanced socio-cultural approach. Such an approach prioritises sustainable education-based outcomes over health-based outcomes, such as fitness, healthy diet, etc. In other words, health

education should improve learners' knowledge and skills about key health issues and how they relate to their own lives, thus empowering them to make healthy, informed choices.[60] Emerging research suggests that the relationship between education and healthy vs. unhealthy behaviours is much more complex than originally thought, for example, there are a number of educated (sometimes highly educated) people who now engage in unhealthy behaviours, including smoking and unprotected/high risk sex, in spite of knowing the risks.[61] [62] This research demonstrates the importance of a critical health education. One recent study on obesity prevention in schools for Hispanic adolescents in the United States found that community-based participatory research (CBPR) has the potential to promote healthy behaviours by engaging communities in identifying barriers to and opportunities for healthy living themselves in a way that is culture-specific.[63]

It is interesting to note that there is an indirect way to encourage healthy behaviours. Researchers have found that 'liking school' has been identified as a protective factor against bullying, sexual risk-taking, tobacco, alcohol and drug use, and other health-compromising behaviours.[64] Thus, turning schools into positive, welcoming environments for all students, increases the likelihood of students liking school, which is associated with positive health behaviours.

2.1.1.7: Enhancing the protective and psychosocially supportive dimensions of education to ensure wellbeing

Research from the WHO's Regional Office for Europe emphasises the key role schools play in students' overall wellbeing.[65] According to this research, children and young people attend school during crucial developmental periods and thus positive school experiences can have powerful positive impacts on students' psychosocial health, while negative experiences can become a major risk factor. A review of Australian HPS suggests that benefits are derived for students and for the whole school community, particularly in terms of building resilience through the building of self-esteem, self-efficacy, peer relationships, intergenerational relationships and a sense of belonging.[66] There is good reason to believe that these lessons can be transferred to lower income contexts, enhancing the protective dimensions of schools.

In 2004, the IRC launched the Healing Classrooms action research-based initiative, which was intended to serve as a global initiative on promoting teacher development for overall student well-being in crisis and post-crisis contexts.[67] It has had some success in promoting psychosocial recovery and supporting the wellbeing of both children and teachers. Currently, refugee and internally displaced people (IDP) populations are on the rise, and a large proportion of these groups are children and young people, who are extremely likely to be at risk for mental health problems.[68] A study exploring the problems, strengths, and help-seeking behaviours of Bhutanese and Somali Bantu refugees and establishing how mental health problems are expressed locally found that often these refugees leveraged support from their communities to overcome challenges, identifying health facilities, government assistance programmes, and school personnel as support agents.[69]

According to Dryden-Peterson (2011), the landmark report by Graça Machel on the *Impact of Armed Conflict on Children* presented to the UN Secretary General in 1996 emphasised the key role that education plays in the protection of refugees and other children and young people impacted by crisis, by providing safe and secure spaces that promote well-being (of students, teachers, and other

school personnel).[70] Since the early 2000s, therefore, UNHCR has officially emphasised the importance of "education as a tool for protection". However, research has shown that education only fulfils this protective function if it is of high quality – all too often, schools are sites of physical and symbolic violence or vulnerability to natural and/or manmade disasters (ibid).

Finally, while it is outside of the scope of this report to do a full review of types of education, it is worth noting that there is a tendency to focus on the type of education which leads to easily quantifiable learning outcomes in more so-called 'academic' and 'functional' subjects, such as mathematics, literacy, science, and engineering. However, a burgeoning body of research demonstrates the importance of humanities and arts education for overall individual and community wellbeing, which will have important implications for peaceful and inclusive societies (see Part 5 of this report). Many arts education programmes the world over are facing limited budgets and/or budget cuts, which places the potential gains to be made from these types of intervention under threat.

2.1.2: Water, sanitation, and hygiene (WASH)

2.1.2.1: The absence of adequate WASH services in health centres

Recent research from WHO drawing from data from 54 LMICs (representing 66,101 facilities) found that 38% lack an improved water source, 19% lack improved sanitation, and 35% lack soap and water for handwashing.[71] In other words, the ability to prevent and control infections and to provide basic, routine services is seriously compromised. The WHO report also found that in several countries, simple measures, including improving toilet cleanliness and installing low-cost handwashing stations, increase uptake of services and encourage members of the community to improve WASH practices at home. The report identifies schools as one important delivery channel for pro-WASH messages, and recommends adapting approaches used to improve WASH in schools for national advocacy to promote WASH in health care facilities. While there are numerous examples of successful WASH programmes in schools throughout the world, much remains to be done to ensure sustainable sanitation systems in schools (both in terms of hardware, such as toilet and handwashing facilities, and software, such as sensitisation, training, advocacy, and hygiene practices).[72]

2.1.2.2: Effective school WASH programmes

Researchers in Kenya attempted to determine what makes school WASH programmes effective and what the impacts of effective school WASH programmes are.[73] As expected, they found that handwashing practices of children were significantly better in schools with adequate facilities than without facilities. However, there was no evidence that toilets were used more consistently or were cleaner in schools with all facilities than in other schools. According to researchers, therefore, the construction of facilities alone does not ensure good WASH practices in schools. Toilets that afforded more privacy were used more often, as were toilets that were kept clean. Schools thus need to prioritise plans that will ensure toilets are kept clean (ibid). In a study investigating the sustainability and impact of school WASH education interventions in Kerala four years after interventions had ended, researchers found that intervention schools had cleaner and better maintained facilities

compared with non-intervention schools.[74] Further, children in intervention schools practised handwashing more consistently, demonstrated more accurate hygiene knowledge, and were more satisfied with facilities than children in non-intervention schools.

2.1.2.3: The role of children in promoting WASH practices

Earlier research from Kenya has shown that children have the potential to serve as health change agents in rural communities.[75] In a quasi-experimental study, 40 schoolchildren were given action-oriented and participatory health education about malaria, diarrhoea and hygiene over a period of 14 months. According to the researchers, there were significant improvements in knowledge in all groups, though behavioural changes were more apparent among children than adults. Thanks to the project, concrete changes in terms of WASH and health were seen in both school and home environments. In fact, a number of key organisations have come to recognise the key role children can play in promoting health and WASH, including the World Bank, UNICEF, WHO, and UNESCO Focusing Resources on Effective School Health (FRESH).[76]

2.1.2.4: Role of education in combatting open defecation and improving community sanitation

Open defecation practices and unsafe water sources remain among the leading causes of childhood diarrhoea, stunting, and even death.[77] [78] A number of researchers have been working on Community-Led Total Sanitation (CLTS), an approach which attempts to mobilise communities to eliminate open defecation and improve WASH practices, facilitating them to appraise and analyse practices and ultimately take action.[79] Education (in the form of encouraging behaviour change) is at the heart of the CLTS approach. As talking about defecation and hygiene practices is often taboo in most cultures, innovative approaches are required to promote CLTS. One example of such an approach is the Open Defecation Free (ODF) Malawi 2015 Strategy, which, among other things, attempts to trigger for handwashing with soap.[80]

2.1.2.5: Menstrual Hygiene Management (MHM) and girls' education

There is extensive research indicating that investing in the education of girls has positive impacts on the overall health and wellbeing of communities for many reasons.[81] Mothers with higher educational attainment tend to have fewer children, and their children are likely to be healthier and less stunted, even when controlling for wealth, urban versus rural residence and various child characteristics.[82] Inadequate sanitation and hygiene facilities and lack of access to appropriate feminine hygiene products are often cited as being among the biggest barriers to the education of upper primary and secondary school aged girls.[83] [84] [85] However, in spite of this recognition of the importance of adequate WASH facilities and resources for girls' education, there is a dearth in quality research on menstrual hygiene management (MHM) and its relationship with girls' school attendance and their overall reproductive health.[86] MHM is often ignored in government policies, advocacy agendas, and donor strategies.[87] While there is a discussion to be had about how to make the most cost-effective, hygienic, and culturally acceptable products available to girls and young women (and educating them about their use), a number of MHM experts have argued for more holistic approaches that provide girls with these products while simultaneously improving water, sanitation and disposal facilities at schools and in communities.[88] Such approaches are seen as more sustainable in the long run.

2.2: Disadvantage and Empowerment

2.2.1: Introduction

Part 1 of this review provided a brief snapshot of global inequalities in relation to education. In this section, we provide a more in-depth analysis of the relationship between education and these inequalities as presented in the literature, going beyond an understanding of education's role in maximising the health and wellbeing of individuals, to considering the role education does (and can) play in combating social exclusion through empowerment. For the purposes of this review, we consider poverty, gender, disability, race, ethnicity and culture, and migration, though it is important to keep in mind that patterns of inequality and disadvantage are in a constant state of flux.

2.2.2: Poverty

The relationship between education and economic growth will be explored more deeply in Part 4: Prosperity, but as poverty is one of the key factors that determines people's access to and participation in quality education and as combatting poverty is a priority in the SDG agenda, the relationship between poverty and education will be discussed briefly here. More specifically, this section will explore the relationship between a person's poverty status and education.

A large body of literature, originating in the 1960s in high income countries such as France, the UK, and the US, and spanning several decades, analyses the relationship between class or socio-economic status (SES)[1] and education. The landmark Coleman Report, *Equality of Educational Opportunity*, based on an extensive survey of educational opportunity at more than 3,000 schools in the US aiming to analyse the causes of the achievement gap between black and white students was published in 1966, and is noteworthy as the first social scientific study mandated by the US Congress specifically to inform education policy.[89] The study found that variations in school quality were not really associated with educational attainment levels if students from similar SES backgrounds were compared. Further, it found that student achievement was related to family SES background, but also to backgrounds of others in the school. The unfortunate fallout from the Coleman Report findings was that the argument was misinterpreted as: "schools don't matter, only families matter",[90] so instead of investing in school improvement and teacher professional development in poorer schools, the government began a social engineering project that involved strategies of desegregation.

Numerous studies since then (primarily undertaken in high income countries) have confirmed the tremendous impact a student's SES background has on educational attainment, to the great frustration of educators around the world:

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[1] Class has been an important concept in social science for many years. The term exists to denote categories associated with the hierarchical social stratification of societies. Today, it is more common to speak about socio-economic status (SES) in research, because it is seen as easier to define and less of a loaded term than class, which is viewed by many to be an outdated term which has come to be used pejoratively when denoting individuals from a 'lower' class. SES refers to any measure which classifies people in terms of indicators, including occupation, income, and education, etc.

Yet, no matter how often confirmed, the claim remains counter-intuitive. Why should poverty mean a child can't learn to read, write, and compute? Surely, a good teacher can guide any child, regardless of skin colour or family income, to do these things. (Rothstein, 2004, p.14)

The Coleman Report helped to ignite the debate around educational achievement and class, a debate which spawned a number of influential studies seeking to gain a better understanding of why SES has such a huge impact on education, inspired by and building on Marxist ideas and critical theory. Bourdieu and Passeron (1977) in France argued that the education system played a key role in the reproduction of social class, by transmitting ideas about people's 'rightful' place in society through 'symbolic violence' which privileged the ideas and tastes (or cultural capital) of the upper classes over the lower classes.[91] In the same year in the UK, Paul Willis published *Learning to Labour: How Working Class Kids Get Working Class Jobs*,[92] an ethnography which looked at cultural reproduction of class from below, trying to understand why working-class kids "let themselves" get working-class jobs. In other words, he demonstrated that the boys were actually deliberately failing themselves, largely because they had no belief in their own potential for upward mobility.

A final study worth mentioning is the work of Jean Anyon who was interested in understanding what happened at the level of classroom practice and how this related to the reproduction of social class.[93] Her research was set in New Jersey in the US and included two working class population schools, one middle class population school, one upper-middle class population school, and one "executive elite" population school. She found that teaching and the enacted curriculum looked different in the different schools, though they looked similar between subjects within the same school. She demonstrated how "school philosophy, the official curriculum and affiliated resources, staffroom and teacher understandings of the students' communities and lives, and an enacted classroom curriculum together contributed to stratified versions of knowledge, with ramifications for students' cultural capital".[94] Students at the lower SES schools tended to see knowledge as something that was transferred from their teacher (the expert) to them (the novices) in exchange for their good behaviour, whereas students at the higher SES schools tended to see knowledge as something that they would co-construct with their teacher and their peers.

These studies (and others like them) suggest that something can be done at the curricular and pedagogical level in poorer schools to empower students to break out of poverty. Scholars and practitioners in the field of popular education and critical pedagogy have investigated how to practice education in poorer, disadvantaged communities so that it no longer follows a 'banking model' (where knowledge is 'deposited' by teachers) but instead builds on learners' experiences and promotes a sense of agency and critical consciousness through participatory activities. With its roots among poorer communities in Latin America and in the United States, the field has had an enormous impact on education practice around the world, and, through its emphasis on the notion of praxis,[2] provided inspiration for researchers using participatory action research (PAR) approaches in a range

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[2] Praxis refers to a cycle of critically reflective practice, which allows the practitioner to connect theory and practice.

of fields, and often working with the poor. Key scholars include Paulo Freire, Henry Giroux, bell hooks, Peter McLaren, and Ira Shor.

Of course, one thing that has become abundantly clear is that poverty, while spoken of in universal terms in the SDG agenda, is context-dependant, and the relationship between education and poverty thus looks different in different contexts. One powerful illustrative example is the work of Stephen P. Heyneman extending the Coleman Report to a low income country context (Uganda), which seemed to suggest that family background was less important in determining students' academic achievement than in higher income countries.[95]

Another key point to consider is that poverty itself is a complex phenomenon, and that within groups classed as 'poor', there are those who are more vulnerable than others. Currently, the Chronic Poverty Advisory Network is actively campaigning for the rights of chronically poor people, arguing that "Chronically poor people need to be at the centre of poverty reduction policies if we are going to achieve the goal of eradicating extreme poverty for good."[96] In the education sector, we have begun to see the problems with policies that target the poor, but do not consider the poorest of the poor, or the chronically poor. One striking example is the policy drive for free primary education. Research from Africa has shown that while introducing free primary education through nationwide abolishment of school fees has led to increased enrolments, there are still many people (among them, the poorest of the poor) who are unable to attend school because opportunity costs are too high, or other essential resources (school uniforms, transport, etc.) are prohibitively expensive.[97]

2.2.3: Gender equity and empowerment

Most discussions about gender and human development take the role of girls and women as a starting point: women and girls have come to be seen as an 'oppressed majority', who, in spite of the fact that they make up slightly over half of the world's population have traditionally been denied equal opportunities to participate in society as compared with men.[98] Since Professor Lalage Bown uttered the words: "Without women, no development" in 1985, there has been an exponential increase in policy and programming around the topic of girls and women and human development, as evidenced by the creation of United Nations Girls' Education Initiative (UNGEI), UN Women, and other organisations, networks, and agencies. Within education, governments and other stakeholders came to see education of 'the girl child' as the key to helping poor families improve their lives around the world.[99]

Increased investment in the education of girls and women has led to some gains in their enrolment, attendance, and attainment. However, not only do girls continue to face challenges in accessing quality education, and the threat of gender-based violence, exploitation, and discrimination, they also have to contend with harsh social and economic realities once they enter the world of work, even if they do perform better than their male peers at school.[100] [101] Unfortunately, the advances of some girls and women educationally, have led to a "backlash against feminism" and a phenomenon researchers refer to as the "boy turn", where certain individuals in minority world countries feel that the pendulum has swung too far the other way and that we now need to look at raising boys' achievement.[102] In spite of the positive impact of feminism in the field of education, many feel that

the feminist project is now complete (or has gone too far), and that boys are now the new 'disadvantaged' group in schooling.

Of course, pitting girls against boys in this fashion seems to run counter to more inclusive philosophies of education. One major contribution feminist scholars have made in recent years is to allow us to move away from thinking about a purely biological division into discrete categories of male and female, to thinking about gender as a social construct, and that every culture has certain socially constructed norms about how women (and girls) should behave. In the words of Raewyn Connell (2010):[103]

> Gender is about how bodies enter history. Gender is a social
> structure, not a reflex of biology, though it's a structure that relates
> to, and organizes, human reproduction. It's a complex, changing
> structure, and the notion that it can be understood through simple
> dichotomies is sadly mistaken.

The work of Vickers (2010) has demonstrated how schools have become gendered organisations, with gendered division of labour (men under-represented as teachers at the primary and early childhood level), unequal power relations (for both students and teachers), and assumptions around male subjects versus female subjects, etc.[104] According to Theobald (1996), nineteenth century ideas about the female brain as more fragile, more emotional, and not suited to rational thought, have prevailed as mass schooling has developed. [105] This extends to the role of teachers, where women are assumed to be natural caregivers. Organisations such as Code First: Girls and Girls Who Code have emerged, which challenge the notion that males are better suited to pursuing carriers in the STEM field.

The last few years have witnessed the rise of a global Lesbian Gay Bisexual Transgender Queer Intersex (LGBTQI) rights movement, though participation in and reception of the movement has varied widely depending on individual country contexts. For example, while many countries have anti-discrimination laws which provide protection for LGBTQI individuals and legally allow marriage between same sex persons, in some countries homosexuality is illegal, with draconian punishments administered if people are found to be 'practising' homosexuality. It is clear that LGBTQI groups, wherever they reside, are still at significant risk of persecution, bullying, and sexually-motivated violence: Human Rights Watch continues to document and expose abuse based on sexual orientation and gender identity worldwide.[106] LGBTQI rights are a highly politicised issue, and, consequently, many major international agencies working with education do not have an official specific policy on protecting individuals based on sexual orientation. Much advocacy and pedagogical work on LGBTQI issues is thus left to individuals and communities themselves,[107] with support from rights-based organisations, such as Human Rights Watch and ActionAid.[108] Instead of acting as safe spaces, schools are often sites of homophobic violence and bullying, even in countries with protective policy environments, such as Canada and Australia.[109] Schools can be important sites for encouraging discussion of LGBTI rights, for example the documentary *It's Elementary – Talking about Gay Issues in School* (1996) and the follow up film *It's STILL Elementary* (2007).[110]

2.2.4: Disability

According to the WHO:

> The International Classification of Functioning, Disability and Health (ICF) defines disability as an umbrella term for impairments, activity limitations and participation restrictions. Disability is the interaction between individuals with a health condition (e.g. cerebral palsy, Down syndrome and depression) and personal and environmental factors (e.g. negative attitudes, inaccessible transportation and public buildings, and limited social supports).[111]

In other words, disability is a complex phenomenon that involves the interaction of a person with their environment. While some form of 'special' educational provision for learners with disabilities has existed in a few countries for a number of decades, when it comes to development, disability and education has received very little attention until recently. It was not until 1994, that representatives from 92 governments and 25 organisations came together for the World Conference on Special Needs Education in Spain and committed to the *Salamanca Statement and Framework for Action on Special Needs Education*, which states that learners with special educational needs (including disabilities) should have access to regular schools with an inclusive orientation, as these are considered to be "the most effective means of combating discriminatory attitudes, creating welcoming communities, building an inclusive society and achieving education for all" (Article 2). Further, "they provide an effective education to the majority of children and improve the efficiency and ultimately the cost-effectiveness of the entire education system" (ibid).

