Syria education and development investment case: economic, social and psychological costs and risks resulting from not investing in education systems in Syria

Report to UNICEF Syria

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Photography credits
Page 23: Maram, 12, in class at school in Al-Jazmati neighborhood, Aleppo city, northwest Syria, on 24 February 2022. © UNICEF/Belal.
Page 68: Azzam, 12, guided by his teacher Abir, solves an exercise during Arabic class in Al-Nashabieh Al-Mohdatheh in Nashabieh, Rural Damascus, Syria, on 21 February 2022. © UNICEF/Deeb.

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Executive Summary

Syrian society remains in crisis more than a decade after the pivotal events of 2011 that provoked that crisis. Nowhere is this more evident than in the school system. Many schools are in ruins, fewer teachers are available, many children are unable or unwilling to attend school, the quality of education has deteriorated in most districts and especially in the remote and underserved locations, and secondary school completion rates are low.

Given the central role of good, universal schooling to human wellbeing in the modern world, there is an urgent need for massive investment to recreate and update the Syrian schooling system. This study assesses the costs of continued failure to undertake that investment. These costs are in two forms: the direct, human costs to successive generations of Syrian children arising from this failure to invest in the schooling system, and the opportunity costs foregone by Syria as a result of failing to invest, including estimation of a benefit-cost ratio (BCR) for that investment.

This report seeks to, firstly, detail direct social consequences for children's education, health and resiliency should investment into Syria's education sector continue to falter; and secondly, propose and analyse the cost-effectiveness of diverse education interventions recommended for the reconstruction of an education system that improves the prospects of children participating in a vibrant 21st century economy that provides much improved economic and social support for their families and communities.

Recent developments in Syrian schooling

After consolidating power in 1970, Hafez al-Assad ruled Syria until his death in 2000. He was then succeeded by President Bashar Al-Assad. The rule of Bashar al-Assad has had two distinct phases, divided by the eruption of the Syrian crisis in 2011, which has now entered its second decade. It is useful to see this study in the context of developments since 2000, and of the differences between the pre- and post-crisis periods.

The Syrian people are currently experiencing desperate economic and social conditions, arising mainly from more than ten years of conflict and its aftermath. Real gross domestic product (GDP) in 2021 will be little more than one third of that ten years earlier, in 2011. A significant proportion of its population is displaced, either internally or externally. The bulk of the country's physical capacity has been lost, as has much of its human capital. Key industries – such as agriculture, manufacturing and construction – are much reduced, and the value of the Syrian pound has declined sharply. This has contributed to the rise in the cost of those imports, including food imports, which are still possible in the light of continuing sanctions. Living standards have dropped sharply, and poverty is widespread, with the position of refugees especially acute. These and other factors provide the essential context in which we focus on the schooling system.

Up until the conflict in 2011, the Syrian educational system compared favourably with other countries in the region, and young people there were among the most educated in the Middle East and North Africa (MENA) region. Syria had achieved near universal primary education enrolment and completion (96% completion rate in 2010), with a strong transition rate from primary school to lower secondary school (98.5%) and a youth literacy rate of 92% (UIS, 2022). These outcomes were mainly due to the Syrian Government's commitment to, and investment in, education.

However, in spite of strong growth in the number of secondary school graduates over 2000–11 (growing at 7.3% per annum and more than doubling over the period), secondary school completion rates remained relatively low. One factor here was that more than 20% of students dropped out each year between Years 7 and 8 (Central Bureau of Statistics Syria, various years). The limited comparative international data available suggest that the quality of Syrian schooling was relatively low at that time.

Enrolments in the vocational education system were modest and growing only slowly – by 1.1% per annum between 2000 and 2011. It is also apparent that, in addition to the slow growth in the number of vocational places, Syrian courses did not cater adequately for the skills more in demand in modern economies, such as digital technologies, communications, business, health care and education support services.

Related in part to these factors, in the pre-crisis period young people in Syria had low labour force participation rates and high unemployment rates. In 2010, only 30% of Syrians aged 15–24 years were in the workforce (50% for males and 9% for females) and of these 20% were unemployed (16% for males and 43% for females) (World Bank, 2022a).

The conflict in 2011 has had a devastating impact on the Syrian education system, with only 57% of schools still functioning as of 2017 (World Bank, 2020, p44), over two million children are out of school, and still others at risk of dropping out (UNICEF, 2019). One of the major reasons for the increase in out-of-school children is the loss of infrastructure and teachers. Data from the Central Bureau of Statistics Syria (2017) show that in 2010 there were 17,120 schools in Syria, but by 2017 there were only 10,279 schools, a loss of 6,841 schools and a country-wide loss of 40%.

Since the outbreak of conflict, millions of Syrian children have become refugees in neighbouring countries. As of December 2018, there were over two million children in five neighbouring countries – Turkey, Lebanon, Jordan, Iraq and Egypt. Turkey had over one million or 50% of the children, followed by Lebanon which had 666,491 children. Fifty-five per cent of the children were in formal education programmes and a further 6% were in non-formal education. However, 39% of the refugee children were receiving no formal or non-formal education (No Lost Generation, 2019).

This makes recovery for the Syrian education system a challenging project; but if not addressed, it will be a human tragedy for more than one generation of Syrian children and adolescents.

Implications of no major investment in schooling: the base case

The education model used to project future schooling outcomes and to analyse the impact of educational interventions in Syria is the VISES Education Model (VEM), constructed for the analysis of a wide range of low- and middle-income countries and documented in the body of the report.

The model tracks the movements of cohorts of Syrian children through the schooling system, starting with 1st Grade and going through the Basic Education 2nd Cycle (5th to 9th Grades) and Secondary School (10th to 12th Grades). Student cohorts are tracked each year in terms of sex, grade and age, with consideration of promotion, dropout, repetition and learning rates in addition to new entry. Risk factors such as poverty, rural location, female sex, ethnic minority status and disability, all increase the probability that an adolescent will leave school prematurely, repeat a grade, or fail to reach learning benchmarks. The model has been extended specifically for Syria through the inclusion of non-formal training for students who leave school with different levels of educational qualifications.

The full analysis includes both a base case – the continuation of the status quo with no new investments – and an intervention case in which major investments in selected new intervention programs are implemented. We use the implications of the base case to consider the direct costs of failure to invest on successive generations of young Syrians, and the comparison between the base and intervention cases to assess the likely impact of the interventions, were they to occur.

One overall qualification to our modelling is that given the crisis prevailing in the country for a decade, there is a serious shortage of good data on many aspects of economic and social life in Syria over the past decade. This means that the modelling must do the best it can with the available data, while recognising the substantial uncertainty surrounding our estimates. It also means that we are unable to estimate the impact of better education on the health and wellbeing of the cohorts being studied here. They remain important benefits from the investment package and should not be ignored because the present situation precludes measurement.

Figure S1 and Table S1 show some of the schooling characteristics of the base case. Figure S1 shows the percentage distribution of school leavers by whether or not they completed secondary school (Year 12) in the base case. Reflecting the positive schooling trends prior to the crisis and the continued movement of students through school, in 2014 about half of all school leavers completed secondary school. This proportion is projected to fall as the full effects of the crisis build up through the school system, to shape the composition of school leavers. These effects continue through to about 2030, by which time only one quarter of school leavers would have completed secondary school. This drop in outcomes in terms of secondary completion rates, from one half to one quarter, is reflected at other achievement levels, with 45% of Syrian school leavers in 2030 (about 204,000 young people in that year) not having gone higher than Year 6.

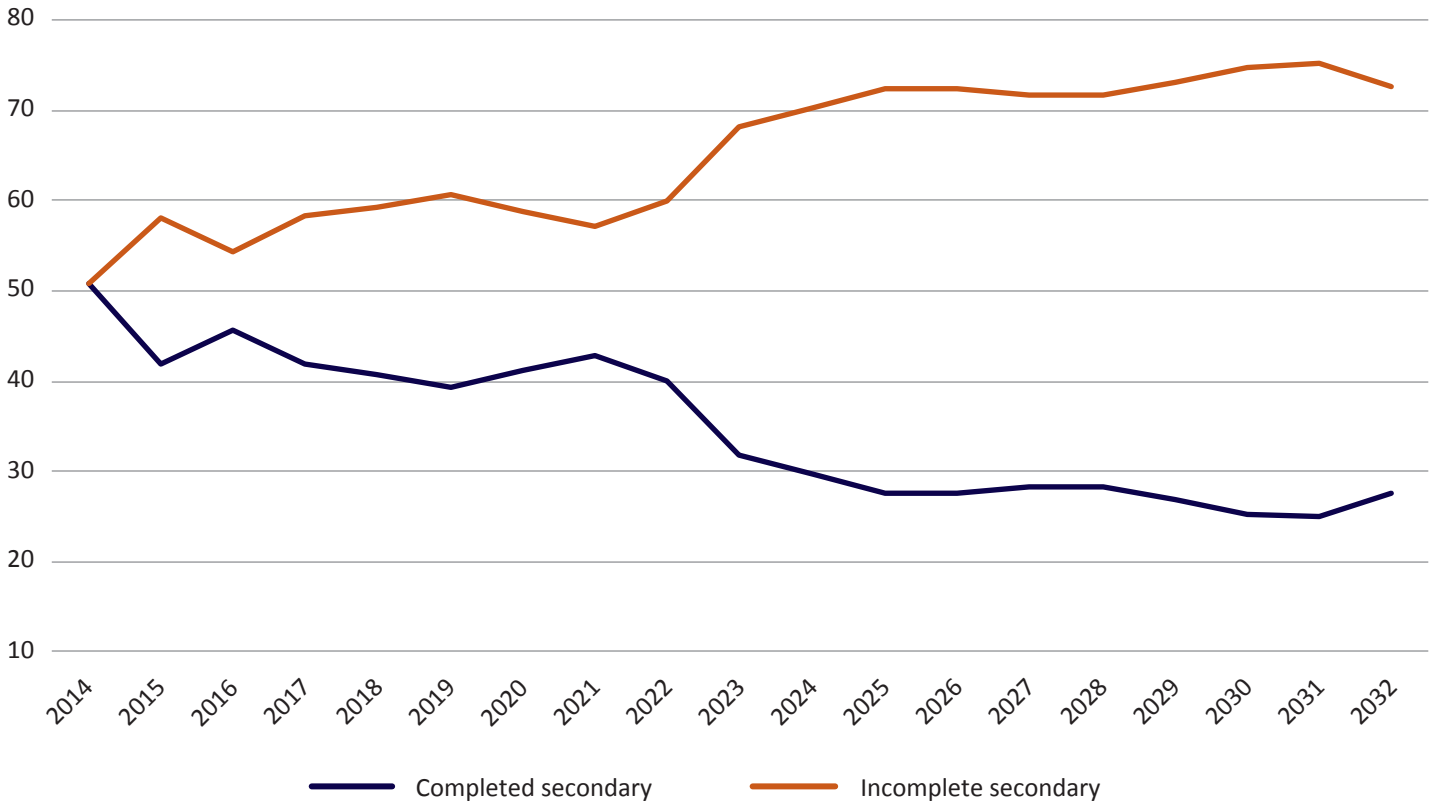

Figure S1: Distribution of school leavers, by completion or non-completion of secondary school, base case, 2014–32, per cent, 2014–21 (estimated), 2022–32 (projected). Source: Estimates of the authors, using the VEM model.

Social costs to generations of children of failing to invest

The failure to invest in rebuilding Syrian schooling will both reduce the human capital and the job prospects of young people and create direct social costs for successive generations. In this report, we cover ten forms of direct costs related to the damages potentially inflicted on the education system, and hence detrimental consequences for Syria children in the continuing Syrian crisis. These are:

- shortage of key education services such as quality basic and secondary education, early childhood development and education, vocational education and inclusive education, multiple pathways for out-of-school children, resulting in insufficient stimulation, early learning, safe quality learning, and alternative learning pathways for poverty and conflict-affected children and youth
- further loss of human capital
- the deteriorating status of young women, in several dimensions
- poorer mental health
- violence and crime (including drug-related crime)
- child labour and the growing vulnerability of young people to become recruited by armed groups
- the further increase of social corrosion and risks of violent conflict, as a result of an increase in horizontal education inequality between groups
- weakening of resiliency of children, families and communities
- the cumulative economic and social effects of the on-going deterioration of education, and
- risk of increased migration.

The reality of the ten factors listed above is widely recognised, but a decade of continuing crisis has precluded the collection of systematic of Syrian Government official data on them. As a result, we rely here on partial data and reports from various non-official sources, while being confirmed by evidence on the same subjects from other parts of the world.

The shortage of key education services

Unless additional resources are made available to fund schools rehabilitation, access to child-friendly school infrastructure, teachers, teacher training, and school supplies, education will continue to be limited, and an entire generation of children will have had at best sub-standard schooling and at worst no schooling at all, with repercussions for their longer-term development and future opportunities.

The economic costs of replacing damaged, destroyed or occupied schools and lost school equipment was estimated by a Save the Children report (2015) to be as high as £2 billion ($3 billion). UNICEF (2015a) estimated the economic loss from school dropout due to the Syria crisis to be US$10.7 billion, or about 17.7% of the Syrian GDP in 2010. This compares with the estimated net opportunity cost of not investing in the education recovery program discussed in Chapters 4–7 of $87.1 billion.

Government funding for education has declined dramatically as the Syrian economy has shrunk by more than 60% since 2010 (World Bank, 2022b). Low attendance levels means that the capabilities of children cannot be developed with the quality to which the government aspires. The prospective risk of poorer cognitive development of this generation of children will not only have serious implications for future workforce productivity and employment opportunities, but also reduce their resilience. The destruction of so many dimensions of the Syrian education system as a result of the crisis, is having, and will continue to have, long lasting adverse economic and social consequences for a full generation of Syrian children and their families.

Loss of human capital

Much of this report is devoted to documenting the loss of human capital in the form of accumulated knowledge and skills. The widespread destruction of the educational infrastructure and teaching capacity has reduced both the quality and years of schooling. The World Bank defines human capital to include good health as well as the knowledge, and skills, that people invest in and accumulate throughout their lives. Investing in people through nutrition, health care, quality education, jobs and skills helps develop human capital (World Bank, 2018).

While the impact of the crisis on the health system has not been a focus of this study, Syria's capabilities to deliver health services to maintain human capital have been severely diminished. For instance, the adverse impact of the mental health of children and adolescents has been a major problem with serious consequences for human capital.

A World Bank report (2020) states that some preliminary analysis by Hamilton and Nguyen (2017) demonstrate that 'the combined effects of casualties, forced dispersion, and reduced investments in human capital formation could add up to a 30 per cent permanent loss in the country's human capital stock (compared with the 2010 stock)' (p53).

The deteriorating position of young women

The lives of women and girls have changed profoundly because of the Syrian crisis, with its negative consequences further exacerbated by the COVID-19 pandemic and the economic downturn in neighbouring Lebanon. Adolescent girls in particular, face complex challenges that have influenced their development and will have an impact for the rest of their lives. The crisis continues to have a gendered impact, with women and adolescent girls paying a high price for reduced access to education, movement restrictions, exacerbation of harmful and discriminatory gender norms, including gender-based violence (GBV), and child marriage (UNFPA, 2019).

As discussed in greater detail in Chapter 2, the costs of not investing in education for girls are:

- girls who drop out of school early are more likely to marry or have children early, before they may be physically and emotionally ready to become wives and mothers
- it has consequences for their health and wellbeing, and deprives them of employment opportunities and higher lifelong earnings
- it perpetuates the cycle of poverty
- this perpetuation of inequality tends to weaken social cohesion and can increase fragmentation of society
- early marriage and low education is associated with high fertility rates, high population growth and increases in migration
- early marriage reduces not only the mother's years of schooling, but those of her offspring, lowering their likely lifetime earnings and other opportunities, and
- increases in gender-based violence (GBV), with all its accompanying adverse impacts.

Educated women are a key prerequisite to strengthen child, family and community resilience. They are better prepared to contribute to the economic survival of the family. They are less likely to experience violence than those with lower levels of education. Education in safe and inspiring learning environments is one of the best ways to empower girls and reduce harmful practices like child marriage. An educated girl will understand her rights, and have the confidence to claim them and to make her own choices about her future. She is also likely to understand the nutritional needs of her children and assess health conditions.

Mental health

In Syria, the projected rising inequality and potential socioeconomic fragmentation of society, along with the economic crisis worsened by the COVID-19 pandemic, and then furthered by the sanctions imposed by the 2019 *Caesar Syria Civilian Protection Act*, are all imposing life-long costs on the physical and mental health of Syrian children and youth (UNICEF, 2022; Moret, 2021, 2022).

The overall costs include:

- persistence of toxic stress suffered by children, which can lead to post-traumatic stress disorder (PTSD), depression, anxiety and even suicide
- the costs of helping children cope with distress, anxiety, hypertension, and treating mental illness
- increase in the use of psychoactive substances; and increased costs for efforts to mitigate drug abuse, of treating drug addiction, as well as the resulting loss of potential earnings
- impact on the brain development of children and hence their educational outcomes, as well as intergenerational impacts
- increased absence from school
- loss of human capital
- limiting the ability of children to be resilient, and
- increasing disintegration of society and the social fabric.

The conflict and economic aftermath is causing massive mental health issues for children and adolescents, as well as their caregivers. Untreated mental health problems in these years extend into adult years. Failure to invest now in adequate educational and psychological programs that mitigate mental health risks for school age children will increase mental health problems for Syrian society in years to come.

Violence and crime (including drug-related crime)

Some of the disengaged out-of-school children and adolescents affected by the crisis and who are mindful of low returns to education arising from poor economic prospects, do contemplate violent and criminal options (including drug-related criminal behaviour). Addressing violence and crime requires both investment in education and confidence in an economic recovery. Where this is not the case, societies will need to face increased enforcement costs in the future.

An effective education system providing secure and accessible schooling to all components of society would substantially limit the opportunities for violence against and by young people. This would be both by providing a safe school environment, and also by providing human capital and potential life-paths to many who now leave school early.

Child labour

Education is a crucial component of any effective effort to eliminate child labour. In Syria, of course, education holds significant status in Syrian culture notwithstanding different religious or ethnic backgrounds; and children do not choose to stay out of school, but are forced to take on jobs instead of going to school because poverty leaves families no other choice. Notwithstanding, children who are not in school or unable to afford transportation to go to school are at greater risk of finding themselves put to work. At the same time, children who work are more likely to drop out of education. In the absence of accessible quality education opportunities, working is often seen as a more productive use of children's time, generating income for the family, as well as allowing them to learn new skills (UNICEF, 2015b; ILO, n.d.).

The costs of not investing in education include:

- increasing rates of child labour
- increasing rates of children and youth doing dangerous work (including signing up to mercenary services), and
- intergenerational impacts, and perpetuation of poverty and child labour.

Child labour is a serious problem in Syria, especially in neighbouring refugee camps where its prevalence and impact are better documented. Households often depend on the income from child labour to help ends meet, even though child labour occupations are frequently high risk. Child labour leads to absenteeism from school placings, resulting in a life-long disadvantage for these children and their families, permanently hindering their chances of getting decent work and escaping the cycle of poverty and exploitation.

Lack of options to escape poverty also enhances the risk of militarising young people, who join the army or mercenary groups in return for income, and where they are confronted with a growing number of militaristic role models, as many move into adulthood without alternative life-paths. The overall consequences for Syrian communities mean that they:

- impede the rehabilitation of child soldiers and hence perpetuate inequalities
- become a recruiting pool for mercenaries, and
- become a platform for perpetuated indoctrination.

Many children see education as their gateway to a different life, away from the violence and suffering they experienced during the years lived with the armed groups. Continued militarisation of future generations of young people is a major cost of failing to invest in education.

Continuing loss of social cohesion as a consequence of increasing education inequalities

The Syrian crisis, the accelerating economic downturn, and the COVID-19 pandemic have increased the barriers to resources for the population both in Syria and those living as refugees, and further exacerbated underlying vulnerabilities due to protracted displacement, all of which have increased inequalities and thus the risk of social tensions between refugees, migrants and host communities (IOM, 2021).

The consequences for social cohesion of not investing in education include:

- risk of long-term education inequalities between population groups, and gender groups
- risk of further, and perhaps accelerating, unraveling of Syrian society and renewed tensions as a result of inequalities in the future
- truncated human and social capital accumulation (e.g., school drop-out, poor labour market entry) and negative conduct (e.g., substance abuse, crime and violence, risky sexual behaviours), as well as the likelihood of these behaviours being transferred to the next generation, creating a vicious cycle of social exclusion and negative behaviours, and
- the viability of future reconstruction of Syria.

The ongoing cumulative effects of the deterioration of education for child, family and community resilience

The confluence of the stalemate in international diplomacy, the loss of human resources and infrastructure suffered after a decade of conflict, as well as the more recent economic downturn in Lebanon and the wider region, all converge to create a situation where efforts to meaningfully invest in education services for all, that are inclusive, equitable, accessible and of quality, are on hold. Every year of non-action will increase education inequalities that will increase and compound the risk of further depletion of human, psychological, social and economic resources, as well as tensions (and thus renewed conflict risks between communities) in years to come.

The social fabric in Syria has been disintegrating and children are growing up with a sense of a lack of physical and psychological safety, and surrounded by violence. Families have been broken by displacement and communities have been shattered. Education can help children, communities and systems become resilient against conflict and disasters, by building capacities and skills that will enable them to manage and resolve tensions and conflict peacefully.

While children can be surprisingly adaptive to stress (Cummings et al., 2017) and demonstrate a capacity to recover from adverse circumstances, the loss of education undermines resilience in numerous and durable ways. Most importantly in the long term, it deprives children of the skills to obtain employment that will provide decent incomes to finance the recovery process. To address the immediate impact of the crisis on Syrian children, an emergency education system is required to provide psychosocial support for children to improve resilience and teacher training in participatory methods and psychosocial skills and ensure protection for all children, including boys from child-labour and girls from early marriage and GBV.

Risk of increased migration

Instability and fragility caused by conflict erode resilience and often force people to migrate (IOM, 2021). With both conflict and displacement evident in Syria, higher numbers of people have and will continue to move out of situations of vulnerability into neighbouring areas and countries, further exacerbating the ability of children to attend school and university, and continue on to a productive life as an adult.

The Syrian crisis, the accelerating economic downturn, and the COVID-19 pandemic have increased both the risk of migration and the barriers to resources for those living as refugees, and further exacerbated underlying vulnerabilities due to protracted displacement, all of which have increased the risk of social tensions between refugees, migrants and host communities with devastating results for children.

As with other counties experiencing humanitarian crises, it is often the more highly skilled and better educated, with greater employment options, who are best placed to migrate out of the conflict zones and find work in other countries. This further diminishes the human and social capital of the country they have left. This has certainly been true of Syria, where professionals, such as engineers, have found work in neighbouring countries or further afield, reducing the social and economic capacity of the country in its recovery phase (World Bank, 2020).

Addressing the economic opportunity costs of not investing in education

While the direct costs outlined above are immediate and confronting, most of this report is directed to estimating the significant benefits of implementing a recovery plan for the Syrian education system. The net benefits generated by a recovery program are equal to the opportunity cost of not investing in such a program. Our modelling suggests that the costs of investing in a recovery plan are relatively modest compared with the expenditure by governments and non-government organisations on foreign assistance, and especially modest compared with their likely economic benefits.

In order to model the costs of a recovery plan, we need to define an effective package of interventions to achieve the best possible outcomes.

Effective investments in Syrian schooling

The model includes a set of interventions (intervention package) which affect various education variables, including increasing enrolments, promotion, repetition, and dropout and learning rates. The interventions affect the number of school enrolments and departures over time that are differentiated by sex, age and grade. The model then generates outputs including the highest grade attained by school leavers, the average learning level and the education attainment levels of population cohorts of 15–19 and 20–24-year-olds out to 2050, for both males and females. The education or learning quality measure increases over time as the various interventions are applied and the pupil-teacher ratio declines through time. Various studies have found the effectiveness of the interventions is affected by various education risk factors including poverty, gender, rural or urban location, and early marriage (Wils et al., 2019).

The education interventions identified in the literature have a broad applicability to low- and middle-income countries. However, Syria has specific circumstances due to the crisis and its cultural heritage, including cultural norms around education, meaning some interventions are more appropriate than others. We have selected the interventions that are considered the most appropriate to Syria in the current context. The interventions provide support for school attendance, teaching and learning, as well as student support.

Interventions aimed at supporting school attendance include conditional cash transfers that have a strong evidence base, as well as having been trialled in the region. A Conditional Cash Transfer for Education program has been trialled for Syrians and other refugees in Turkey with positive results. For Syria, the issues relevant to transfers are more likely to concern safety (particularly for girls), out-of-pocket expenses, and loss of income from the child's labour and child marriage. Consequently, the design, level and targeting of the program would need to reflect these particular objectives. Due to the uneven nature of impacts on the crisis on levels of enrolment and dropout across Syria, such transfers may be targeted at the more vulnerable segments of society in Syria to have the greatest impact.