In spite of the rapid growth of a number of organisations and networks working on inclusive education, it seems that our research on disability and education has not caught up: according to leading disability and education experts, we have come to vague conclusions *that* inclusive education is the most effective and cost-effective approach to reach all learners, but we have very little research about *how to do* inclusive education.[112] Singal (2015) has pointed out that while many global declarations now make reference to people with disabilities (either explicitly or implicitly), including the SDGs, a review of the evidence should cause us to be concerned about several key issues:[113]

- Access has increased but not equally
- Participation and learning remain neglected
- There is a lack of investment in structures and personnel
- The "how" of inclusive education remains conspicuously absent
- The upscaling and sustainability of small initiatives is a key challenge
- There is growing dissatisfaction with the notion of "inclusive education"
- Those working on disability issues tend to make the assumption that disability is a homogeneous phenomenon and there is very little research on the heterogeneity of disabilities and subsequently the heterogeneity of educational experiences for those with disabilities

- As with the education agenda as a whole, research on disability and education has tended to focus on primary school settings without much consideration for other levels of education nor for improving transition rates
- Intersectionality (which will be discussed below) is not always considered in research on disability globally, even though it is a widely occurring phenomenon (for example, a poor girl with a disability is triply disadvantaged)
- There is burgeoning work on teacher and parental attitudes, but not much on capacity building and the enhancement of the quality of teaching and learning
- There is very little research on the perspectives of people with disabilities themselves, particularly in majority world contexts
- There is very little research on learning outcomes across disability groups

2.2.5: Race, ethnicity & culture

While multiple understandings of culture exist, a useful broad definition in social science is that it is "all in human society which is socially rather than biologically transmitted [. . .], the symbolic and learned aspects of human society".[114] A key component of the human experience is the forming and maintaining of a collective identity, where a group seeks to maintain its culture by identifying certain common characteristics that make them different from other groups.[115] According to Giddens (2009), an "ethnic group is one whose members share a distinct awareness of a common cultural identity, separating them from other groups around them."[116]

While many people use ethnicity and race interchangeably, race differs from ethnicity in that it can be defined as "a set of social relationships which allow individuals and groups to be located, and various attributes or competencies assigned, on the basis of biologically grounded features".[117] However, recent research has demonstrated that racial groupings are not based on any valid genetic differences, and that there are more differences within a given racial group than between members of different racial groups.[118] In other words, as with ethnicity, race is increasingly understood as a social construct.

Race and ethnicity often play a huge role in an individual's educational experience, as learners and teachers today continue to face discrimination based on the colour of their skin, their customs, etc. According to Fields (2001), racism refers to: "the assignment of people to an inferior category and the determination of their social, economic, civic, and human standing on that basis".[119] This assignment can happen at the personal level (e.g. racial slurs, hate speech, physical violence, unfair assessment, etc.) and the institutional level, where certain discriminatory structures are in place that put certain individuals at a disadvantages because of their race or ethnicity.[120] [121] Often, institutionalised racism is unconscious. A recent study published in the *APA Journal of Personality and Social Psychology* found that black boys as young as 10 in the United States are perceived to be older and less innocent than their white peers, with obvious consequences for their educational opportunities.[122]

2.2.6: Forced displacement/migration

The Global Program on Forced Displacement (GPFD) defines forced displacement as "the situation of persons who are forced to leave or flee their homes due to conflict, violence and human rights violations."[123] Forcibly displaced persons include refugees, internally displaced persons (IDPs), asylum-seekers, returnees, and stateless peoples.[3] Forced migration is a related term that tends to refer to the actual movements of these people. According to UNHCR (2014), we currently have the highest number of forcibly displaced persons ever recorded on the planet:

Figure B: Forcibly Displaced People Worldwide in 2014 (Source: UNHCR, 2014, p.2)[124]

Further, humanitarian crises are lasting longer. Research from the Refugee Studies Council identified 30 major protracted refugee situations around the world and determined that the average time spent in displacement in these situations was almost 20 years in 2011, up from 9 years in the early 1990s.[125] However, in spite of the burgeoning global forced displacement crisis and its potential to throw a spanner in the works of sustainable development, the only reference to migration in the SDGs themselves is in SDG 10 target 7, which calls for stakeholders to: "Facilitate orderly, safe, regular and responsible migration and mobility of people, including through the implementation of planned and well-managed migration policies."[126] The framing document for the SDGs, *Transforming Our World*, does make special mention of refugees, IDPs, and migrants (along with other disadvantaged groups), stating that these "vulnerable" people "must be empowered."[127] The document goes on to say:

> We recognize the positive contribution of migrants for inclusive growth and sustainable development. We also recognize that international migration is a multi-dimensional reality of major relevance for the development of countries of origin, transit and destination, which requires coherent and comprehensive responses. We will cooperate internationally to ensure safe, orderly and regular migration involving full respect for human rights and the humane treatment of migrants regardless of migration status, of refugees and of displaced persons. Such cooperation should also strengthen the resilience of communities hosting refugees,

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[3] It is beyond the scope of this review to define these terms, but Forced Migration Online at the Refugee Studies Centre, University of Oxford is a useful resource for terminology on forced displacement: http://www.forcedmigration.org/about/whatisfm

particularly in developing countries. We underline the right of migrants to return to their country of citizenship, and recall that States must ensure that their returning nationals are duly received. (ibid.)

However, there is little guidance about *how* this should be done, and, given the lack of specific targets on migration, it seems a likely scenario that these groups are overlooked.

While the right to education for forcibly displaced peoples is mandated through several key documents, education for refugees, internally displaced persons (IDPs), and asylum-seekers, is in a state of crisis when it comes to access and quality. Refugees have called for education as they see it as "the key to the future", but in reality, have been faced with "education for ultimate disappointment."[128]

2.2.7: Double disadvantage and intersectionality

The inequalities described above seldom occur on their own. The concept of double disadvantage has been used to describe the situation when a person experiences social disadvantage due to more than one factor, e.g. an African American woman, an immigrant with a disability, etc. As often there might be more than two factors impacting an individual's social and economic situation, researchers have begun using the terms triple disadvantage and intersectionality to describe these situations. The concept of intersectionality was developed by the feminist Kimberlé Crenshaw, who describes the concept as follows:[129]

> Cultural patterns of oppression are not only interrelated, but are bound together and influenced by the intersectional systems of society. Examples of this include race, gender, class, ability, and ethnicity.

As chief sites of socialisation, education institutions are uniquely placed to begin to dismantle these oppressive structures, and to rid us of "the legacy of negative socialization".[130] The first means of implementation target for SDG 4 is to: "Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all." If this target is met, then, it will not only improve educational environments, but also have a spill-over effect, as learners are socialised into more positive ways of knowing and being.

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PART 3: PLANET

> **Planet**
> We are determined to protect the planet from degradation, including through sustainable consumption and production, sustainably managing its natural resources and taking urgent action on climate change, so that it can support the needs of the present and future generations.
> (UN, 2015, p.3)

3.1: Introduction

How societies succeed in responding to economic and environmental pressures depend largely on the behaviour of human beings acting individually or collectively. As individuals become better informed and equipped with better knowledge, and when it is in their interest to change to new forms of behaviours towards the environment, they start to use their power as consumers, and voters to adopt and support behaviours that are compatible with sustainable outcomes.[1] In this regard, individual human capital accumulation, through formal education, can shape environmental attitudes and behaviours, and lead to pro-environmental actions.

Indeed, education is found to encourage certain environmentally-friendly behaviours. Existing studies, mostly carried out in Europe and the United States, find that there is a positive association, if not causation, between environmentalism and higher education.[2][3] For example, a cross-national study of European countries reported a positive association between education and mitigation behaviours in response to climate change such as avoiding car use, using energy-efficient electrical appliances and recycling.[4] Likewise, extension education for farmers is shown to be negatively correlated with the likelihood of using environmentally-unfriendly practices such as slash and burn in Cameroon,[5] and positively correlated with investment in sustainable agricultural practices in New Zealand (Jay, 2005).[6]

3.2: Mechanisms through which education reduces vulnerability and enhances sustainable lifestyle and consumption

Education is critical for climate change action both in terms of vulnerability reduction and promotion of sustainable lifestyle and consumption. At the individual level, barriers to the adoption of mitigation and adaptation measures include a lack of awareness and understanding of climate change risk, doubt about efficacy of one's action, lack of knowledge on how to change behaviour and lack of financial resources to implement changes. Accordingly, there are many sound reasons to assume that education can contribute to overcome these barriers both in direct and indirect manners.

First, directly formal schooling is a primary way individuals acquire knowledge, skills, and competencies that can influence their mitigation and adaptation efforts. Schooling provides a unique environment to engage in cognitive activities such as learning to read, write, and use numbers. As students move to higher grades, cognitive skills required in school become more progressively demanding and involve meta-cognitive skills such as categorization, logical deduction and IQ.[7][8][9] This abstract cognitive exercise alters the way educated individuals think, reason, and solve problems likewise.[10] Indeed, experimental studies have shown that higher-order cognition improves risk assessment and decision making skills.[11][12] These are relevant components of reasoning related to risk perception and making choices about mitigation and adaptation actions.

Furthermore, education enhances the acquisition of knowledge, values and priorities as well as the capacity to plan for the future and efficiency in allocation of resources.[13][14] Schooling can help individuals adopt, for instance, disaster preparedness measures by improving their knowledge of the relationship between preparedness and disaster risk reduction. Moreover, educated individuals may have better understanding of what measures to undertake and can make better choices with respect to safe construction practices and location decisions. Recent evidence also shows that education change time preferences such that more educated people are more patient, more goal-oriented and thus make more investments (e.g., financial, health or education investments) for their future.[15][16][17] Such forward-looking attitudes can influence adoption of mitigation actions or adaptation measures where benefits may only be expected by future generations.

Apart from the direct impacts, education may indirectly reduce vulnerability or promote mitigation actions through many other means. Firstly, education improves socio-economic status as evident that education generally increases earnings. This allows individuals to have command over resources such as purchasing costly disaster insurance, living in low risk areas and quality housing, installing renewable energy sources at home or willingness to pay carbon taxes. Secondly, many empirical studies have shown that people with more years of formal education have access to more sources and types of information.[18][19][20] The level of education is not only highly correlated with access to weather forecasts and warnings but the highly educated are also able to understand highly-complex environmental issues such as climate change better than less educated counterparts. Knowing where to get information on how to reduce emissions or what adaptations to take allow individuals to change behaviour appropriately. Indeed, there is evidence that good understanding of climate change or environmental knowledge are associated with undertaking of climate change mitigation behaviours such as consumption of climate-friendly food,[21] owning fuel-efficient vehicles,[22] and conservation behaviour.[23] On top of that, more educated individuals also have higher social capital.[24] [25] A perception of risk and motivations to take preventive action can be transferred via social networks while individuals who participate regularly in social activities can benefit from an exchange of useful information and warnings. Evidently, through increasing socio-economic resources, facilitating access to information and enhancing social capital, education can promote vulnerability reduction and foster sustainable lifestyle and consumption.

The following figure illustrates the processes through which education can reduce vulnerability and contribute to more sustainable production and consumption.
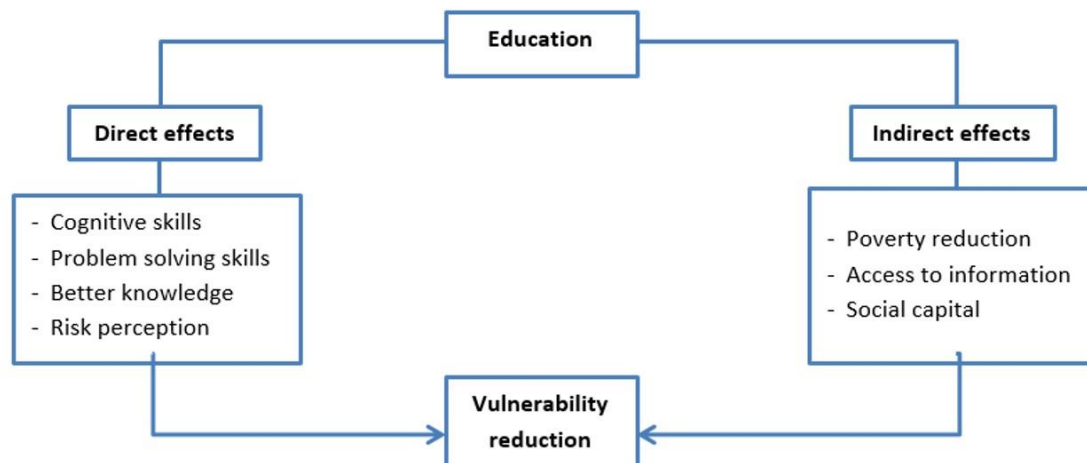
Figure C: Flowchart displaying the processes through which education contributes to vulnerability reduction

3.2.1: To what extent does education help reduce vulnerability to climate change?

3.2.1.1: Evidence on the role of formal education in vulnerability reduction

There is relatively consistent evidence showing that countries, communities, households and individuals with higher level of education experience lower vulnerability to natural disasters.[26] This applies to both developed and less developed countries as well as different dimensions of vulnerability including preparedness and responses to disasters, mortality, morbidity, coping strategies, recovery from disasters and other relevant outcomes. The evidence discussed below are based on multivariate analysis of empirical data taking into account demographic and socioeconomic characteristics and, in some occasions, contextual factors determining disaster-related outcomes.

Many studies have established that higher educational attainment enhances disaster preparedness – measures taken to prepare for and reduce the impacts of disaster. This includes being prepared for earthquakes,[27] hurricanes,[28 29 30] flood,[31 32] tsunami,[33] terrorism,[34 35 36] and general emergency preparedness.[37 38] It is hold that better knowledge about the disaster and higher capacity to perform effective emergency measures explain why individuals with higher level of education have greater disaster preparedness.[39 40] There is also empirical evidence showing that the effect of education on disaster preparedness is mediated through social capital and risk perception.[41]

Consequently, better disaster preparedness among more educated individuals can provide protective effects when a disaster strikes. It has been found in Indonesia and India that individuals with higher educational attainment are more likely to survive from the 2004 Indian Ocean tsunami and lower risk of injuries.[42 43] Likewise, at the community level, communities with higher mean year of schooling were reported to experience lower losses in human lives due to floods and landslides in Nepal.[44] The evidence extends to the country level where countries with higher level of education, even after accounting for income per capita and other development indicators, experienced significantly lower mortality from climate-related disasters.[45 46 47] With respect to morbidity associated with disasters, in general, there is not much evidence on the association between

education and physical morbidity associated with natural hazards. The literature on mental health morbidity however has consistently shown that individuals with higher level of education have lower prevalence of distress, depression and post-traumatic stress disorder (PTSD).[48][49] With higher engagement in disaster preparedness and mitigation activities as well as better knowledge about where to obtain assistance after disasters, education and income facilitate faster recovery from disasters including psychosocial dimensions.[50] Indeed, the protective role of education on mental health is confirmed in the literatures reviewing quantitative studies on risk factors for psychological morbidity after natural disasters.[51][52]

Apart from relatively lower disaster impacts on mortality and morbidity, damages to residential property and economic losses are found to be lower among communities and countries with higher mean year of schooling or higher literacy rate.[53][54][55] It is explained that education enhances awareness and knowledge of natural disasters, and educated citizens can make better choices related to disaster risk reduction measures such as construction practices and location decisions.[56] This in turn mitigates disaster risk and reduces vulnerability.

Furthermore, education equips individuals and households with a variety of coping strategies following natural shocks. Natural disasters can disrupt livelihoods, destroy crops or damage homes and property. Consequently, households have to employ different mechanisms to smooth consumption i.e. maintain the same level of consumption when income is affected by transitory shocks. Households or communities with higher educational attainment are better able to maintain their welfare and level of consumption after disasters.[57][58][59] There is evidence that households where household heads have higher level of education have better access to loans and credits which facilitates stabilizing and increasing the consumption levels.[60] More educated heads of households have more salience in staving off poverty and future poverty possibly because they have better information regarding aggregate risk and are able to make better decisions regarding this risk.[61] With a wider coping strategies portfolio, highly educated households do not need to opt for coping options which involve disinvestment such as taking children out of school or reducing food consumption.[62] Note however that while higher education attainment corresponds with having better skills, higher incomes and better access to credits which facilitate recovery from shocks, households with educated heads may experience higher levels of severity and more costly shocks. Therefore, in some cases, educational attainment is not associated with faster recovery.[63]

With respect to adaptation to the changing climate, education is indeed highly relevant since individuals with higher level of education are also more likely to have better awareness of climate risk.[64] Given that climate change is a relatively new form of risk, education facilitates the understanding of new ideas and concepts related to climate variability. It is reported that highly educated household heads are likely to have a better level of planning and access and understanding of early warning information which are relevant for climate variability adaptation.[65] Education also enhances knowledge of what adaption measures can be taken as found that households with higher level of education have higher likelihood of carrying out adaptation actions such as changing crop types and planting and harvesting dates, methods of farming and using improved type of seed.[66][67] Likewise, education also increases options to diversify livelihood. For instance, when facing climate pressure, farmers in rural Tanzania with higher level of education are more able to switch to non-

farm income earning activities.[68] Indeed, formal education is positively associated with capacity to adapt to the changing climate.

3.2.1.2: The role of disaster education in disaster risk reduction

The importance of participatory disaster risk reduction has increasingly being recognized as sustainable strategy to strengthen local disaster prevention, mitigation, response and reconstruction capacities. Disaster education includes education on disaster risks, mitigation and preparedness strategies, which can consequently raises disaster awareness and enable an understanding of risks and options to reduce disaster impacts. Disaster education hence is perceived as an important mean to shift the burden of disaster risk reduction from government agencies to individuals and communities.[69]

Indeed, the role of education for disaster risk reduction has been put forward as important development agendas as seen in the UN Decade for Education for Sustainable Development 2005-2014 and the third priority for action of the Hyogo Framework for Action 2005-2015. Current efforts to promote disaster risk reduction education are divided into public education i.e. those that target adults e.g. through teaching materials such as brochures, films and booklets, media and community disaster training,[70] and programmes that target children mainly through school education. Following the global campaign "Disaster Risk Reduction Begins at School" initiated by the UN International Strategy for Disaster Reduction (ISDR) Secretariat in 2005 to 2006, disaster risk reduction was integrated into school curricula in several countries. However, there is virtually no scholarly consensus either on what teaching and learning approaches are efficient or on how effective disaster education programmes are.[71][72] Similarly, evaluation of the effects of public education and community disaster training programmes is scarce and has yielded mixed results.[73]

Apart from the limited number of studies evaluating effectiveness of disaster education, scientific quality of extant studies are rather poor with methodological and research design limitations or weak data collection tools. For instance, Johnson et al. (2014) reviewed 35 published and grey literature which offer measurement or evaluation disaster education programmes for children.[74] They concluded that although the majority of these studies reported improved children's knowledge of disaster risks and enhanced positive outcomes such as household preparedness, with methodological limitations e.g. small samples and lack of a control group, the results obtained are questionable. Other studies of school children based on descriptive statistics in New Zealand, Japan and Indonesia reported increases in disaster risk awareness and knowledge among children who have received school disaster education but not necessarily actual actions for disaster reduction.[75][76][77] Indeed, it is difficult to draw a scientific conclusion on the effectiveness of disaster education programmes. There remain several gaps in the literature including the lack of studies that assessed differential effects by demographic and socioeconomic characteristics and few studies measure long-term outcomes of disaster education.[78]

Furthermore, the effectiveness of disaster education for children can vary with teaching method. For instance, community and family level of education as well as active learning appeared to have more direct influence on disaster preparedness behaviour as compared to school education.[79][80] In Taiwan, it is found that compared to students who learnt about disaster prevention via traditional teaching

method, those who learnt via WebQuest (an inquiry-oriented online tool for learning) performed better in learning retention test.[81] Similarly, providing public disaster education can be effective in raising public awareness and preparedness but the success of the programme varies with locations and communication methods. For example, while brochures and written documents promote the public awareness of earthquakes for residents in California,[82] [83] in Fukui, Japan, it is found that various educational sources including printing materials, broadcasts and meeting work well in enhancing earthquake readiness.[84]

In sum, while in theory disaster education should raise disaster awareness and preparedness, scientific evidence supporting the claim remains inadequate. This requires more scientific studies with sound research designs and methods in order to establish the link between disaster education and disaster risk reduction.

3.2.2: What types of education hold the most promise for building resilience and adaptive capacity to climate change related risks and coping strategies?

A review of empirical literature on disaster prevention, responses, impacts and recovery in different national contexts presents a robust scientific evidence on the relationship between formal schooling and vulnerability reduction. While specific disaster education and training may prove useful in certain contexts, formal schooling remains a fundamental tool which enables an individual to acquire cognitive skills and knowledge, enhance ability to adopt new technologies and possess a mean (e.g. economic) to take actions.

Following the adoption of the Hyogo Framework for Action, increasing disaster awareness and knowledge and promoting a culture of disaster prevention and resilience are placed as one of the priority actions in disaster risk reduction.[85] While there is little empirical evidence supporting the effectiveness of disaster education, it seems that formal schooling remains a key player in the success of disaster education efforts. For instance, there is evidence that formal education enhance knowledge of climate change and adaptation. A study of administrative and management personnel from governmental departments responsible for climate change adaptation planning in China showed that the respondents with higher level of education are less likely to mention lack of professional knowledge as a barrier to climate change adaptation planning.[86] Likewise, after receiving a booklet on disaster preparedness or attending a training workshop, it is found that more educated individuals are more likely to prepare for emergencies.[87] This suggests that investing in universal primary and secondary level of education will have a spill over effect on building resilience and adaptive capacity. Indeed, education is key to achieve all of the newly endorsed 17 Sustainable Development Goals (SDGs) ranging from poverty eradication, gender equality, access to clean energy, health, climate actions and so on.

3.2.3: What types of education interventions have been shown to encourage more sustainable consumption, lifestyle and production practices?

3.2.3.1: Evidence on the role of formal education in sustainable lifestyle and consumption

The relationship between education and sustainable lifestyle and consumption is rather complex. At the country level, based on the environmental Kuznets curve (EKC) hypothesis, it is expected that the high levels of education raise environmental awareness and empower citizens to demand for higher environmental standards. This consequently contributes to the emergence of an EKC – that is an inverted-U-shaped relationship. Originally, the EKC hypothesis describes the relationship between various indicators of environmental degradation and income per capita.[88] [89] It is hypothesized that environmental degradation and pollution increase in the early stages of economic development, then the trend reverses when income per capita rises beyond a certain point. Thus, at high-income levels economic growth, environmental degradation decreases leading to environmental improvement. To date, empirical results on the relationship between economic growth and environmental quality remains inconclusive depending on a set of countries being investigated and both outcome and independent variables being accounted for.[90] [91] [92]

With respect to education, many studies show that better level of education or higher literacy rates have positive effects on environmental quality such as lower atmospheric and water pollutions (Torras and Boyce 1998), higher percentage of protected area (Bimonte 2002), lower rates of deforestation (Bhattarai and Hammig 2004; Ehrhardt-Martinez 1998), environmental sustainability (Park et al. 2007) and reduction of municipal solid waste (Arbulú et al. 2015). The effects of education found are independent of per capita income. Education contributes to environmental quality through many channels both those related to preferences and opportunities. Regarding deforestation, for instance, it is explained that improved level of education translates into greater opportunity for non-farm wage income, flexibility of labour migration and engagement in other employment and economic activities which place less demand on land clearing (Wyman and Stein 2010). Likewise, education may raise knowledge and access to information about the consequences of environmental damage and consequently enhances public participation in better enforcement of laws and regulations as well as willingness to pay to protect the environment (Munasinghe 1999). Furthermore, education facilitates adoption of improved or cleaner technology. In terms of preferences, education is associated with greater concern about the environment or climate change. Accordingly, possibly to due to better knowledge and greater purchasing capacity, there is evidence that individuals with higher level of education are more likely to translate their concern for the environment into consumption reduction actions (Ortega-Egea and de Frutos 2013).

Correspondingly, there is considerable evidence at the individual level regarding the relationship between educational attainment and a wide range of pro-environmental behaviour including consumption, conservation and lifestyle. In terms of consumption, education is found to be associated with food choices that are less damaging to the environment. Consumers with higher level of education are more likely to be willing to pay for eco-labeled seafood in China (Xu et al. 2012), purchase eco-labeled and organic food products (Blend and van Ravenswaay 1999; Lockie et al. 2004; Ngobo 2011), eat less meat (De Backer and Hudders 2015; Graça et al. 2015). Likewise,

highly educated individuals are also more likely to purchase eco-labeled, higher efficiency electrical appliances (Flamm 2009; Ma et al. 2013; Wijaya and Tezuka 2013) and adoption of fuel-efficient or alternative fuel vehicles (Mannberg et al. 2014; Potoglou and Kanaroglou 2007).

Likewise, in many low and middle income countries especially in Sub-Saharan Africa and South Asia where access to modern energy services remain limited, the education level of household members is consistently associated with household energy choices. Traditional fuel types do not only pose a major threat to health due to smoke from combustion contributing to indoor air pollution, but also a threat to environmental sustainability due to high concentration of methane and black carbon contributing to CO_2 emissions. Households with higher level of education are more likely to choose a clean, efficient and modern sources of energy e.g. liquefied petroleum gas and electricity as opposed to kerosene, charcoal or fuelwood in Bhutan, China, Ethiopia, Ghana, Kenya and India.[93 94 95 96 97 98 99] In rural Bangladesh, it is found that installation of solar panels is higher among households with better level of education.[100] Similarly, in Ethiopia, households where household heads have higher educational levels are more likely to adopt biogas technology, modern renewable energy system used for electricity production.[101] In this context, education provides both better knowledge on the benefits of modern fuels usage as well as affordability (due to the association between education and economic conditions).

With respect to conservation and lifestyle, generally the relationship with education varies with behavioural measurement. On the one hand, empirical studies based on self-reported environment related behaviour commonly found the positive relationship between education and pro-environmental behaviour. This includes recycling,[102 103 104 105 106] energy conserving practices,[107] water saving behaviours,[108] and a wide range of carbon emission reduction actions e.g. reducing the use of car, avoiding taking short-haul flights, reducing the consumption of disposable items and buying seasonal and local products.[109] Moreover, exploiting changes in compulsory education laws to correct for the identification problem of endogenous educational attainment, a few studies have further shown a substantial causal effect of education on pro-environmental behaviour.[110 111]

Nevertheless, studies of pro-environmental behaviour often rely on self-reported behaviour which can be subject to social desirability bias, especially when the highly educated are more aware of what behaviours will be positively evaluated by others. Indeed, when comparing household energy use with self-reported pro-environmental behaviour among Dutch households, Gatersleben et al. (2002) revealed that people who reported to act in a more environmentally-friendly way do not necessarily use less energy.[112] In this regard, it is important to also consider studies that use objective measures of consumption patterns.

Indeed, while literature that rely on self-reported pro-environmental behaviour commonly report the positive effect of education, studies estimating direct and indirect household energy use, water consumption and emissions produce differing results.[113 114] These studies generally employ micro-level data such as household expenditure survey to derive energy use or CO_2 emissions. On the one hand, a series of studies reported a positive relationship between education and, for example, transport emission in the UK,[115] total CO_2 emissions, indirect emissions and transport emissions in the UK even after controlling for income,[116] and household embedded carbon emissions in China.[117] It is explained in one qualitative study that higher consumption and travel of people with high

education are part of their identity.[118] In contrast, many other studies reported a negative association between education level and energy consumption or emissions. In estimating CO_2 emissions based on household sociodemographic characteristics in the UK, Baiocchi et al. (2010) find that emissions increase with income but decreased with education.[119] Using household consumption expenditure data, Pachauri (2004) finds that households where the head is illiterate has higher per capita energy requirements as compared to the literate head in India.[120] Distinguishing between household direct and indirect energy use in China, Golley and Meng (2012) find that direct emissions is negatively associated with education while the opposite is true for indirect emissions.[121] The more educated households may adjust their direct energy consumption patterns given that they are more aware of the adverse health and environmental consequences of certain energy sources, especially coal. However, with respect to indirect emissions such as transportation or food, higher consumption associated with lifestyle of the more educated contributes to higher indirect emissions.

Since education is also linked with economic affluence, this consequently contributes to potential higher demand for energy and unsustainable consumption e.g. increase in meat consumption and car ownership. Accordingly, some studies have reported no or negative effects of education on the environment. At the country level, the EKC hypothesis is not uniformly supported by the literature. For instance, Hill and Magnani (2002) find that education – measured as the average number of years of schooling in the population aged 25 – is one key determinant of the level of a country's pollution emissions.[122] However, the result is counterintuitive such that higher educational levels increase pollution possibly because for low-income countries improvements in education levels increase access to polluting technologies such as cars. A similar result is reported by Gangadharan and Valenzuela (2001), showing that level of education has a positive relationship with environmental stress, especially regarding to commercial energy use and CO_2 emissions.[123] In fact, environmental quality depends considerably on policies and regulations.[124] Since highly educated individuals are more likely to be concerned and are more willing to pay to protect the environment,[125][126][127][128][129]it is possible that they will push for "greener" environment later after the country has achieved a certain level of economic development.

Furthermore, while consumption tends to increase with education due to income rise, people with higher education may have better knowledge and greater capacity to consume in a sustainable manner. For instance, while food consumption is found to increase with educational level in China, households with higher level of education also produce less food waste.[130] Therefore, overall, we may expect that education is positively associated with sustainable lifestyle and consumption. This is because those with higher level of education are likely to have greater access to information and better understanding of the benefits of a cleaner environment and a reduction in health risks related to environmental pollution.

3.2.3.2: Environmental-related education/intervention

The IPCC Working Group III: Mitigation has highlighted how changing lifestyle choices are crucial for climate policy. Consumption patterns and lifestyles such as those related to transportation and residential sectors have direct impact on energy consumption and emissions. Consequently, it is commonly held that raising public awareness of their contribution to global CO_2 emissions through

environmental education can promote changing in behaviour.[131] Environmental and climate change education can be integrated in school curricula as well as in non-formal education programmes.

3.2.3.3: Formal education programmes

In terms of formal education programmes, there exist a number of nationwide, whole-school initiatives which have implemented a range of innovative approaches to environmental education and sustainability. A whole-school approach calls for holistic integration of environmental, climate change or sustainability education throughout the formal curriculum, rather than being taught on a standalone basis. In this approach, schools are also perceived not only as training grounds for sustainable and environmentally friendly practices through curriculum but also as a showcase of good environmental management in a community. Some scholars believe that pupils (children) can act as mediators of social and environmental change among their parents and other community members through raising students' concern about the environment in the classroom (Ballantyne et al. 2006). While the whole-school approach for sustainability and sustainable development education has been promoted by various agencies e.g. the European Commissions, UNESCO, UNICEF there is little, high quality, systematic evaluation and scientific studies on implementation and effectiveness of these programmes.[132 133]

Although there has been growing empirical research on environmental knowledge, attitudes and behaviours of school children, there are less studies that focus on the outcomes of environmental education interventions.[134] In particular, there has not been much systematic empirical evaluation of the effectiveness of environmental education programmes.[135] A comprehensive review of 110 empirical studies published in 1993-99 on primary and secondary age students by Rickinson (2001) on learners' environmental knowledge, attitudes and behaviours and learning outcomes showed that most evaluation studies are related to special educational programmes rather than regular practices and to short-term as opposed to long-term impacts.[136] In general, there is evidence of significant gains in students' environmental knowledge, changes in attitudes, willingness to plan and take action for the environment at least in the short term. Likewise, it has been shown that children who have received environment educational interventions can influence their parents' environmental attitudes and behaviours through intergenerational discussion and socio-cognitive interaction. Compared to parents of the control group, parents of the programme participants significantly exhibited greater awareness of environmental issues and engagement in pro-environmental behaviours.[137 138]

However, the durability of learning outcomes is questionable. Some studies reported retention of pro-environmental attitudes, knowledge and conservation behaviour a few months after the education intervention (e.g. Dettmann-Easler and Pease, 1999),[139] while others found the level of concern about the environment declined after a few weeks, sometimes even below the pre-course levels (e.g. Uzzell et al. 1995).[140] There is indeed the lack of follow-up study evaluating the persistency of the learning outcomes sometime after the educational intervention. In addition, intended outcomes are only partially realised in many occasions (Kortland 1997).[141]

The inconsistencies in the findings are due to many reasons as described below:

1) Sample selection: The criteria for selecting samples of schools and students are often not well explained. Further, the sample size of students under evaluation can be as small as only ten students making it difficult to generalize the findings to a wider population.

2) Study design and analytical method: Many studies did not have a control group or a pre-test before intervention. This can lead to Type I errors where a true null hypothesis is rejected.[142] Generally, questionnaire instruments were not tested for validity and reliability nor based on previously used attitude scales. Thus, it is almost impossible to compare the findings across studies. Furthermore, most evaluation studies are based on descriptive analysis mainly frequency comparison without accounting for relevant individual and household characteristics. It is therefore difficult to draw a conclusion whether the effectiveness of the education programme is due to selection upon other characteristics rather than the treatment effect of the programme itself.

3) Type of education programmes: There are not many studies that analyse how and why certain programmes are more effective than the others. Most studies commonly report whether there is an effect while in fact different programmes e.g. residential field courses and school-based initiatives with particular teaching approaches, content areas or skills can yield different learning outcomes.

In designing successful environmental education programmes, teachers and policy makers need to consult extant evidence base research which share a similar geographical context and target age groups. Different intervention strategies e.g. out-of-school visits to public gardens, school-based programmes including elements of community and parental involvement and environmental curricula may work for certain age groups and differential aspects of learning outcomes i.e. attitudes, knowledge and behaviours.

3.2.3.4: Informal education programmes

In general, traditional education programmes and mass media campaigns which simply disseminating information to raise pro-environmental knowledge and attitudes often do not translate into behavioural change.[143] [144] [145] Environment-related education includes tropical conservation education program,

A review of 56 reports on conservation education programs between 1975 and 1990 in different world regions by Norris and Jacobson (1998) reported the low rates of inclusion of program evaluation in the reports.[146] For 30% of the reports where evaluation was available, the success rates were low and the program success is correlated with program longevity as well as formative or long-term evaluations in the program design. Most program evaluations were carried out in a short time frame. Frederiks et al. (2015)[147] conduct a comprehensive review of effective intervention strategies. Two important points that emerge are to: (1) keep messages simple as when faced with uncertainty, people generally rely on simple decision-making heuristics;[148] and (2) frame pro-environmental behaviour as normative, as there is a lot of evidence demonstrating that the conveying of social normative information is effective in promoting pro-social and altruistic behaviour, which includes pro-environmental behaviour.[149] [150] [151] [152] [153] One example is that, when given information

comparing their own energy use to the energy use of their peers, people consumed less energy than households receiving only energy saving guidelines.[154]

3.3: Education and energy

This section examines the links between education and energy access and consumption, both in terms of the role of education in promoting sustainable behaviour and in terms of the important contribution of modern energy to children's schooling.

The notion that, at a given level of income, education has a positive contribution to make to sustainable energy consumption patterns is partly based on theoretical considerations. After all, "the very nature of ecology with its complex interactions between organisms and environment serves to make its subject matter difficult to understand and assimilate" (Maloney et al., 1975, p.585, quoted by Diamantopoulos et al. 2003, p.472).[155] It stands to reason that effective behavioural change is difficult as long as people do not actually understand where in their households the most energy is consumed, for example.

In this context, Zografakis et al. (2008, p. 3227, referring to Newborough et al., 1991) note the distinction between "two types of energy education […]: one which focuses on developing energy professionals and another which aims at producing a more energy-literate society via compulsory primary and secondary education."[156] A similar distinction is made elsewhere in this report, when it comes to the dual role of the education system in producing both health professionals and promoting healthy behaviours, for example.

This view, that "energy squandering could be better remedied by education and legislation" (Newborough and Probert, 1994),[157] is strengthened by the long-standing observation that the main barrier to greater energy economy is not technological, or even economic, but plainly a "lack of knowledge" (Bittle et al., 2009, quoted by deWaters and Powers, 2011).[158] Because the barriers to greater energy conservation are almost entirely "soft", education has a role to play in overcoming all forms they take, which Weber (1997) identified as institutional, market, organizational and behavioural ones. It is noteworthy that the conclusion that "education is one of the best ways to transform the human behavior in for the rational use of energy" (Dias et al., 2004, p. 1339)[159] is reached by energy researchers themselves, not just advocated by educationalists. Further, what they characterise as good energy education overlaps significantly with what is "good education": interdisciplinary, holistic, inquiry based, experiential, engaging, use case studies, project-based, using the campus as a laboratory.[160]

In terms of individuals' own behaviour, it is not just the short-term daily patterns that are at stake (turning off appliances, optimal use of fridge, use of public transport), but also medium-term behaviour (choice of appliances, travel habits), and their contribution to long-term structural factors (residential preferences). The question of the acceptance of interventionist energy policies/tariffs illustrates that it is not just behaviours that matter, but also attitudes.[161] It is common in this context to speak of "energy literacy", comprising of cognitive (knowledge), affective (attitudes, values), and

behavioral dimensions. The distinction is important, because both in settings with low levels of energy literacy[162] and high levels of energy literacy,[163] there is a distinct gap between people's knowledge and their actions when it comes to energy preservation. This gap may contribute to the fact that while some research confirms the anecdotal impression that "green" consumers are more likely to be highly educated,[164] others have taken a more sceptical view in light of more ambiguous findings.[165] Diamontopoulos and colleagues note a tendency in the literature to find a positive association between general education and environmental measures, but found that all socio-demographic predictors only accounted for less than six percent of the variation in the outcomes in their own (primary) data. More recently, and with an econometric causal analysis, Meyer (2015) does conclude that (general secondary) "education causes individuals to be more concerned with social welfare and to accordingly behave in a more environmentally friendly manner", at least in Europe (p.105).[166] However, the magnitude of the estimated effects are meaningful, but rather moderate. In addition, his estimation strategy implies that the results are informative of the effect of an extra year of education on the behaviours of individuals on the margin of dropping out of secondary school. They do not necessarily indicate the impact of expanding secondary schooling overall.