New and rebuilt schools is a particularly necessary intervention for Syria given the significant number of schools that have been destroyed and extensively damaged in the crisis. Improved school infrastructure with a focus on female-friendly facilities are also a key intervention to support attendance.

Interventions aimed at improving teaching and learning include remedial education to address the significant disruption to many students' learning. An example of a program in Syria includes remedial classes at community centres supported by UNHCR. These classes enable young people to complete education qualifications such as Basic Education (2nd Cycle) (UNHCR, 2016).

Remedial education is closely linked to pedagogical changes that can improve student-teacher interactions that may have room for improvement according to evidence from the Joint Education Needs Assessment (JENA) (IMU, 2019). Pedagogical changes are also dependent upon teacher incentives and training. For Syria, it is likely that teacher pay is a significant issue in attracting back the large number of teachers needed. A trial backed by UNICEF to pay volunteer teachers in Turkish refugee camps has been very successful (UNICEF, 2015c). Improved training of teachers in a modern curriculum is required, and professional development is necessary to deal with the difficulties presented by the crisis, such as psychosocial student support.

The reduced number of suitable school buildings due to the crisis increases the importance of information and communications technology (ICT) facilities in Syrian schools and at home in the short- to medium-term. Students may access schooling at home through inexpensive radio-based instruction supplemented by online, inexpensive resources developed during the COVID-19 pandemic for remote learning. Online resources may be accessed through mobile phones with coverage providing access to over 95% of the population. Proposals for ICT educational frameworks for Syria already exist that provide a framework incorporating ICT into the education system in Syria.

Interventions supporting the recovery of mental health of students include programs to reduce bullying, provide greater psychosocial support, and help students acquire the attitudes and skills essential for learning such as provided by Social and Emotional Learning (SEL) programs. These programs aim to improve education outcomes, and reduce absenteeism and dropouts. The Youth Readiness Initiative developed for a post-conflict environment, and therefore highly relevant to Syria, was developed to provide psychosocial support for young people in post-crisis zones leading to positive attendance and improved educational performance (Betancourt et al., 2014; Newnham et al., 2015).

Non-formal education programs that are most relevant to this project for Syria are those that offer education and skills training to improve the performance of youth in industry, the service sector, as well as agriculture. Boosting ICT training to facilitate participation in these sectors is also important for the youth skills set.

Non-formal programs, including trade certificates, vocational training and programs like UPSHIFT, are likely to be relevant to Syrian circumstances (UNICEF, n.d.). Trade certificates and vocational training programs can address issues of relevance for employment. Many out-of-school children state that the main reason for not attending school is that education is of little use and doesn't secure job opportunities. Trade certification and vocational training aimed at job relevance can address this issue.

The UPSHIFT program includes social innovation and social entrepreneurship. It is designed to empower young people to identify challenges in their communities and create entrepreneurial solutions to address them. UPSHIFT aims to build transferable skills and create opportunities, with a focus on the most disadvantaged young people, with a primary outcome of UPSHIFT being to address youth employment.

The cost of the interventions

As shown in Figure S2 (overleaf), the intervention costs rise to about $360 million in 2030 and peak at about $400 million in 2035, after which the cost of the initiatives begins to decline. The cost of the Youth Readiness Initiative, SEL and pedagogical improvements are three of the higher expense components totalling about $160 million in 2030. Each are relatively labour intensive and therefore high cost, but are important in addressing, in different ways, psychosocial issues facing students and their likelihood of staying at school. The cost of the school building and infrastructure peaks at almost 60 million in 2035. Expenditure on most programs begins to decline by 2040.

The total cost of the inventions compared with the baseline costs represents an additional $1,905 million from 2022 to 2030, and $6,355 million from 2022 to 2050.

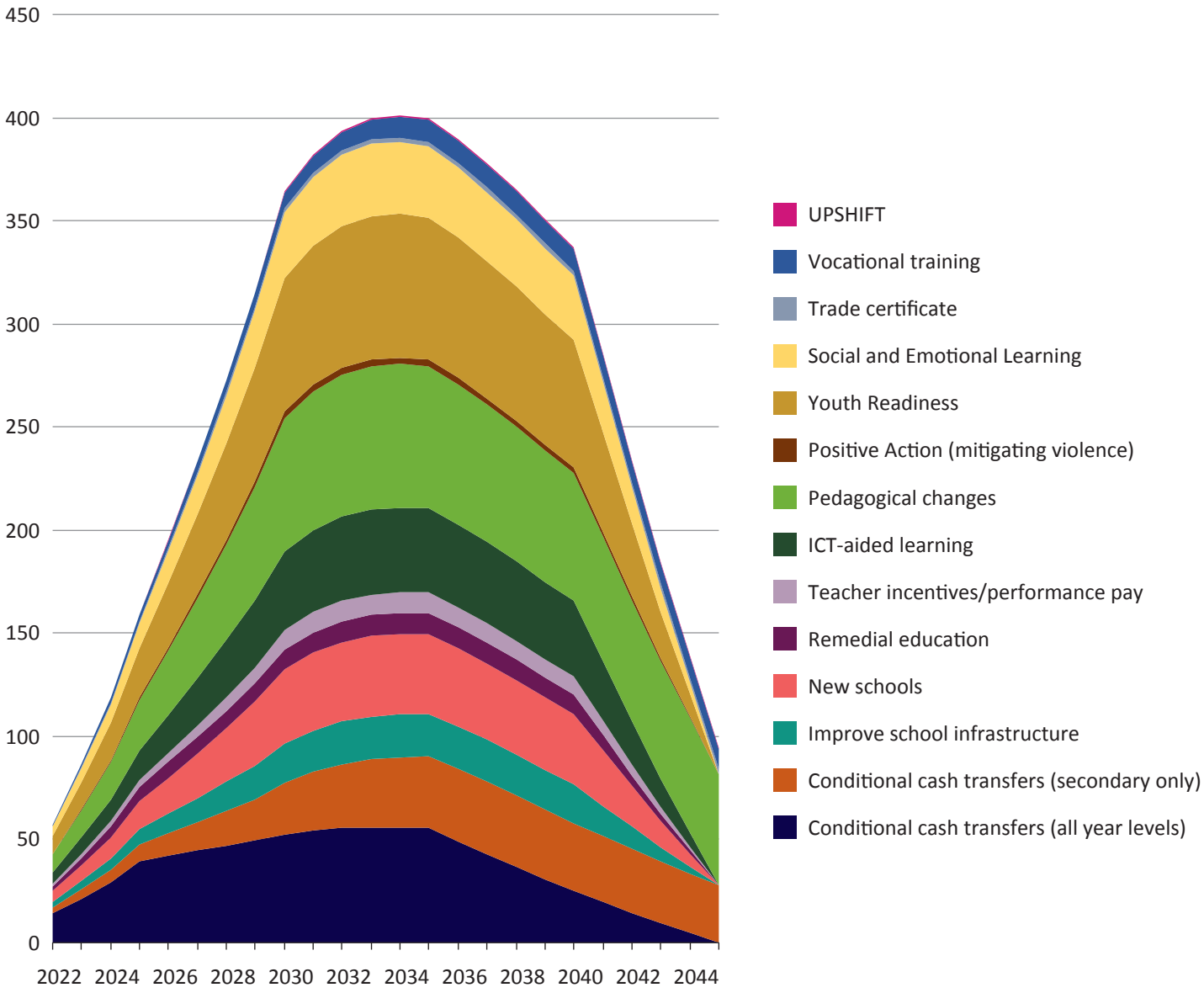

Figure S2: Modelled formal and non-formal intervention costs in total and by intervention, US$ million. Source: Authors estimates.

Education outcomes

Two measures of education outcomes from which significant employment and productivity gains are derived, are years of schooling and secondary completions. The economic returns to years of schooling vary by country and are relatively low for Syria. Nonetheless, additional years of schooling form part of the positive economic benefits derived from increased education. The other measure is secondary education completions. The literature indicates that completing secondary school substantially increases the likelihood of obtaining quality employment in most lower and middle-income countries such as Syria (Sheehan et al., 2017; Sheehan and Shi, 2019).

Figure S3 (overleaf) compares both the intervention and baseline cases. It shows that the interventions increase secondary school completion outcomes very substantially between 2020 and 2040 compared with the baseline. The intervention case is 23% and 27% higher for females and males respectively.

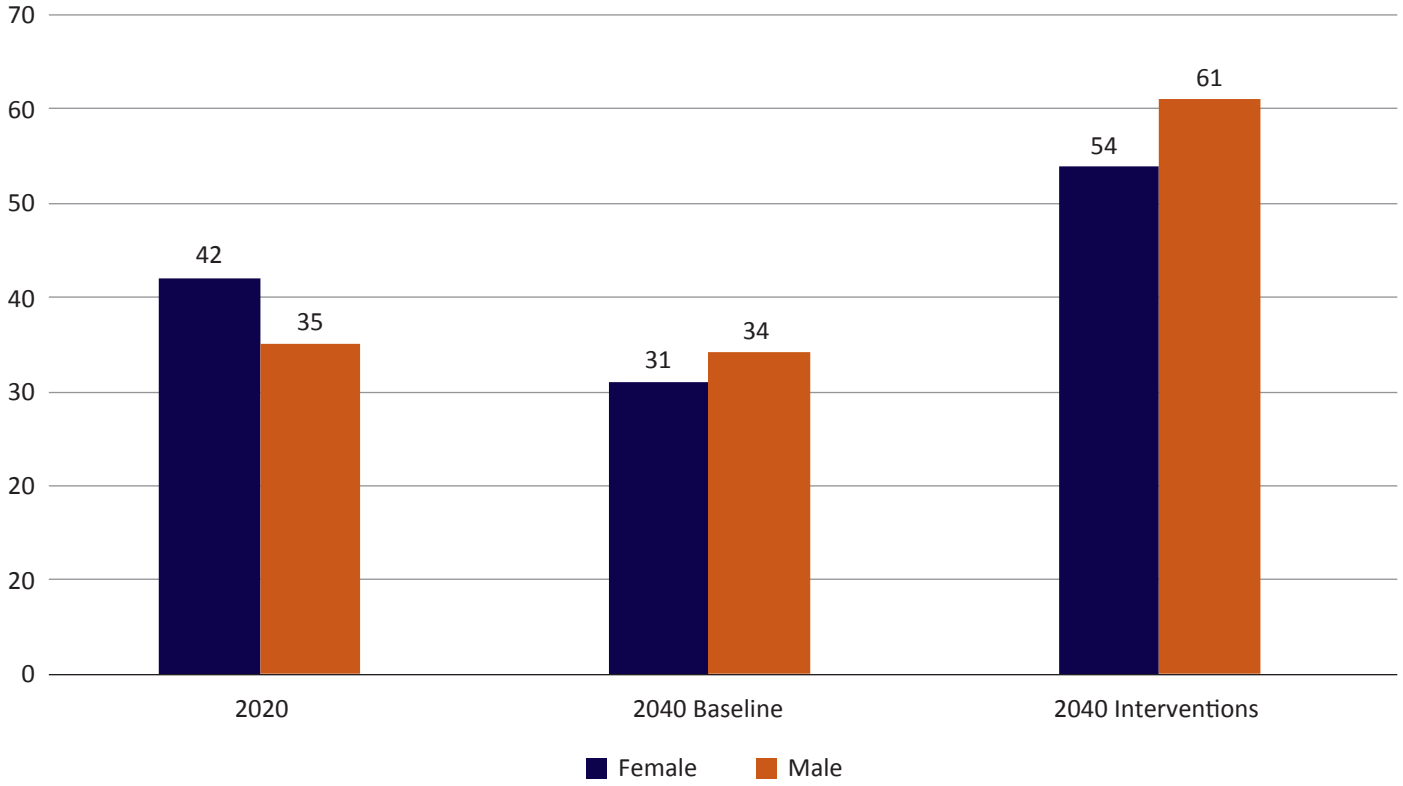

Figure S3: Secondary school completion rates for 20–24-year-olds by age, 2020 (estimate), 2040 (projected baseline and intervention cases). Source: Authors estimates.

Estimating the economic benefits

This report provides evidence of the significant economic gains – of the order of 40 times the costs – to be made by investing in a package of interventions in education for adolescents. These returns, particularly in education, are long-term in nature. The timely investment in related interventions is necessary to transform the lives of each adolescent cohort over their life course. In addition to the importance of an enabling economic environment, the success of these initiatives will be highly dependent on maintaining a conducive socio-political environment, maintaining appropriate levels of protection, reducing GBV and promoting gender equality.

Given the crisis prevailing in the country for a decade, there is a serious shortage of good data on many aspects of economic and social life in Syria over the past decade. This means that the benefits modelling must do the best it can with the available data, while recognising the substantial uncertainty surrounding our estimates.

We estimate the impact of two components. The macroeconomic multiplier effects on total GDP of the increased investment expenditure, as well as an enhanced ability for Syria to innovate. This is offset to some degree by the leakage of the increased expenditure into imports, which for Syria may be relatively high.

The second component is the impact of better education and training on the individual productivity of the cohorts who receive that education and training. There are several aspects of this impact:

- an increase in productivity for each completed year of schooling
- increased productivity when at work resulting from better quality learning while in school
- increased productivity and employment arising from upgrading a better-educated work force from informal to formal work, and
- the productivity effects of improved job skills, such as those arising from vocational training and the development of IT/internet skills and interpersonal skills.

A third component which, due to lack of data, we are unable to estimate while acknowledging its importance for Syria, is the effect of better education and training on the health (including mental health) and wellbeing of the cohorts and their children.

Overall results

Table S1 shows the benefit-cost ratios (BCRs) for the implementation of the education initiatives previously discussed. The three cases have different, largely macroeconomic assumptions. For instance, the preferred case assumed a GDP growth rate of 4% per annum, while the high and low cases assumed a GDP growth rate of 5% and 3%, respectively. The strong variation of these BCRs over time is also evident in these estimates. For our preferred case for the parameter setting, the BCR of the interventions to 2030 is 2.5 rising to 14.5 to 2040 and 42.2 to 2050. A similar pattern is evident for the high case and low case. By comparison with the BCR of 14.5 for the preferred case in 2040, it is 21.4 for the high case and 13.7 for the low case. This suggests that the estimates are quite robust to significant variations in the assumptions.

Table S1: Results of benefit-cost ratios for three scenarios, 2030–50

Parameter	Preferred case	High case	Low case
Results			
Benefit-cost ratios (discount rates)			
> To 2030 (@ 3% pa)	2.5	4.2	1.7
> To 2040 (@ 5% pa)	14.5	21.4	13.7
> To 2050 (@ 7% pa)	42.2	49.9	34.2

Source: Authors estimates.

These are, by any standard, high BCRs, and show that these high return investments would be sustained even with substantial downward revision of the assumptions, as illustrated in the low case. The pattern of BCRs over time highlights the fact that these are long-term initiatives which could have a major impact on Syrian society. These long-term benefits are being foregone, while appropriate investment in education and training in Syria remains impossible.

Conclusion

The economic and social situation in Syria is dire and this is reflected in the parlous state of the education system. The crisis has destroyed much of the physical infrastructure, a significant proportion of teachers and other staff have left the system and millions of students are out of school. All the available evidence suggests that both the short- and long-term social costs of this failure in the capacity to provide education services to school aged children is immense. They strike at the very core of the functioning of Syrian society. Together, they exacerbate the continuing loss of social cohesion, and encourage the increasing tendency towards a violent and more militarised society. The position of young women continues to deteriorate, and children suffer from increasing levels of toxic stress and other mental health issues.

While the economic implications of this ongoing loss of social fabric are likely to be severe, their ongoing impact is difficult to quantify. Accordingly, a major focus of this report has been to estimate the opportunity cost of allowing this deterioration in Syrian education to continue. It seeks to assess the considerable benefits of reinvesting in the recovery of the education system.

In doing so, we have identified a package of interventions to lift the performance of the education system. This package includes new and rebuilt schools, improvements to teaching standards and addressing remedial education, increasing access to IT facilities, at home as well as school, and supporting the recovery of student mental health. Interventions also specifically address improving retention between lower and higher levels of secondary school, which was a particular weakness in the pre-crisis period. Non-formal and vocational schooling is encouraged to better equip students with employable skills.

These interventions are designed to increase enrolments, reduce dropout rates and improve secondary school retention levels. Success with these education performance measures has economic implications. A major part of the modelling is devoted to estimating the economic benefits of these improved education outcomes, which open up new job opportunities and increase productivity. While small, relative to the long-term employment and productivity gains, the expenditures on the intervention program, which is estimated to peak at about $400 million in 2035, is also expected to have a stimulatory effect.

While many assumptions are made in the course of estimating the estimated BCRs, they suggest very high economic returns to the program of educational interventions. Given the long-term nature of the benefits and the time taken for these interventions to achieve measurable economic benefits, the BCRs are sensitive to the period over which the benefits are measured. In our preferred case, the BCR with benefits to 2030 is a relatively modest 2.5, compared with a BCR with benefits to 2050 of 42.2. While plenty of items of physical infrastructure are built for BCRs of less than 2.5, the extension of the estimation of benefits to 2050 indicates that, in the longer term, the recovery package of educational interventions would have a major impact on Syrian society.

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Chapter 1: Introduction

This report outlines the results of a study to determine the economic and social cost of not reinvesting in the rebuilding process of the post-crisis education system in Syria. It examines the problem from two perspectives. Part 1 focusses on the current and future social costs should the status quo remain in place. Part 2, the more extensive part of the report, provides the results of detailed modelling from a cost-benefit analysis, which estimates the net economic benefits of a recovery investment program in the Syrian education sector. These net economic benefits reflect the opportunity costs of allowing the status quo to be retained. The Appendices provide complementary background information about the Syrian economy and the education system (pre-crisis and post-crisis).[1]

1.1 Current situation in Syria in relation to education

Up until the conflict in 2011, the Syrian education system compared favourably with other countries in the region, and young people there were among the most educated in the Middle East and North Africa (MENA) region. Syria had achieved near universal primary education enrolment and completion (96% completion rate in 2010), with a strong transition rate from primary school to lower secondary school (98.5%) and a youth literacy rate of 92% (UIS, 2022). These outcomes were mainly due to the Syrian Government's commitment to, and investment in, education.

However, in spite of strong growth in the number of secondary school graduates over 2000–11, growing at 7.3% per annum and more than doubling over the period 2000, secondary school completion rates remained relatively low with more than 20% of students dropping out each year between Years 7 and 8. The limited comparative international data available suggest that the quality of Syrian schooling was relatively low at that time (Central Bureau of Statistics Syria, various years).

Enrolments in the vocational education system were modest and growing only slowly – by 1.1% per annum between 2000 and 2011 (Central Bureau of Statistics Syria, various years). It is also apparent that in addition to the slow growth in the number of vocational places, Syrian courses did not cater adequately for the skills more in demand in modern economies, such as digital technologies, communications, business, health care and education support services.

Related in part to these factors, in the pre-crisis period, young people in Syria had low labour force participation rates and high unemployment rates. In 2010, only 30% of Syrians aged 15–24 years were in the workforce (50% for males and 9% for females) and of these 20% were unemployed (16% for males and 43% for females) (Central Bureau of Statistics Syria, 2017).

The crisis erupting in 2011 has had a devastating impact on the Syrian education system, with only 54% of schools still functioning as of 2018, and of these 15% were in need of rehabilitation, 140,000 teaching and other education personnel (one third) estimated to have left the education system, and over two million children out of school, and still others at risk of dropping out. Of the total number of 16,521 schools in 2018, only 8,856 were functioning, although the data was affected by the number of schools in areas not controlled by the government. In a 2018 survey, 70% of families replied that the 'current crisis' was the main reason for out-of-school children not attending school (Ministry of Education, 2021).

Since the outbreak of conflict, millions of Syrian children have migrated or become refugees in neighbouring countries. As of December 2018, there were over two million children in five neighbouring countries – Turkey, Lebanon, Jordan, Iraq and Egypt. Turkey had over one million or 50% of the children, followed by Lebanon which had 666,491 children (No Lost Generation, 2019). Fifty-five per cent of the children were in formal education programmes and a further 6% were in non-formal education. However, 39% of the refugee children were receiving no formal or non-formal education.

This makes recovery for the Syrian education system a challenging project, but if not addressed, it will be a human tragedy for more than one generation of Syrian children and adolescents.

1.2 Introduction to the types of costs used in this report

In this report, the terminology of costs and benefits is used in various ways, and this use needs to be made clear. We use two terms in referring to the costs to individuals or to society as a whole arising from a low level of educational outcomes, namely:

- **Opportunity costs** – the net benefits to individuals and to the community foregone by those poor outcomes, which can be measured by long-term modelling.
- **Direct costs** – the costs arising from a continuing low level of educational outcomes, which are directly observable but cannot be measured at this time by this form of modelling.

1. For information about the literature on which the set of interventions selected are based on for this study, see Symons et al. (2022). *Proposed Interventions for Modelling Formal Education*, VISES Project Working Paper 2022–1, Victoria Institute of Strategic Economic Studies, Victoria University, Melbourne, at: https://www.vu.edu.au/sites/default/files/proposed-interventions-for-modelling-formal-education-working-paper.pdf.

Direct costs are typically social costs (factors such as increased violence, poor mental health or violence against women) which are evident as a product of poor educational outcomes, and some can be measured by appropriate techniques in that situation. However, most of the social costs are difficult to measure in practice. These costs and the consequences of not investing in education for these costs, in the Syrian context, are discussed in Chapter 2.

By contrast, one common way of measuring opportunity costs (such as poor employment prospects arising from lower human capital) is to model two scenarios – a base case and an intervention scenario producing better educational outcomes – and to estimate a range of economic and social outcomes for each scenario. The improvement in these outcomes in the intervention case represents the benefits foregone in the base case, and this is the way in which 'benefits' is used in this report.

The estimation of these opportunity costs is the focus of Chapters 4–7.

Complicating this exposition of costs is the cost of financing the intervention scenario to produce the better educational outcomes. These costs, such as additional classrooms, better trained teachers, and incentives to attend school, are referred to in this report as 'intervention costs'. In estimating the opportunity costs foregone, these intervention costs are subtracted from the estimated benefits. The cost of not investing in education is the net **benefits foregone**, arrived at after subtracting the intervention costs from the benefits.

1.3 Modelling the economic costs and benefits

While the direct costs outlined above are immediate and confronting, most of this report is directed at estimating the significant benefits of implementing a recovery plan for the Syrian education system. The net benefits generated by a recovery program are equal to the opportunity cost of not investing in such a program.

We model two scenarios. A baseline which includes the current costs of running the education system and generates the current level of education outcomes, including the number of dropouts, and completions at primary, lower and upper secondary levels. The second scenario is to run the models with an intervention package of programs designed to achieve a recovery of the education system. There is a cost to these programs which we describe, as outlined above, as the **'intervention costs'**. These programs generate enhanced education outcomes when compared with the baseline, such as fewer dropouts and higher secondary school completion rates. The economic benefits of these enhanced education outcomes are calculated by estimating their positive impact on productivity and better job opportunities. The increased earnings received by these better educated entrants to the labour market generate higher gross domestic product (GDP) over their working lifetimes. This increased GDP forms the basis of the estimated economic benefits of the recovery program.

Both the intervention costs and the benefits arise over different time periods. Most of the intervention costs arise early in the recovery period, while the economic benefits are delayed by the time to gain employment and earn an income. To adjust for these time differences, we apply a discount rate (3%) to both the annual intervention costs and economic benefits, and sum the two series to be able to compare them in the present period.

One way to consider the value of the investment in the recovery program is to subtract the sum of discounted intervention costs from the sum of discounted economic benefits to arrive at the net economic benefits, or as outlined above, this is the opportunity cost of not investing in an education recovery program. The other measure, employed in this report is to construct the benefit-cost ratio (BCR) by dividing the sum of the discounted economic benefits by the sum of the discounted intervention costs. This BCR estimates the total benefits generated by one currency unit (US dollar) of intervention costs.

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PART 1
ASSESSING THE SOCIAL COST

Chapter 2: Direct cost of failing to invest in education in Syria

2.1 Introduction

Children (aged 0–14 years) are estimated to make up 33% of the population of Syria, and young people (aged 15–24 years) represent 19.3% (World in Maps, 2021). This large group of people, in the key developmental phases of life, rely heavily on a well-functioning education system. In this chapter, we study what we call the direct costs, which include the social and psychological costs, of the failure to invest in the education system in Syria. These costs have not been included in the modelling of opportunity costs reported in Chapters 6 and 7, because there is neither the data nor the modelling tools available to do so. Even so, they remain of vital importance for Syrian society.