The evidence is perhaps more encouraging with respect to targeted energy education. In an explicit cost-benefit analysis in Brazil in the late 1990s, education and training programmes for energy conservation were found to actually be the cheapest interventions by far in terms of cost per kWh saved.[167] These programmes were not necessarily school-based, but if it is true elsewhere that as in Taiwan, "most students reported that school had contributed most to their understanding of energy issues and problems" (Lee et al., 2015, p.105),[168] it makes sense to build on that existing channel. This need not be limited to the transmission of knowledge, but includes, for example, the 'normalisation' of energy-saving behaviour practised at school. Nor does it only reach the children, who are expected to influence their households' behaviour generally. However, "although numerous energy education and information projects are currently taking place in Europe, little research has been done in the investigation of their success" (Zografakis et al., 2008, p.3227).[169]

On balance, higher levels of education may be broadly associated with greater energy literacy and energy preservation, but the link is relatively weak and contingent. In particular, this means that this effect is very unlikely to offset the greater overall level of consumption arising from the higher average incomes of the better educated.

Related to the issue of environmentally sustainable behaviour is the type of fuel households use for cooking and heating. However, in low-income settings where some households fall back on the collection of firewood or dried dung, in other words: where the question is not which form of "modern" energy households utilise, but whether they utilise any modern source instead of highly inefficient alternatives, even the serious environmental concerns (cooking stoves alone account for over half of all anthropogenic emissions in Africa and South Asia (Bond et al., 2004a, 2013, cited by Rao et al., 2013, p.1122)[170] fall back behind the implications for health and socioeconomic development, including education. Conversely, adoption of clean cooking stoves offers 'co-benefits' for both health and the environment.

Indeed, indoor air pollution is one of the greatest health threats in many low-income settings, and is projected to cause more premature annual deaths by 2030 than HIV/AIDS and malaria combined.[171] Women and children especially are even more vulnerable, both because in general they spend more time at home and indoors, but also because children's less-developed respiratory system is more vulnerable; Indeed, half of all pneumonia deaths among children under five in developing countries are attributed to indoor air pollution. The air pollution from pre-modern fuel is not the only detrimental health impact of 'energy poverty', the lack of access to affordable modern energy. Other negative outcomes include poor nutrition from improperly cooked food, the consumption of un-boiled water, and the lack of refrigeration. Moreover, there are frequent accidents involving the ingestion of spilled kerosene or fires resulting from a reliance on candlelight.[172]

With respect to the adoption of more efficient, low-emission cooking stoves, education can potentially make both a direct and indirect contribution. Ekouevi and Tuntivate (2011) consider health education and women's employment to be key strategies for helping households "move up the energy ladder."[173] Their 'lessons learned' for what makes household energy programs successful include awareness, education, and information regarding inefficient and unhealthy stoves. There is a strong positive association between female education and choice of modern energy and technologies in a number of studies including this variable.[174] Randomized Controlled Trials (RCTs) on stove technology, mainly from the health sector, provide mixed evidence on the effectiveness of information campaigns; In particular, increased adoption does not necessarily translate into continued use. Moreover, the generally positive association between education and adoption of "improved cookstoves (ICS)" does not fully extend to the adoption of clean fuel.[175]

In terms of the effects of cleaner and healthier cooking stoves on children's educational outcomes, a major pathway is a potential reduction in the time children, and especially girls, spend collecting firewood or other traditional fuels. The time saving can be considerable, given that in rural India, for example, women have been found to spend one or two hours or even more on this task every day.[176] A reduction in this time investment therefore potentially frees significant time for study. Unfortunately, in practice, the time saving is strongly diminished if water has to be collected outside the home anyhow.[177] [178]

The link between access to modern energy and schooling is even clearer when it comes to electricity. This offers additional potential for releasing girls' time from household chores, time that can instead be spent attending school or studying. This effect is one reason to perhaps expect girls' schooling to benefit even more from access to electricity than that of boys,[179] an expectation that is not, however, always fulfilled.[180]

In addition there is the direct benefit of adequate lighting, that can dramatically increase the hours available for reading, reducing the need for school children to study under streetlight; a familiar scene in many energy-poor neighbourhoods. Indeed, in rural Bangladesh, Khandker and colleagues (2009) found children's education to be one of the "major uses" of electricity at home,[181] and some estimates find education gains to be among the largest, or even the single largest, economic benefit from household electrification (excluding business activity).[182]

Until relatively recently, research studies[183] struggled to uncover unambiguous evidence on the actual educational benefits that go beyond the kind of purely correlational evidence such as shown by Anderson et al. (2005),[184] and concluded that a causal link may be difficult to establish.[185] However, recent attempts to tackle the question with sophisticated econometric estimations have indeed confirmed a positive impact of electrification on schooling.[186] A recent wide-ranging review of more than ten studies attempting a causal analysis of education impacts across African, South Asian, and South-East Asian countries has concluded that improvements in education from electrification are "widely and consistently reported" (Pueyo et al., 2013, p.54).[187] Notably, this applies across various outcome measures: study time (input), enrolment (process), and years of schooling (outcome).

Apart from direct effects, another aspect is that home electrification greatly increases access to modern mass media: radio, television, and – more recently – the internet. This potentially offers both direct benefits for the opportunity to gain and practice literacy, there is also some evidence that the exposure to non-traditional lifestyles can have a considerable effect on women's standing,[188] with positive knock-on effects on girls' schooling.

While wealthier households tend to consume more electricity (no doubt partly because of the higher likelihood of owning appliances),[189] it is worth noting that traditional energy sources are actually more expensive in the long run. One estimate concludes that with respect to the running cost of providing 50,000 hours of home lighting, kerosene lamps are an order-of-magnitude more expensive than incandescent electric lights, which in turn are an order-of-magnitude more expensive than LEDs.[190] This is another example of where poverty creates a double disadvantage.

The link between electrification and education is not limited to the household level. At the community level, electric street lighting, for example, may increase security out on the street in the early morning or evening hours, making it easier for girls in particular to safely attend school. A crucial factor is the electrification of schools themselves. The scale of the problem is enormous: an estimated 90 percent of students in sub-Saharan Africa attend primary schools that lack electricity,[191] and taking the schools as the unit of analysis, in most SSA countries, this concerns a vast majority of schools.[192] Across all developing countries, half of all children attend primary schools without electricity,[193] with a large urban/rural gradient. The electrification of schools offers similar benefits as the electrification of children's homes, in additional to its own specific ones. With respect to the former, in the absence of electricity, school meals prepared without the benefit of modern cooking solutions may require students to collect firewood, decreasing time for learning (see the Practical Action report for an example from Bolivia).[194] Similarly, electric lighting greatly increases the available time for teaching and learning, space heating and cooling (depending on climate and season) create a healthier environment for children and teachers to spend their time in, and powered water pumps allow for more hygienic sanitation.

In addition, there are specifically pedagogical benefits, such as the possibility of operating tools and equipment for vocational training, but also ICT for general learning. The optimistic perspective asserts that "perhaps the most transformative impact ICT can have on schooling, however, is through the internet […] that serves as one of the best tools for exposing students to a broad set of information and experiences that can become central to their education, socialization, and future employment" (UNDESA 2014, p. 11),[195] or using less demanding technology, but nevertheless reliant

on electricity: the possibility of creating photocopies, for example. Given the plethora of plausible mechanisms for such a linkage, it is unsurprising that indeed there is a strong correlation between school electrification and enrolment and/or the quality of education.[196] In addition, school administration benefits from the possibility of modern record keeping, and in the absence of electricity and other modern infrastructure, the problem of recruiting and retaining staff for schools, especially in rural areas, is further exacerbated. There are, however, numerous challenges to be overcome in order to achieve more widespread school electrification, not limited to cost.[197]

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PART 4: PROSPERITY

> **Prosperity**
> We are determined to ensure that all human beings can enjoy prosperous and fulfilling lives and that economic, social and technological progress occurs in harmony with nature.
> (UN, 2015, p.3)

4.1: Inclusive economic growth

In the economics and development literatures, "inclusive growth" is one of the most frequently mentioned terms, yet it lacks a consistent definition agreed to among academicians and experts. It is often used interchangeably with "broad-based growth," "shared growth," and "pro-poor growth". The main concern of pro-poor perspectives is reducing inequality and improving the relative and absolute welfare of the poor, including through income redistribution. With a different emphasis, inclusive growth concerns growth which is broad-based across sectors, creating productive employment opportunities for the majority of the labour force. In this approach, increasing productive employment opportunity is the means to increase mainly the absolute, not necessarily the relative, income of the excluded. Moreover, this growth requires productivity improvements, technological breakthroughs, and other innovations in order to be sustainable.[1][2] Thus, both the pace and pattern of growth matter for sustainable, fast economic growth, and poverty reduction.[3] A report published by the IMF argues that "for growth to be inclusive, productivity must be improved and new employment opportunities created. Inclusive Growth is about raising the pace of growth and enlarging the size of the economy, while levelling the playing field for investment and increasing productive employment opportunities."[4] Education has a crucial role to play in this respect, both historically and in terms of future outlook.

4.2: Structural transformation, productivity and education

The importance of sectorial transformation and factor reallocation to fast and sustainable economic growth has long been recognized in the development and economics literatures.[5][6][7][8][9][10] The notion of structural change involves the movement of labour from low-productive to higher productive sectors and the growth benefit from it is higher, the higher the gap in productivity level between sectors.[11] Such economic transformations, particularly at the early stage of development, makes an important contribution to broad-based and sustainable economic growth by shifting a large share of underemployed labour from the less productive agricultural sector to sectors with higher marginal productivity of labour. Historically, almost all episodes of rapid economic growths were significantly accompanied by such structural changes.[12] No country has achieved significant economic growth and poverty reduction without a structural transformation and economic diversification at some point or period of time.[13] Labour reallocation explained about 15-25 percent of growth differentials observed, among countries, over the period 1960-1990.[14][15] Indeed, it has been argued that the slower than average growth rate observed in SSA is fully explained by the slower rate of labour

reallocation.[16] In today's advanced countries, over the 19th and 20th centuries, economic growth rates has been strongly associated with a sharp reduction in both the employment share and the nominal value added share of agriculture while employment share and the nominal value added share in services has been rising.[17] Similarly, the impressive economic growth experienced by some emerging economies is at least partially related to rapid labour productivity growth achieved mainly by reallocation of large numbers of workers out of less productive agriculture and into more productive wage jobs. Crucially, this allowed a large share of the population to take part and benefit from the expanding economy. China and India sustainable growth is accompanied by a declining employment share for the agricultural sector from 71 percent in 1978 to below 40 percent and 50 percent, respectively, in 2008.[18] [19] In China, this reallocation of labour has contributed to about one-fourth of growth in output per worker.[20] In Vietnam, where more than half of the workforce is working outside of agriculture and is increasingly focused on wage employment, the reallocation of labour accounted for 2.6 percent of the 4.2 percent of labour productivity growth. Moreover, the fast economic growth of Vietnam, averaged of 7.5 percent over the last two decades, helped poverty to fall down from about 58 percent in 1993 to below 10 percent in 2010.[21]

Despite evidence that in low income countries, migration out of rural area and occupational shift out of agriculture have already been a way to escape poverty for many,[22] there continues to exist a wide residual gap in productivity across sectors which represent the allocative inefficiency that persist in the regions. According to national accounts data, labour in developing countries is 4.5 times more productive outside of agriculture than in it, even 6 times more so in Africa.[23] As a result, studies frequently attribute a significant loss in aggregate productivity to labour misallocation in low-income countries.[24] [25] Vollarth (2009) has estimated that variation across countries in the degree of misallocation accounted for 30-40% of the variation in income per capita, and up to 80% of the variation in aggregate total factor productivity across countries.[26]

Questions of measurement and interpretation aside (even though they are sufficiently severe even for the well-studied question of income inequality that there is not even a consensus on the direction in which it was changing in developing countries during the period 1990-2010 – see, for example, Justino and Moore, 2015),[27] the critical issues are, firstly, whether economic returns to education are changing, and secondly, whether they are diminishing at higher level of schooling, or on the contrary, increasing. With respect to the former, note that even returns that increase faster at lower levels do not necessarily decrease inequality. Evidence from India suggests that "higher economic returns to education make children's current schooling more valuable in the labor market and thus may cause a poor family to withdraw children from school and put them to work".[28] With respect to the latter, for some twenty years, conventional wisdom held that the highest returns were associated with primary schooling. While an almost exclusive focus on the lowest level to the detriment of secondary, technical and vocational, and higher education was roundly criticised by education experts, at least in principle this yielded a complementarity between poverty reduction and educational development. More recent evidence has been interpreted as calling into question the assumption of decreasing educational returns, and suggesting that returns in many settings may be more rapidly increasing, or be higher already, at higher levels of schooling (Colclough et al., 2009,[29] review a large number of studies), including when self-employment and agricultural employment are taken into account.[30]

4.3: Education and the labour market

Education promotes broad-based, fast economic growth by facilitating factor reallocation as well as by boosting with-in sector productivity of capital and labour and creating decent job. Studies shows that education-induced economic growth by removing the barriers to efficient allocation of inputs and promote a faster reallocation of labour.[31] [32] [33] [34] In the USA, the declining education costs induce an increasing proportion of the labour force to move out of the agricultural sector and into the (skilled) non-agricultural sectors, over the period 1880-1980.[35] Similarly, Lee and Malin (2009) explained that, in China, educational expansion help to overcome the labour market barriers (such as migration regulations) and induced massive reallocations of inputs towards their most productive use.[36] They further showed that 11 percent of the overall growth in output per worker, between 1978 and 2004, is accounted for by increased education with 9 percent coming through its labour reallocation effect. Yang (2004) also explained that education contribute to sustained rural income growth, in China, by raising the allocative efficiency of households. In other words, better educated households react more quickly to market equilibria and policy changes by devoting more capital and labour to non-agricultural activities which yields higher return.[37] The economic transformation and the recorded inclusive growth in Vietnam was mainly triggered by the rapid universalization of primary education and expanding access to higher levels of education. In rural Vietnam, improvement in human capital and employment in export sector accounted for 60 percent of probability of households escaping poverty in the 1990s.[38] Conversely, in low income countries the gap in skill required in more productive sectors and skill possessed by agricultural households is one of the barrier for labour reallocation.[39]

Education not only facilitates the structural transformation of the economy but in addition increases the effectiveness of the transformation. Labour reallocations that are not backed by educational expansions and transformations are less effective. Ferreira et al. (2014) have tried to demonstrate the importance of education in channelling labour reallocation to economic growth by comparing the different success stories of South Korea and Brazil, both of which experienced a massive reallocation of labour from agriculture to service sector over the period 1980-2005.[40] However, the Brazilian economic growth has stagnated after a period of fast economic growth from 1960-1980 while the South Koreans enjoyed the fast and sustainable growth over the last decades. Ferreira et al. attribute this divergence between two countries with similar pattern of labour reallocation to the difference in educational performance. While the proportion of the population with no schooling in Brazil, was almost the same as in South Korea in 1960, it was more than three times South Korea's level by 2005. In effect, in Brazil, the accumulation of low-skilled labour in the service sector caused the continuous fall of productivity in the sector and stagnation of overall economic growth. In contrast, in Korea, it is the skilled labour which used to move to service sector and lift up the growth and productivity of both the service sector and the overall economy.

4.3.1: The service sector – trends, main drivers, and future skill- and job demands

Several demographic, social and economic factors are responsible for the ongoing sectorial shift of employment and output. First: the shift in the structure of final demand from goods to services due to the low income elasticity of demand for the goods produced by the manufacturing and agriculture

sector. Second: The stronger increases in labour productivity in industry and agriculture compared to other sectors coupled with the lower demand for its products caused employment to get concentrated in service sector. Third: The increased participation of women in the labour market and population ageing increased the demand for services in the fields of health care, child care and other social assistances. Fourth: changing business models, whereby manufacturers outsource services such as logistics, marketing or legal advice to enterprises in the service sector, have caused a decline in the employment share for industry and a rise in the service sector. Fifth: the continuing liberalization of international trade that has induced a shift from the tradable sectors (industry and agriculture) to the non-tradable sectors (construction and services). Six: Technological changes automated many routine tasks which were mainly performed by the middle-skilled workers in the manufacturing sectors. On the other hand, rapid changes in technology demanded for new skills and competencies across most service sectors, resulting in the creation of new types of job and make long distance services possible.

4.3.1.1: Health care and social assistance

In line with the increasing ageing and income of many populations, the associated large number of those suffering from chronic disease, the elderly care, health care and social assistance sector will certainly continue to expand. In the US alone, health care related jobs are expected to grow by more than 25 percent in the coming decade. In the EU, in the health and social work sector, 1.8 million new jobs are expected to have been created between 2013 and 2015.[41] Moreover, in the near future, emerging economies such as China, Indonesia, Russia and India are expected to face massive health care demands.[42]

4.3.1.2: Professional, technical, and other business activities

The drivers of service sector expansions are expected to positively and strongly affect jobs in the professional and business services. Jobs in management, scientific and technical consulting services are the main job creators in the near future of Europe and the US. In the EU, the professional service sub-sector is expected to create about 3 million new jobs while jobs as technicians and associate professionals (covering highly-skilled occupations such as associate professionals in physical and engineering science, life science and health, teaching, finance and business sectors, as well as public administration) will expand in all European countries and may generate more than 5.2 million jobs up to 2025.[43] Similarly, in the US, professional and business service employment is expected to grow by 4.7 percent per year and reach 1.6 million by 2020, one of the largest and fastest employment increases of all industries.[44]

4.3.1.3: Computer services

In the coming decades, industries and other companies are expected to increasingly become automated and digitalized and the demand for increased network and computer systems security, mobile technologies, and custom programming services will rise. As a result, employment in the computer systems design and related services industry is projected to grow in many advancing countries. Jobs in this sector are expected to grow by 8.8 percent, in all EU-member countries except Germany, while in the US it is projected to add 671,300 jobs up to 2020.[45] [46]

As data usage grows exponentially with cloud computing and other storage needs, the demand for data analysts, information managers, cyber-security specialists and many other skilled professionals is rising too.[47] In line with this, the need for software publishers is also growing for a more secure network. Between 2010 and 2020, employment in the software publishing sector, in the US, is projected to grow from 91,800, to reach 351,600.[48]

4.3.1.4: Hospitality, tourism, and creative sectors

The ageing population, income growth are contributing to a growing market for tourism and related activities.[49] The hospitality and tourism industry is one of the largest employer which require different skill levels and a relatively low-entry barrier route into the job market for the youth, women and migrants. In 2013, it was responsible for the employment of 265 million people around the world. In the coming decade, the sector is expected to grow at an average annual growth rate of 4.2 percent to create 74.5 million new jobs (WTTC, 2014).[50] In the EU-member countries, jobs in hotel and catering sector are expected to rise by 10.2 percent between 2013 and 2025, the third fastest growing sub-sector.[51] Similarly, in the US, the leisure and hospitality sector is expected to gain 1.3 million jobs, to reach nearly 14.4 million, over the 2010-2020 period.[52]

The increasing digital revolution and technological transformations in communications will create more demand and jobs in the creative sector too, both in the developed and developing countries. In the EU the sector accounts for more than 6.7 million jobs in 2013 and expected to create more jobs in the future. Similarly in Africa, creative sectors such as Nollywood and other formal and private cultural activities are creating immense employment opportunities.[53]

4.3.2: Future skill gaps and demands in the labour market

The structural changes outlined above will create an increasing demand for a high-qualified and adaptable workforce. Cedefop (2013) indicate that the future skills needs move in the direction of higher educated and better skilled workers.[54] It projected that, in the EU-member countries, the employment share of highly-skilled jobs will increase from 41.9 % in 2010 to 44.1 % in 2025. On the other hand, most jobs in non-manual skilled occupations will require highly qualified workers and the share for the low skilled would decline to 18 percent. The future skill and job patterns call for more training and skill formation in technical as well as managerial occupations. Partnership for 21st Century learning (2011)[55] and Trilling and Fadel (2009)[56] argue that the three most important set of skills to flourish in the future labour markets are "learning and innovation" skills, "information, media and technology" skills, and general "life and career" skills. In this vision of the future of work, the most important skills will be relatively high-level and transferable.

Specifically, these skills include critical thinking and problem solving, communication and collaboration, creativity and innovation. Organizing and analysing complex data, understanding systems and interactions, and producing novel and innovative solutions are the skills most valuable to modern companies. In addition, International experience, cultural awareness and communication skills, are likely to be highly valued as global value chains expand. Working effectively with large groups of people involves the ability to adapt language and behaviour.

The future labor market requires the ability to manage, understand and interpret large amounts of data. There will also be a need for a worker who are able to intelligently engage, access, evaluate, apply and manage information as well as high level of digital competence and adaptability to new technological developments. Flexibility and adaptability to globalized changes which require new collaborations and new resources demands motivated, self-reliant individuals who are capable and comfortable with self-directed initiatives. Similarly, the ability to manage diversity and inclusion in in multi-cultural teams will become important.

The major challenges of the future labor market will be the shortage of high skilled labor and the need to create enough new jobs often for low and medium skilled labor. To overcome these challenges, more integrated and cross-sector collaborations are crucial.[57] Moreover, labor market polarization will continue to affect many advanced countries.[58] Accordingly, there is a need to improve flexibility and transparency of the transition between different levels and types of education, which could potentially increase the number of students who successfully complete their education.[59] Vocational education should be strengthened and be provide a path to both work and higher education. Moreover, on job training will be provide an option to equip low and medium skilled workers with the right skill. This motivates the increased interest in public-private partnerships.[60] [61] [62]

4.3.3: Labour market polarization

Apart from shifts in sector composition of employment, the ongoing driving forces has been affecting the skill composition of workers in advanced economies. New technologies such as ICT have been automating routine works and reduce the demand for medium skill works, particularly in manufacturing sector, such as bookkeeping and clerical works. On the other hand, these rapid technological changes has been increasing relative demand for non-routine tasks performed by high skill workers. Nevertheless, the non-routine manual works that require low-skill workers such as cleaning and security have not been affected by the skill biased technological changes.[63] [64] [65] This again has also caused wage-polarization as technological change increase the demand, productivity and wage of the skilled workers while the wage of low-skilled workers remained unchanged. For example, In the United States, non-routine cognitive occupations pay on average US$33.81, while earnings in routine and non-routine manual occupations pay US$18.78 and US$14.93, respectively.[66] The hollowing out of the medium skilled jobs coupled with the wage-polarization has been responsible for the rising inequality in the advanced economies.[67] Similarly, globalization and the rising international trade has increased the relative cost of production in developed economies and, thereby, offshoring of certain parts of the production process, contributing to the fall in many medium-skilled manufacturing jobs in advanced economies.[68] Outsourcing of production process are partially explained by the technological progress.[69]

4.4: The informal sector, education, and skills development

According to the International Labor Organization (ILO) definition, the 'informal economy' encompasses all economic activities by workers and economic units that are – either in law or in practice – not covered or insufficiently covered by formal arrangements.[70] Traditionally, the informal

economy was considered to be a temporary phenomenon, marginal and peripheral, not linked to the formal sector, and actively discouraged by policy makers.[71] However, more recently, the informal sector has been expanding and increasingly recognised as a major source of employment and earnings for rapidly growing populations. Estimates show that the non-agricultural employment share of the informal workforce, between 2005 and 2010, was 58% in Northern Africa, 66% in SSA, 58% in Latin America and the Caribbean, and 44-68% in Asia. Unsurprisingly, therefore, it remain a significant contributor to the GDP of low-income countries. Excluding agriculture, the informal sector represents nearly half of non-agricultural GDP in sub-Saharan Africa, more than 46 percent in India and nearly one-fourth in Latin America.[72]

The informal economies are generally small, unregulated and have low entry requirements. Informal firms employ, on average, only four people, compared to 126 employed in the average formal firm.[73] A greater share of people employed in the informal sector are self-employed. In sub-Saharan Africa, self-employment represents 70% of informal employment, 62% in North Africa, 60% in Latin America, and 59% in Asia.[74] Being unregulated, it does not necessarily comply with regulations concerning registration, tax payment, conditions of employment and operating licenses.
Much of the informal segment of the workforce shares a number of common characteristics. It is a "low skill, low productivity, low wage, and low investment" sector.[75] The sector employs labour intensive technologies with little to no capital, generates small and unpredictable incomes, and highly unstable employment.[76] La Porta and Shleifer (2014) have showed that wages in the informal firms, averaging across countries, are roughly one-half of those in small formal firms and less than one-third of those in large formal firms and the income of the informal firm operators is unpredictable in addition to being low.[77] They further showed that the value added per employee in the informal sector ranges from 1 percent of the value in the formal sector, in Congo to 70 percent in Cape Verde.

While there are numerous other contributing factors, differences in the level of human capital are the main source of this productivity differential between formal and informal firms of the same size. A world bank Enterprise Survey result showed that about 76 percent of formal firms are running by a manager with college degree while only 7 percent of informal firms have manager of the same education level.[78] Even though the general level of formal education has been rising significantly over the past few decades, the vast majority of those in informal employment continue to have a low level of education and have received little or no formal training. In Rwanda, for example, about 60 percent of informal sector operators have some primary education and the sector employs only 8 percent of those with secondary or higher education.[79] Instead, most of those in informal employment have acquired their skills through self-learning or on-the-job training – most likely through traditional apprenticeship.[80]

Education and trainings affects workers earnings by influencing the with-in sector productivity, the type of employment obtained, and by facilitating sectorial mobility. In other words, it can enable informal workers to move into more lucrative formal employment. There is ample evidence across developing countries that better education level and training participations directed to employment in the formal sector and higher earnings within the sector.[81] [82] [83] [84] [85] Moreover, even those remaining in informal employment can benefit. World Bank (2013) household surveys in sub-Saharan Africa find a strong correlation between education and training participation and

employment in the formal and informal sectors, as well as earnings within each sector, at least at levels beyond primary schooling.[86] Lower quality as a result of rapid expansion of schools and an over-supply of primary school graduates are considered possible explanations for the lack of observable benefit at this level. And while secondary and higher levels of education promise positive returns in both sectors, they still tend to be higher in the formal than in the informal sector. For instance, the return to year of schooling in Kenya's informal sector is 8.3 percent while it is 18 percent in the formal sector. The existence of market segmentations is one explanation for this difference in return to higher education.[87] In addition, secondary and higher education programs too often underemphasize the non-cognitive skills which are vital to success in the informal sector especially, and provide only limited opportunities for the application and practice of the theoretical principles taught.[88] Though traditional apprenticeship are the main source of skill in the informal sector, it is difficult to observe a measurable impact on the earnings of those engaging in them. Low level of literacy among those who participate in such arrangements, the low skills of the master crafts-person, as well as well as an over-reliance on outdated technologies, and poor working conditions are barriers to transform skills learned through such apprenticeships into higher productivity. Only higher vocational and college certificates are positively associated with earnings of the informal sector operators, with the caveat that only a very select subset of them can boast such credentials.

Education and skill development are also a way out to the more productive formal sector.[89] People with more than primary education level are more likely to find jobs in the formal sectors and for those in the informal sector it creates an opportunity to participate in higher vocational and other training programs which facilitate access to formal sector employment. On the other hand, primary schooling is unlikely to open doors to the formal sector. People with no or only primary education are more likely to end up in the informal sector.[90][91][92] Traditional apprenticeships and lower levels of vocational schooling are not passports to formal employment. Apprenticeship do often lead to jobs outside of agriculture, but mainly still in the informal sector. For workers in the informal sector, higher level of trainings certified with diploma or advanced certificates are required to join formal employment. However, since in sub-Saharan African countries, for example, access to higher level skill trainings is biased to formal sector employees,[93] this selection is self-reinforcing.

According to Adams et al. (2013), improving the productivity and mobility of workers in the informal sector require a comprehensive strategy to remove the numerous barriers to skills development: low baseline education, unequal access to training, the presence of inefficient market incentives, the lack of interest in the needs of the informal sector on the part of public training providers, and the existence of other market constraints to training for informal sector enterprises.[94] Pina et al. (2012) also suggest the need for a holistic approaches to fill the skill gaps and productivity in the sector.[95] It includes reforming school-based programs by redesigning curricula to maximize training effectiveness, strengthening collaboration with prospective employers, and improving outreach to the informal economy, improving non-school programs with efforts such as reforming the traditional apprenticeship system, implementing targeted training programs for women and rural populations, and systematically evaluating the impact of new initiatives in these areas.

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PART 5: PEACE

> **Peace**
> We are determined to foster peaceful, just and inclusive societies which are free from fear and violence. There can be no sustainable development without peace and no peace without sustainable development.
> (UN, 2015, p.3)

5.1: Inequality, insecurity, conflict and education

According to Luckham (2015, p.28), how people experience insecurity and violence is:

> [. . .] shaped by constantly evolving patterns of social differentiation, including gender, age, class, locality, religion, ethnicity, race, etc. – and by the ways that these are transformed by violence itself. Multiple intersecting identities influence how people and groups perceive, cope with and mitigate their insecurity. The reality is that the benefits of security and the burdens of insecurity tend to be unequally shared. Those who feel most marginalised tend to lack the quality and substance of citizenship, as well as being most exposed to violence.[1]

In other words, the factors highlighted in Section 2.2 of this review all have implications for individuals' sense and state of security. While a comprehensive analysis of the multiple forms of violence that people experience within these constantly evolving patterns of social differentiation is beyond the scope of this review, examples of violence(s) experienced by vulnerable groups include gender-based violence against women as a weapon of war, the targeting of particular religious or ethnic minority groups, racial profiling by police and military, etc.

These multiple intersecting identities also play a role in determining who becomes a perpetrator of violence. Given the emergence of the global 'war on terror' and what Novelli (2010) has referred to as the "militarisation of development"[2] in recent years, there has been rising interest in the relationship between education and extremism. This research has explored how education can be used to radicalise and promote extremist views on the one hand, and how education can be used to combat extremism and promote resilience on the other.[3][4][5][6] There has been a tendency in the public discourse to assume that large youth bulges (particularly young males) are associated with political instability and violence, however, Urdal and Hoelscher (2009), analysing global data for 1960 to 2006, found that large male youth bulges are not generally associated with increased risks of social disturbance (violent or non-violent). They also found that other factors to do with higher levels of youth exclusion (for example, failing/absent democratic institutions, low levels of economic

growth, low levels of secondary education) are significantly and robustly associated with social disturbance.[7] Barakat and Urdal (2009) make a strong case for broad policy interventions in education to reduce the risk of conflict.[8]

There is an increasing body of literature on the relationship between education and conflict more broadly.[9] Perhaps the most seminal work on the relationship between education and conflict is Bush and Saltarelli (2000), which education has two 'faces' when it comes to education and conflict. First, it can have a negative face, which has to do with uneven distribution of educational opportunity, education as a weapon of repression, denying education as a weapon of war, the manipulation of history and textbooks for political purposes, issues around self-worth, and segregated education leading to reinforcement of inequality, low esteem, and stereotyping. Second, it can have a positive face, which has to do with the conflict-dampening impact of educational opportunity, the capacity of education to nurture and sustain an ethnically tolerant climate, de-segregation of the mind, tolerance of multiple languages, the cultivation of inclusive citizenship, the dismantling of the teaching of history, education for peace, and educational practice as an explicit response to state oppression.[10]

A recent study from Timor-Leste found that the short-term effects of the conflict on education are mixed, while in the long term, there was evidence of a significant loss of human capital (particularly among boys who had been exposed to peaks of violence during the 25 year conflict.[11] It is important to note that sometimes schools and other educational institutions are deliberately targeted during wars and conflicts.[1] According to the Global Coalition to Protect Education from Attack, thousands of targeted attacks on education were reported across the world between 2009 and 2013:

> The vast majority of these attacks involved either the bombing, shelling or burning of schools or universities, or the killing, injury, kidnapping, abduction or arbitrary arrest of students, teachers and academics. Some were carried out by armed forces or security forces, others by armed non-state groups or in some cases by armed criminal groups.
>
> In addition, education facilities were used as bases, barracks or detention centres by armed groups and armed forces. Moreover,

---

[1] An in-depth discussion of education in emergencies is beyond the scope of this review. For three excellent recent reviews of this topic, please see:

- Burde, D., Guven, O., Kelcey, J., Lahmann, H. & Al-Abbadi, K. (2015). What works to promote children's educational access, quality of learning, and wellbeing in crisis-affected contexts. Education Rigorous Literature Review. DFID; NYU; INEE. Retrieved from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/470773/Education-emergencies-rigorous-review2.pdf
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there was significant evidence of children being recruited for use as
combatants from schools and some instances of sexual violence by
military forces and armed groups against students and teachers.
(GCPEA, 2014, p.41)[12]

It is tempting to think about these attacks on schools as restricted to the majority world. Certainly, the GCPEA report only looks at majority world countries. However, over the last few years, there has been an increase in violent attacks on education in minority world countries. The United States has seen a devastating rise in mass school shootings since the high profile Columbine incident in 1999. While more of the attacks have happened in secondary schools and institutions of higher learning, the tragic attack on Sandy Hook Elementary School in 2012, where 20 children between the ages of 6 and 7 were among the murdered, demonstrates that no age group is immune to this form of violence.[13] The murder of 69 participants of a Workers' Youth League summer camp in Norway by far-right terrorist Anders Behring Breivik in 2011 is further evidence that the attack on education are a global phenomenon, that requires a global response.[14]

Finally, recent research suggests that for numerous countries, the security agenda is having a greater and greater influence on the development agenda,[15] with potentially detrimental consequences for 'education aid.' In contexts such as Iraq and Afghanistan, education begins to be used as an ideological tool to socialise target populations into particular (Western) ways of knowing and being as part of counter-insurgency strategies, potentially putting educational development practitioners at heightened risk.[16] In the following section, we will discuss what the literature has to say about protecting education from attack, about minimising the effects of the 'negative face' of education, and maximising the effects of the 'positive face' by turning to the relationship between education and peacebuilding.

5.2: Education and peacebuilding

Smith et al. (2010) conducted an extensive review of the literature on education and peacebuilding.[17] They found that there are three discourses which have emerged in the education literature in the past decade relating to conflict:

1. **Humanitarian response:** this discourse prioritises an 'education in emergencies' response to the negative impacts of conflict on children's education, and maximises the protection of those children.
2. **Conflict-sensitive education:** this discourse focuses on education that 'does no harm' and that looks to preventing conflict.
3. **Education and peacebuilding:** this discourse tends to be framed in terms of a developmental role for education by reforming the education sector and contributing to positive political, economic, and social transformation.

Further, they point out that programme (or grey) literature tends to emphasise protection and reconstruction, while academic literature tends to explicitly discuss the need for post-conflict

transformation, reflecting a gap between theory and practice, and a different degree of intervention, as transformation requires a more explicit commitment to social change than simple reconstruction. In the last few years, there has been a growing movement to bridge the gap, and it is now becoming more common place for academics and practitioners alike to talk about 'building back better.'[18]

5.2.1: Education planning and policies for peace

According to Smith et al. (2010), most education programming in post-conflict contexts is not being planned explicitly from a peacebuilding perspective and that peacebuilding should pay more attention to education sector reform than it currently does. There is also a concern that transitions from humanitarian to development funding for education during the peace process, if not carefully managed, can derail peacebuilding efforts. Dupuy (2008) found that while education has been on the minds of some peacemakers since the Cold War ended, there is significant variation in the way in which education is addressed and incorporated into peace agreements in terms of what is mandated for the education sector post peace-agreement signing, what type of education will be provided by and to whom, and how education is perceived in these agreements.[19]

For Kotite (2012), educational planning must consider the unpredictable nature of the world today, and be "flexible and rapid in implementation and responsive to local needs" (p.10)[20] She points out the importance of research and training in sustainable development, and recommends capacity development for conflict prevention in the education sector and other ministries, as well as analysis of the root causes of conflict and the potential role education has in mitigating tensions. Finally, there's a strong case to be made for conflict-sensitive education policies that focus on prevention and on building positive peace. [21] Not only is this form of conflict mitigation more sustainable, as it is based on building a more cohesive society, it is also a cost-effective option, as preventing conflict is much less expensive than the costs of reconstruction.[22] Further, there is tentative evidence building to suggest that success in schooling for more people reduces the likelihood of armed conflict.[23] There is a burgeoning number of resources on how to plan education for peace and to support the integration of conflict sensitivity in education policies and programmes, for example the *INEE Conflict Sensitive Education Pack*.

5.2.2: Curriculum reform and education for peace

While inequitable access to educational opportunity can lead to the outbreak of conflict, what happens in the classroom in terms of what is taught and how it is taught has important implications in terms of peace. Curricula and textbooks that privilege certain ethnic or religious groups can lead to enhanced tensions that may lead to civil conflict.[24] Shah (2012) has demonstrated how curriculum reform in post-conflict or post-colonial states is often driven by a need to construct and legitimise a new national identity.[25] However, he argues that, in the case of Timor-Leste, certain aspects of the new curriculum have effectively alienated certain population groups, in spite of efforts to build a more inclusive, democratic "Timorese" education system. In a review of 42 empirical studies from 11 countries, Paulson (2015) explores whether or not recent conflict forms part of national curricula and how teaching is approached where it does.[26] She finds that while young people were taught about recent conflict in all cases reviewed, in some cases there is no curricular guidance. There

seems to be a reliance on disseminating national narratives through a traditional, collective memory approach, narratives that are "top-down and ethno-nationalist" and that tend to rely on rhetorical devices such as "mythical past unity" and the "exceptionalism of conflict." Paulson recommends that curriculum reform actors attend to recent conflict as an "active past".