Young people have been living under extremely difficult circumstances since the beginning of the crisis and have suffered many serious effects, many of which are long lasting and can be intergenerational. In the Universal Declaration of Human Rights, the United Nations has proclaimed that childhood is entitled to special care and assistance, and the family, as the fundamental group of society and the natural environment for the growth and wellbeing of all its members and particularly children, should be afforded the necessary protection and assistance so that it can fully assume its responsibilities within the community (OHCHR, 1989). **Like elsewhere in the world, Syria's children are 'human rights holders' which entitles them to care and protection for their special needs. They deserve to not just live and survive, but to thrive. Their rights deserve to be protected.**

In February 2022, the UN assessed 6.4 million children aged 3–17 as being in need of education services with over half in severe need. Compared with some of the other apparently more pressing needs, such as food, security and livelihood support, education provides both an immediate boost to wellbeing and is also a long-term investment in the life prospects of children and adolescents (OCHA, 2022, p25). Regrettably however, the short-term coping mechanisms to secure food, security and livelihood take precedence over educational attendance.

In Syria, five negative coping mechanisms to access food have been identified, including early marriage, begging, borrowing, child labour and child recruitment into conflict (OCHA, 2016). Other consequences include family break ups and resorting to crime and violence.

One of the most significant impacts of the crisis has been the loss of education, with only 57% of schools still functioning as of 2017 (World Bank, 2020, p44), over two million children out of school, 1.3 million are at risk of dropping out (Ministry of Education, 2021), and one in eight children are in need of specialized psychosocial support (UNICEF, 2019a).

There is an urgent need to address the issues facing young people and children in Syria. **Failure to address them would have repercussions for any attempt to preserve the resilience of Syria's children, families and communities, and in the long term, Syria's and the wider region's ability to stabilise or transition into reconstruction and long-term development.**

Education can help protect children, families and communities from some of the adverse and resilience-debilitating impacts of the crisis. There is concrete evidence that education has a positive impact:

> … both in terms of national income, economic growth and poverty reduction, and in human development outcomes such as health, fertility, women's empowerment, risk management, individual and community resilience, civic engagement and increased tolerance. (UNICEF, 2015a, p4)

Education can help in reducing poverty by improving lifelong earnings (see Chapter 6). It can also play a central role in the protection and promotion of children's psychosocial wellbeing in multiple ways (as discussed in detail in Chapter 3) and described by Dybdahl and Williams (2021). First, they argue, education appears to have positive effects on psychosocial wellbeing in and of itself. In addition, educational settings are often staging points for the provision of psychosocial support (Bosqui and Marshoud, 2018). They then go on to say that schools and other educational settings can provide some stability by offering children safety, predictability, and a sense of accomplishment, dignity, and hope. Thirdly, efforts to bring schooling and mental health interventions together, as embodied by Social and Emotional Learning (SEL) curricula and instructional practices, can help all students acquire the attitudes and skills they need to manage and regulate their complex and difficult emotions, build prosocial attitudes, learn empathy and awareness of others, and develop conflict-resolution skills (Mahoney et al., 2018).

Equipping students with these skills in emergency contexts may help reduce the distress of children and families, and in return prevent destructive coping mechanisms such as crime, conflict, family break-up, etc. (Durlak et al., 2011; Zins et al., 2004). They further quote Jones and Khan (2017), who show how advances in cognitive science highlight the critical nature of social and emotional dimensions of learning. The authors conclude that beyond the cognitive content knowledge, children are expected to acquire positive experiences in educational settings which can help them learn to live and thrive (cited in Dybdahl and Williams, 2021, p5). The costs and benefits of specific SEL interventions are discussed in detail in Chapter 3.

Unfortunately, as UNICEF (2015a) indicates, international aid does not give as much priority to education as it does to health. While not minimising the importance of health interventions, the report indicates that during 2010–2012, on average, total external aid to health amounted to US$20 billion a year compared with only US$13 billion a year for education, based on OECD estimates. In Syria, the international donor community has for more than a decade generously and persistently supported education services, mostly for light infrastructure rehabilitation, and for civil society organizations setting up non-formal community-based learning centres. Due to the prevailing stalemate in international diplomacy and the absence of political solutions (see UN, 2022), a consideration for formal education support necessary for children to return and integrate into formal schools that are affordable, accessible and child-friendly is not anticipated. This will directly impact the developmental opportunities for the majority of Syria's children, as well as their teachers across Syria.

Although Government of Syria allocations to the Ministry of Education increased from SYP 56 billion in 2010 to SYP 300 billion in 2021, in real terms, allocations have declined more than six-fold during this period (81% decline). This is the highest annual decline recorded since the beginning of the crisis. Recurrent expenditures such as salaries represent 88% of all planned expenditures, leaving only SYP 42 billion for capital investments. These are allocated to technical education (SYP 12 billion) and the central administration of the Ministry (SYP 26 billion) (UNICEF Syria, 2021).

2.2 Costs of not investing in education

In this chapter, we cover ten forms of direct costs related to the partial collapse of education in the continuing Syrian crisis. These are:

- shortage of key education services such as quality basic and secondary education, early childhood development and education, vocational education and inclusive education, multiple pathways for out-of-school children, resulting in insufficient stimulation, early learning, safe quality learning, and alternative learning pathways for poverty and conflict-affected children and youth
- further loss of human capital
- the deteriorating status of young women, in several dimensions
- poorer mental health
- violence and crime (including drug-related crime)
- child labour and the growing vulnerability of young people to become recruited by armed groups
- the further increase of social corrosion and risks of violent conflict, as a result of an increase in horizontal education inequality
- weakening of resiliency of children, families and communities
- the cumulative economic and social effects of the on-going deterioration of education, and
- risk of increased migration.

The reality of the ten factors listed above is widely recognised, but a decade of continuing crisis has precluded the collection of systematic official data on them. As a result, we rely here on partial data and reports from various non-official sources available mostly from government-controlled areas in Syria, and corroborated by referencing evidence from international research findings.

The intensely difficult situation in which young Syrians are growing up, and in which Syrian schools operate, is well documented, including in later chapters of this report. Many factors shape the deteriorating situation in the ten areas mentioned above, and we do not claim that this situation is only, or even mainly, due to the failings in the education system. However, these problems are grave, and the failure of the education system is a major contributor to them. If there is no re-investment in the educational system, the situation will further deteriorate over the coming decade. As a consequence, the social costs of not investing in schools are likely to be very high. The young people of Syria will be even worse off than they are now, and will carry the burden to the next generation. In the words of Misty Buswell, the Save the Children's regional advocacy director for the Middle East: 'If the generation of children who are going to have to rebuild their country aren't equipped to do that and they don't have the tools, then the country remains devastated even after the conflict is over.' (Masri, 2017).

2.2.1 Educational services

The economic costs of replacing damaged, destroyed or occupied schools and lost school equipment was estimated by a Save the Children report (2015a) to be as high as £2 billion ($3 billion). Furthermore, the report estimated that the long-term impact on Syria's economy of 2.8 million Syrian children never returning to school could be as much as 5.4% of GDP, which equates to almost £1.5 billion ($2.18 million).

UNICEF (2015a) estimated the economic loss from school dropout due to the Syria crisis to be US$10.7 billion, or about 17.7% of the Syrian GDP in 2010. By 2021, OCHA (2021a) estimated 2.5 million children, mostly boys, were out of school.

This compares with the estimated net opportunity cost of not investing in the education recovery program discussed in Chapters 4–7 of $87.1 billion. While there are differences in the assumptions underlying these two estimates, both are based on a human capital approach, meaning that both are concerned with the loss in productivity and job opportunities, either as a result of the crisis or the opportunity cost of not investing in the recovery program. Both are measured in terms of the discounted value of earnings lost from the crisis (UNICEF estimates) or gained from the recovery program (VISES). A comparison of the two estimates confirms the immense value of the suggested recovery program.

A UNICEF analysis of the Syrian State Budget indicates that:

> … allocations to the Ministry of Education have increased in nominal terms, from about SYP 56 billion in 2010 to almost SYP 300 billion in 2021. In real terms however, allocations to the Ministry declined more than six-fold during this period (81% decline).
>
> Comparing 2020 and 2021, planned expenditures by the Ministry show a sharp decrease of 55% in real terms. This is the highest annual decline recorded by the Ministry since the beginning of the crisis. Recurrent expenditures represent 88% of all planned expenditures, leaving only about SYP 42 billion for capital expenditures. These are allocated to technical education (SYP 12 billion) and the central administration of the Ministry (SYP 26 billion).
>
> The lack of resources to invest in education continues to worsen education outcomes. It is estimated that out-of-school children range between 1.1 million (ages 6–14 years) and 2.5 million (ages 5–17 years), among a school-age population of about seven million. Kindergarten enrolment declined from 12% in 2011 to 8% in 2018. Among the students who passed the ninth-grade exam in 2018, only 81% registered for the tenth grade. Furthermore, 11% of students attending school were not in the correct grade for their age. Only 55% of the 19,663 schools registered pre-crisis were functional by June 2018. (UNICEF Syria, 2021, p19)

Unless additional resources are made available to fund schools, school access, teachers, teacher training, and school supplies, education will continue to be limited, and an entire generation of children will have had insufficient schooling or no schooling at all, which will have repercussions on their longer term development and opportunities (UNICEF, n.d.). There is a large international literature on student absenteeism and academic performance (Chen and Stevenson, 1995; Connell et al., 1994; Finn, 1993). A large-scale study by Hancock and colleagues found that performance on a national mathematical and literacy test was 25% lower for Year 3 students who were away from school for more than 40% of school time (Hancock et al., 2013). Other literature has emphasised the lasting and cumulative effects of such absence (Alexander et al., 1997) and also for Syria (Qaddour and Husain, 2022).

UNICEF (n.d.) also indicates that even those with access to schooling experience, study in overcrowded classrooms, struggle to finance transportation to school, study under teachers whose salaries' purchasing power has evaporated and who lacked opportunities of teacher professional development for a decade, and who likewise suffer from psychological distress as a result of multiple consequences of the crisis. Nearly one-third of students drop out before finishing primary school. Many Syrian families deem it impractical to invest in education for their children, especially when that investment requires sacrificing food or shelter (Borgen Project, 2020).

Poverty in Syria is a direct result of violent conflict. Poverty will only worsen as an increased number of uneducated Syrians seek to enter the workforce. Without the development and economic opportunities that education provides, Syrians will continue to live in poverty, which perpetuates the vicious cycle of conflict and poverty.

UNICEF (2015a) provides some evidence for investing in education:

> … Patrinos and Psacharopoulos (2013) cited in Lomborg (2013) demonstrated that there is a correlation between increasing the education level in a country, measured by average years of education, and decreasing income inequality, as measured by the Gini coefficient. Using data for 114 countries in the 1985–2005 period, they showed that one extra year of education is associated with a reduction of the Gini coefficient by 1.4 percentage points. (p8)

UNICEF (2015a) also indicates:

> … the average private return for one additional year of education was found to be a 10 per cent increase in income, according to computations from more than 800 surveys in 139 countries. The returns are generally higher in low- or middle-income countries than in high-income countries. It is also noteworthy that returns are higher for women than for men. Over the years, private returns to education have modestly decreased, suggesting that the world demand for skills has been increasing as world skill supply has also increased (Montenegro and Patrinos, 2014). Nevertheless, they remain high – a strong argument for education investment, particularly in developing countries. (p8)

In Syria, only 12% of children have access to pre-primary school. Pre-primary education has the potential to provide significant personal and social economic returns (Heckman and Masterov, 2007). Heckman's research on the 'The Lifecycle Benefits of an Influential Early Childhood Program', shows that high quality birth-to-five programs for disadvantaged children can deliver a 13% per year return on investment (2017). The program analysed a wide variety of life outcomes, such as health, the quality of life, participation in crime, labour income, IQ, schooling and increases in mothers' labour income as a result of subsidised childcare. For females, the study found the quality program had positive effects on high school graduation, years of education, adult employment and the adult labour incomes of participants and their parents. The results for males show lower drug use and blood pressure, as well as positive effects on education, and later, labour income. The study also indicated that a good quality program improved the economic prospects of treated children and their mothers, allowing the latter to enter the workforce and increase earnings, while their children gained the foundational skills to make them more productive in the future workforce – having a two-generation effect on the workforce.

In low-income countries, the expansion of primary education contributes the most to national income growth. It is estimated that 10 additional percentage points in the primary enrolment rate is associated with an increase of between 0.2 and 0.3 percentage points in GDP per capita annual income growth (in real terms), a significant increase, as the average annual growth had been 0.8% during the period considered (UNICEF, 2015a, p15). Public costs for secondary education decrease the economic returns as earnings benefits are limited. Overall, private returns are high for an individual in primary education (as compared to an individual with no education), drop in secondary education and rise again with tertiary education (UNICEF, 2015a). For tertiary education in low-income countries, there is a 26% return for personal and 11% for social returns, taking into account public costs (UNICEF, 2015a, p16).

In summary, the destruction of so many dimensions of the Syrian education system as a result of the crisis, is having, and will continue to have, long lasting adverse economic and social consequences for a full generation of Syrian children and their families. Government funding for education has declined dramatically. Low attendance levels means that the capabilities of children are not being developed. Poor cognitive development of this generation of children will not only have serious implications for future workforce productivity and employment opportunities, but also severely reduce their resilience.

The following sections will elaborate on the ways in which the failure to provide adequate education is reducing the resilience of children, their families and the community more generally.

2.2.2 Loss of human capital

The widespread destruction of the educational infrastructure and teaching capacity as outlined above, has reduced both the quality and years schooling and the resulting loss of knowledge and skills. This represents the reduction in one component of human capital. The World Bank defines human capital to include good health as well as the knowledge and skills that people invest in and accumulate throughout their lives. Investing in people through nutrition, health care, quality education, jobs and skills helps develop human capital (World Bank, 2018).

While the impact of the crisis on the health system has not been a focus of this study, Syria's capabilities to deliver health services to maintain human capital have been severely diminished. For instance, the adverse impact of the mental health of children and adolescents has been a major problem with serious consequences for human capital.

The World Bank *Toll of War* (2020) report on the economic and social consequences of the conflict in Syria, states that some preliminary analysis by Hamilton and Nguyen (2017) demonstrate that 'the combined effects of casualties, forced dispersion, and reduced investments in human capital formation could add up to a 30 per cent permanent loss in the country's human capital stock (compared with the 2010 stock)' (p53).

2.2.3 The deteriorating position of young women

The lives of women and girls have changed profoundly because of the Syrian crisis, with its negative consequences further exacerbated by the COVID-19 pandemic and the economic downturn in neighbouring Lebanon. Adolescent girls in particular, face complex challenges that have influenced their development and will have an impact for the rest of their lives. The crisis continues to have a gendered impact, with women and adolescent girls paying a high price for harmful and discriminatory gender norms, including gender-based violence (GBV), movement restrictions, child marriage, and lack of access to education (UNFPA, 2019).

The evidence presented in this section indicates that costs of not investing in education for girls include:

- girls who drop out of school early are more likely to marry or have children early, before they may be physically and emotionally ready to become wives and mothers
- it has consequences for their health and wellbeing, and deprives them of employment opportunities and higher lifelong earnings
- it perpetuates the cycle of poverty

- this perpetuation of inequality tends to weaken social cohesion and can increase fragmentation of society
- early marriage and low education is associated with high fertility rates, high population growth and increases in migration
- early marriage reduces not only the mother's years of schooling but those of her offspring, lowering their likely lifetime earnings and other opportunities, and
- increases in gender-based violence (GBV), with all the accompanying adverse impacts of GBV.

Child-friendly schools (especially girl-friendly schools) can increase enrolments and reduce child marriage and mitigate GBV, thereby helping sustain education equity and resilience.

Failing to address the specific needs and capacities of adolescent girls has major and long-term implications for them and for wider society. In a growing number of protracted crises worldwide, adolescent girls are missing multiple years of education and are entering young adulthood without having had opportunities to develop skills, become economically independent or contribute meaningfully to society. This jeopardises their potential dividend towards recovery, peace building and long-term development (Plan International, 2021).

Failing to invest in education is likely to make the position of young women in Syria much worse in that:

- their lifetime earnings will continue to deteriorate, thus impacting not only on their ability to provide for their own children regarding health, education and other social services, but also more generally on national economic growth
- child marriage rates will increase, which impacts on child and maternal mortality, and the health of the following generation
- earlier marriage and lack of access to sexual and reproductive health services as a result of the crisis will lead to an increase in fertility rates and migration, and high population growth, and
- opportunities will have been missed to provide girls with agency, confidence and knowledge that is likely to reduce the violence they will encounter, reducing the burden of health cost on the family and the economy (GDC, 2022).

However, in Syria, education for females drops with age. Around 91% of female children aged 6–11 were in education, but this had dropped to 84% among female children aged 12–14 and improved slightly for those aged 15–17 to 86%; but only 31% of females were in tertiary education in 2021 (OCHA, 2021b).

The Humanitarian Needs Assessment Programme (HNAP) report (OCHA, 2021b) also indicates that the number of females aged between 15–29 who were not in education, employment or training (NEET rate) was 32%. It was highest in Northwest Syria (67%), followed by North Syria (65%), Northeast Syria (57%), and Central and South Syria (19%).

Gender-based violence (GBV)

The UNFPA (2019) reports that in Syria, women and girls continue to experience various forms of violence in their homes, in flight from danger, and within internally displaced persons camps and other places – yet these experiences are generally hidden under a blanket of silence, as is often the case around the world. It goes on to indicate that as in the past years, the forms of violence that are the most common in Syria are sexual violence, domestic violence and early/forced marriage.

Education can:

- help address the root causes of GBV, which has high economic and social costs and can have intergenerational impacts
- reduce violence and promote non-violent equitable norms
- reduce inequality, and
- contribute to women's social and economic empowerment, hence increasing their protection and contribution to society.

GBV can affect both men and women. However, the majority of victims of GBV are women and girls. Deeply rooted beliefs of male patriarchy place women and girls at risk of discrimination and marginalisation, which in turn puts them more at risk of GBV. This risk is further exacerbated during humanitarian crises, when the normal protective mechanism and social networks are disrupted or absent (UNFPA, 2020). The global cost of violence against women and girls (public, private and social) is estimated at approximately 2% of global GDP, or US$1.5 trillion (Puri, 2016).

Vyas et al. (2021) found that out-of-pocket expenditures to individuals for seeking health care after an episode of violence ranged from US$29.72 (South Africa) to US$156.11 (Romania), and that lost productivity averaged from US$73.84 to US$2,151.48 (South Africa) per facility visit.

Education includes the importance of understanding an individual's human and legal rights, and their role in society. For girls, it informs them of the importance of making autonomous decisions regarding their bodies in reproductive health, providing consent and the path their lives will take.

However, education can help address the root causes of GBV, and good quality education in a child-friendly environment can help counter the impacts of negative gender stereo types. Engagement of whole school communities, including leadership, in developing and sustaining policies, protocols and practices, can reduce violence and promote non-violent, equitable norms (Parkes et al., 2016). Though evidence is weak on whether interventions targeting school infrastructure (e.g., toilets) reduce violence, well-resourced and managed schools may be better able to sustain work against school-related GBV (Parkes et al., 2016, pviii).

GBV is the consequence of gender norms and stereotypes, and is enforced by unequal power dynamics, but this can be mitigated through schools that are gender-sensitive, with teachers that have received teacher training on gender-sensitivity and are empowered to taking action on violence. Effective approaches create 'safe' learning environments, attempting to erode hierarchies by creating participatory, inclusive spaces for deliberation. By not supporting the education system, much-needed inputs for institutionalizing of work on gender and violence in schools and communities is being purposefully delayed (Parkes et al., 2016, pp 56, 59, 68).

The intergenerational implications of GBV have been considered by a number of studies and include child post-traumatic stress disorder (PTSD) symptoms (Lünnemann et al., 2019); increased risk of child mistreatment (Assink et al., 2018); and increased risk of children and adolescents experiencing emotional, physical and sexual abuse, of developing emotional and behavioural problems, and of increased exposure to the presence of other adversities in their lives (Holt et al., 2008).

Early/forced marriage

Early/forced marriage is a form of GBV. Factors that contribute to early marriages are varied and complex, but with the most significant being poverty. Financial transactions around marriage, when a girl is seen as an economic commodity are facilitated by prevailing social and cultural norms in households with low education levels (UNICEF, 2005; UNFPA, 2012; Parsons et al., 2015; Malhotra et al., 2011; UNICEF Syria, 2006).

The crisis in Syria has seriously exacerbated the degree of poverty and lack of education. Seventy-six per cent of Syrian households indicated an inability to meet basic needs in mid-2021 (OCHA, 2022). As indicated above, the crisis has had a devastating impact on the provision of education services.

Child marriage rates in Syria

In 2021, of the communities that took part in the UN-led Multi-Sectoral Need Assessment, 71% mentioned that early marriage is an issue (OCHA, 2022).

According to the most recent DHS survey in Syria conducted in 2006, around 18% of women married before the age of 18 (UNICEF Syria, 2006, p52). Various reports indicate higher marriage rates in Syria since the crisis, especially among refugee women. For instance, the UNFPA (2017) indicated that a survey conducted by UNFPA, the American University of Beirut and Sawa for Development and Aid that covered some 2,400 refugee women and girls living in Western Bekaa, found that more than a third of those surveyed between the ages of 20 and 24 had been married before reaching age 18, and among refugee girls currently between ages 15 and 17, some 24% are married. The survey further indicated that while estimates vary, some show child marriage rates to be four times higher among Syrian refugees today than among Syrians before the crisis. This indicates that displacement, instability and poverty are driving the number of underage marriages up.

The role of education in preventing child marriage

Education is a bulwark against child marriage. Completion of secondary school is almost a guarantee of avoiding child marriage (defined as marriage before reaching 18 years of age). Wodon et al. (2018, p22) indicate that:

> … each additional year a girl completes in secondary school reduces the likelihood of marrying as a child on average by 6.1 percentage points across the 15 developing countries. The potential impact is similar with a reduction of 5.8 percentage points for the risk of having a first child before age 18. With several years of education, the reductions in risks of child marriage and early childbearing are larger.

Child marriage is a key reason for girls to drop out of school. In a Pant Institute survey, there is evidence that 33% of survey respondents had discontinued education after marriage (Pant Institute, 2015, p174). Early pregnancy led to the discontinuation of education for 11% of respondents (p189). Ending child marriage would help improve girls' educational attainment. Conversely, keeping girls in school is one of the best ways to end child marriage (Wodon et al., 2017). In pre-crisis Syria, there were indications that early marriage rate declines as the woman's education rises (UNICEF Syria, 2006, p52).

Child marriage, lower educational outcomes and reduced levels of literacy are strongly correlated (Nguyen and Wodon, 2014). Low education outcomes indicate reduced economic participation (Chaaban and Cunningham, 2011). Education and vocational opportunities open the door for girls to develop the skills (Nguyem and Wodon, 2012), increase their earnings potential, generate better employment outcomes and productivity gains (Sheehan and Shi, 2019), and increase their

psychological and emotional awareness to make autonomous decisions on all aspects of their life at every developmental stage, such as whether to marry, with whom and when to have children, and how to live their lives after divorce and widowhood (UNFPA, 2019, p5).

Majgaard and Mingat (2012) computed the ratio of the relative benefit one additional year of education has on different human development outcomes in sub-Saharan Africa (in UNICEF, 2015a). The cost-to-benefit ratio for primary education is higher than for both lower-secondary and upper-secondary education, but with some exceptions including the age at first birth (in the 'childbearing' category, it is 40% more cost-effective to invest in lower secondary education than primary education) (p18).

An educated girl is more likely to marry later, to have her first child when she is not a child herself and education can help her to break the cycle of poverty. Good education strengthens the position of the women in the family, and makes them less susceptible to other forms of abuse. It is linked to empowerment, particularly for girls. Women with higher education are much more likely than uneducated women to be able to make their own choices in life concerning their spouse, number of children, working outside the home and making important household decisions (UNICEF, 2015a). There is also evidence that better education improves the health of the young woman and her children (Wodon et al., 2018).

Impacts of child marriage

The major impacts of child marriage according to the UNFPA (2013) are on health, education and economic outcomes.

The major health impact is due to teenage pregnancy and childbirth, and includes increased risks of miscarriage, still birth, premature birth and maternal death (UNFPA, 2013; UNICEF Syria, 2006; Pant Institute, 2015). The major contributory factor to teenage pregnancies is child marriage – the UNFPA suggests 90% of adolescents who give birth are married. Major factors contributing to maternal death, illness and disability include obstetric fistula, unsafe abortions, sexually transmitted infections, and psycho-social impacts. Child marriage is a violation of human rights, compromising the development of girls and often resulting in early pregnancy and social isolation, with little education and poor vocational training reinforcing the gendered nature of poverty (UNICEF Syria, 2006, p52).

Women who married at younger ages were more likely to believe that it is sometimes acceptable for a husband to beat his wife and were more likely to experience domestic violence themselves. The age gap between partners is thought to contribute to these abusive power dynamics and to increase the risk of untimely widowhood (UNICEF Syria, 2006, p52).

Child marriage has adverse health and educational intergenerational impacts (Delprato et al., 2017; Patton et al., 2018). A study by Delprato et al. (2017) in 32 Sub-Saharan countries, shows a significant source of inequality, with offspring of women married before age 18 receiving, on average, two years of less schooling than those whose mothers married after 18. Patton et al. (2018) outlined the biological, interpersonal and social processes in adolescent parents that have the potential to influence the growth and development of the next generation.

Specific intergenerational health impacts when mothers marry after age 18 include reduction in risk of anaemia among under-five children (Anjorin and Yaya, 2021), higher BMI and haemoglobin levels (Sunder, 2019), and less likelihood of stunting (Efevbera et al., 2017).

Interventions for poverty eradication, changing discriminatory social norms and encouraging girls to stay at school (to make them economically independent), could also help reduce child marriage rates and population growth (Wodon et al., 2017, p9).

Impact of ending child marriage and increasing education

No data is available that allows assessment of the impact of ending child marriage and increasing education in the Middle East. Notwithstanding, Wodon et al. (2017) looked at girls' education and child marriage in west and central Africa, and some of their conclusions included that:

- Controlling for other factors affecting total fertility, ending child marriage would result in a reduction in the number of live births that women have over their lifetime by about 10% on average in six countries that account for two thirds of West and Central Africa's population.
- Universal secondary education for girls could have an even larger impact, with a reduction in total fertility nationally of one-fourth on average. This estimate does not include the additional benefit that should result from the impact of universal secondary education on child marriage.
- Overall, ending child marriage and educating girls, especially at the secondary level, could help in substantially reducing fertility and thereby population growth. This would help countries increase standards of living and reap the benefits of the demographic dividend.

They also calculated the economic costs of child marriage related to population growth, health risks for young children, and lower earnings for women are large. While it is difficult to present precise estimates, due to the number of assumptions involved, Wodon et al. (2017) state that the benefits of ending child marriage by 2030 could reach well above an estimated $60 billion in purchasing power parity in the region. The benefits from reduced under-five mortality and stunting could reach more than $5 billion a year in purchasing power parity terms. The loss in earnings for women associated with past child marriages is estimated at $8.3 billion in purchasing power parity in six countries that account for two thirds of the region's population.

In summary, educated women are a key prerequisite to strengthen child, family and community resilience. They are better prepared to contribute to the economic survival of the family. They are less likely to experience violence than those with lower levels of education. Education in safe and inspiring learning environments is one of the best ways to empower girls and reduce harmful practices like child marriage. An educated girl will understand her rights, and have the confidence to claim them and to make her own choices about her future. She is also likely to understand the nutritional needs of her children and assess health conditions. Education is a significant prerequisite for women's empowerment, and an opportunity missed in contexts where education investments are not forthcoming.

2.2.4 Mental health

Children and youth in Syria have been living with continuous stress through the protracted crisis, worsened by the economic downturn, as well as the sanctions imposed by the 2019 *Caesar Syria Civilian Protection Act* and the COVID-19 pandemic, which could impose life-long costs on their physical and mental health (UNICEF, 2022; Moret, 2021, 2022). Children and youth living with continuous stress and distress are therefore likely to suffer toxic stress, which can lead to PTSD, depression, anxiety and reduced resilience (World Vision, 2018), all of which can impact on their development, adversely affect their educational outcomes, as well as have harmful intergenerational impacts (Shonkoff et al., 2012).

Untreated mental health problems in the adolescent years tend to extend into adult years. As discussed further below, the reestablishment of schools gives children a sense of the restoration of normality, familiar routine and hope for the future; all of which are vital for mitigating the psychosocial impact of violence, and displacement for individuals and whole communities. Failure to invest now in adequate educational and psychological programs that reach **all** school age children threatens deepening mental health problems for Syrian society in the future.

The overall costs include:

- persistence of toxic stress suffered by children, which can lead to PTSD, depression, anxiety and later suicide
- the costs of helping children cope with distress, anxiety, hypertension, and treating mental illness
- increase in the use of psychoactive substances; and increased costs for efforts to mitigate drug abuse, of treating drug addiction, as well as the resulting loss of potential earnings
- impact on the brain development of children and hence their educational outcomes, as well as intergenerational impacts
- loss of human capital
- limiting the ability of children to be resilient, and
- increasing disintegration of society and the social fabric.

Mental health of adolescents in Syria during the crisis

AN ICRC study (2021) found that nearly two out of three young Syrians report having experienced anxiety (73%) in the past 12 months, while more than half have struggled with depression (58%), distress (69%) and sleeping disorders (54%) because of the conflict. Moreover, among all those who reported such emotional distress, very few have been able to receive medical treatment.

Perkins et al. (2018) looked at the mental health of Syrian children, with a particular focus on PTSD. In their study, there were 492 children between 8 and 15 years randomly selected from schools in Damascus and Latakia. They found that in their sample, 50.2% of students were internally displaced and 32.1% reported a negative experience. Sixty-five per cent of those tested had at least one probable psychological disorder, with PTSD the most common (35.1%), followed by depression (32.0%), and anxiety (29.5%). Binary logistic regression indicated that PTSD symptoms were predicted by: living in Damascus [odds ratio (OR) 2.36, 95% confidence interval (CI) 1.51–3.69]; being female (1.54, 1.02–2.34); having depression and anxiety (2.55, 1.48–4.40); and the negative experiences of displacement and daily warzone exposure (1.84, 1.02–3.30 and 2.67, 1.08–6.60).

The mental effects include extreme grief resulting from injury or loss of close family members among children, adolescents and adults which adds to the stress. A study of Syrian refugee children near the border with Turkey found that 79% had experienced someone in the family dying, and more than 60% had experienced a stressful life event in which they thought someone was in great danger (Ozer et al., 2013). About 60% reported they had seen someone get kicked, shot at, or physically hurt; and approximately 30% reported they themselves were kicked, shot at, or physically hurt. Around 44% of children had experienced five or more of these stressful events, and 19% had experienced seven or more (Sirin and Sirin, 2015, p13).

Nearly half (45%) of the surveyed Syrian refugee children experienced PTSD symptoms – more than ten times the rate observed in other children around the world who also took the same survey (Fairbank et al., 2007). Conflict has seen children separated from their families and these children are considered to be at increased risk of psychological and social challenges. Armed conflict not only severely affects individual children and their educational attainment; it also affects the entire family system. This can cause destabilizing ruptures in the social fabric, networks, and services that support and protect children and families, ultimately hindering their potential protective capacities and potentially contributing to negative long-term intergenerational effects (Denov and Shevell, 2019).

Mental health challenges among population groups in humanitarian settings may also translate into an increased susceptibility to consume psychoactive drugs as they become available (Hanna, 2017). Forced migration populations are likewise known to be vulnerable to substance use as a coping mechanism, because of personally experienced pre- and post-migration stress and trauma, including loss of homes and livelihoods, violence, torture and family separation (Horyniak et al., 2016, p3). According to UNODC '… studies on the mental health of populations displaced by conflict have brought out the links with PTSD and depression, both potential triggers for initiating or escalating drug use' (2016, p70).

Toxic stress is triggered by adverse childhood experiences (ACEs), such as physical and emotional abuse, chronic neglect and violence. Exposure to the four ACEs is strongly associated with mental health conditions, and interpersonal and self-directed violence. Research also indicates that exposure to risk factors during early periods of rapid brain development can alter a child's physiology and gene expression – they become biologically embedded (Petersen et al., 2016). These changes can either help or hinder resilience and vulnerability in the face of trauma. If these experiences occur at critical moments of brain development, they can have severe adverse consequences for children's development, their educational outcomes (UNICEF, 2021a; Scott et al., 2016), as well as have harmful intergenerational impacts (Shonkoff et al., 2012; Julien et al., 2017; Ridout et al., 2018; O'Neill et al., 2021).

It is well recognised that mental health problems among Syrians of school age are widespread, although reliable data are limited. However, OCHA (2021a) reports that 27% of households surveyed in 2020 report that their children showed signs of distress, a big increase on the figure of 14% in the previous year. These problems are also more acute among the estimated 6.7 million internally displaced persons (IDPs) in Syria. For this group, 31% of households report that their children are showing signs of psychological distress.

In Syria, almost half of school-age children had not been attending school during some periods of the crisis. Reports indicate that nine years into the crisis, 50% of children were out of school throughout the nine years since the crisis began. As mentioned in the introduction to this chapter, in 2021, the Ministry of Education reported two million children – over one-third of Syria's child population – were out of school and 1.3 million were at risk of dropping out (2021). The UN further reports that one in eight children per classroom require specialised psychosocial support (UNICEF, 2019a).

The *Confronting Fragmentation* report indicates that during 2013–14, 42.7% of school-age children did not attend school (SCPR, 2016, p48) and 45.2% in 2014–15. Attendance at school varies considerably between different regions, depending on the nature of the conflict (SCPR, 2016). In 2014–15, non-attendance rate was highest in Ar-Raqqa and Der-ez-Zor (almost 95%), due to ISIS' decision to close schools under their control. Non-attendance in Aleppo was 74%, rural Damascus 49% and Idleb 48%, reflecting the continuing intensification of military operations. In safer regions, non-attendance rates were: Tartous 0%, Damascus 16% and Lattakia 17%. These widely differing attendance rates are indicative of widely differing rates of education access, which increase inequality and lead to social fragmentation.

Mental disorders in adolescents are in any case, a cause for concern in the Middle East and Africa. UNICEF (2021b) estimated that more than 13% of adolescents aged 10–19 live with a diagnosed mental disorder as defined by the World Health Organization, and prevalence is highest in the Middle East and Africa. It also reported that suicide is the fifth most prevalent cause of death for adolescents aged 10–19; for adolescent boys and girls aged 15–19, it is the fourth most common cause of death, after road injury, tuberculosis and interpersonal violence. For girls aged 15–19, it is the third most common cause of death, and the fourth for boys in this age group. The report indicated that the annual loss in human capital arising from mental health conditions in children aged 0–19 is US$387.2 billion (purchasing power parity dollars). Of this, US$340.2 billion reflects disorders that include anxiety and depression, and US$47 billion reflects the loss due to suicide.

Role of education in addressing mental health issues

Education plays one of the most important roles in bringing about recovery after violent conflict or major disasters (Barakat et al., 2013). It is both a silent victim of a violent conflict, as well as having a key role in conflict prevention and in the reconstruction of post-conflict societies (Buckland, 2004; UNESCO, 2011). Barakat et al. (2013) argue that education in emergencies assumes a 'dual humanitarian-developmental' function, and asserts that it is possible to intervene early by addressing basic education needs to construct a more orderly transition out of protracted and devastating crises into phases of 'recovery' and 'development'. In this way, it assumes a 'multiplier effect' (p126).

The International Institute for Educational Planning (IIEP-UNESCO) 2010 *Guidebook for Planning Education in Emergencies and Reconstruction* suggests that education not only saves lives in emergencies, it also sustains life by giving children a sense of the restoration of normality, familiar routine and hope for the future; all of which are vital for mitigating the psychosocial impact of violence and displacement for individuals and whole communities. Re-establishing educational services in Syria has an important role to play in improving their mental health.

Education is one of the important social determinants of health in adolescents. Safe and supportive schools, together with positive and supportive peers and families are crucial to helping young people develop their full potential (Viner et al., 2012; Basic Education Coalition, 2020). Schools play a key part in children's development, from peer relationships and social interactions to academic attainment and cognitive progress, emotional control and behavioural expectations, and physical and moral development – all areas reciprocally affected by mental health (Fazel et al., 2014). Schools offer a unique platform from which to provide mental health interventions to support children and adolescents with psychological difficulties. As detailed in the next chapter, mental health problems can hinder performance at school, but attending school, especially in conjunction with psychosocial interventions such as cognitive behaviour therapy, can have a significantly positive impact on mental health and hence on educational performance. School-based interventions that address anxiety, depression and suicide provide a return on investment of US$21.5 for every US$1 invested over 80 years (UNICEF, 2021b, p12).

There is also evidence for the significant protective effects of educational attainment on mental health. Wang (2021) using data from the China Family Panel Studies, found that one extra year of schooling improves the mental health scale by 0.14 standard deviations. Furthermore, the mechanism analysis shows that education positively affects self-assessed income and social status, and improves individuals' cognitive ability. Di Novi et al. (2021) found that: education plays a protective role against mental health disorders; high-educated people are less likely to experience depressive and anxiety disorders; education protects mental health status also in presence of adverse health shocks; and education can be used to promote mental health.

Among the relatively few studies on the association between educational level and mental disorders, most have reported a persistent association between lower education and higher prevalence of common mental diseases (Araya, 2003), major depressive and general anxiety disorders (Bjelland et al., 2008; Murcia et al., 2015), and excessive alcohol consumption (Droomers et al., 1999).

Cash transfer programs assist in influencing the mental health of children and adolescents by increasing school participation. Cash transfer programs have been found to positively impact on the cognitive and behavioural development of young children (De Walque et al., 2017); conditional cash transfers reduced suicide by 18% in Indonesia (Christian et al., 2019) and by 3.4–7.9% in Brazil (Alves et al., 2019), and unconditional cash transfers were associated with 15% reduction in depressive symptoms in youth aged 15–22, particularly for females (Angeles et al., 2019).

Mental health interventions for those from conflict zones

Evidence of mental health interventions on mental disorders of subjects generally from war/political violence contexts is provided by studies conducted in Bosnia, Sri Lanka and the United States. Most of the interventions reviewed included cognitive behavioural therapy, supplemented by various other psychosocial support programs (Layne et al., 2008; Becker et al., 2013; Berger and Gelkopf, 2009). The outcomes were generally large and significant.

Shah (2017) provides details of a program that addresses the acute psycho-educational needs of children affected by conflict-induced trauma and has produced promising outcomes when it comes to improving the wellbeing of participating children, by equipping them with skills for coping with the fear, stress, and anxiety of living in a context of continual conflict. The 'Better Learning Program' (BLP) developed by the Norwegian Refugee Council, supports conditions for children to better succeed in school, by improving their ability to focus/concentrate in class, strengthen connections between them/their parents and school actors, improve their ability to complete homework, and increase their overall enjoyment of school.

SEL skills, discussed in more detail in Chapter 3, are increasingly being recognized as important for child development and involve the ability to respond appropriately to social interactions. These are often regarded as 'soft skills' and personality traits that according to Heckman and Kautz (2012) predict success in school, the labour market, and in life. SEL is often embedded into a school curriculum and is seen to help reduce risky behaviours such as violence and drug abuse (Durlak et al., 2010; CASEL, 2003).

Bloom et al. (2011) estimated the global cost of mental illness is $2.5 trillion, with a predicting increase to $6 trillion by 2030. Mental illness is the leading cause of increase in disability adjusted life years (DALYs), accounting for 37% of healthy loss years (WHO, 2010). Gul and Faruqui (2016) identified large variation in the prevalence of post-traumatic disorder in populations exposed to human-made disasters, with prevalence estimates from 0.6 to 73%. They also found that countries with poor socioeconomic structure and lower spending on health care expenditures were seen with high prevalence of PTSD.

Despite demand for support, median government expenditure on mental health globally, is 2.1% of the median government expenditure on health, and in some of the poorest countries, governments spend less than $1 a person treating mental health conditions (UNICEF, 2021a).

In summary, conflict and the economic aftermath such as in Syria during the current crisis causes massive mental health issues for children and adolescents. Untreated mental health problems in these years tend to extend into adult years. Failure to invest now in adequate educational and psychological programs that mitigate mental health risks for school age children will increase mental health problems for Syrian society in years to come. And this in return will diminish children's caregivers and communities' resiliency to manage and cope in difficult life conditions.

2.2.5 Violence and crime

Large numbers of disengaged out-of-school children and adolescents in Syria, and low returns to education arising from poor economic prospects, is a recipe for the growth of violent and criminal (including drug-trafficking) behaviour. Addressing violence and crime requires both investment in education and confidence in an economic recovery.

Current situation in Syria

It is known that countries facing political, security and social pressures are much less likely to have high levels of resilience to organized crime (Global Initiative against Transnational Organized Crime, 2021, p124).

Data about violence and crime in Syria tends to be anecdotal and qualitative in nature. Nonetheless, the prevalence of violence and threats of violence is to be expected in a society such as Syria, where one-third of the population is internally displaced, and over two million children are out of school. There is deep poverty, and military activity of various types continues within the country.

While military operations of a major scale were much less frequent in government-controlled Syria, since 2019, civilians continued to be heavily impacted by the economic downturn, and clashes among the conflicting parties, improvised explosives and unexploded ordinances (UNICEF, 2021a). Children in Syria continue to face high levels of risk. The Syria Monitoring and Reporting Mechanism reported 2,271 grave violations against children in 2021, including 898 children which were killed or injured, with 69% of verified violations in Northwest Syria (UNICEF, 2021a, p2).

As OCHA (2020) points out, girls and boys of all ages in Syria face threats of violence and concerns about protection in many life situations. In particular, the transition to adolescence is a time when exposure to new forms of violence increases, in part due to harmful coping mechanisms within the family. Adolescent boys are more likely to be killed and injured, detained and recruited, or to be involved in child labour, while adolescent girls are particularly at risk of child marriage, cyber harassment and other forms of GBV including sexual violence. Boys are also at risk of sexual violence, as are men, primarily in the context of detention.

Children and youth on the move with low levels of education may be at increased risk of exploitation. Although official data regarding exploitation risks among Syria's internally displaced children are not available, UNICEF (2017) reports that children on-the-move outside of Syria were vulnerable as follows:

- In children moving across the Central Mediterranean route to Europe, 90% of adolescents without education reported exploitation compared with 77% of children with primary education and 75% with secondary education. On the Eastern Mediterranean route, 23% of adolescents without education reported exploitation compared with 20% with primary education and 14% secondary education.
- Adolescent girls on the move faced unique risks. Girls are more likely to become victims of sexual and GBV. In countries affected by conflict, girls are 2.5 times more likely to be out of school than boys.

A report *Crime and Development in Africa* by the UN looked at the social factors associated with crime, which included: income inequality; youthful population; rapid rates of urbanisation; poorly resourced criminal justice systems; and proliferation of firearms (UNODC, 2005). Many of these would pertain to Syria. The World Bank further indicates that homicide rates increase by 25% in the five years following civil war (UNODC, 2005), and the factors that lead to it include: psychological trauma (both perpetrators and victims may cause 'cycles of violence'); crime as a post-conflict livelihood, when without alternative employment, livelihoods or educational opportunities can result in the creation of profitable drug trading (UNODC, 2016) or smuggling routes, etc.; the displacement of populations resulting in further community conflict; and weakening of the state which can derail attempts to re-establish order.

Violence costs South Africa about 13% of its GDP. Total violence containment spending in the country amounted to around ZAR1.84 trillion (roughly ZAR34,160 per person in the country) (IEP, 2020).

Violence has significant economic costs for individuals and societies. The Global Peace Index has shown that the effect of violence on the global economy in 2019 amounted to $14.5 trillion in constant purchasing power parity terms. This is equivalent to 10.6% of the global GDP or $1,909 a person. In this study, Syria was ranked the second worst, 162 out of 163 countries. The economic cost of violence was estimated to be 60% of GDP in Syria (IEP, 2020). Pereznieto et al. (2014) have estimated the global cost of violence against girls and boys was US$7 trillion annually. If the estimates could be regarded as broadly comparable, then this suggests that about half the total estimated by the IEP (2020) pertains to girls and boys or 30% of Syrian GDP.

Role of education in reducing violence and crime

Talbot (2013) suggests that a good quality education can help with long-term processes of post-conflict reconstruction and strengthening of social cohesion, as it counteracts the fundamental causes of violence, by nurturing values on inclusion, tolerance, human rights and conflict resolution.

A recent study (Boessen et al., 2021) provided evidence that educational attainment has important consequences for neighbourhood crime, but this relationship depends on the kind of education, historical temporal period, and region of the city. Overall, communities with more college degrees are consistently associated with reductions in violence in more recent decades. Garcia et al. (2016) had established that early childhood programs targeting disadvantaged families had long-term benefits on a range of variables including crime.

The WHO (2020) indicates that youth violence is a global public health problem in which low educational achievement is a risk factor. Youth violence includes a range of acts from bullying and physical fighting, to more severe sexual and physical assault, to homicide. Worldwide, some 200,000 homicides occur among youth 10–29 years of age each year, which is 42% of the total number of homicides globally each year.

The major risk factors include: low educational achievement; low commitment to school and school failure; involvement in crime; unemployment; and exposure to violence in the family. Risk factors within the community and wider society include access to and misuse of firearms; gangs and a local supply of illicit drugs; high income inequality; poverty; and the quality of a country's governance (its laws and the extent to which they are enforced, as well as policies for education and social protection). School dropout is associated with lower economic growth, youth unemployment, decreases in gross income, as well as higher crime rate (see Psacharopoulos, 2007). Criminal behaviour in adolescence can have strong links to future negative outcomes, among them adult crime, low academic performance and early school leaving. At the same time, school dropout can encourage juveniles to become involved in criminal behaviour (Rud et al., 2013).

In summary, an effective and affordable education system providing secure and accessible schooling to all components of society would substantially limit the opportunities for violence and crime against and by young people. It would also directly protect families and communities. This would be both by providing a safe school environment and by providing human capital and potential life-paths to many who now leave school early.

2.2.6 Child labour

Education is a crucial component of any effective effort to eliminate child labour (ILO, n.d.). Children who are not in school are at greater risk of finding themselves put to work. At the same time children who work are more likely to drop out of education. In the absence of sufficient quality education opportunities, working is sometimes seen as a more productive use of children's time, generating income for the family, as well as allowing them to learn new skills (UNICEF, 2015c; ILO, n.d.).

Children with no access to quality education have little alternative but to enter the labour market, where they are often forced to work in dangerous and exploitative conditions. On the other hand, child labour is one of the main obstacles to Education for All (EFA), since children who are working full time cannot go to school. In addition, the academic achievement of children who combine work and school often suffers. There is a strong tendency for these children to drop out of school and enter into full-time employment (ILO, n.d.).

A large share of younger children in child labour are excluded from school despite falling within the age range for compulsory education. More than a quarter of children aged 5 to 11 and over a third of children aged 12 to 14 who are in child labour are out of school (UNICEF and ILO, 2021).

Current situation in Syria

In Syria, of course, education holds significant status in Syrian culture notwithstanding different religious or ethnic backgrounds; and children do not choose to stay out of school, but are forced to take on jobs instead of going to school because poverty leaves families no other choice. The Syria crisis has dramatically reduced livelihood opportunities and impoverished millions of households in the region. While comprehensive data on child labour in Syria is not available, anecdotal evidence suggest that it is highly prevalent. The UNICEF Child Protection reported that child labour was preventing attendance at school in school in 84% of 6,423 locations surveyed across Syria, the second highest child protection issue listed (UNICEF, 2022).

Data from neighbouring refugee camps also provide some indication of its extent and impact. In Jordan, 47% of refugee households say they rely partly or entirely on income generated by a child (UN Women, 2013). In Jordan, for example, a majority of working children in host communities work six or seven days a week; one-third work more than eight hours a day. Their daily income is between US$4 and US$7 (ILO, 2014). Children also start working very young, often before the age of 12. In some parts of Lebanon, children as young as six are being put to work (ILO, 2012).

Child labourers inside Syria face particular hazards, especially those involved in smuggling goods across borders, collecting and selling oil, or other forms of manual labour. Assessments have found children aged between 9–16 working 12 hours a day for little pay, and under the threat of physical abuse (Save the Children, 2015b). Children working in agriculture can be exposed to pesticides, dangerous equipment and long working hours in extreme temperatures. In the Jordan valley, for example, Jordanian and Syrian children have been found working an average of 25–30 hours a week (UNICEF, 2015c).

In the recent past, children from Syria have been increasingly exposed to recruitment and use by armed forces and groups (Human Rights Council, 2015). In 2014, the UN verified at least 278 such cases including children as young as eight years old. However, it noted that actual numbers were much higher. In 77% of these cases, children were armed or used in combat roles, including attending to the wounded or recording battles for propaganda purposes. Other children work as guards or at checkpoints. Children have also been employed as suicide bombers.

Militarization of children and young people, or even their recruitment into mercenary groups remains an ongoing risk after active conflict has ended, because young men may view armed groups as an opportunity to earn a steady income and have a career track with potential upward mobility (O'Neil and van Broeckhoven, 2018, p157). Thousands of Syrian men, including boys under 18 years, have reportedly been sent to Libya via Turkey during the last two years (OHCHR, 2020).