Sinclair (2010) defines curriculum as:

> the sum total of all the learning experiences that are intended and that happen within educational institutions. This includes the learning objectives, syllabi, teaching methods, instructional materials, methods of assessment, whole school policies, the 'hidden' curriculum (messages that students pick up from the school setting), the 'real' curriculum (what is actually learned in the classroom as distinct from what appears in official curriculum documents), and supplementary activities including sports and clubs. (p.281)[27]

She proposes a number of pathways for curriculum and pedagogy renewal as a tool for peace:

- Introducing independent assessment of learning to ensure that learners are fairly assessed. (The Early Grades Reading Assessment and the Early Grades Mathematics Assessment are proposed as possible starting points for independent international assessments.)
- Focusing on replacing rote learning with skill acquisition and comprehension.
- Moving towards 'child-friendly' and 'rights-respecting' schools.
- Relying less on corporal punishment and more on the use of positive discipline.
- Including conflict resolution in teacher training.
- Teaching fundamental humanitarian principles, principles of human rights, principles of local, national and global citizenship.
- Teaching skills and values for conflict resolution, peace, and social cohesion.
- Developing a harmonized curriculum framework for 'learning to live together'.
- Using multiple channels of communication.
- Enhancing monitoring and evaluation and research on young people's attitudes, values and behaviours.[28]

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PART 6: PARTNERSHIP

> **Partnership**
>
> We are determined to mobilize the means required to implement this Agenda through a revitalised Global Partnership for Sustainable Development, based on a spirit of strengthened global solidarity, focussed in particular on the needs of the poorest and most vulnerable and with the participation of all countries, all stakeholders and all people.
>
> (UN, 2015, p.4)

6.1: Global commitments to education

Education has been considered a human right since the drafting of the _Universal Declaration of Human Rights_ in 1948. Article 26 of the Declaration reads:

1. Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education shall be compulsory. Technical and professional education shall be made generally available and higher education shall be equally accessible to all on the basis of merit.

2. Education shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms. It shall promote understanding, tolerance and friendship among all nations, racial or religious groups, and shall further the activities of the United Nations for the maintenance of peace.

3. Parents have a prior right to choose the kind of education that shall be given to their children.

Article 26 sets out a powerful vision for education, that brings with it benefits for individuals and society as whole. It is important to note the emphasis on elementary education, and the mandate for education to be 'free' and 'compulsory' at this level, suggesting that people are not only _entitled_ to elementary education, they are _obligated_ to it. Close inspection of Article 26 reveals a number of issues that continue to form part of the international discourse(s) on education today:

→ Elementary education is given priority, and is universal
→ Access to higher education should be merit-based
→ Skills-based education ('technical and professional education' is an important avenue for many people
→ Education is more than basic literacy and numeracy
→ Education should contribute to peacebuilding, social cohesion, and respect for and promotion of human rights

$\rightarrow$ Parental choice should be prioritised in education provision

There are numerous other international documents that protect the right to education but none as close to truly 'global' as the 1989 *Convention on the Rights of the Child*. Article 28 of the CRC reads:

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1. State Parties recognize the right of the child to education, and with a view to achieving this right progressively and on the basis of equal opportunity, they shall, in particular:

   a. *Make primary education compulsory and available free to all;*

   b. *Encourage the development of different forms of secondary education, including general and vocational education, make them available and accessible to every child, and take appropriate measures such as the introduction of free education and offering financial assistance in case of need;*

   c. *Make higher education accessible to all on the basis of capacity by every appropriate means;*

   d. *Make educational and vocational information and guidance available and accessible to all children;*

   e. *Take measures to encourage regular attendance at schools and the reduction of drop-out rates*

2. States Parties shall take all appropriate measures to ensure that school discipline is administered in a manner consistent with the child's human dignity and in conformity with the present Convention.

3. States Parties shall promote and encourage international cooperation in matters relating to education, in particular with a view to contributing to the elimination of ignorance and illiteracy throughout the world and facilitating access to scientific and technical knowledge and modern teaching methods. In this regard, particular account shall be taken of the needs of developing countries.

What sets the CRC apart from other rights documents is that every nation in the world (except the United States)[a] has ratified it and agreed to uphold its standards. In other words, every nation that has ratified the document is accountable for providing education for its citizens. Further, paragraph 3 of Article 28 stipulates that nations should cooperate in matters relating to education, though by highlighting "the needs of developing countries", the CRC reinforces the idea of a global dichotomy, suggesting that the problems are to be found in the 'developing world' and the solutions in the 'developed world'. In fact, many development agendas and commitments (including those related to Education For All, EFA) exhibit similar signs of the dominance of so-called developed country interests over so-called developing country interests, such that essentially these agendas and commitments are set by wealthier countries for poorer countries to follow.[1] More broadly, then, when it comes to the transfer of knowledge and expertise in terms of education and development, they tend to be transferred from wealthier countries to poorer countries, regardless of the relevance of said knowledge and expertise, and rarely in the opposite direction.[2] [3]

---

[a] The United States has signed the Convention, but not ratified it as yet.

The language of Article 28 of the CRC is quite different from Article 26 of the UDHR – Article 28 of the CRC is much more prescriptive and does not appeal to a broader vision of peace and humanity (see, for example, the emphasis on 'eliminating ignorance and illiteracy' rather than 'promoting tolerance, understanding, and friendship'). Article 28 also prioritises 'free and compulsory primary education', but includes a provision for secondary education, calling for it to be diverse, free (where possible), and for financial assistance to be given based on need (note: not merit or capacity). The notion of quality is notably absent from Article 28. In fact, a reference to attendance and drop-out rates reveals an emphasis on the notion of access, which came to dominate the international discussion on education for many years. One final point worth mentioning is the emphasis on 'positive discipline', 'scientific and technical knowledge', and 'modern teaching methods' as these issues have all come to the fore in recent years.

These key rights documents have played a significant role in the shaping of the global education narrative and the development of international partnerships for education. However, according to King (2015), attempts to come up with some form of global vision for education have been made since the early twentieth century.[4] Some of the key global declarations/commitments to education are listed below:

→ 1960s: major regional conferences on education organised by UNESCO (target year 1980 for Universal Primary Education, UPE)
→ 1990: World Conference on Education For All (EFA), Jomtien, Thailand (target year 2000)
→ 2000: Millennium Development Goals, Goal 2: UPE (target year 2015)
→ 2000: World Conference on Education For All (EFA), Dakar, Senegal (target year 2015)
→ 2015: Sustainable Development Goal 4 (target year 2030)

A discussion of the financial commitments that have been made to achieve the EFA targets is beyond the scope of this review, but it is worth mentioning a couple of partnership initiatives designed to support financing of these targets:

EFA Fast Track Initiative[5]
EFA-FTI was launched in 2002 to help low income countries 'get on the fast track' to EFA. The idea was that donor countries would pool the necessary resources and expertise for LICs to develop appropriate national education plans in order to reach national educational targets.

The Global Partnership for Education[6]
Also established in 2002, the Global Partnership for Education (GPE) is made up of 61 so-called developing countries, more than 20 donors, international organisations, and other educational stakeholders. It takes a collaborative approach, supporting the 61 member countries in designing, funding, implementing, and evaluating their education sector plans. GPE prioritises quality basic education, particularly for the poorest, most vulnerable, and people in fragile and conflict-affected countries.

Global Business Coalition for Education[7]

The Global Business Coalition for Education was founded in 2012 by 15 international businesses. They attempt to mobilise the business community to accelerate progress in delivering education for all children and youth around the world. They currently have a membership of over 100 brands, and are responsible for a number of current global education initiatives, including the #Tech4Ed platform and the Safe Schools Initiative.

6.2: The will and capacity of governments to follow through on global commitments to education

6.2.1. Governance

As has been discussed in the previous section, there is an extensive global framework of rights documents, agreements, financial commitments, and partnerships in place to ensure the right to education. However, in order for this right to be realised, governments around the world have to have the will and capacity to uphold key rights, to follow through on their agreements and financial commitments, and to work together with other partners in a cohesive and productive manner. We therefore turn to the concept of governance. Governance can be defined as a governing body's "ability to make and enforce rules, and to deliver services, regardless of whether that [governing body] is democratic or not."[8]

The work of developmental psychologist, Urie Bronfenbrenner has proven hugely influential in education research and practice and can be useful in helping to build an understanding of the relationship between education and governance. His theory of human development is known as ecological systems theory.[9] This theory proposes that there are different levels of environmental influences that impact on a child's development, from people and institutions immediately surrounding the child (e.g. family, school, peers) to historical, cultural, and socio-economic forces and laws, as can be seen from the figure below:
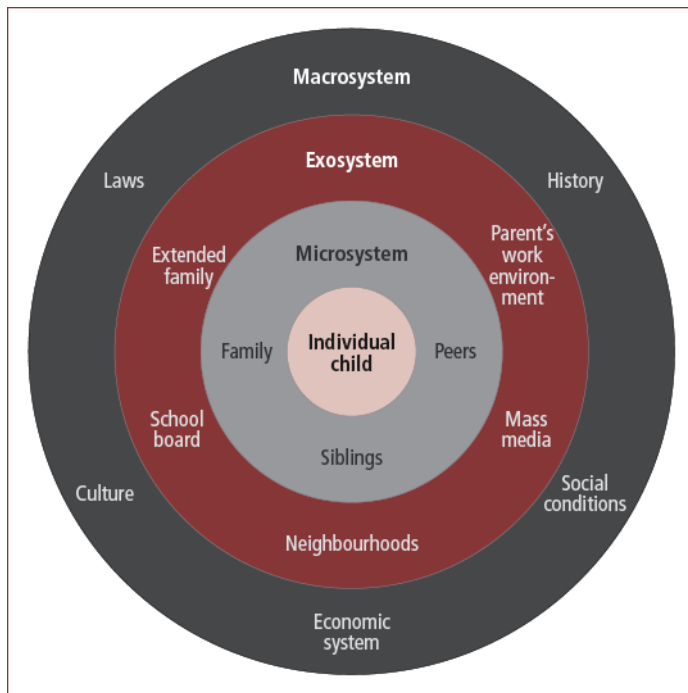
Figure D: Bronfenbrenner's Ecological Model (Moloney et al., 2012)[10]

Social ecological models such as Bronfenbrenner's can prove useful in understanding governance and education, because they highlight the multilevel interconnectedness between individuals, institutions, and socio-historical forces.[11] While many international agencies emphasise improving governance at local, national, and global levels, it is important to note that authoritarian regimes can be well-governed and democratic regimes can be poorly governed. In fact, recent research has demonstrated that better educated countries generally have better governments, which holds for both dictatorships and democracies.[12] In other words, building education systems that contribute to peaceful, just, and inclusive societies, requires more than effective governance: this process requires *good* governance,[13] trust and accountability mechanisms between governments and citizens, [14] and democracy at the local level. [15] [16]

In an increasingly interconnected world, it is important to consider the concept of global governance. As with much of the terminology around states and government, global governance is a contested term, though very broadly speaking, it can be defined as the constellation of public and private authorities, networks, frameworks, regulations, policies, laws, etc. governing transnational processes.[17] What characterises global governance today is the presence of a range of stakeholders beyond national governments and new institutions and mechanisms beyond state-led, treaty-based regimes.[18] Jang et al. (2016)[19] describe the SDGs as an example of a Public-Private Partnership (PPP) governance structure across all aspects of implementation, involving states, UN agencies, NGOs, transnational corporations (TNCs), communities, and a range of other actors. While multi-actor global governance configurations expand opportunities to broaden policy solutions and share information and knowledge more widely, they also increase the probability of fragmentation across different levels of the system and across different functional spheres.[20] [21]

Jang et al. (2016) raise important questions about the SDGs in terms of what responsibility the international community (as a global governance structure) holds beyond the satisfaction of basic

needs and who will finance the eradication of "poverty in all its forms everywhere" (which is a priority goal on the SDG agenda) and how this is best accomplished. They further point out that the focus of global governance actors tends to be on interventions in poor countries because they tend to think in narrow terms of short-term stability and security, rather than longer term global development issues, likely due in part to the idea of a global dichotomy discussed above. According to these authors, though, the nature of global governance systems is changing, which will have an enormous impact on transnational processes. One factor shaping the global governance systems of the future is individual empowerment, through the rapid growth of information technology (IT) and social media, which has given individuals more "information power" than they had 50 years ago (ibid., p.4). Through this access to information power, individuals are in a better position to hold various institutions and agencies to account. Another shaping factors identified by Jang et al. (2016) is a shift in international power, which has seen power in the current global governance system become more diffuse and the emergence of so-called 'rising powers'. While almost all traditional global governance institutions were initiated by 'countries of the Global North', the authors expect that, due to the changing power relations globally, the voices of actors from the 'Global South' will become more prominent within global governance mechanism.

Education has a key role to play in the shaping of these new global governance mechanisms for a number of reasons. First, given the role of education can play as a 'driver of change' that people own for themselves (see Introduction), it can help to shift the focus from short-term stability to the realisation of longer term global development goals. Second, education can contribute to maximising the information power that individuals have, through the teaching of key critical thinking skills which allow individuals to interpret, reflect on, and act on the information they are able to access through IT and social media. In Bronfenbrenner's model (above), education can help individuals to understand and influence the microsystem, the mesosystem, and macro-system in which they exist. Third, education can contribute to the overall economic growth of low and middle income countries (LMICs), improving the negotiation capacity of these nations at the international table.

6.2.2: Political will, capacity, and fragility

As global commitments and declarations are primarily made between states, and states are key players in the current global governance infrastructure, it is important to build a basic understanding of how states function in this era of globalisation. According to Kaplan (2014), "A state's ability to navigate its challenges is chiefly determined by two factors: the capacity of its population to cooperate and the ability of its institutions (formal and informal) to channel this cooperation to meet national challenges" (p.52).[22] The following figure illustrates four types of political order arising from different degrees of political-identity formation and institutionalization in a number of low and middle income countries (LMICs):

	Low Political-Identity Fragmentation	High Political-Identity Fragmentation
High Institutionalization (or at least high coercive capacity)	*I: Dynamic* Botswana Turkey Chile China	*III: Fragile but Controlled* Syria (before 2011) Soviet Union Iraq (before 2003) Saudi Arabia Uzbekistan
Low Institutionalization	*II: Stable but Sluggish* Senegal Armenia Tanzania Bangladesh	*IV: Fragile and Unstable* Nigeria DRC Somalia Libya (after 2011) Syria (after 2011)

Figure E: Four types of political order (Kaplan, 2014, p.55)[23]

While it is possible to coerce a population to cooperate (as the figure above suggests), a study of horizontal inequalities involving survey data for 55 countries between 1986 and 2003 found that a combination of politically and economically inclusive government is necessary for securing peace in low and middle income countries (LMICs).[24] In other words, the fewer horizontal inequalities in a population, and the greater the coherence between the make-up of the government and the population, the more likely a country is to be at peace.

With an increasing number of shared global agendas, commitments, and declarations, it is perhaps unsurprising that terminology has emerged to describe countries that are *not* considered to be performing 'well' globally. One term which gained traction as a buzzword in the 2000s, and is still popular in the global discourse today is the term 'fragile states', which denotes a lack of political will and/or capacity on the part of governments to perform core state functions. Most definitions of this term begin with the phrase "there is no agreed-upon definition" or highlight the contested nature of the term in some other way, but this has not prevented many actors within the global governance infrastructure (and members of the general public) from using it. Many scholars, practitioners and politicians have pointed out several problems with this term, including:

→ there is no consensus about what is actually meant by 'fragility'[25]
→ the term does not differentiate between the unique economic and socio-political dimensions of states[26]
→ it is not an either/or condition, but a continuum[27]
→ it is a pejorative and inherently political term[28]

This final point is worth briefly expanding on, as it raises the question of who controls the discourse, and what implications there are for countries who are labelled as fragile. As with the issue raised earlier about the setting of agendas by rich countries to be followed by poorer countries, the term is not applied consistently, and, more often than not, it is applied to LMICs by HICs, and not vice versa.[29] Through stereotypical thinking around the term fragile states, legitimised by popular usage by development experts, countries labelled as such risk further marginalisation in the international community (ibid.). In fact, the g7+ , a group of conflict-affected countries, working together to address development issues, was formed in 2010 to counter this type of thinking. At the inaugural meeting in Timor Leste, they made the following statement: "We, the member countries of the g7+, believe fragile states are characterized and classified through the lens of the developed rather than through the eyes of the developing." The g7+ argue that this lens is a key reason that development assistance has been less effective than it should have been, and believe that solutions lie in learning from one another and in developing a deep understanding of individual contexts.
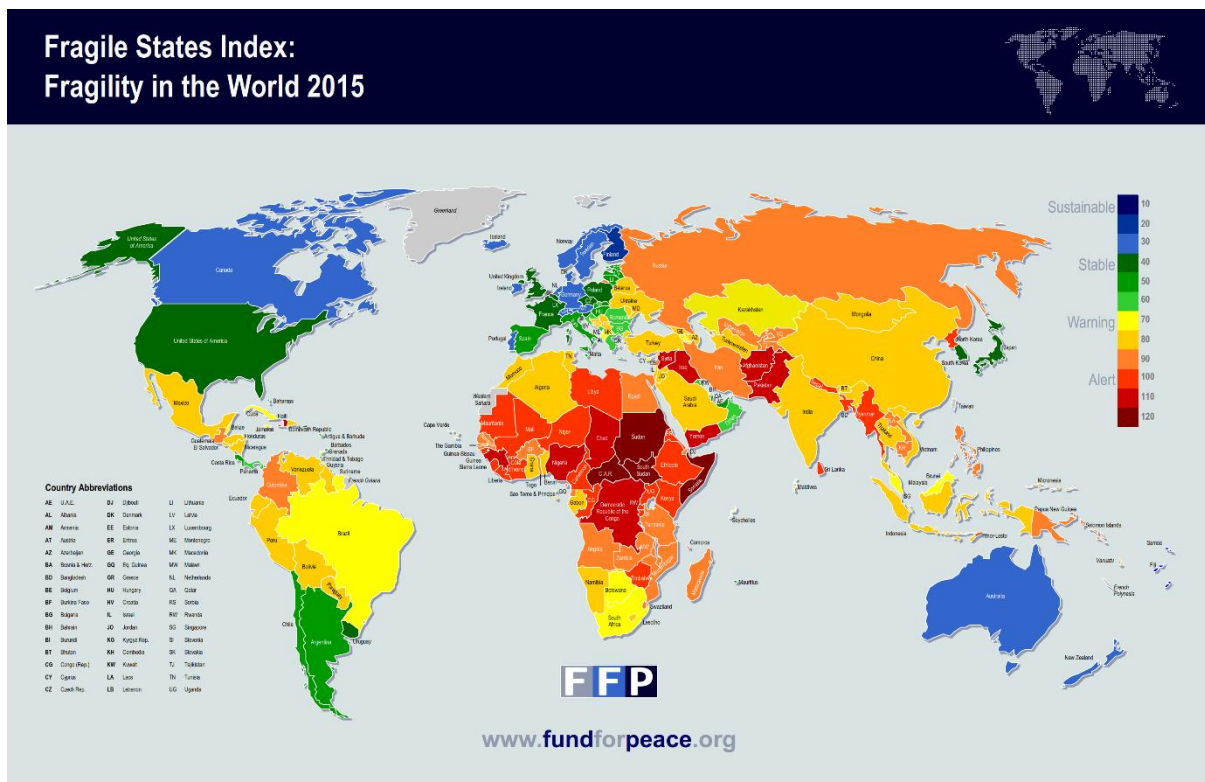
The map below depicts the 2015 Fragile States Index:

Figure F: Fragility in the World 2015 (Fund For Peace, 2015)[30]

According to the map, Africa is by far the most fragile continent, even though there are communities across that continent that are enjoying relative stability and peace, particularly in comparison with poorer communities in countries such as the United States and Australia.