Harmful work hurts children's bodies as well as their prospects in life. Around 75% of working children in the Za'atari refugee camp in Jordan reported health problems; almost 40% reported an injury, illness or poor health (UNICEF, 2014a); and 35.8% of children working in Lebanon's Bekaa valley are unable to read or write (ILO 2012). Boys and girls involved in harmful work miss out on their childhood.

The worst forms of child labour can cause severe psychological damage to children. Working in an environment where they are harassed, or experience violence and abuse will have a profound effect on a child's mental health (UNICEF, 2015c).

Role of education in reducing child labour

Many working children are deprived of an education, as they have neither the time, nor the energy to attend school, due to the demands of their work. Child labour appears to be the predominant reason for the withdrawal of children from schools in many parts of Syria, including Hama (78%), rural Damascus (75%), Idleb (61%) or Aleppo (60%) (ILO, 2014).

Guven et al. (2011) detail the impact of education on the economic and social integration of former child soldiers (although the impact can apply to all children from war-affected regions). Firstly, education can provide the children with skills and competencies needed for re-integration, placing them on an equal socioeconomic footing with their peers (Blattman and Annan, 2008). Even when children are reluctant to go back to formal education, MacVeigh et al. (2007) suggest, they want to learn skills that will help them support themselves and make a positive contribution.

Annan et al. (2009) argue that education provides these children with a new social role and identity, and Betancourt (2005) found that education and training can help these children develop goals and a sense of purpose in life. Betancourt et al. (2008) indicate that well-managed schools can help in preventing social isolation and stigmatization, and can encourage the creation of peer groups, which can be a significant source of support. They also suggest that education systems are a perfect place for integrating psychosocial support and referrals to help children cope with the mental and emotional consequences of their experiences (Betancourt et al., 2008). Matsumoto (2008) suggested that education could provide an alternative to combat and help deter children from re-engaging in violence, and may even act as a deterrent to engage in violence in the first place.

Consequences for child labour of not investing in education or access to affordable education

Overall, the costs of not investing in education include:

- increasing rates of child labour
- increasing rates of children and young people doing dangerous work (including signing up to mercenary services), and
- intergenerational impacts and perpetuation of poverty and child labour.

In summary, child labour is a serious problem in Syria and especially in neighbouring refugee camps, where its prevalence and impact are better documented. Households often depend on the income from child labour to help make ends meet even though child labour occupations are frequently high risk. Child labour leads to absenteeism from school placings, resulting in a life-long disadvantage for these children and their families, permanently hindering their chances of getting decent work and escaping the cycle of poverty and exploitation. This challenge will increase as long as current poverty rates persist and there are many education services that are neither accessible nor affordable.

2.2.7 Risks of continuing loss of social cohesion due to education inequalities between groups

Situation in Syria

The Syrian crisis, the accelerating economic downturn, and the COVID-19 pandemic have increased the barriers to resources for the population both in Syria and those living as refugees, and further exacerbated underlying vulnerabilities due to protracted displacement, all of which have increased the risk of social tensions between refugees, migrants and host communities (IOM, 2021).

Ghitman (2020) reports on extreme wealth inequality in Syria. Conflict does not just negatively affect mental wellbeing, but it also has adverse consequences in terms of social cohesion, interpersonal trust (Dutch Initiative), and exacerbates education inequalities between ethnic and religious groups (Kibris, 2015; Shemyakina, 2011; Agüero and Majid, 2014), and also gender groups (Justino, 2016). Inequality and the lack of social cohesion have adverse mental and physical health consequences (Wilkinson and Pickett, 2007; Pickett and Wilkinson, 2015; Marmot and Wilkinson, 2006).

The United Nations OCHA report for 2021 summarised some of the ways in which coping strategies adopted by those struggling to make ends meet become the factors for increasing inequality generating an ongoing decline in social cohesion:

> Facing deteriorated living standards, families are increasingly adopting harmful coping mechanisms. Seventy-one per cent of households and 75 per cent of female-headed households have taken on more debt since August 2019. Twenty-eight per cent of families now adopt 'crisis' or 'emergency' food related coping strategies, including withdrawing children from school to have them work instead, selling property, migrating due to lack of food and early child marriage. Twenty-two per cent of assessed communities report child labour as frequently occurring, while child marriage of young and adolescent girls (12–17 years) is reported by 18 per cent of assessed communities as a very common issue. (OCHA, 2021a, p3)

Role of horizontal education equality in social cohesion

Equitably distributed education services can be helpful to increasing social cohesion, but an unequal distribution of educational services puts groups into situations of comparative disadvantage, which in the long-term can increase inter-group tensions and act to reduce social cohesion (Omoeva et al., 2016; Omoeva and Buckner, 2015). Syria witnesses pronounced discrepancies in school attendance and access to relevant quality education opportunities, across areas and regions. Divergent education policies and curricula further restrain children's ability to compete for limited labour market opportunities. All of the above exacerbates inequalities in an already fragmented society.

Failing to invest in children and youth triggers substantial economic, social, and political costs (World Bank, 2011). Given the cumulative nature of human development, any under-investment in children and youth becomes difficult to reverse later in life, and the price for society is high. This can result in truncated human and social capital accumulation (e.g., school dropout, poor labour market entry) and negative conduct (e.g., substance abuse, crime and violence, risky sexual behaviours). Moreover, there is evidence that these behaviours are likely to be transferred to the next generation, creating a vicious cycle of social exclusion and negative behaviours.

Safe and supportive schools, together with positive and supportive peers for all Syrians (girls and boys) are crucial to helping young people develop their full potential (Viner et al., 2012; Basic Education Coalition, 2020). A safe school environment can help lead to better educational outcomes, which in turn can have life-long benefits through improved earnings potential, reducing inequalities and fragmentation, improving social cohesion and the sustainability of peace-building efforts.

There is evidence that education inequalities do increase the risk of violent conflict between groups. Vice versa, real conflict exacerbates pre-existing education inequalities (Omoeva and Buckner, 2015). Comparing education data from nearly 100 countries and over a 50-year timespan, Omoeva et al. (2016) found specifically that the likelihood of violent conflict doubles in countries with high education inequality between ethnic and religious groups. Conflict worsens educational attainment and exacerbates pre-existing inequalities thereof. Conflict effects are more pronounced when ethnic in nature, and attainment and inequality outcomes worsen as conflicts persist over time. Specifically, they find that conflict, in general, lowers mean attainment by about 7.6% of a year of schooling, increases inequality at the national level where the Gini coefficient increases by approximately 2%, lowers the gender parity ratio by 5%, and increases the educational inequality between wealth decile groups by 5.4%, as measured by the between-group Gini coefficient. On the other hand, greater education equality between male and female decreases the likelihood of conflict by as much as 37%.

Education – together with other social services – is therefore an important prerequisite for fostering the cohesiveness of society, and for mending the social fabric that may have been damaged by years of conflict and violence (UN and World Bank, 2018; Omoeva and Buckner, 2015). Equitable quality education helps reducing inequalities, by helping to place citizens on an equal footing with their peers (Blattman and Annan, 2008), and hence assist in post-conflict development (Guven et al., 2011). Education has been found to have an impact on aspects of social capital such as connectedness, social trust and political knowledge (Helliwell and Putnam, 2007; Glaeser and Sacerdote, 2008), as well as to play a significant role in shaping key performance indicators for social and economic outcomes (Camilleri and Camilleri, 2016).

Consequences for social cohesion by not investing in education

Overall, the consequences include:

- risk of long-term inequalities between population groups, and gender groups
- risk of further, and perhaps accelerating, unraveling of Syrian society and renewed tensions as a result of inequalities in the future
- truncated human and social capital accumulation (e.g., school drop-out, poor labour market entry) and negative conduct (e.g., substance abuse, crime and violence, risky sexual behaviours), as well the likelihood of these behaviours being transferred to the next generation, creating a vicious cycle of social exclusion and negative behaviours, and
- the viability of future reconstruction of Syria.

In summary, the confluence of the stalemate in international diplomacy, the loss of human resources and infrastructure suffered after a decade of conflict, as well as the more recent economic downturn in Lebanon and the wider region, all converge to create a situation where efforts to meaningfully invest in education services for all that are inclusive, equitable, accessible and of quality, are on hold. Every year of non-action will increase education inequalities that will increase the risk of further education inequalities, and thus the risk for tensions and violent conflict between communities in the future.

2.2.8 Depletion of child, family and community resilience

Situation in Syria

The social fabric in Syria has been disintegrating and children are growing up surrounded by violence and insecurity. Families have been broken by displacement and communities shattered. Kimhi and Shamai (2004) demonstrate the importance of perceived community resilience as an individual resource for coping with the threat created by war and terror, thereby connecting between micro- and macro-levels in events related to political violence.

- In Syria, education systems are unable to maintain equitable access to quality education for all in the midst of adversity.
- Education disruption in Syria will therefore continue, as will permanent dropout of learners from schooling, weakened learning outcomes, and long-term psychosocial concerns for learners.
- This will weaken child, family and community resiliency overall.

Children can surprisingly develop adaptive responses to stress (Cummings et al., 2017), and demonstrate resilience and the capacity to recover from adverse circumstances. However, to do this they need a safe and supportive environment that is provided by the family and their communities (Herrman et al., 2011; Masten and Tellegan, 2012; Turliuc et al., 2013). They can develop this within the multiple nested contexts, (e.g., family, school, community and broader culture) (Cummings et al., 2017). Vindevogel (2017) further suggests 'that the locus of resilience lies within nurturing relationships that can arise between many spheres of social connection and among groups of individuals, peoples, and institutions' (quoted in UNICEF, 2020b).

Role of education

Education can help children, communities and systems become resilient against conflict and disasters by building capacities and skills that will enable them to manage and resolve tensions and conflict peacefully (UNICEF, 2014b). According to the Education in Crisis and Conflict Network (Baboun 2020), an efficient education system has the potential to expand individual, community, and institutional resilience, and resilient populations are best able to deliver safe, relevant, quality education and learning for all children and youth. A safe and orderly school environment, positive relationships with teachers and student academic engagement appear to be associated with resilient outcomes in the context of poverty. Education is crucial for fostering more cohesive societies and mending the social fabric that may have been damaged by years of conflict and violence (UNICEF, 2015a, p13).

A range of factors have been identified as supporting resilient outcomes for adolescents. These include: individual factors such as coping style, cognition, optimism and self-esteem (Hooberman et al., 2010; Bowes et al., 2010; Ben-David and Jonson-Reid, 2017); positive family relationships and social connectedness (Bowes et al., 2010; Ben-David and Jonson-Reid, 2017; Marriott et al., 2014); and community factors such as social connectedness (Fantuzzo et al., 2012). As Gartland et al. (2019) indicate, resilience can be affected by a range of factors in children across different social ecological domains. Many of these such as cognition, self-esteem and social support are nurtured in an educational environment such as schools.

Wilson et al. (2021) identified risk factors to include poverty, violence, and marginalization, while availability of youth education was identified as a protective factor. Education plays a role in coping with disaster over the longer term (Frankenberg et al., 2013). The research by Frankenberg et al. (2013) into education, vulnerability and resilience after the 2004 tsunami found that the better educated were far less likely than others to live in a camp or other temporary housing; moving instead to private homes, staying with family or friends, or renting a new home. The better educated were more able to minimize dips in spending levels following the tsunami, relative to the cuts made by those with little education. Five years after the tsunami, the better educated were in better psycho-social health than those with less education. In sum, education is associated with higher levels of resilience over the longer term. Social support, self-reliance, and access to education were found to be associated with resilience and stress-related growth in a study of Cambodian survivors of terror (West, 2000).

When education systems are unable to maintain equitable access to quality education for all in the midst of adversity, it can lead to prolonged education disruption, permanent dropout of learners from schooling, weakened learning outcomes, and long-term psychosocial concerns for learners. Such consequences can have profound impacts for countries and regions of the world seeking to recover and transform after a crisis, particularly when entire generations of children may have never gone to school or had their schooling interrupted prematurely.

The World Bank's Conflict Prevention and Reconstruction Unit, examined the impact of war on children and education systems and analysed potential policy responses to help the affected countries (Sommers 2002). It states:

> Education for children whose lives have been affected by war is a vital protection measure. Appropriate formal and non-formal education can provide important alternatives to child soldiering and other forms of exploitation (sexual and otherwise), social and cultural alienation, violence, and self-destruction. War also exposes the dynamics of gender in education and socialization, and the vulnerability of boys as well as girls, making responses to gender needs critical. Lack of investment in and creative, participatory work on education for children and youth at risk makes a return to peace extremely difficult if not impossible. (Sommers, 2002, p1)

Its key recommendations for donors to support and expand emergency education are:

- Enhance commitment and investment. The psychosocial dimension of emergency education, its community-based and flexible nature, and the importance of conflict-resolving measures need to be recognised.
- Work directly with governments affected by or involved in war. Donors, non-government organisations (NGOs), international agencies and governments need to develop coherent approaches.
- Support teacher training, with emphasis on participatory methods and psychosocial skills. Teachers remain at the centre of education provision before, during and in postwar periods.
- Understand that war defines a new educational setting that requires new policies. Psychosocial interventions to encourage resilience and allow children to learn are essential.
- Ensure protection for all children. Special attention should be provided to girls against sexual violence and exploitation when attending school.
- Promote research to further understand the dynamics of education during times of war. Also, evaluation of previous experiences should be promoted to help identify what does and does not work.

In summary, while children can be surprisingly adaptive to stress and demonstrate a capacity to recover from adverse circumstances, the loss of education undermines resilience in numerous and durable ways. Most importantly in the long term it deprives children of the skills to obtain employment that will provide decent incomes to finance the recovery process. To address the immediate impact of the crisis on Syrian children, an emergency education system is required to provide cognitive, psychosocial and lifeskills development support for children to improve resilience; teacher training in participatory methods and psychosocial skills; and ensure protection for all children, including boys from child-labour and girls from early marriage and gender-based violence.

2.2.9 The ongoing cumulative effects of the deterioration of education

The above-mentioned risks of deteriorating education services, the deteriorating status of women, mental health risks, crime, social cohesion, etc., are not static risks but likely to produce cumulative effects over time. While due to lack of data it is not possible to quantify many of the anticipated deterioration in quantitative terms, it is possible to illustrate anticipated declines in completion and drop-out rates in years to come.

Situation in Syria

Prior to 2011, Syria was a middle-income country with gradually improving education outcomes with a literacy rate over 80% among males and females, and primary school enrolment was nearly universal for both boys and girls by the early 2000s.

Since the crisis, enrolment rates in Syria have reduced markedly. In 2013, the gross enrolment figures for both primary and secondary were significantly lower than in 2005 (Figure 2.1).

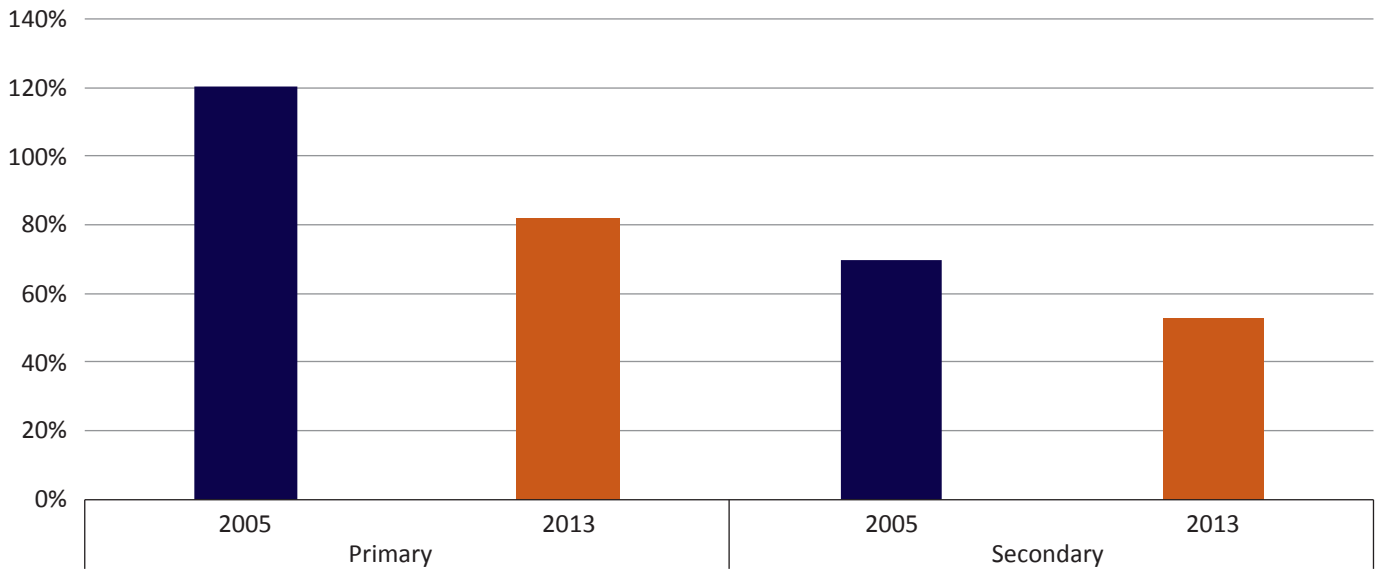

Figure 2.1: Gross enrolment rates in Syria

Estimates of Syrian education outcomes to 2050

In Part 2 of this report, particularly Chapter 5, we provide projections of education outcomes extending to 2050 under two funding scenarios. One is in essence a continuation of the current crisis-effected levels and the other assumes funding for a comprehensive recovery program to lift the Syrian education system out of its current depressed state. In the modelling, we call the continuation of the current funding levels, the base case. This provides a view of what Syrian education outcomes might be in a status quo policy environment in the absence of any recovery program.

The baseline modelling assumes that there will be sufficient funding to progressively absorb 'out-of-school children' and reduce those leaving at the end of primary school. However, there is no funding to address the low rate of attendance at the senior levels of the secondary system or secure their completion at the end of senior secondary school. The baseline scenario for secondary education incorporates no expectation of any change in identified factors that would contribute to a substantial recovery in secondary completions.

In contrast to the baseline, the recovery scenario, assumes the implementation of incentive programs to reduce secondary dropout rates, improve learning outcomes and increase secondary completion rates. In particular, there are programs to reduce early marriage and make the schools more girl-friendly, as well as providing cash incentives to stay at school.

As shown in Figures 2.2 and 2.3, without these programs, the proportion of students starting, but not completing secondary school will increase from about one quarter to 60%. Secondary completions will fall from 42% to 31% for girls and 36% to 34% for boys in the period from 2020 to 2040. The larger fall for girls is complex, but includes the low level of incentives for girls to attend school and the poor prospects for female employment.

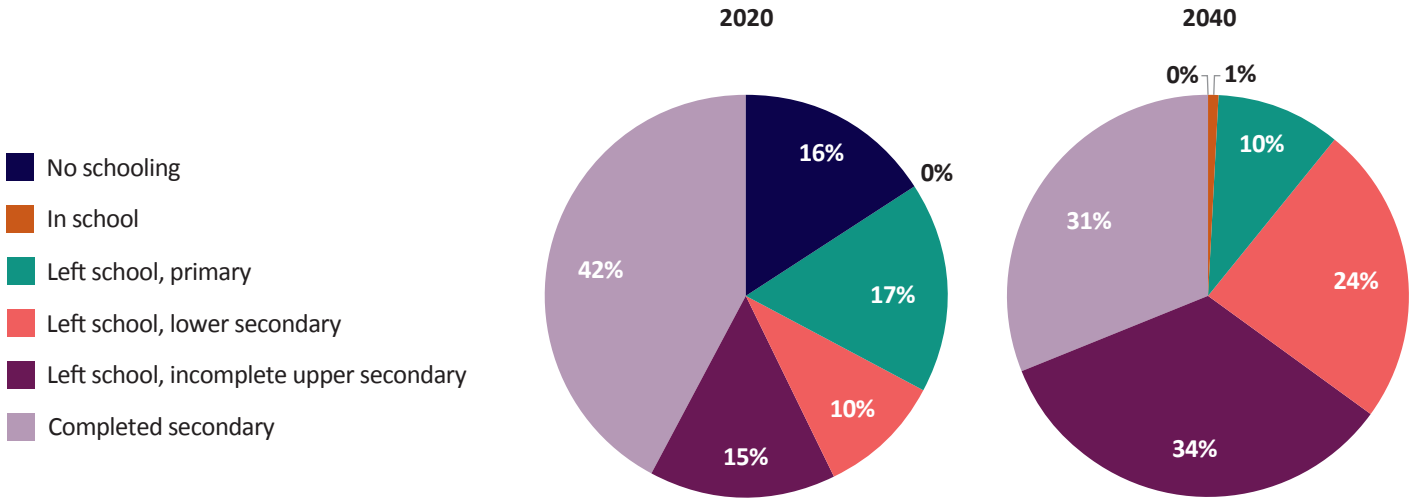

Figure 2.2: Female post-adolescence education distribution, 20–24 years of age

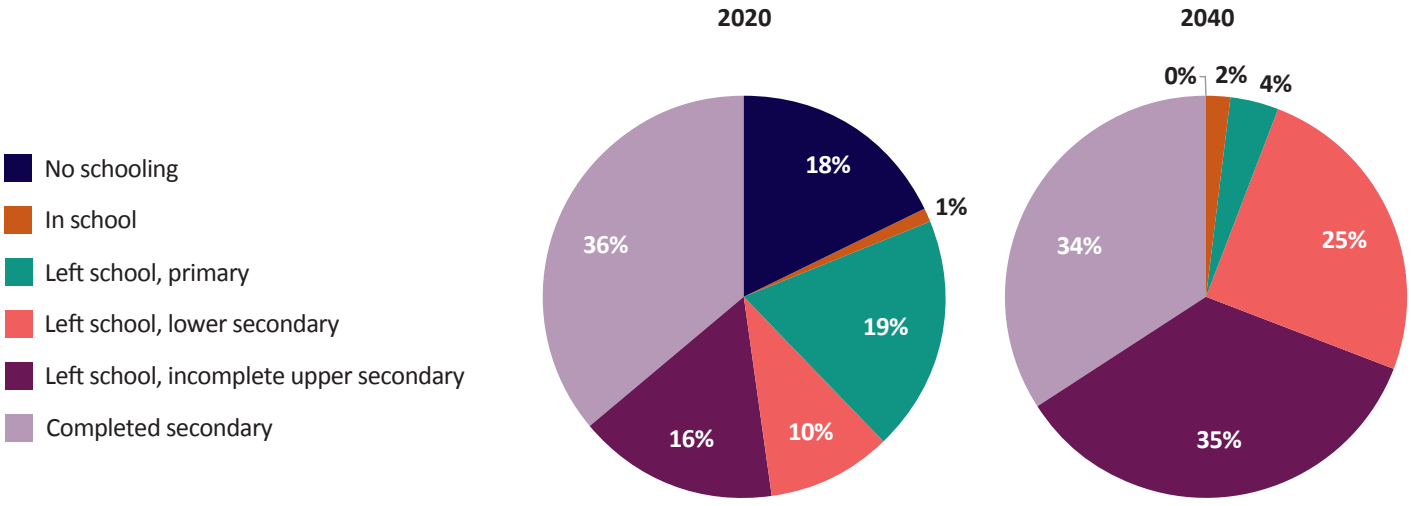

Figure 2.3: Male post-adolescence education distribution, 20–24 years of age

These outcomes will have ongoing social and economic consequences. The completion of secondary school provides the minimum training necessary for employment in the growth sectors of modern economies. In developing countries, it is a passport to quality jobs and tertiary entrance. Without these basic qualifications, Syrian youth will continue to be severely disadvantaged, and the Syrian economy will not be able to compete in the globalised world.

Prior to the crisis, the Syrian education system had an outdated curriculum and relatively low-quality education outcomes. International tests, such as TIMSS, were indicating that the Syrian education system was achieving below world average scores in science and mathematics. Prior to the crisis, the latest international measure of the quality of education in Syria was the 2011 TIMSS survey. The score of 380 for mathematics and 426 for science for 8th Grade students was below the centre point value for survey of 500. Indeed, in the 2011 test, few students achieved scores equal to the average achieved by South Korean students, the best performing country in the survey (GHDx, 2021).

This difference can only have deteriorated since the crisis. It illustrates the difficulty for Syrian students to get jobs in modern growing economic sectors requiring superior skills, such as in communications and IT.

2.2.10 Risk of increased migration

Instability and fragility caused by conflict erode resilience and often force people to migrate (IOM, 2021). With both conflict and displacement evident in Syria, higher numbers of people have and will continue to move out of situations of vulnerability into neighbouring areas and countries, further exacerbating the ability of children to attend school and university, and continue on to a productive life as an adult.

The Syrian crisis, the accelerating economic downturn, and the COVID-19 pandemic have increased both the risk of migration and the barriers to resources for those living as refugees, and further exacerbated underlying vulnerabilities due to protracted displacement, all of which have increased the risk of social tensions between refugees, migrants and host communities with devastating results for children.

As with other counties experiencing humanitarian crises, it is often the more highly skilled and better educated, with greater employment options, who are best placed to migrate out of the conflict zones and find work in other countries. This further diminishes the human and social capital of the country they have left. This has certainly been true of Syria, where professionals, such as engineers, have found work in neighbouring countries or further afield, reducing the social and economic capacity of the country in its recovery phase (World Bank, 2020).

2.3 Conclusion

This chapter has outlined the impact on Syrian children and adolescents of ten dimensions of severe economic and social consequences of the crisis on in Syria. They are:

- the shortage of key education services such as quality basic and secondary education, early childhood development and education, vocational education and inclusive education, multiple pathways for out-of-school children, resulting in insufficient stimulation, early learning, safe quality learning, and alternative learning pathways for poverty and conflict-affected children and youth
- loss of human capital
- the deteriorating status of young women, in several dimensions
- poorer mental health
- violence and crime
- child labour and the growing involvement of young people in military activities
- the further increase of social corrosion and risks of violent conflict, as a result of an increase in horizontal education inequality
- weakening of resiliency of children, families and communities
- the cumulative economic and social effects of the on-going deterioration of education, and
- risk of increased migration.

While none of these impacts can be comprehensively quantified, we believe that the data assembled from many sources in Syria, and the expected effects based on international experiences and evidence, provides convincing evidence of the extent to which conditions have been degraded by the crisis for Syrian children and adolescents. The conditions in which they live and their prospects in life are by any measure truly miserable. They have little opportunity to develop their skills and capabilities to establish meaningful lives for themselves or future generations.

In Part 2, we demonstrate the extraordinary benefits of funding at modest cost, an education recovery program that has the capability to transform the lives of this generation.

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Chapter 3: Proposed mental health and psychosocial interventions

3.1 Introduction

Chapter 2 has drawn attention to the enormous social costs of the Syrian crisis. Many of these costs have a bearing on the mental health of the Syrian population. Of particular relevance to this study, children and youth have been living through continuous stress produced by the crisis and associated economic downturn. This chapter considers not only the direct consequences of the stress of the crisis for mental health, but the indirect effects, such as violence and crime, the deteriorating position of women, child labour, failing social cohesion and the depletion in child, family and community resilience in impacting mental health.

The purpose of this chapter is to discuss the interventions that are most likely to successfully address the impact of the continuous stress experienced by children and youth living through these various crises, the impact on their mental health, and the impact mental health has on their educational outcomes. While mental health affects education performance, the availability of affordable and good quality education has a positive impact on mental health. Thus, interventions to improve mental health, which lead to better educational outcomes, can have life-long benefits through improved earnings potential, reducing inequalities and fragmentation, improving social cohesion and the sustainability of peace-building efforts.

We first describe the various crises and their impacts, then discuss the theory of change, including the role of education in addressing the various impacts, the relationship between education, mental health and lifetime earnings, before considering individual interventions that can improve various outcomes such as improved educational attainment and the capacity to increase lifetime earnings.

The bombing and shelling in parts of the country during the course of the initial crisis has resulted in both great mental and physical suffering. The mental effects include extreme grief of injury or loss of close family members among children, adolescents and adults, symptoms of PTSD and trauma (McDonald et al., 2017). Conflict has seen children separated from their families and these are considered to be at increased risk of psychological and social challenges (Bean et al., 2007; Hodes et al., 2008). Armed conflict not only gravely impacts individual children, and their educational attainment (Omoeva et al., 2018), but the entire family system, which can cause destabilizing ruptures in the social fabric, networks and services that support and protect children and families (Betancourt and Khan, 2008; UNICEF, 2009), ultimately hindering their potential protective capacities and potentially contributing to negative long-term intergenerational effects (Denov and Shevell, 2019). One of the major impacts of that crisis for children and adolescents has been the loss of education, due to either parents being unable or unwilling to send their children to school because of concerns for their safety, the loss of infrastructure because of the bombings, lack of resources, or the shortage of teachers who have been either displaced, fled, kidnapped or even killed.

In Syria, almost half of school-age children have not been attending school during some periods of the crisis. Reports indicate that nine years into the crisis, 50% of children were out of school, with many at risk of dropping out. In 2019, the Government of Syria's Ministry of Education UN reported two million children – over one-third of Syria's child population – were out of school and 1.3 million were at risk of dropping out (Ministry of Education, 2021). The UN further reports that one in eight children per classroom require specialized psychosocial support (UNICEF MENA, 2019).

3.2 Theory of change

Children and youth who have endured years of warfare, violence and poverty, experience continuous stress and distress, and are therefore likely to suffer toxic stress which can lead to PTSD, depression, anxiety and reduced resilience (World Vision, 2018), all of which can impact on their development, adversely affect their educational outcomes, as well as have harmful intergenerational impacts (Shonkoff et al., 2012). The relationship between toxic stress, mental health and education outcomes is complex. Perfect et al. (2016) reviewed the literature to identify school-related outcomes associated with trauma of school-aged youth. They quote SAMHSA (2014) and Bowen and Bowen (1999), who established that neurobiological, cognitive, emotional and behavioural issues inherent in stress, interfere with school functioning (e.g., learning problems, lower grades, need for special education, less attendance, increases in problem behaviour, increased suspensions/expulsions) (Perfect et al., 2016, p9). They also indicate that a number of studies concluded that poor academic performance (e.g., based on grades and standardized assessment scores) was evident in youth exposed to trauma (Armsworth and Holaday, 1993; Margolin and Gordis, 2000; Overstreet and Mathews, 2011).

Trauma-informed interventions for school-aged children affected by the Syrian crisis aim to improve the innate resilience in children, and their emotional, social and psychological wellbeing. Evidence from studies of children from other conflict and war-afflicted countries suggests that they will benefit from interventions that can effectively address safety concerns, depression, anxiety, post-traumatic shock and other mental health problems (Layne et al., 2008; Berger and Gelkopf, 2009; Fondren et al., 2020; Basic Education Coalition, 2020).

The introduction of interventions to boost mental health, will also improve educational outcomes (such as learning outcomes, attendance rates and retention rates) for children affected by the crisis in Syria, and would provide substantial economic benefits (in terms of increased earnings), as well as social benefits (such as greater social cohesion) (Basic Education Coalition, 2020; Novelli et al., 2017). One of the important social determinants of health in adolescents is access to education; and that safe and supportive families, safe and supportive schools, together with positive and supportive peers are crucial to helping young people develop their full potential (Viner et al., 2012; Basic Education Coalition, 2020). Thus interventions to improve mental health, which lead to better educational outcomes, can have life-long benefits through improved earnings potential, reducing inequalities and fragmentation, improving social cohesion and the sustainability of peace building efforts.

While mental health affects education performance, the availability of affordable and good quality education has a positive impact on mental health. Education is critical for the success of reintegration into civil society of children affected by trauma (Blattman and Annan, 2008). Re-establishing educational services in Syria has an important role to play in improving their mental health. The discrepancy in educational opportunities, between children who have been affected by the war and those in safer locations in Syria, contributes to the fragmentation of society. Education can help in reducing these inequalities, helping to place them on an equal footing with their peers (Blattman and Annan, 2008), and hence assist in post-conflict development (Guven et al., 2011). Education is crucial for fostering more cohesive societies and mending the social fabric that may have been damaged by years of conflict and violence (UNICEF, 2015).

As argued in Chapter 2, education and training help child soldiers (and children suffering from PTSD) develop goals and a sense of purpose in life (Betancourt et al., 2005, cited in Betancourt et al, 2008); and educational systems are ideal places for integrating psychosocial support (Betancourt et al., 2008).

An illustration of the relationships between mental health, education and lifetime earnings is provided in Figure 3.1. Firstly, war/conflict has an impact on mental health of school-aged children, which in turn adversely affects their education outcomes and lifetime earnings. The impact of two sets of interventions, one to address mental health and the other to improve education outcomes of the children and youth is traced through to their ultimate benefits in the form of increased lifetime earnings and overall increased wellbeing. There is also a feedback loop indicating the benefits of enhanced education services for mental health.

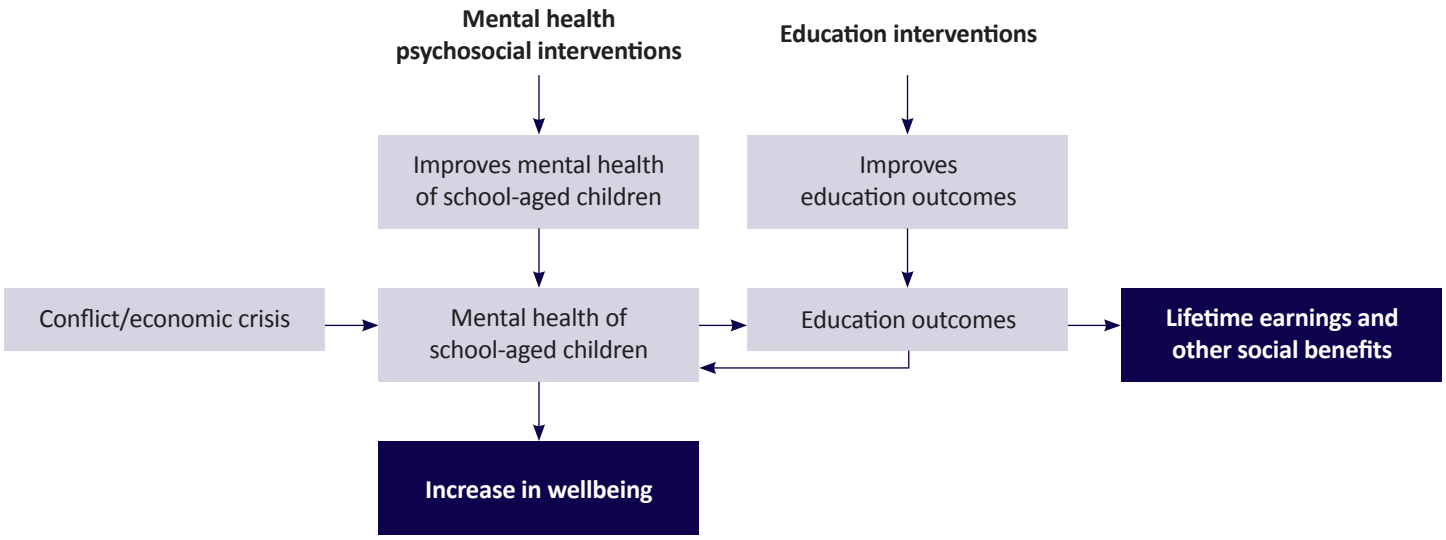

Figure 3.1: Simplified theory of change, impact of interventions on mental health and their outcomes for Syrian school-aged children

In modelling the costs and benefits of the factors driving this theory of change, we face a number of challenges in identifying the evidence directly relevant to the Syrian context. Firstly, the studies of intervention effects need to provide quantified, statistically significant outcomes to be used in the modelling. Secondly, while there is a substantial literature on the effect of war and violence on school-aged children, there is less literature on the impact of interventions to reduce their impact on mental health. There is an even narrower literature on the impact of these programs on the educational outcomes for these children or on the impact of the availability of education services to improve mental wellbeing. In the context of the theory of change, these interventions could include relatively broad-based policy changes that seek to reduce risk structures and structural violence. However, in modelling broad-based policy interventions, the outcomes need to identifiable and quantifiable. This may be difficult if there are multiple outcomes and the evidence of their individual effectiveness is not available.

Thirdly, by far the most comprehensive studies, with the best measured outcomes, have been undertaken in western contexts. Many, but not all, of these studies are focussed on anti-social behaviours, such as juvenile delinquency and drug abuse, and therefore are of less relevance to the mental disorders prevalent in school-aged children in Syria. However, a number of these studies, such as Lawrence et al. (2019) have produced comprehensive data on the effects of poor mental health on education outcomes, and Betancourt et al. (2014) who produced a study on the cost effectiveness of mental health interventions. An assessment needs to be made on whether or how these results might be translated to the Syrian context.

3.3 Interventions

This section seeks to assemble the evidence for the effectiveness and relevance of the three sets of interventions outlined in the theory of change. The first is the effect of mental health interventions on mental disorders. The second considers the evidence we have for improving education outcomes as a result of addressing mental health disorders. The third is evidence for the effect of education on improving mental health. To be valuable for inclusion in our models, the outcomes of these studies need to be quantified, statistically significant and ideally include the relevant costs of the intervention programs.

3.3.1 Impact of mental health and psychosocial interventions on wellbeing

In 2007, the UN established an Inter-Agency Standing Committee (IASC) to 'protect and improve people's mental health and psychosocial wellbeing in the midst of an emergency' (IASC, 2007, piii). They recommend a multi-layered system of support that meets the needs of different groups. These have been updated by UNICEF (2018a) and may be illustrated by a pyramid (see Figure 3.2).

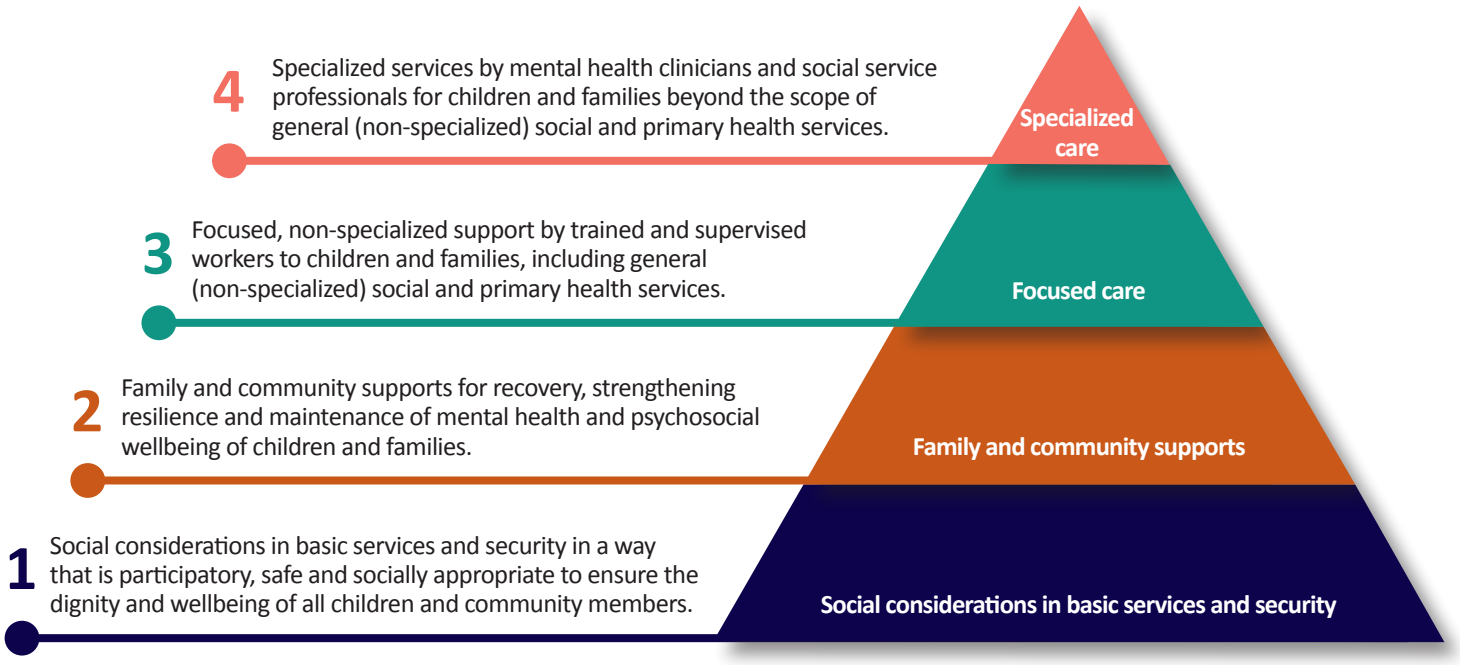

Figure 3.2: IASC MHPSS intervention pyramid
Note: MHPSS is mental health and psychosocial support. Source: UNICEF (2018, p15).

While all layers of the pyramid are important and should ideally be implemented concurrently, a review of mental and psychosocial health supporting children affected by armed conflict in low- and middle-income countries (LMICs), suggested that most interventions tend to be focused on strengthening community and family support, and to be delivered by a non-specialist in a school or a community setting (Jordans et al., 2016). Accordingly, our focus is Tiers 2 and 3 interventions in the figure, which have been shown to provide cost-effective focused care to children and families.

The US Substance Abuse and Mental Health Services Administration (SAMHSA, 2014) have another model that integrates a trauma-based approach to classifying interventions. They propose three tiers determined not by the means of intervention delivery, but by the characteristics of the target group. Those that have experienced trauma are in Tier 3, those who are at risk for trauma exposure or impact (that is, children in distress) are Tier 2, and Tier 1 is to educate children in social, problem solving and coping skills, regardless of exposure to trauma (Chafouleas et al., 2016).

A structured review of trauma-related interventions has adopted the SAMHSA approach to classifying the studies reviewed in Fondren et al. (2020). As stated above, our interest is those studies is classified as Tiers 2 and 3.

Tier 2 programs include strategies and interventions that provide psychoeducation about trauma, reinforce social support systems, and strengthen self-regulation skills, as well as some group-based therapy protocol. These generally include group-based cognitive behavioural skill building. Tier 3 programs include facilitating cognitive-behavioural therapy (CBT), community-based services, and wrap-around care. These programs involve more intensive group-based CBT or individualized therapy via trauma-focused cognitive behavioural therapy.

Fondren et al. (2020) assessed trauma-informed and trauma-responsive interventions among trauma-affected youth. These interventions were provided to children from elementary school to middle school in response to war/political violence and natural disasters. Many of these have been associated with significant decreases in PTSD symptoms and psychopathology (e.g., depression and somatic symptoms), and increases in a metric assessing children's feelings of 'hope' with medium to large effect sizes. Several of the Tier 2 interventions combined CBT with other treatments such as meditation and mindfulness. Some of the studies and their impacts are provided in Table 3.1. Tier 3 interventions were aimed at students who had experienced significant trauma and significant trauma symptoms. Cognitive behavioural intervention for trauma in schools (CBITS) was the most common Tier 3 intervention, but some included individualized CBT approaches, such as trauma-focused cognitive behavioural therapy (TF-CBT), and were generally provided by mental health professionals. These tend to be expensive to administer and difficult in a low-resource setting. Programs that integrate multiple supports for students at different levels of trauma exposure and/or impairment (for example psychoeducation for all, but groups-based therapy for those affected by trauma) are multi-tiered

Table 3.1: Mental health interventions to address trauma

	Treatment (length of treatment)	Trauma type (location)	Child age/grade	Intervention facilitator	Key outcomes
Tier 2					
Barron, Abdallah and Smith (2013)	CBT + Trauma recovery vs Control (6 sessions)	War/political violence (Palestine)	11–14 years		PTSD Sym (d=0.900) Functional Prob (d=0.57) Somatic Complaints (d=1.01) Hope (d=1.09) Depression Sym (d=0.480)
Berger and Gelkopf (2009)	CBT + Meditation + Art therapy vs Control (12 sessions)	Natural disaster (Sri Lanka)	9–14 years	Teachers	PTSD Sym (d=0.909) Functional Prob (d=0.57) Somatic Complaints (d=1.01) Depression Sym (d=0.480)
Multi-tiered					
Layne et al. (2008)	Classroom-based psycho-education and skills intervention vs 'Wait list control group (20 sessions with 10 traumatised)'	War/political violence (Bosnia)	13–18 years	School clinician	PTSD Sym (d=0.493) Depression Sym (d=0.429) Traumatic grief (d=1.242) Existential grief (d=0.815)

Note: CBT = cognitive behaviour therapy; PTSD = post-traumatic stress disorder. Source: Fondren et al. (2020).

Most of the interventions included CBT, supplemented by various other psychosocial support programs. The outcomes were generally large and significant with the effect size on PTSD being reduced by an average Cohen d score[2] across five studies of 0.939 (std. dev = 0.203), with the three studies conducted by teachers having a slightly higher average of 0.949 (0.068). The outcomes are based on an average of 10 sessions which we can use as a basis for costing the programs.

2. As rule of thumb, a Cohen d score in excess of 0.8 is considered a large effect (Cohen, 1998).

3.3.2 Impact of mental health interventions on educational outcomes

The most comprehensive studies of the impact of mental health on educational outcomes have been done in western contexts (Lawrence et al., 2019; Hancock et al., 2013; Goodsell et al., 2017). However, these clearly show the significant association between mental disorders and educational outcomes. We will review these before proceeding to consider the most relevant evidence we can find for interventions that have successfully improved education outcomes.

An Australian-based study by Lawrence et al. (2019) provides one of the most detailed analyses of impact of mental disorders on school attendance (see Figure 3.3). It provides estimates of days absent from school, allowing the link between mental disorders and educational outcomes to be quantified.

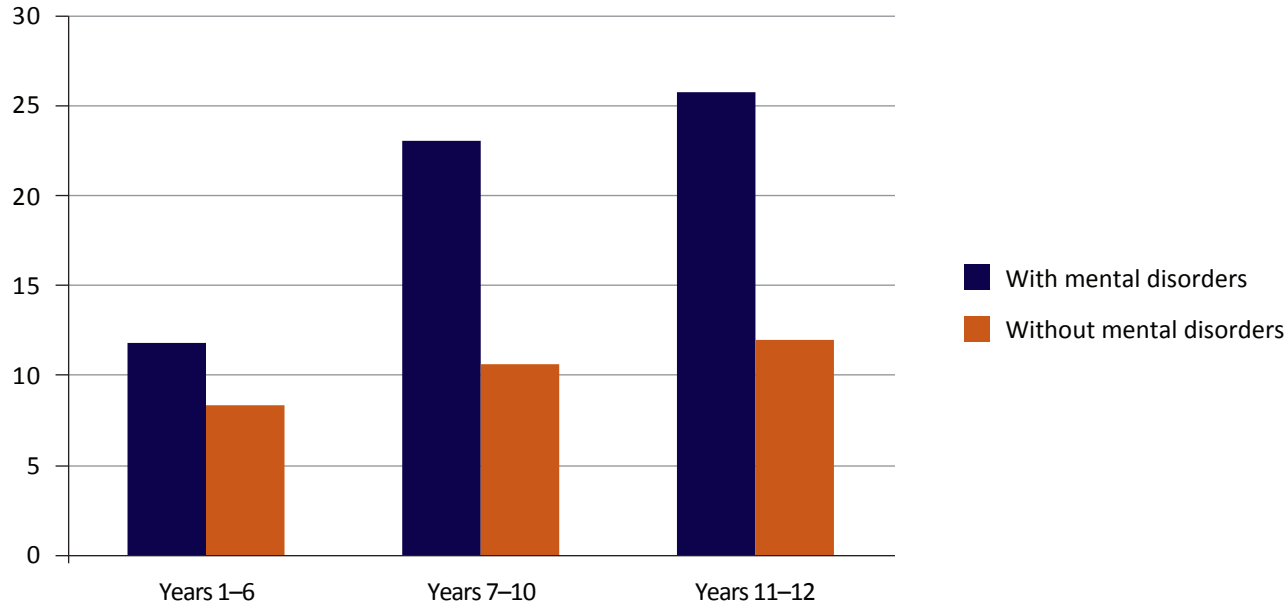

Figure 3.3: Number of days absent, school children with and without mental disorders, by year levels, Australia, 2014.
Source: Lawrence et al. (2019).

In secondary school (Years 7–12), days absent for students with a mental disorder was twice those without, and by end of secondary school was 26 days or about 13% of annual school days. Furthermore, Lawrence et al. (2019) found that among students with a mental disorder, absences due to a disorder accounted for 13.4% of all days absent from school, which increased across years in schools from 8.9% in Years 1–6, to 16.6% in Years 11–12.

Every day of attendance at school contributes towards a child's learning, and academic outcomes are enhanced by maximising attendance in school (Hancock et al., 2013). Also, there is no 'safe' threshold, and effects of absence also accumulate over time. Absence from school was related to academic achievement in numeracy, reading and writing, not only in the current year, but in future years as well, as indicated by Hancock et al. (2013). The impact of mental disorders on test scores of Year 9 students undertaking NAPLAN[3] (see Figure 3.4, overleaf) was assessed by Goodsell et al. (2017).

While the Syrian context may be very different from that applying in Australia, it is likely that the impact of mental disorders on school attendance and learning outcomes is likely to be even greater in the crisis-ridden context of Syria. The loss of educational opportunities identified by these studies (Table 3.2, overleaf) confirms that the introduction of interventions to improve the mental health, and hence educational outcomes for children affected by the war, would be an essential component of the modelling for the recommended 'recovery' package of interventions for education.