One of the major limitations of the fragile states terminology that emerges from a closer inspection of the map is that it does not capture the dynamics of the world today, but portrays a static image of 'dangerous' versus 'safe' spaces, where the dangerous and unstable world is the so-called 'developing' world, and the safe and stable world is the so-called 'developed' world. The ongoing

physical and virtual movements of people today mean that the world's challenges and solutions are also 'on the move' and increasingly interconnected.[31] The following figure, depicting the global flows of people between 2005 and 2010, illustrates how important it is to begin to think about the world as dynamic and interconnected, if our major development challenges are to be solved at all, let alone by 2030:
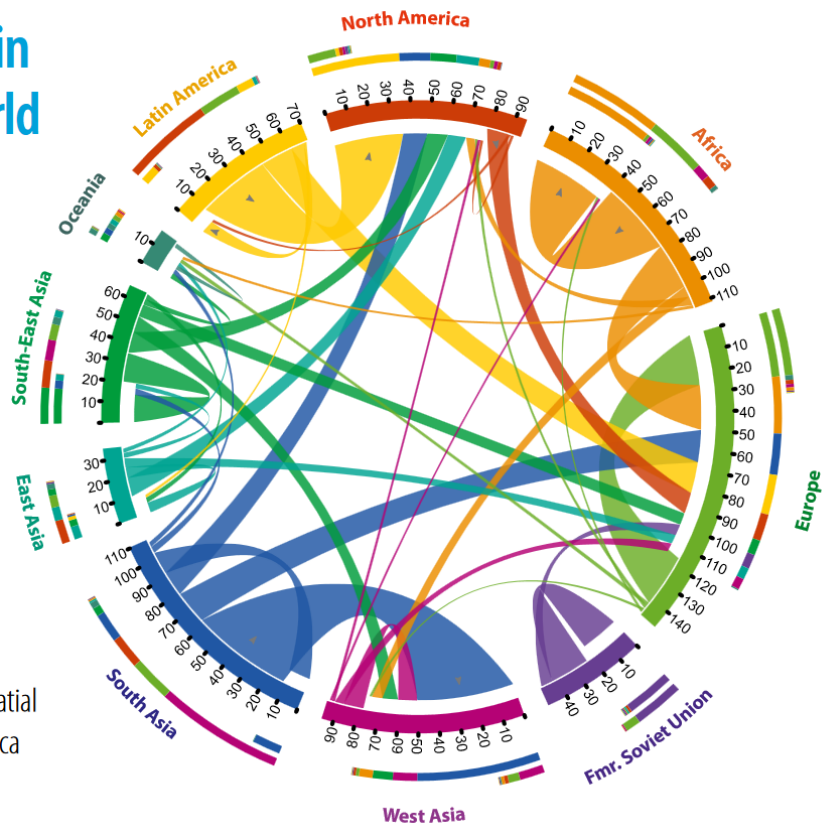

Figure G: Global Migration Flows 2005-10 (2014)[32]

Discussions continue around these concerns about fragility terminology doing more harm than good, though the debate has sparked discussions about how to obtain more nuanced understandings of how governments, institutions, and societies interact to better inform policy at local, national, regional, and global levels. Kaplan (2015),[33] for example, proposes five guiding principles for working with states that experience problems with political will and/or capacity:

1. decentralising government
2. unifying disparate peoples
3. promoting regionalism
4. creatively supplementing state capacity
5. gradually increasing accountability

As it can be (and has been) argued that all states are fragile to a greater or lesser extent, and given the increasing interconnectedness of the world's peoples and institutions, these five principles could potentially be used as starting points for improving global governance mechanisms.

When it comes to education and fragility, research (and practice) has tended to focus on the relationship between education and fragility and how to go about service delivery in so-called fragile states without establishing what fragility is (or indeed, if it exists).[34] Interestingly, many education in emergencies (EiE) researchers, policymakers, and practitioners recognise the significant limitations of fragility terminology, but have chosen to engage with it to ensure that education gets 'a seat at the table' of the new global development agenda (ibid.).

6.2.3: Whose responsibility?

There are some groups, including refugees, IDPs, asylum-seekers, seasonal labourers, nomadic populations, environmental migrants, pastoralists, etc., who seem to exist outside the global nation-state infrastructure, and while these groups technically have the same rights as other people, questions arise about who should take responsibility for fulfilling those rights, including education. In the case of IDPs, while the legal responsibility for education provision sits with national governments, few countries have specific policies addressing the special needs of IDPs, and fewer still have documented any significant progress towards meeting these needs,[35] with the exception of Colombia, who mandates the provision of education for IDPs of school-going age.[36] In the case of nomadic and other mobile populations, they often face a range of problems, including those to do with irrelevant and/or inappropriate curriculum and pedagogy and institutionalised racism and other forms of discrimination, leading to further marginalisation within the global system.[37] [38]

In Section 2.2.6 of this review, we discussed the problem of forced migration and the difficulties faced by refugees in accessing and participating in quality education opportunities. While certain agencies (UNHCR, UNRWA, IDMC, etc.) exist to protect these individuals, in reality the sheer numbers of displaced peoples (many of whom have not had the chance to claim asylum) often find themselves in an extended state of limbo, in makeshift conditions such as urban settlements and camp, and very rarely do they see their rights met, including their right to education. As Arendt (1966, cited in Bhabha, 2014, p.238) points out, "the moment human beings lacked their own government and had to fall back upon their minimum rights, no authority was left to protect them and no institution was willing to guarantee them." In other words, our "supposedly *inalienable* [rights have] proved to be *unenforceable*" (ibid).[39] We will now turn to a brief discussion of the coordination of education provision for refugees, as this has become a heightened point of concern in today's global climate.

6.2.3.1: Refugees and asylum-seekers in low and middle income countries

When it comes to refugees and asylum seekers (non-Palestinian), education is technically the responsibility of governments who have signed the 1951 Refugee Convention and/or 1967 Protocol, UNHCR, and those organisations with a mandate to provide education for forcibly displaced people. Further, refugees and asylum seekers themselves often take responsibility for initiating education programmes, though they can be limited in their capacity because of lack of government (and agency support), finances, and voice. Before the landmark UNHCR Global Review of Refugee Education in 2011,[40] and the launch and adoption of the UNHCR Education Strategy (2012-2016),[41] coordination between these various stakeholders was limited, with international organisations often acting as "pseudo nation-states", managing the provision of education services for refugees.[42] As the global trend is now towards integrating refugees within national education systems wherever

possible/appropriate, and in consultation with refugees themselves (as set out in the UNHCR Strategy), significant improvements have been made in the area of coordination: in 2014, 11 of the 14 refugee-hosting priority countries worked towards the integration of refugees into their own national system, up from 5 in 2011.[43] Prior to 2011, UNHCR's relationships with national Ministries of Education were all informal, but today, UNHCR has formal partnerships with almost all Ministries of Education in its countries of operation,[44] though actual provision of education and the nature of the partnership vary from context to context, dependent on each country's own policies and laws. Finally, it is worth noting that a number of governments who are *not* signatories to the 1951 Refugee Convention and/or 1967 Protocol do still work with partners to ensure protection and education for refugees, e.g. the government of Jordan, who have a Memorandum of Understanding with UNHCR to support refugees.[45]

Around a quarter of the world's refugees are Palestinian, and fall under the mandate of the United Nations Relief & Works Agency (UNRWA). While the formal definition of 'a refugee' tends to emphasise the legal dimensions of the term, the definition of 'a Palestinian refugee' is more of an operational one: it exists primarily to identify persons residing in Gaza, West Bank, Jordan, Syria, and Lebanon, who are eligible for UNRWA services,[46] which today include education, health, relief & social services, microfinance, infrastructure and camp improvement, and emergency response.[47] A Palestinian refugee is a person whose residence was Palestine for at least two years before losing home and livelihood as a result of the 1948 conflict, or a descendant of such a person. It is important to note the gendered dimension of this definition: descendants of male UNRWA refugees who marry a non-Palestinian inherit the UNRWA title, but descendants of female UNRWA refugees who marry a non-Palestinian do not.[48]

Palestinian refugees are excluded from the UNHCR Statute and protection according to the 1951 Refugee Convention, because they receive protection or assistance from another UN agency, namely UNRWA, though the 1951 Refugee Convention mandates the ipso facto inclusion of Palestinians, if protection or assistance from UNRWA should cease. Education for Palestinian refugees is the shared responsibility of UNRWA, host governments, and a range of other organisations with an educational mandate operating in the area, though the degree of coordination and the quality of provision vary depending on the particular context. UNRWA's education programme has always been the agency's most significant programme,[49] with schools considered to be "the nucleus" of refugee camps and education the key to a more stable future.[50] In spite of the worsening situation for Palestinian refugees in the last few years, UNRWA has managed to make significant progress on its 2011 Education Reform Strategy,[51] as described in a 2014 update on the reform[52] and a report by the World Bank on the relative effectiveness of UNRWA schools.[53]

6.2.3.2: Refugees and asylum-seekers in high income countries

In spite of the unprecedented increase in numbers of refugees and asylum-seekers making their way to Europe in the past couple of years, it is important to note that the bulk of the global forced migration crisis is borne by LMICs, with estimates suggesting that over 85% of refugees remain within their region of origin, adding further strain to national systems that already face significant socio-economic challenges.[54]

Education for refugees and asylum-seekers in HICs is primarily the responsibility of host countries, who are all signatories to both the 1951 Refugee Convention and the 1967 Protocol, except the United States, which has only signed the 1967 Protocol. These governments are thus responsible for ensuring that all refugees and asylum-seekers of school-going age are allocated school places and that detailed education statistics are collected on them.[55] UNHCR is active only at the invitation of host country governments in HICs, and so adopts more of a diplomatic advocacy role in these contexts, unlike in LMICs, where it has both a presence and an operational role.[56] While most HIC governments have signed the Refugee Convention and/or the Protocol (which include provisions for education), and tend to have stronger, more stable institutions than LMICs, a coordinated response to education provision for refugees and asylum seekers is lacking, which is troubling, given the increasing numbers of individuals making their way to HICs. These individuals end up in local communities and unofficial camps and settlements, or they are sent to specific cities or detention centres, to have their asylum claims processed. HIC governments tend to adhere to rigid legal definitions of refugees and asylum seekers (and to detain asylum seekers, while claims are processed), which means that technically they are only responsible for the education of officially recognised refugees. Those identified as refugees are generally resettled, and then have better access to social services (including education) through the government, though, it should be noted that only a small proportion of refugees globally are resettled in HICs.[57] [58]

In HICs with strict mandatory detention policies (i.e. they detain people seeking political asylum, or who they consider to be unauthorised arrivals and/or illegal immigrants), there is very little in terms of a coordinated response to meeting the educational needs of those who have been detained. For example, an observational study of educational facilities for children in detention on the Australian territory, Christmas Island, found that the facilities failed to meet Australia's international obligations and political pledges to uphold the right of asylum-seeking children to education.[59] Asylum-seeking children in the United States also face challenges: the emphasis appears to be on processing claims, with no clear roles for providers of health, education, and other key services.[60]

Given the adherence of HICs to rigid, legal definitions of refugees and the current rise in populations seeking asylum in HICs, many unofficial camps and settlements of so-called 'migrants' have emerged in France, Greece, etc., where accountability for the provision of essential services and the fulfilment of rights, including the right to education, is lacking. As a result, conditions in these 'camps' are often dire, failing to meet basic standards set out by the WHO, UNHCR, and the Sphere Project.[61] Further, there have been recent reports indicating that there are hundreds of separated or unaccompanied children living in these settlements (or on the move across Europe), whose basic human rights (including to education) are not being met.[62] UNHCR does have a policy on and operational educational guidelines for urban refugees, which could potentially provide guidance for these types of contexts, these documents explicitly state that they do not explore "the challenge of refugee integration or the issue of subsidiary protection standards in the industrialized states" (UNHCR, 2009, p.3).[63]

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PART 7: SPATIAL DIMENSIONS OF EDUCATION AND THE SUSTAINABLE DEVELOPMENT AGENDA

7.1: Introduction

Education has an important spatial component. That the educational process is still place-bound in general is highlighted by the fact that even when it is not, this is made explicit, as in the term "distance (!) education". This spatial dimension concerns not just the mode of delivery, but also the typical characteristics of students, and teachers, as well as their attitudes and expectations, of inputs and outcomes, and its interaction with other development challenges that are particular to its location.

The consideration of urban, peri-urban, and rural settings is certainly a highly relevant aspect of the spatial dimension of education and sustainable development more generally. However, it is important in this context not to conflate the related, but distinct, issues of rurality, geographic remoteness, and population sparsity. While the definitions of an "urban" area differ considerably between countries, key elements are considered to be continuity and density of construction, the share of the labour force engaged in the agricultural sector, the presence of key services and amenities, administrative classification, and – possibly – absolute population size or density within the perimeter. However, even where the population density within the area is one of the criteria, it does not follow that "rural" areas are sparsely populated in a way that would affect the efficiency or viability of scaled-up education provision. Both Rwanda and Bangladesh, for example, combine some of the lowest urbanisation rates in the world with some of the highest overall population density. Conversely, an isolated "minimally urban" location may well suffer from a lack of educational scale. This example underlines how urban/rural status and density at various scales *interact* with remoteness, which can act as an educational constraint by itself. Here, "remote" should be understood in a broad sense to include not only geographic distance, but obviously also travel time and/or "difficulty to reach" more generally, as which – perhaps less obviously – would include isolation that is due to conflict or political will, for example. Moreover, given variation in age structure, the density of the *school-age* population may differ greatly from the overall population density, especially in terms of its dynamic over time. In combination with local regulations concerning catchment areas, this means that it is possible for schools to close due to lack of demand even in metropolitan cities with millions of inhabitants, such as Berlin. This is true even where "competition" of schools for pupils is not part of the design of the system. These nuances are not captured by considering "peri-urban" as an intermediate category while remaining on a one-dimensional linear scale. In any case, this term means rather different things in industrialised and developing countries: in the former, such areas are, arguably, not a major separate concern from an education point of view, because they are characterised by a small residential population, and strong functional integration with the urban centre; in the latter, it is more frequently a transitional state, as rapidly expanding cities encroach on what used to be rural communities.

These considerations justify a conceptualisation of the spatial dimension of education and sustainable development along the following lines, each of which is elaborated further below:

1. One set of challenges concerns areas and localities that are dominated by agricultural production and that lack key public services and infrastructure.
2. Another, overlapping with the above, concerns the educational challenges faced by areas and localities that lack the population, within the locality itself and/or even within the surrounding area, to sustain educational provision "at scale".
3. Again, overlapping with both of the above, are educational challenges associated with being on the periphery of the national education system.

These differences matter. For instance, Monk (2007)[1] notes, with respect to the US, that teacher experience and retention is above the national average in *rural* schools, but lower in particularly *small* schools. For sub-Saharan Africa, Linard et al. (2012)[2] demonstrate that the actual spatial distribution in terms of *accessibility* gives different results compared to simple considerations of "urbanization" or even population density, especially in the absence of reliable transport systems. As a result, there are large differences *among* rural populations in terms of their agricultural productivity that benefits strongly from proximity to urban markets,[3] and their access to services such as education or healthcare.[4][5][6]

These distinctions should be at the back of our minds as we consider, in this section: First, the nature and scale of spatial inequalities in education; Second, how general rural development challenges contribute to the difficulty of achieving spatial educational equity; Third, the way these inequalities, not just in education itself, but also in the opportunity to reap their rewards, shape individual (and household) location decisions; Fourth, the way highly productive urban economies rely on human capital, but extreme urban growth and density create educational challenges of their own.

7.2: Urban-rural educational inequality

If we accept the premise that "the equity project of public schooling involved seeking to treat not simply every child but also every place as the same",[7] we must concern ourselves with spatial inequalities in education. This issue has already been discussed elsewhere in this report, in the context of education and inequality generally (see Part 1 and Section 2.2 of this review). To recall: spatial inequalities are widespread, often substantial, and arise at all levels of the educational process and experience, that is, in terms of inputs, process, outputs, and outcomes.

An indication of the difficulty of overcoming spatial inequalities in particular is provided by the fact that not only do such inequalities persist even in countries with high overall levels of education, but also in countries that are progressing rapidly to join them. For instance, the urban-rural difference in well-being in China remains large and has been described as the "Difference Between Heaven and Earth" (Treiman, 2012),[8] despite tremendous advances in raising the overall education level. Remarkably, "despite the fact that children of rural-hukou status gained relatively more opportunities at junior high school level [due to 9-year compulsory education], the rural-urban gap in the likelihood of transition to senior high school level enlarged" during the 2000s (Wu, 2010, p.

91).[9] These persistent urban/rural inequalities occur not only at the resource level, but also at the level of legal rights and capabilities.[10] The latter are to be understood in Sen's sense, which have been noted to extend to "group capabilities",[11] including those of the "rural population" as a group.[12] Indeed, hukou status not only affects opportunities, but also the *returns* to education that students can achieve.[13] A silver lining is that the gap in the economic returns decreases with increasing education level, so that overall educational expansion tends to increase spatial equity.

In Young's (2013) cross-country analysis, 40 percent of within-country inequality in education arises from the between urban and rural populations gap.[14] Importantly, a considerably part of this gap can be attributed to sorting on human capital and skill on top of differences in provision, since the migration flow from urban *to* rural areas in his analysis is actually of the same magnitude as the rural-to-urban flow, despite lower living standards. There is some more recent support for this. In India, for example, Chudgar and Quin (2012) found that, in terms of home background characteristics, urban Indian children attending public schools are comparable to rural children attending private schools.[15] Nevertheless the contention remains controversial that at this point, the urban-rural gap (as well as educational inequality by socioeconomic status) should be of greater concern and policy priority than the gender gap.

While the urban advantage in overall well-being tends to disappear at advanced levels of development,[16] the disadvantage of rural *schools* is not limited to developing countries.[17] For instance, the problem of insufficient scale for efficient provision affects services for students with special needs in particular.

Despite such inequalities, it would be a mistake, and counter-productive, to conceptualise "rurality" purely from a deficit perspective,[18] not least because urban settings bring their own disadvantages (see Subsection [tbc] below). Moreover, perceptions matter, and create vicious feedback loops, whereby the existing educational urban-rural gap results in different educational expectations among urban and rural youth,[19] contributing to its further reproduction (as well as sorting by migration, see Section 7.4 below).

It is important to note that spatial inequalities in education, and social and economic well-being generally, are not merely observed in cross-sectional analysis, but are confirmed by careful econometric studies that attempt to account for possible selection effects. For instance, Bocquier et al. (2011), in a study of infant and child mortality, find that the mortality levels of rural-to-urban migrants dropped further following their arrival in urban areas, even after accounting for their lower than average levels among the rural population to begin with.[20] Crucially, however, these differences were almost entirely explainable by differences in access to services and economic opportunities. In other words, there is no "mystery" to the urban-rural gap in education. Unfortunately, understanding the role that differences in service provision plays in maintaining this gap does not by itself make it easier to close it, as the following section discusses.

7.3: Constraints to equitable rural education provision

Spatially equitable provision of schooling is a challenge even in industrialised countries, where the issue is frequently framed in terms of efficiency considerations. Even policies intended to improve rural education may lead to unintended inequities if the underlying planning assumption have an urban bias (e.g. regarding availability of transportation).[21] With a focus on rural areas in industrialised countries, Barakat (2015)[22] offers a short review of the literature focusing on the 'optimal' school network size, rational site location, and cost-effective transportation arrangements,[23] [24] [25] [26] and notes the interrelation between physical school network sparsity and the education system's structure.[27] Early tracking into different school types, for instance, promotes spatial concentration. Conversely, sparse school networks may encourage socioeconomic self-selection at the post-compulsory level.