From our review of the available evidence, two intervention programs appear relevant. They are the Youth Readiness Intervention (YRI), which has been conducted and evaluated in a developing country setting and detailed costs and cost-effectiveness of the program are available, and universal Social and Emotional Learning (SEL) interventions for which there are also detailed evaluations, although these have only been conducted in Western contexts.

3. NAPLAN is the Australian National Assessment Program – Literacy and Numeracy (NAPLAN) is an annual assessment for Australian students in Years 3, 5, 7 and 9 (https://www.nap.edu.au/naplan).

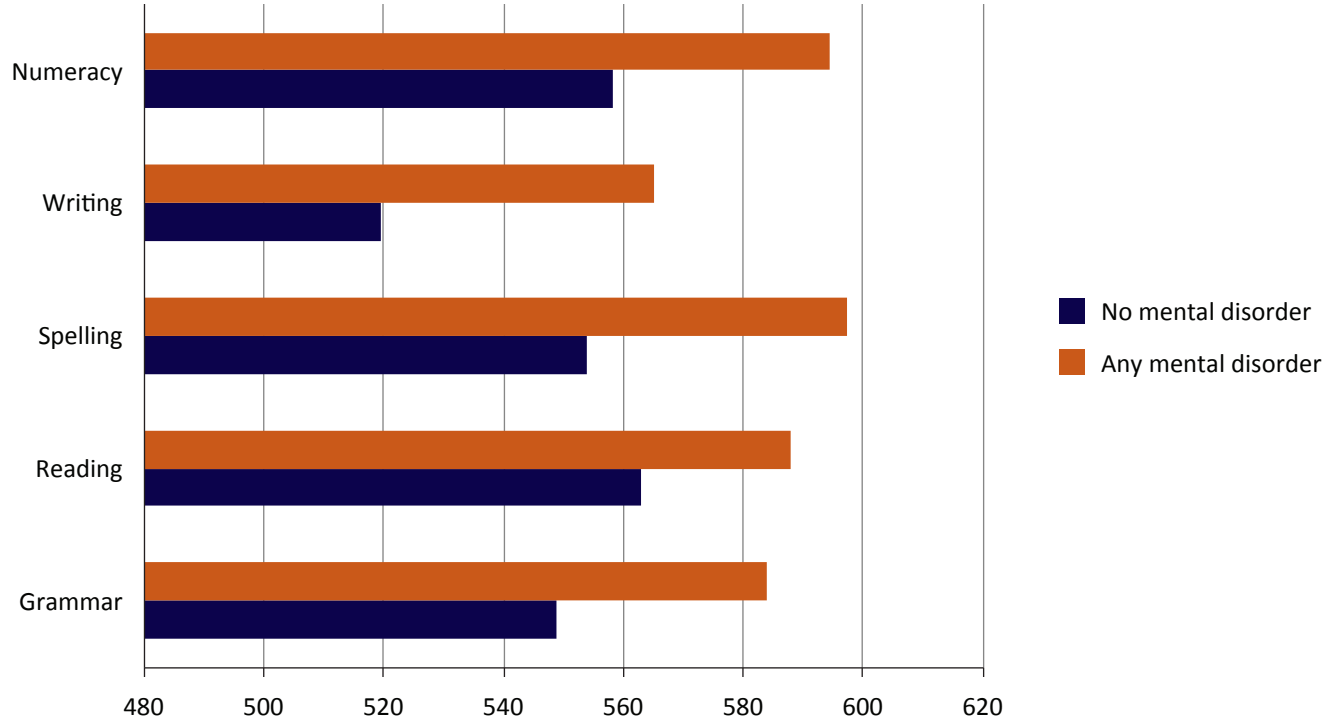

Figure 3.4: Average test scores for Year 9 students with and without a mental disorder, by test domain, Australia, 2016.
Source: Goodsell et al. (2017, p39).

Table 3.2: Specific academic outcomes of mental health interventions

Study	Type	Country	Academic outcomes	Comments
Barron et al. (2013)	Randomized controlled trial of Teaching Recovery Technique (TRT) CBT trauma recovery	Bosnia	School performance d=0.35	
Becker et al. (2013)	Review of mental health treatments in 85 studies, describing 88 randomized trials		Over 64% reflected academic achievement and 20% behavioural skills	Significant association between mental health and educational outcomes
Baskin et al. (2010)	Meta-analysis of 83 randomized controlled trials (RCTs; published between 1980 and 2008) of youth psychotherapy delivered in both school and non-school settings		0.38 for educational outcomes Academic self-efficacy (ES = 0.59) Academic achievement (e.g., grades, standardized tests; ES = 0.36) Teacher-reported classroom behaviour (ES = 0.26) Environmentally-related outcomes (e.g., attendance, discipline referrals; ES = 0.26)	Mental health outcomes (ES = 0.50)
Hoagwood et al. (2007)	Review – studies primarily of universal prevention targeting externalizing behaviours that was delivered in the school setting		63% reported mental and academic gains	

Note: ES = Effect size (Cohen's d). Cohen's d is an effect size used to indicate the standardised difference between two means. It can be used, for example, to accompany reporting of t-test and ANOVA results. It is also widely used in meta-analysis. Cohen's d is an appropriate effect size for the comparison between two means. Cohen suggested that d=0.2 be considered a 'small' effect size, 0.5 represents a 'medium' effect size and 0.8 a 'large' effect size. This means that if two groups' means don't differ by 0.2 standard deviations or more, the difference is trivial, even if it is statistically significant (Cohen, 1988).

3.3.3 Youth Readiness Intervention (YRI)

Betancourt et al. (2014) undertook a randomized control trial of the Youth Readiness Intervention (YRI)[4] in Sierra Leone for war-affected youth. It included a 10-session CBT-based intervention aimed to improve mental health, social behaviour and school functioning. War-affected youths identified by elevated distress and impairment via community screening were randomized to participate in the trial of YRI (222) or to a control condition (214).

The YRI showed significant post-intervention effects on emotion regulation, prosocial attitudes/behaviours, social support, and reduced functional impairment, with significant follow-up effects on school enrolment, school attendance, and classroom behaviour. An education subsidy was associated with better attendance, but had no effect on mental health or functioning. Newnham et al. (2015) also assessed the YRI in Sierra Leone and found that a CBT-based intervention presented a feasible and acceptable intervention for use in a low resource setting.

One study of YRI (McBain et al., 2016) provided not only the estimated costs and cost-effectiveness of a program, but also its impact on educational outcomes. The randomized control trial comprised ten weekly two-hour sessions. Each session represented one module, in which facilitators taught specific components derivatives from CBT, (e.g., emotion regulation skills, cognitive restructuring, problem solving and interpersonal skills). The trial yielded an incremental cost-effectiveness ratio (ICER) of $7,260 per quality-adjusted life-year (QALY) gained, at an economic cost of $104 per participant. This cost included participant attendance opportunity costs and imputed rental costs. Excluding these amounts, the average financial cost was $82.

The schooling outcomes at eight-month follow-up found that at the end of the 2012–2013 academic school year, 74 youth were enrolled in school: 28.8% (n=64) of YRI participants versus 4.7% (n=10) of controls [z=4.31, P<0.001, odds ratio (OR) 8.88]. Similar numbers of youth were still in school at the end of the year, when comparing cohorts randomized to receive education starting in 2012 (15.9%, n=35) versus 2013 (18.1%, n=39), [z=0.67, P=0.50]. Of youth who were still in school at the end of the school year, teachers (blinded to YRI condition) reported that YRI youth demonstrated significantly better classroom performance (t=2.19, P=0.03, effect size=1.31), based on the CPS, as well as attendance over the past month (z=2.70, P=0.007, OR 34.93). The significant difference in school attendance and other outcomes can be used as evidence of response to a CBT program for war-affected children and youth in our modelling of education outcomes.

In order to reduce barriers to youth participation in LMICs and in complex humanitarian emergencies and settings of adversity, Brown et al. (2017) noted that attendance was greater if the YRI interventions were held in convenient community spaces, such as vacant classrooms not in use during weekend breaks or in other private rooms made available by community leaders.

3.3.4 Social and Emotional Learning (SEL)

In the UNICEF guidelines (UNICEF, 2018), SEL forms part of Tier 2, Family and Community Supports (see Figure 3.2). The focus of SEL is on the process of acquiring the attitudes, competencies, knowledge and skills essential for learning, being effective and having a sense of wellbeing. It is targeted at those who have not had the intense trauma experienced by those who participated in the YRI program. Nonetheless, it could be a useful component of the schools-based curriculum aimed at supplementing other informal/non-formal education programs.

Increasingly, social and emotional skills are being recognized as important for child development and involve the ability to respond appropriately to social interactions. These are often regarded as ‘soft skills’ and personality traits that according to Heckman and Kautz (2012) predict success in school, the labour market, and in life. SEL is often embedded into a school curriculum and is seen to help reduce risky behaviours such as violence and drug abuse (Durlak et al., 2010; CASEL, 2003). It may form one aspect of programs designed to enhance non-cognitive skills and improve, among other things, academic performance (Gutman and Schoon, 2013).

Zins et al. (2004) explain the framework for key SEL competencies which include: self-awareness, social awareness, responsible decision making; self-management and relationship management.

SEL programs can: enhance academic achievement and attainment; improve school attendance, engagement and motivation; reduce negative student behaviour in schools and in the community, such as bullying, violence, and juvenile crime; benefit the mental health of staff and students by lowering stress, anxiety, and depression; improve health outcomes by reducing teenage pregnancies and drug abuse; lead to better staff retention and higher morale; and generally help to improve the social and emotional skills of both students and staff (Durlak et al., 2011; Zins et al., 2004).

4. YRI is a mixed-methods approach for developing and piloting a culturally grounded group mental health treatment.

Educational responses that incorporate SEL can play a crucial role in helping youth learn skills that reduce the negative developmental and behavioural effects of exposure to conflict. This includes building the intrapersonal and interpersonal skills needed to manage emotions effectively and build healthy relationships (Varela et al., 2013).

Zins et al. (2004) sought to examine the relationship between SEL and school success as measured by school attitudes (e.g., motivation, responsibility, etc.), school behaviour (engagement, attendance, study habits) and school performance (e.g., grades, subject mastery and test performance) (p194). They quote a CASEL (2003) review of 80 nationally available programs, of which 34% included methods to promote the integration of SEL with academic curricula and teaching skills. The review found all approaches used had positive effects on academic performance of which 83% produced academic gains. In addition, 12% did not specifically target academic performance. The results would have been higher, if the studies had considered academic outcomes. Zins et al. (2004) concluded that there is a growing body of scientifically-based research supporting the strong impact that enhanced social and emotional behaviours can have on success in school and ultimately on life.

Taylor et al. (2017) conducted a meta-analysis review of 82 school-based, universal SEL interventions involving 97,406 kindergarten to high school students. The study assessed outcomes at six months to 18 years post-interventions and found that there were significant positive effects of the intervention, with participants having stronger SEL skills than those in the control group. They faired significantly better than the control group at post-intervention on academic performance (based on grades and test scores drawn from school records, obtained at a mean follow-up period of 195 weeks), and the long-term effects were notable. Of the 82 studies, 38 were conducted outside the United States in a wide range of socioeconomic backgrounds. The positive impact of SEL competencies and school success as measured by school attitudes (e.g., motivation, responsibility, etc.), and school behaviour (engagement, attendance, study habits) on academic performance (e.g., grades, subject mastery and test performance) was also established by a review by Zins et al. (2004). The review found all approaches used had positive effects on academic performance of which 83% produced academic gains (Table 3.3, overleaf). Belfield et al. (2015) found that for every dollar invested, there was a return of 11 dollars for six SEL interventions.

A meta-analysis by Durlak et al. (2011) and separately reported by Payton et al. (2008) of 213 school-based, universal SEL programs involving 270,034 kindergarten through high school students. The SEL participants demonstrated significantly improved social and emotional skills, attitudes, behaviour, and academic performance that reflected an 11-percentile-point gain in achievement (see Table 3.3). The programs were conducted with greater success by school teaching staff rather than non-school personnel.

Specific SEL programs

Belfield et al. (2015) presented the costs and benefits of some specific SEL programs, based on results of various studies. The details of five of these are presented below. It should also be noted that the costs and benefits of these programs are for a developed country and would need to be adjusted for a developing country context.

The **4Rs Program (Reading, Writing, Respect, and Resolution)** focuses on SEL and literacy development in Grades K–5, to ameliorate aggression and violence. The curriculum, specific to each grade, aims to develop cooperative problem-solving skills, and each grade has seven units, each based on one literary work, highlighting themes such as conflict, diversity, and relationships. The curriculum reinforces them through skills practice.

Positive Action Program (based on theory that positive action makes us feel good and so becomes self-reinforcing) is a school-based curriculum and supplemental set of school cultural and family activities designed to promote students' positive thinking, actions and self-concept. The program consists of a series of short lessons at each grade level organised into six units: self-concept; positive actions for your body and mind; managing yourself responsibly; treating others the way you would like to be treated; telling yourself the truth; and improving yourself continually. Positive Action can have many impacts such as improvements in personal behaviour, mental health, achievement and academic and school climate, not all of which can be quantified.

Life Skills Training (LST) is a school-based classroom intervention to reduce substance abuse and violence generally delivered to at-risk students in middle and/or high school.[5] LST teaches social and emotional skills to build confidence and self-esteem, to equip youth with the skills needed to resist peer pressure, and generally to improve social and emotional competence to reduce anxiety and improve a range of health outcomes. The curriculum has three key components over three years: knowledge and skills needed to resist use of alcohol, tobacco and other drugs; personal management skills; and general social skills to build assertiveness.

5. At www.lifeskillstraining.com

Table 3.3: Social and Emotional Learning programs and academic outcomes

Study	Type	Country	Academic outcomes	Comments
Casel (2003), cited in Zins et al. (2004)	Review	National (US)	83% of studies indicated academic gains	12% did not target academic performance else results could have been higher
Taylor et al. (2017)	Meta-analysis 82 studies, 97,406 students	38 non-US studies out of 82	Program (8) significantly better than control. ES = 0.22, 95% CI ES = Hedges' g	Mean effect of .33 on academic performance (based on grades and test scores drawn from school records, obtained at a mean follow-up period of 195 weeks) compared favourable to post-effects obtained by many educational interventions
Durlak et al. (2011) Payton et al. (2008)	Meta-analysis of 213 SEL programs involving 270,034 kindergarten through high school students Almost half employed randomised designs	Urban 56% elementary school 31% middle school 13% high school 71% were less than a year 11% 1–2 years 12% over 2 years	Group Total ES = 0.27* (11% – Payton 2008) Sample CI 0.15 to 0.35 N 35 Class by teacher ES = 0.34* CI 0.16 to 0.52 N 10 Class by non-school personnel ES = 0.12 CI –0.19 to 0.43 N 3 Multi-component ES = 0.26* CI 0.16 to 0.36 N 22	SEL skills, emotional distress, etc., outcomes also available ES = Hedges' g

Note: *p<.05. ES = effect size.

Second Step is a classroom-based social skills curriculum for pre-school through to junior year of high school, with a distinct curriculum for each grade. It builds on cognitive behavioural intervention models and consists of interactive lessons that relate to problem-solving and emotional management. It is designed for school-wide implementation and implemented by classroom teachers. It aims to develop empathic behaviours and improve students' skills in communication, social problem-solving, and critical thinking – to identify and understand their emotional state, and to manage and communicate these emotions appropriately, therefore increase social competence, and reduce aggressive and delinquent behaviours.

Responsive Classroom is a pedagogical approach focusing on how teachers both teach and interact with elementary school students – designed to provide teachers with strategies, structures, practices, and techniques to improve their self-efficacy, to impact student social and emotional, academic, and other non-academic outcomes, and to build a strong school community.

It includes two one-week training sessions and published materials for coaching, on how to incorporate ten key practices into their teaching philosophy and pedagogy – providing emotional support and to proactively manage the class. These lead to increased student motivation and engagement, which in turn increases academic skill acquisition. It is integrated with classroom instruction and provides opportunities to practice SEL skills and tools to assess implementation and evaluate student behaviour (CASEL, 2003, Figure 3). Early research found that the program improved social skills and reduced problem behaviours (Elliot, 1993, 1995, 1999).

Table 3.4 (overleaf) provides a summary of the programs and their costs and benefits.

Table 3.4: Costs and benefits for Social and Emotional Learning programs

Program	Targeted outcome (e.g., drug abuse, violence)	Statistical effect size (SDs or other)	Cost per participant (US$)	Cost (GDP per capita terms)	Benefit (US$)
4Rs	Reduced aggression	0.13 SD, for reduced aggression (average from 0.05–0.21)	Without instructional time/facilities, $420; with instructional time/ facilities, $680 for two years	0.79% to 1.28%	$4,470
Positive Action	Reduced bullying, and reduced sexual and physical violence	0.38 SD in bullying for three years yields 18 fewer days of bullying	$510 over three years	0.96%	$3,370
Life Skills Training*	Reduced vandalism and school suspensions	In past year: Delinquency (odds ratio of 0.684) Frequent fighting (odds ratio of 0.742) Frequent delinquency (odds ratio of 0.643)	$130 for three years	0.73%	$450
Second Step**	Increased social competence, and reduced aggressive and delinquent behaviours	42% reduction in self-reported physical aggression	$50 per year per student not accounting for instructional time $440 including instructional time	0.83%	$18,420 per participant, but if fade out of 10% assumed, then $7,550 per participant
Responsive Classroom	Improved social skills and reduced problem behaviours	Effect size gain by 5th Grade of 0.26 SD in maths and 0.3SD in reading***	$900 over three years	1.69%	$802,000 per 100 students Benefit is $8,920, so net present value per 100 students is $802,000
Average Cost				1.05% $30#	

Notes: * Knowles and Beherman (2003) identified LST for Aids in Zambia to be US$0.16 per person per year.
** World Bank (2003) identified costs per person per year for Second Step in Mozambique to be US$0.3.
*** Students with low math achievement: increase of 0.89 SD (p<.01) in math an 0.52 SD(p<.05) in reading. High achieving math students an increase of 0.49 SD(p<.01). From Rimm-Kaufman et al. (2014) for students entering in 3rd Grade in 2008–09, 4th Grade in 2009–10; and 5th Grade in 2009–10 in a large, diverse mid-Atlantic school.
# Based on pre-crisis 2010 GDP per capita for Syria of $2,857.
Source: Belfield et al. (2015).

The costs and benefits in Belfield et al. (2015) are in US$ and based on earnings in US$, and the value of skills varies across countries. They are based on the development of SEL skills, how these skills influence future earnings, are mediated through changes in education levels, and set out a framework for estimating the value of SEL skills in developed countries.

SEL in developing countries

There is little doubt that SEL programs have a place in addressing the mental health problems of children and youth in Syria in ways that have been identified by UNICEF (2018a, p31), and in a review of studies of immigrant refugee children conducted largely in high-income countries (Sullivan and Simonson, 2016) which concluded:

> … the research on social-emotional interventions for students who are refugees, asylum seekers, or otherwise traumatized by war … suggest that school-based interventions may be effective in reducing students' trauma-related symptoms and impairment. (p523)

However, the review contained no quantified evidence of the conclusions.

The costs and benefits estimated by Belfield et al. (2015) are available for a Western environment and are not easily adaptable to a Syrian context. Other studies quoting effectiveness size, largely in the range of 0.2 to 0.3 for academic performance (in Table 3.3), demonstrate the value of SEL programs for lifting education outcomes, but are largely from Western-based studies.

The priority for SEL programs for Syria would be to address the day-to-day post-conflict stresses of Syrian children and youth. Most of the programs such as 4Rs, LST and Second Step could provide benefits in reduced aggressiveness, and some lead to improved academic performance. The programs such as the Positive Action Program to address bullying, if employed, would need to be addressed in an entirely different context, one in which costs and benefits had entirely different metrics. The intervention program benefits are typically the value of community costs avoided, which would be very different between the US and Syria.

The appropriateness of the SEL program to non-Western countries has been questioned by Jukes (2018a), one of the few to document its use in a developing country context. He developed an assessment tool of SEL in Tanzania, but argues that SEL programs use frameworks from evidence gathered in Western industrialised societies (Jukes, 2018b), and cannot be simply applied in a new context such as non-Western communities because of the cultural differences in values. In his studies in Mtwara, Tanzania, he found differences between parent and teacher values, where parents value respect and obedience, but teachers value confidence, curiosity, self-direction and self-belief, which were seen as more important for success at school (Jukes, 2019, p182, 194; 2018b). He concludes there is a need to contextualize and negotiate SEL goals within the participants' population and their communities, including the ways they would like to change (RTI International, 2018).

3.3.5 Impact of restored education services on mental health of children and youth

One of the most important roles in bringing about recovery after violent conflict or major disasters, is one that is played by education (Barakat et al., 2013). This realisation has led to the development of increasingly targeted and sophisticated education programs to assist in post-conflict recovery. Talbot (2013) suggests that a good quality education can help with long-term processes of post-conflict reconstruction and strengthening of social cohesion, as it counteracts the fundamental causes of violence, by nurturing values on inclusion, tolerance, human rights and conflict resolution.

Some studies that address the relationship between the provision of education and recovery from violent conflict were discussed in Chapter 2. Regrettably, we were unable to locate any studies with reliably quantified results to include our modelling.

3.4 Conclusion

This paper has considered the evidence for the cost and effectiveness of three sets of interventions for relationships between education and mental health outlined in the theory of change. To be suitable for inclusion in our models, the outcomes of these studies need to be quantified, statistically significant and include if possible, the relevant costs of the intervention programs.

The three areas are:

- the effect of mental health interventions on mental disorders
- the effect on education outcomes of addressing mental health disorders, and
- the effect of education on improving mental health.

In order for the intervention outcomes to be relevant to modelling for Syria, results from studies in developing countries were preferred over those from Western countries. As a high proportion of studies have been conducted in the United States, this reduces or qualifies the value of these studies.

There is ample evidence for the effectiveness of mental health interventions on mental disorders. The studies we reviewed were conducted in a range of locations, Bosnia, Sri Lanka and the United States. The subjects were generally from war/political violence contexts. Most of the interventions reviewed included CBT, supplemented by various other psychosocial support programs. The outcomes were generally large and significant. The effect size of reducing PTSD was by an average Cohen d score across five studies of 0.939 (std. dev = 0.203), with the three studies conducted by teachers a slightly higher average of 0.949 (0.068).[6] The outcomes are based on an average of 10 sessions which we can use as a basis for costing the programs.

There are fewer studies to provide evidence on the impact on education outcomes of addressing mental health disorders, especially for developing countries which have experienced violent crisis. One intervention, YRI, which was conducted in a post-crisis context for youth in Sierra Leone satisfied our criteria and provided details of both delivery costs and effectiveness. At a per participant cost of $104, education performance measures such as attendance was much higher for those enrolled in the YRI.

6. As rule of thumb, a Cohen d score in excess of 0.8 is considered a large effect (Cohen, 1988).

At the end of the academic school year, 74 youth were enrolled in school: 28.8% (n=64) of YRI participants versus 4.7% (n=10) of those in a control group [z=4.31, P<0.001, odds ratio (OR) 8.88]. Of the youth who were still in school at the end of the school year, teachers reported that YRI youth demonstrated significantly better academic classroom performance (t=2.19, P=0.03, effect size=1.31), including completion of coursework, classroom behaviour and classroom participation. The significant difference in school attendance and other outcomes can be used as evidence of response to a CBT program for war-affected children and youth in our modelling of education outcomes (McBain et al., 2016).

There was also considerable evidence for the impact and economic value of SEL programs on mental health and educational outcomes. However, most of this evidence comes from programs conducted in the United States and in other Western countries. The Belfield et al. (2015) study of youth in the United States demonstrates high benefit-cost factors for a range of SEL interventions in mental health, but limited evidence of a positive impact on educational outcomes. Other studies quoting effectiveness size, largely in the range of 0.2 to 0.3 for academic performance (Table 3.3), demonstrate the value of SEL programs for lifting education outcomes, but are largely from Western-based studies.

Interventions such as UNICEF MENA's Life Skills and Citizenship Education (LSCE) Initiative (UNICEF MENA, 2017; Harvard University, n.d.) that emphasize core life skills – creativity, critical thinking, problem solving, cooperation, negotiation, decision making, self-management, resilience, communication, respect for diversity, empathy and participation – could help students develop work life skills (for further discussion, see Chapter 4) and also enable them to manage their lives with reduced emotional distress, conduct problems and improved academic performance (Durlak et al., 2011) – more effectively.

It would be desirable to conduct a learning assessment about the psychosocial relevance of the MENA LSCE programme, because there is evidence exists that links life skills to academic achievement (see Hoskins and Liu, 2019). For instance, Ashraf et al. (2018, 2020) found that an intervention that increased non-cognitive, interpersonal skills (specifically negotiation skills) during adolescence, significantly improved educational outcomes over the next three years and also produced a higher probability of being enrolled in secondary school.