Research evidence on a lack of local education provision serving as a push factor is rather inconclusive.[28] While communities whose last school closed are sometimes found to be overrepresented among declining locales,[29] [30] this is not consistently the case.[31] [32] In addition, causal inquiry tends to point to school closures as a consequence, rather than a cause, of population decline.[33] [34]

A major constraint in many developing countries for achieving spatial educational equity is the supply of teachers. Large urban-rural disparities play a large role in creating the paradox that with respect to teachers, there is often a simultaneous surplus and a shortage at the national level.[35]

Rural teachers in sub-Saharan Africa have specific training needs compared to their urban counterparts.[36] It should be noted, however, that less professional teacher training need not necessarily lead to worse outcomes, as shown by Bourdon et al. (2010) in connection with contract status, i.e., comparing contract teachers to civil servants.[37] While distance education for teacher training is appealing in principle as a way to overcome some of these limitations, in practice its successful implementation faces a multitude of challenges,[38] including a reliance on electricity for modern communication (see also Section 3.3 on education and energy). Indeed, Mulkeen (2005) reports that in Malawi, teachers may even request a transfer on the basis of a lack of electricity if they are engaged in further study.[39] More generally, the 'ICT in education' revolution, such as "has so far been much less 'revolutionary' than originally envisaged",[40] despite some limited success stories in using radio for mass education. It remains to be seen whether the potential of widespread access to mobile phones in many developing countries can be successfully leveraged for education, to overcome the numerous challenges imposed by distance.

Unfortunately, large distance from an urban centre may fail to motivate teachers, or actively impede them, in a large number of ways.[41] Teachers may start late and/or finish early to compensate for a long commute if they live outside the rural community where they teach. If they do live locally, they may be entirely absent more frequently in order to travel to collect their pay, or to attend training, for example. They are more likely to have to travel for medical appointments, or conversely miss more days due to illness if they rely on inadequate local healthcare facilities. The remote school is less likely to be visited frequently by inspectors/supervisors, and the parents may demand less accountability.

Lack of proficiency in the local language is an obstacle to the social and professional integration of teachers if they belong to a different linguistic community.[42] At the same time, it cannot be assumed that attracting qualified local candidates provides a solution, since the local who pursued appropriate qualifications may have done so precisely to facility their own mobility and departure from the area. After all, Towse et al. (2002) present empirical evidence that in developing countries, as in developed countries, many become teachers simply for lack of other opportunities, rather than commitment.[43] And those who do become teachers typically express a preference for an urban posting. Mulkeen (2005) provides some (dated) references for monetary and non-monetary incentives to deploy in rural areas nevertheless.[44] The latter may include free or subsidised housing provided by the government or the local community, additional leave entitlements, or extra training, for example. However, instead of positive encouragement, a rural deployment may also be required of newly-qualified or junior teachers to "pay their dues", or even serve as a punitive measure. At the same time, whole categories of teachers may not be available for rural deployment, such as when there is an official policy against making married female teachers move to rural areas.

7.4: Education opportunity and location decision-making

Education generally contributes to internal mobility, by potentially increasing both the motivation and the capacity to move. This is not only the case in low-income countries where higher educational opportunities may be "few and far between"; Even in a relatively high density, moderately sized country with many universities such as the UK, higher education is associated with high levels of human capital mobility.[45] The spatial redistribution resulting from such flows is not random. There is convincing evidence that "the higher educated have a preference for urban living" (Dijkstra 2004, cited by van Winden et al. 2007, p. 531).[46] This conclusion with respect to industrialised countries is mirrored in the evidence on the preferences of teachers in developing countries already mentioned. Likewise, Young (2013) offers cross-country micro-evidence from developing countries that rural-to-urban migrants are better educated than rural stayers.[47]

Article 13 of the Universal Declaration of Human Rights asserts freedom of movement within one's country's territory, so rural-to-urban migration ought not to be framed as a problem per se (and in any case, its contribution to urban challenges may be overstated, as discussed further below); the rights challenge is to ensure rural populations are not pushed to leave. Nevertheless, the phenomenon of young people especially leaving the countryside is anyhow "one of the most dominant demographic trends both over time and across space".[48] In today's industrialised countries, productivity gains in agriculture greatly reduced the demand for rural labour during the 19th and early 20th centuries.[49] More recent rural population losses in these countries are related less to declining agricultural employment specifically, which is already minor even in highly rural regions, but nevertheless continue to be driven by the pursuit of educational opportunities, employment, and an urban lifestyle.[50] A sense of isolation and search for anonymity drives some rural youth out of the periphery towards urban centres.[51] Conversely, those feeling a sense of community in their rural community are more likely to stay.

Porter et al. (2010) offer rich ethnographic confirmation of how in rural areas of developing countries, education acts as a push and pull factor in similar ways.[52] At the same time, "the extent to which adults and young people express faith in the transformative power of formal education and its potential value as a route to better livelihoods (albeit at the same time recognising the inadequacies of local schools) is sadly unrealistic" (p. 1099) for many, who therefore remain behind in increased frustration. "Agriculture is regarded as an employer of the last resort to young people" (Juma 2007, p. 2, cited by Leavy and Smith 2010),[53] due to the nature of farm work and the low wages it pays, low status, lack of privacy and entertainment. Leavy and Smith (2010) observe that while the remains "a tendency for rural young people's educational expectations to be lower than those of their urban counterparts" (p. 10), the aspirations of rural and urban youth are converging, but that "there is an increasing gap between these aspirations and rural young people's expectations about the style of life and level of livelihood that local rural environments and economies can support".[54] However, despite indisputable dynamics away from farming, two-thirds of Africa's population still live and work in rural areas, of which two-thirds work in agriculture (ibid.) Aspirations for city-life notwithstanding, "agriculture and the rural economy play a substantive role in the lives of many millions of young people" (ibid, p. 3).

However, for a nuanced understanding of the potential of education to offer an alternative, it must be noted that agricultural activity is not necessarily (strictly) economic, but that "involvement with agricultural livelihoods is in many places a strong component of rural social customs, with young people engaging in agricultural labour through social institutions such as bride service, where a new son-in-law is required to work on his father-in-law's land" (Leavy and Smith 2010, p. 3, referring to Perry 2000).[55] This points to the difficulty of affecting rural development through education policies in isolation. An additional example of the need for integration is provided by You and Annim (2014),[56] who review the (mixed) evidence on the impact of microfinance on children's education, and note in particular that positive effects may only accrue in the medium to long term. In addition, they note that more emphasis is required on lowering (or at least stabilising) educational costs for poor rural households, not just on removing credit constraints to meet those costs, and conclude that "microfinance would function better to improve welfare for its clients had education policy been designed concurrently" (pp.945-6).

A noteworthy facet of rural-urban migration (both domestic and international) is that it potentially affects those staying behind as well as those migrating. Of particular concern to educational development is the phenomenon whereby one or both rural parents engage in labour migration, but the child(ren) remain in the village in the care of others. A priori: theories that emphasize migration's role in separating children from parents at critical stages of development anticipate negative consequences of migration for school entry, performance, and perseverance. Those that emphasize the role of migrant remittances and financial transfers in easing household budget and liquidity constraints anticipate improved educational progress resulting from two pathways: increased investment in the schooling of children, and reduced burdens of household and non-household child labour.[57]

The question is how the potential negative effect of being "left behind" and the potential resource benefits balance out. Evidence from countries as varied as Bangladesh, China, and Mexico (but excluding sub-Saharan Africa, unfortunately), suggests that – if anything – the benefits tend to

dominate. In Bangladesh, Kuhn (2006) found a positive overall effect of education of migration, including rural-to-urban migration. In China, Chen et al. (2009) found no significant negative effect, and fathers' out-migration specifically had a discernible positive impact.[58] In Mexico, results have been nuanced, with Kandel and Kao (2001) finding that high levels of temporary labour migration to the US improved grades, and lowered aspirations for higher education,[59] while Antman (2012) likewise concluded that remittances outweighed the absence, but that the positive education effect was stronger for daughters.[60]

7.5: Rapid urbanization and education

A widely-shared concern is that rural-to-urban migration as described above drives unsustainable, or at least: unsustainably rapid, urbanisation in many developing countries. Before discussing the very real educational challenges surrounding rapid urban growth, it is necessary to put these concerns into proper perspective. A continuing rapid rate of urbanisation in sub-Saharan Africa is actually disputed based on satellite imagery, which provides some evidence that urbanisation "has slowed or is even stagnating" (Potts, 2012, p. 1382),[61] further confirming the findings of Beauchemin (2011).[62] Additional evidence suggests urban growth is actually mostly driven by natural increase rather than rural-to-urban migration. Urbanisation in the sense that the urban growth rate exceeds the rural growth rate is partly due to the fact that during a transition period, mortality actually tends to be *higher* in urban areas, so overall health improvements boost urban growth more. This effect diminishes by itself over time. Ultimately, popular imagery notwithstanding, even in the future, only a small minority of the urban population, globally and in developing countries, will be living in 'mega-cities'.

All this does not detract from the fact that the urban growth that is indeed occurring has complex implications for the development challenges faced by low-income countries. In fact, urban poverty in developing countries is growing even as rural poverty has begun to decline.[63] [64] Arguably, the interaction with urban *poverty* is crucial. It is not necessarily urban areas or growth as such that are a source of concern, but the size and growth of poorly-served populations living in informal, low-income settlements, i.e. "slums". The need for additional research to elaborate the role of schools in "slum upgrading" is highlighted by their invisibility in current debates on the topic (e.g. in Minnery et al. 2013).[65] Indeed, the UN's World Urbanization Prospects 2014 Revision fails to mention education entirely, outside of the Introduction. However, it should not be assumed that a lack of formal schooling in such neighbourhoods is necessarily an oversight, because there may actually be vested interests in the continued existence of slums.[66] The potential contribution of unrecognised, "low-fee" private schools to fill the gap in public education provision remains hotly contested.[67]

At the individual level, educational attainment is generally recognised as a factor contributing to Urban Social Sustainability.[68] Li et al. (2009) set the scene with a useful listing of references on the increasing recognition that "sustainable urban development" is required to counteract some of the negative effects of high urban density, especially in combination with poverty, and of policies enacted to promote it.[69] This includes "the intention to increase the skills and knowledge of residents as a means for human and social development" (Yigitcanlar et al. 2008, p. 8, referring to Gonzalez et al. 2005).[70] The expectation that education makes a positive contribution does have

some empirical support. Even after controlling for income, higher education leads to households living in dwellings with better structural characteristics;[71] Crucially, they also tend to exhibit improved *behaviour*, in terms of waste handling, avoiding stagnant water, potentially creating important positive spillovers. Somewhat more limited evidence from industrialised countries suggests a potential positive association between higher educational attainment and behaviours such as public transport use, or lower violent crime, which contribute to urban sustainability. However, while fully a third of the positive effect of the number of college graduates on employment growth in cities was attributed to improvements to "quality of life" (as opposed to increased productivity) in one study, these seemed to be driven more by a greater demand for amenities "rather than from more politically mediated area attributes such as crime, schools, and pollution" (Shapiro, 2006, p.334).[72]

7.6: City economies and human capital agglomeration

Paradoxically, "the replacement of physical commodity production by more abstract forms of production (e.g. information, ideas, and knowledge) has [...] reinforced the importance of central places (cities) and led to the formation of knowledge cities".[73] However, it is easy to overstate the importance of the "knowledge economy" as a separate sector even for most cities in high-income countries. While the *effects* of the knowledge economy are worldwide, the knowledge economy as such "can currently be observed only in small parts of the world".[74]

It is undisputed that education (and 'knowledge production' more generally) itself is one of the main economic complexes providing a large share of employment in developed urban regions;[75] Yet, at the city level, connection between knowledge and economic growth has been difficult to establish.[76] Measurement is one obstacle, since counting R&D establishments may be too limited. Taking into account "a more multidimensional measure of the knowledge-base which seeks to incorporate tacit knowledge, codified knowledge and knowledge infrastructure", Lever (2002) still only find "some correlation", and with one specific economic outcome measure, and only when Paris and London were excluded from the analysis (on the basis that "agglomeration diseconomies of high rents, high wages, high living costs, congestion and the adverse social pathologies such as crime have been sufficient to offset the knowledge advantages of the two world cities") (ibid.) In another study (OECD 2004), "data on a number of OECD metropolitan regions show that differences in skills explain about 36 per cent of the observed differences in productivity", a weaker link than is expected, perhaps.[77] This is mirrored in findings at the corporate level, where there is also no strong relationship between R&D and corporate success.[78]

To the extent that there is a link, it is not necessarily tied to universities or other sites of knowledge production specifically. Indeed, it is "obvious that knowledge-intensive industries have not, to date, followed a particular spatial logic", but are "outcome of decisions made for whatever reasons and sometimes even centuries ago" (Kunzmann, 2008, p. 298).[79] This is partly attributable to the fact that "the rationale of guiding urban development and the rationale of managing a university are significantly different", not least because universities are – in many countries – directed from a level of governance above the city, such as the state or even the federal level. As a result, the presence of

universities at most *interacts* with other city characteristics in creating a successful knowledge economy.[80]

All these results point to the conclusion that for the vast majority of cities, the knowledge economy should not be conceived of as a separate sector, but as an economy "that encourages its organisations and people to acquire, create, disseminate and use (codified and tacit) knowledge more effectively for greater economic *and social* development" (van Winden et al. 2007, p. 32, citing Dahlman and Anderson 2000, emphasis added).[81] "An educated and skilled population that can create and use knowledge" is an obvious prerequisite. Even if the link with specific institution of knowledge production is tenuous, it is clear that the education embodied in the population itself, their knowledge, skills, and competence, "matter most to the knowledge-intensive industries [and] are essential in attracting these industries and investment" (van Winden et al. 2007, p. 299).[82] This highly-qualified population in turn bases its household decisions in no small part on "the existence of good kindergartens and excellent international schools, and quality hospitals" (ibid.)

Turning to developing economies, there is disagreement among development economists whether much of sub-Saharan Africa is "too rural" or "too urban". The case for preferring greater urbanisation is the large productivity gap between the rural and urban economies. This gap is not a statistical artefact, and may owe as much to unobserved differences in skills as it does to measurable human capital.[83] The implication is that that moving more workers from agriculture into the urban economies should, in theory, increase aggregate economic output. Others note that sub-Saharan Africa is already more urbanised than other regions are or were at comparable stages of industrial development.[84] Nevertheless, with a view to the *future*, it is a widely-shared assumption that growth in developing countries will be driven by cities.[85]

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CHALLENGES & CONCLUDING THOUGHTS

In the last two decades, the burgeoning body of research on education in emergencies has been used as an important advocacy tool for including education as the fourth pillar of humanitarian response, along with healthcare, water and food, and shelter. According to researchers in this field, education has a number of important short-term, life-saving benefits, as well as longer-term, life-sustaining benefits, which complement efforts in other sectors. In the short-term, education of good quality is protective – not only does regularly attending school restore a sense of normalcy and stability to many, schools can serve as convenient delivery platforms for other interventions, and can be used to teach life-saving lessons about health, safety, hygiene, etc. However, most of the key benefits of education are longer term, and at times intergenerational. In other words, there is a time lag between when education is first 'applied' (so to speak), and when benefits 'kick in'. A case in point is maternal education – research has shown that better educated girls and women have healthier, better-nourished children than their less educated peers, but these differences only manifest after the children have been born, i.e. in the next generation. Unfortunately, because of a lack of robust longitudinal studies on education, these benefits often go undocumented.

The time pressures of global agendas, including the MDGs and the SDGs, compound this problem: there is little incentive to invest in longitudinal studies or interventions which project long-term benefits as money needs to be spent now and impact seen by 2030. In the example given above, there are girls who are only beginning their formal educational journey today, many of whom will be young mothers post-2030 and yet the benefits of their education will not be captured in the studies evaluating the SDG agenda in the 2030s. On a related note, there continue to be disputes about what should be measured in terms of education benefits. In the international community, there has been a preference for collecting quantitative data on enrolment, completion, achievement on academic assessments, etc. However, an increasing number of researchers have pointed out the problems with relying on narrowly-defined, easily quantifiable measures of impact. As it is widely recognised that the purpose of education should be defined beyond the transfer of largely academic and/or functional knowledge and skills, to include the development of critical thinking and abstraction skills, as well as the tools for social cohesion, we need more comprehensive ways of 'measuring' the impact of education. Instead, we continue to predominantly rely on standardised assessments, including PISA and TIMSS, which evaluate student learning outcomes in very narrow terms, and quantitative measures on access-related issues.

In a similar vein, many of the benefits of education are indirect, and therefore are often not attributed to education (or even measured) by policymakers, administrators, and other stakeholders. These benefits are known by education experts as part of the 'enabling' effect of education, and much of the advocacy work on the right to education is thus framed in terms of education as an enabling right, or a right through which other rights can be accessed. Examples of this include maternal education, schools serving as delivery platforms for health and nutrition interventions, and health education helping to ensure "the right of everyone to the enjoyment of the highest attainable standard of physical and mental health" and opportunities to participate in a holistic, integrated curriculum helping to ensure "the right of self-determination", which allows

individuals to "freely determine their political status and freely pursue their economic, social and cultural development."[1] It is difficult to measure this enabling effect, particularly when it comes to intergenerational transmission, and so determining the 'value added' of education is challenging, as has been demonstrated throughout this literature review: while we know education has an enabling effect, there is a lack of robust research demonstrating how this effect functions, particularly over time.

Up until quite recently, international education research and global policy commitments have tended to focus on different levels of education, rather than the education system as a whole. A case in point is the rate of return research which came to the fore in the 1980s and 1990s. According to these researchers, rates of return to primary education are higher than secondary education, which in turn are higher than higher education.[1] Consequently, many donors and other key stakeholders began to prioritise primary (or basic) education, often at the cost of other education levels. This prioritisation is manifested in the MDG agenda, where MDG 2 calls for universal *primary* education. This failure to understand the education sector as a system led to a failure to consider the knock-on effects of investments at different levels of education in education planning around the world. Further, with the emphasis being on private (rather than social) returns to education, work on how the education sector as a whole could contribute to broader societal development and community cohesion fell by the wayside.

Finally, it is important to consider the consequences of the global refugee crisis, highlighted in Part 2 and Part 6 of this review. As previously mentioned, there is only one mention of migration in the SDGs themselves (SDG 10 target 7), but no guidance on how to do this, nor how to achieve the other 168 targets for populations on the move. Further, currently, some donors are diverting resources away from longer-term development interventions (with delayed benefits, such as education, as discussed above) in order to respond to the immediate impact of the global refugee crisis (in terms of short-term security, health, etc.). Such a diversion of resources potentially increases the numbers of people on the move (as they attempt to move to a [perceived] better place) and puts the overarching development goal of a peaceful, just, inclusive global society in significant jeopardy.

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[1] Please see the International Covenant on Economic, Social and Cultural Rights.

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