Life skills programs are also a common intervention used for girls and young women to delay marriage. Their objectives are in some ways similar to those developed within the SEL framework. They aim to provide girls and young women with information and basic skills to better navigate the transition to adulthood, through extended education and delayed marriage. Some detailed studies of life skills programs, such as in Egypt (Sewall-Menon and Bruce, 2012), may provide a better costing framework than Western-based studies.

In modelling relationships between mental health and educational outcomes for Syria, education efforts must be socio-emotionally informed. This may require importing and adjusting the approaches and indicators of SEL programs conducted in Western countries to Syrian conditions.

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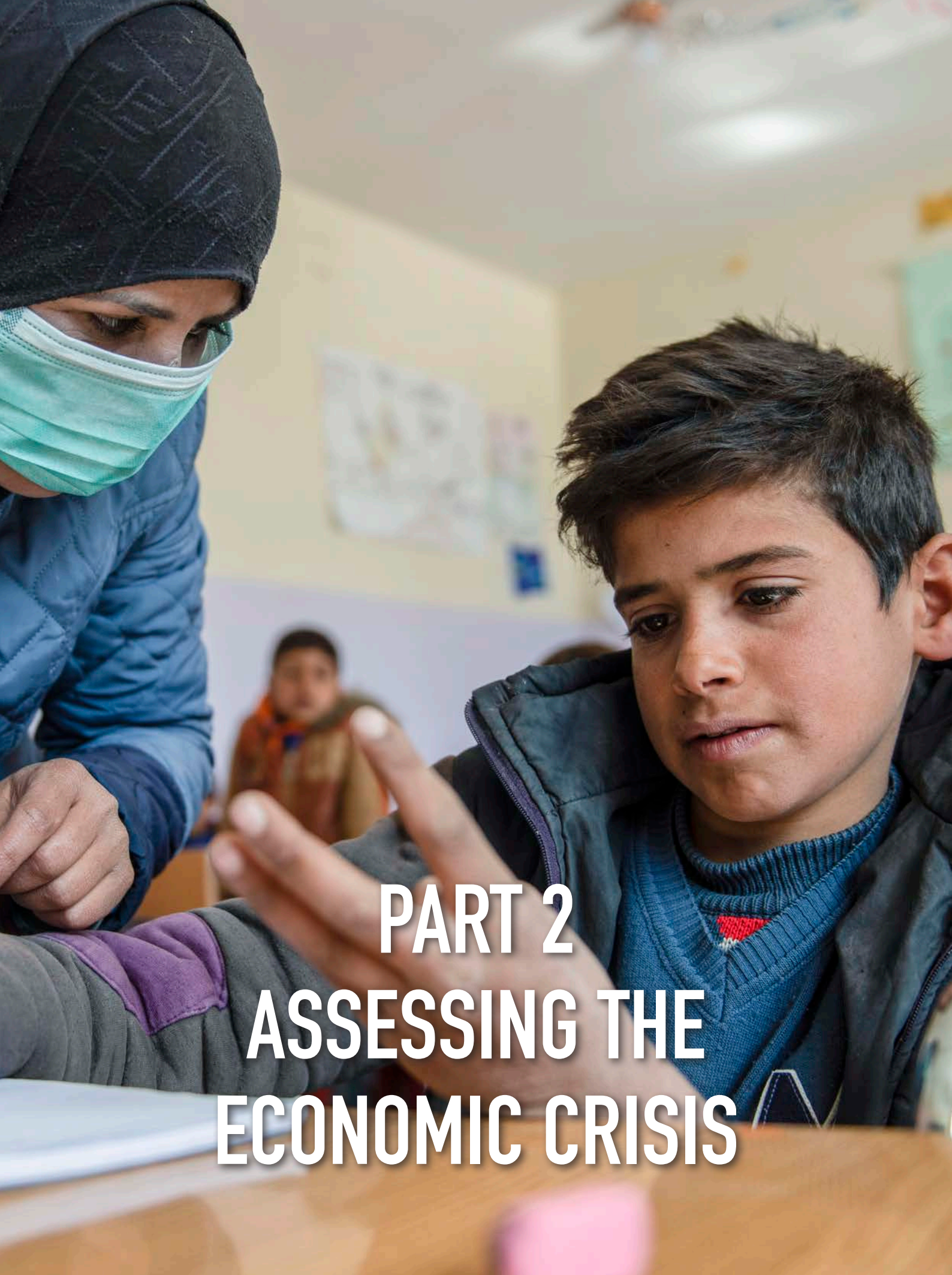

PART 2
ASSESSING THE ECONOMIC CRISIS

Chapter 4: The education model

In the first part of this report, we have recognised that the current crisis imposes a social cost on Syria's children cognitively and mentally health wise. It adversely affects child resilience, future employability and competitiveness, in ways that impact community resilience and could create challenges for the future cohesiveness of society. We have provided to the best of our ability evidence-based arguments as to why a strong education system would address many of these risk factors.

In this second part, we firstly turn our attention to identifying the types of education investments that could produce the best economic returns on investment for Syria. We then model the costs and educational outcomes from adopting these intervention programs. Following that, we model the economic benefits, in terms of greater employability and productivity, of those completing school with higher educational standing.

We pursue these objectives by proposing in this chapter an education model that will enable us to estimate the costs of the investments and the improved educational outcomes, and in Chapter 5 we present the application of this modelling. In Chapter 6, we model the benefits of investing in education and training in terms of improved productivity and higher GDP. Finally, in Chapter 7 we bring the costs and the economic benefits of the investments together to provide estimates of the economic returns on the investments in education and training.

4.1 Introduction

The education model used to analyse the impact of educational interventions in Syria is the VISES Education Model (VEM), constructed for the analysis of a wide range of low and middle-income countries. The model was first outlined in Sheehan et al. (2017) and documented in detail in Wils et al. (2019).

The VEM has been extended specifically for Syria through the inclusion of non-formal training for students who leave school with different levels of educational qualifications. The model includes target increases for vocational education, and in addition, specific percentages of the school-leaving cohorts are assumed to undertake non-formal training such as training programmes.

The VEM analyses the costs and benefits of various education interventions for adolescents in secondary schools that in Syria includes the Basic Education 2nd Cycle (Grades 5 to 9) and Secondary School (Grades 10 to 12).

The basic structure of the education model is shown in Figure 4.1.

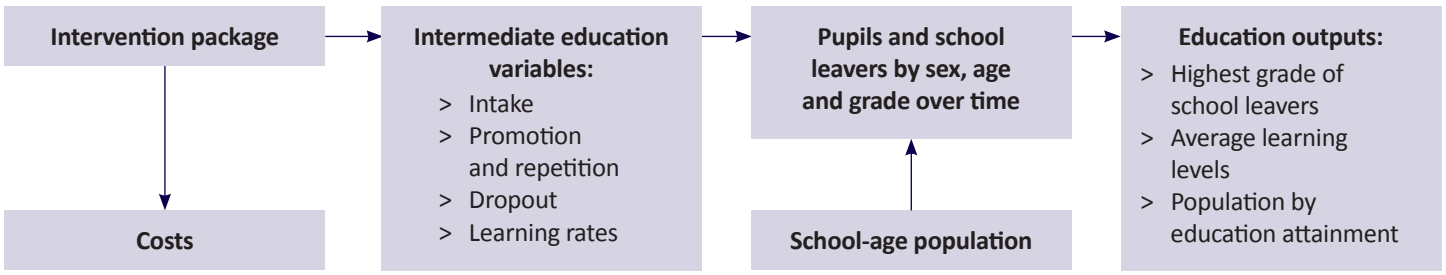

Figure 4.1: VISES education model structure

There are three hurdles to receiving a full education: school entry, school retention, and learning while in school. The barrier to school entry is real and substantial. Of the 650 million primary school age children in the world currently, 25 million will not enter school and 20 million will enter school late (UIS, 2015). If a child has not started school by age 11–13, the chances that he or she will do so at a later age are very low. However, this is not necessarily the case in Syria due to the specific circumstances of the crisis where there with a large number of out-of-school children.

The model includes a set of interventions (intervention package) which affect various education variables, including increasing entry, promotion, repetition, dropout and learning rates. The interventions affect the number of school entries and leavers over time that are differentiated by sex, age and grade. The model then generates outputs including the highest grade attained by school leavers, the average learning level and the education attainment levels of population cohorts of 15–19 and 20–24-year-olds out to 2050, for both males and females. The education or learning quality measure increases over time as the various interventions are applied and the pupil-teacher ratio declines through time. Various studies have found the effectiveness of the interventions is affected by various education risk factors including poverty, gender, rural or urban location, and early marriage (Wils et al., 2019).

More specifically, the education outputs are influenced by the varying coverage effectiveness of interventions, the duration of the interventions, as well as multiple interventions operating simultaneously with their overall effectiveness being multiplicative, and hence reducing the individual impact. Educational achievement is also included as a quality measure of the education system that increases promotion and reduces repetition rates.

Most of the interventions, their effectiveness and cost parameters used in the model come from studies conducted in LMICs, often in very poor countries, among strongly disadvantaged populations. The studies addressed many of the issues that affect under-performing systems, including but not limited to:

- children with low levels of school readiness
- compromised health
- classrooms with little learning
- materials that are missing
- pedagogy that is outdated and ineffective
- teachers who are ill-trained and unsupported
- teachers who are frequently absent
- children who leave school after too few grades, and
- children who do not understand the language of instruction.

The studies analysed cover five outcomes: learning, cognition, dropout, completion and enrolment. It was not feasible to compile the geographical distribution of the studies with precision, but the majority of studies were done in sub-Saharan Africa, followed by South Asia as an area of interest, with Central Asia, Latin America, South-East Asia and the Pacific underrepresented. One study identified in the Middle East, North Africa (MENA) region included a study in Morocco on the effects of unconditional cash transfers on enrolment (Benhassine et al., 2014). Two other relevant studies, one about the effects of a longer school day on test scores was conducted in Ethiopia (Orkin, 2013) and another examined the effect of building new schools in Afghanistan (Burde and Linden, 2013). We draw heavily on the meta-analysis of a large number of studies found in Damon et al. (2019). The studies identified by Damon et al. (2019) were also examined individually for this study, with over 200 research papers reviewed.

The VEM calculates the number of adolescents who leave school, by gender, age and the grade of school departure. These school leavers are aggregated into post-school education groups, namely: Basic Education 1st Cycle only (equivalent to primary); Basic Education 2nd Cycle (equivalent to lower secondary) (incomplete and complete); incomplete secondary; and full secondary education (a portion of this group may go on to tertiary education – this is not included in the model).

The VEM has been extended specifically for Syria in several ways. These include accommodating the substantial population changes due to refugee movement that dramatically affect enrolment rates and interventions targeting enrolments. In addition, non-formal training for adolescents who leave school with different levels of educational qualifications (e.g., Basic Education 1st Cycle, Basic Education 2nd Cycle [incomplete and complete], incomplete secondary and complete secondary) has been modelled. The non-formal training for adolescents includes trade certificates, vocational training and life skills, and the UPSHIFT programme that has previously been implemented in other countries with the assistance of UNICEF (UNICEF, n.d.).

The UPSHIFT programme combines youth and adolescent development approaches with social innovation and social entrepreneurship in order to empower young people to identify challenges in their communities and create entrepreneurial solutions to address them. UPSHIFT is designed to build transferable skills and create opportunity, with a focus on the most disadvantaged young people. As the UPSHIFT content is modular, it may be adapted to different contexts and delivered in different settings –from schools and non-formal education centres. Participants gain transferable skills, including problem solving, critical thinking, creativity, collaboration and leadership.

The model includes target increases for trade certification, vocational education and UPSHIFT, with a certain percentage of school-leaving cohorts who are assumed to undertake non-formal training.

Incorporated into the VEM model are the basic costs associated with education provision, including infrastructure, maintenance, salaries and materials, and the additional costs of the interventions. These costs are required to estimate the BCRs and guide the choice of the best value for money interventions.

The purpose of calculating the aggregated post-school education groups is to generate input educational achievement cohorts for the VEM, which then estimates the employment and broader economic effects for these cohorts.

4.2 Data sources

A variety of data sources are used in the VEM, although every effort was made to use locally sourced data provided by the Government of Syria.

Data on enrolment, age grade distribution, the number of teachers, pupil-teacher ratios, education system structure and expenditures including salaries, school feeding, materials and construction costs were obtained directly from the Department of Education, Government of Syria. Population forecasts were obtained from United Nations Population Division projections (UN, 2022), and GDP figures and literacy rates were obtained from the World Bank (2020).

4.3 Common measure for sizes of the effect of education interventions

In addition to determining which interventions are the most effective, it is necessary to determine a common scale or measure for the size of the effects of the education interventions. The meta-analysis utilized for this model standardizes the effects of nearly 50 interventions into standard deviations (SD) (Conn, 2017). In effect, when a student or child receives this programme or intervention, their learning outcomes (enrolment, completion, etc.) will improve by a standard deviation of X if everything else is held constant. Standard deviations are chosen because they take into account the range of variability within a group (how much test scores differ say, among a group of children).

Standard deviations may not be as simple to understand as, for example, an improvement of Y percentage points. If the data is normally distributed, a one-standard deviation improvement would move the median student up to the 16th percentile (from being the 50th best student in a class of 100 to being the 16th best student). For a binary outcome like dropout, a one-standard deviation improvement would shift an initial 50% probability of dropping out of school to a 16% chance. Typically, the effect of a programme or intervention is only a small fraction of a standard deviation. For example, rural school supply has a standard deviation improvement in dropout rates of 0.38. This means the mean of the distribution is shifted 0.38 standard deviations as shown in Figure 4.2. The red line in Figure 4.2 represents an increase of one standard deviation, while the green line represents a decrease of 0.38 standard deviations. The green line illustrates the new distribution of dropout rates for a given cohort. This translates to fewer younger people dropping out of school early.

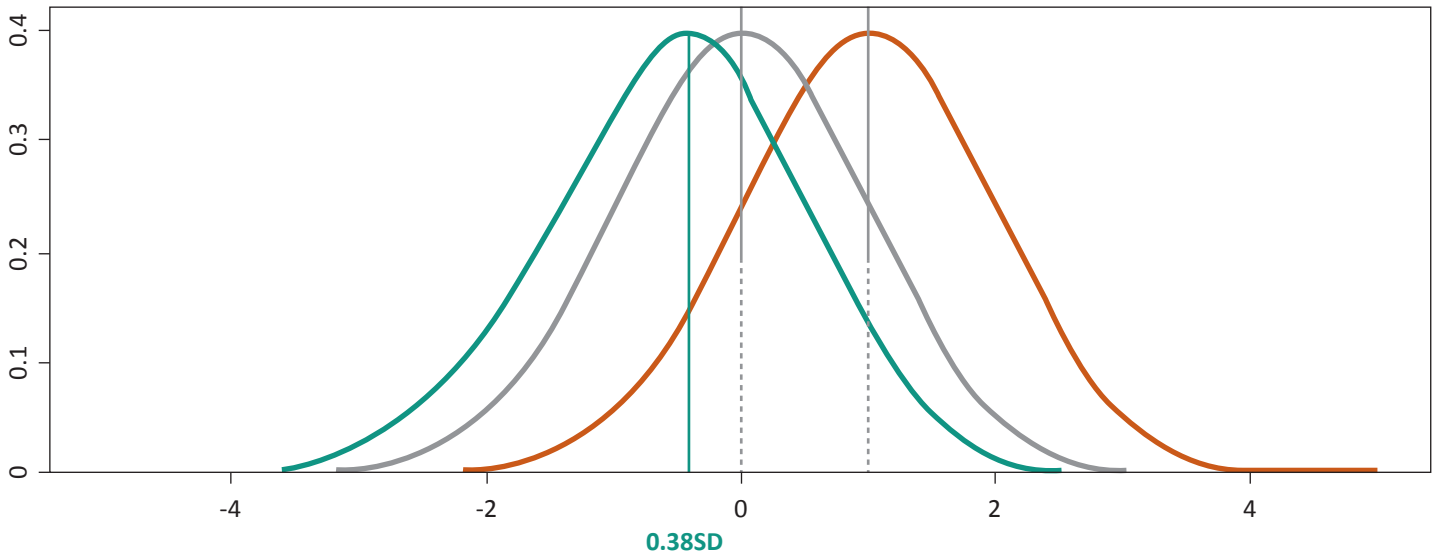

Figure 4.2: Shift in mean of standard deviation. Source: Authors estimates.

4.4 School quality

There is no consistent, global education indicator of quality for schools, as opposed to accepted global indicators of quantity such as enrolment rates, completion rates, etc. There are comparable learning measures within various international learning assessments including three global assessment series, TIMSS, PIRLS and PISA[7], which each cover some LMICs; and regional assessments covering additional LMICs: LLECE (in Latin America), SACMEQ (in Southern Africa) and PASEC (in francophone Africa)[8].

It is known that grades, or years of schooling, by themselves do not make an educated or skilled population. Hanushek and Woessmann (2010) and Barro (2013) found that cognitive skills are a very strong predictor of GDP growth. These studies show that cognitive skills do not necessarily correspond to educational attainment due to large differences in quality. In some countries, years of schooling amount to only a small increase in knowledge and skills.

In order to address the lack of a global, standardised estimate of learning achievement, numerous researchers have transformed the scores from the different assessments to standardized measures (Hanushek and Kimko, 2000; Hanushek and Woessmann, 2010; Altinok, 2012; Altinok et al., 2014; Angrist et al., 2013). While the methodology has evolved over time, the basic approach is:

(1) the scores of the three global assessment series (TIMSS, PIRLS, and PISA) are standardized using the United States scores as an anchor
(2) the scores from the three regional assessment series (SACMEQ, PASEC and LLECE) are standardized using countries that have participated in one of these tests and a global assessment as anchors, and
(3) the scores are standardised over time using the United States scores from an American assessment that has been in use since 1971, the National Assessment of Education Program.

However, many developing countries are missing from the World Bank data set including Syria. Consequently, for Syria, the only option is to make estimates based on correlations to other observed variables such as any observed PISA and TIMSS results (the most recent Syrian data is from 2007). This provides a starting point for a numerical value for the education model. The various interventions are considered to improve school quality with the effects separated into impacts on dropout and learning, with different improvements in quality for both, and with the level of education of school achievement also a factor in the school quality calculations. In addition, the improvement in school quality is also impacted by the pupil-teacher ratio, with a lower ratio generating a larger increase in school quality for a given intervention.

4.5 In-school interventions[9]

Which educational interventions to include is a critical part of the model construction. Evidence compiled from several hundred research studies has been analysed in meta-studies to determine what works to improve education outcomes in lower-income countries. Much of the research focuses on schooling in general, such as: having schools within accessible distance; teacher quality; well-developed pedagogical methods and materials; remedial teaching; financial support; and some health interventions. In addition, there are interventions that are specific to adolescents. In some societies, female teachers are important for adolescent girls; in all societies, adequate sanitary facilities may be critical for adolescent girls.

Based on the literature identified in the Damon et al. review (2019), we conducted our own meta-analysis of 268 papers to identify relevant interventions for Syria, their effectiveness and cost.

Intervention modelling

The effectiveness associated with the interventions model is summarised in Table 4.1 (overleaf). This shows the relative benefit in terms of increased enrolment, reduced dropout and improved learning as a standard deviation or percentage change for interventions in formal education. Some of the interventions have an effect in more than one of enrolment, dropout and learning.

As discussed in the previous section, the VEM does not include UPSHIFT, professional training or trade certificates in terms of dropout rates and learning gaps, as no academic studies have been undertaken to establish these effects. However, the productivity effects of such programmes have been undertaken and these have been included in the employment model to determine the economic benefits of these non-formal education training programmes.

7. TIMMS is Trends in international mathematics and science study, PIRL is Progress in International Reading Literacy Study, and PISA is Programme for International Student Assessment.
8. LLECE is Latin-American Laboratory for Assessment of the Quality of Education, SACMEQ is Southern and Eastern Africa Consortium for Monitoring Educational Quality and PASEC is Programme for the Analysis of Education Systems.
9. For information about the literature on which the set of interventions selected are based on for this study, see Symons et al. (2022). *Proposed Interventions for Modelling Formal Education*, VISES Project Working Paper 2022–1, Victoria Institute of Strategic Economic Studies, Victoria University, Melbourne, at: https://www.vu.edu.au/sites/default/files/proposed-interventions-for-modelling-formal-education-working-paper.pdf.

The education interventions are assumed to be independent, but with multiplicative effects. This means that the effect of one is multiplied by the effect of the next to generate the final effect. For example, conditional cash transfers lead to an 18% reduction in dropout rates, meaning that 82% of the students who would have dropped out, will still drop out early after implementing this intervention. The new schools interventions leads to a 57% reduction in dropout rates, or 43% of students who would drop out will still drop out early. If the two programmes are implemented simultaneously, then the overall effect is calculated as follows:

=0.82 * 0.43

=0.353 (i.e. 35.3%)

Therefore, if the two programmes were implemented simultaneously, it is expected the dropout rate would be 35.3% of the dropout rate prior to the interventions. The multiplicative effect of standard deviation changes is more complicated in its calculation, but the principle is the same.

The interventions are implemented progressively, increasing in a linear fashion until they reach full implementation by the specified full implementation year, whether that is 2025 or 2030.

Table 4.1: Effectiveness and cost of selected education interventions

	Average effectiveness			Average cost (% base unit costs)		
	Learning/Test scores	Enrolment	Dropout	Learning/Test scores	Enrolment	Dropout
Conditional cash transfers	18.3%	25.8%	–10.3%	64.6%	16.3%	9.7%
Merit based scholarship	33.1%	13.8%		12.1%	12.8%	
New schools	56.8%	45.3%		14.0%	14.0%	
Remedial education	37.2%			5.9%		
Teacher incentives/performance pay	27.9%			1.4%		
Pedagogical changes	0.23 SD		–0.13 SD			
School meals			–36.9%			47.8%
Private schools (vouchers)	23.5%	24.8%		48.8%	45.7%	
Computers/ICT	31.2%			11.8%		
Improved school infrastructure			–0.11 SD			5%
Bicycles provision (girls)		32%			19.5%	
School-based management		1.1%	–2.4%		0.48%	0.16%
Parent/teacher partnerships	0.11 SD			5.4%		

Source: Authors estimates based on Damon et al. (2019); VISES review.

Intervention costs

In order to be seriously considered for implementation, the effectiveness of interventions needs to be evaluated against costs. Even very effective programmes may not be cost-effective if the unit costs are very high; conversely some programmes with relatively small impacts may have very low costs or additional non-schooling benefits that render them cost-effective.

Often cost estimates in studies are described in terms of absolute values (dollars, pounds, local currency). Absolute costs are problematic when determining costs across countries. However, a useful transferable and comparable indicator of costs is the marginal cost of an intervention relative to the base costs of education provision. The base costs of education provision are the costs to provide education for a country and include teacher salaries, buildings, maintenance of school buildings, learning materials and administration. The total of these costs are then divided by the number of students to obtain an annual cost per student. The costs of the interventions are then based on this annual cost per student. For example, if the annual cost per student is $100 and providing remedial education costs 5% of base costs, then the cost of implementing remedial education would be an additional $5 per annum per student. This approach is taken so that costs for interventions in one country may be applied to a different country using a consistent unit of analysis.

The cost estimates were compiled from various sources: studies from the meta-analyses that also include costs; studies specifically investigating costs; and international sources with estimates for particular programmes. None of these estimates take into account cost savings from reduced repetition and dropout; these are straightforward per pupil-year marginal cost calculations.

Each of specific interventions from Table 4.1 are discussed below.

4.5.1 Conditional cash transfers

The evidence strongly supports the effects on education outcomes of conditional cash transfers. Damon et al. (2019) reports 52 of 57 estimates for 24 randomised controlled trials or other high quality studies as being positive and statistically significant. The PROGRESA scheme in Mexico is one of the best known. Other programs have become common in Latin America and increasingly so in Asia and Africa. While the scheme details differ, conditional cash transfers (CCT) provide financial support to students to remain at school (Baird et al., 2011, 2013; Barham et al., 2013; Baez and Camacho, 2011; Garcia and Hill, 2010; Behrman et al., 2009, 2011; Schultz, 2004; Barrera-Osorio and Raju, 2011; Levy and Ohls, 2010; Kremer et al., 2009; Friedman et al., 2011). While some are provided as a final year lump sum, others provide ongoing support contingent on daily attendance over the school year. Of the selected interventions, CCT alone has a favourable impact on each outcome, test scores, increased enrolment and reduced dropout. The average impact across the study results was 26% for enrolments, 18% for test scores and 10% reduced dropout.

4.5.2 Merit-based scholarships

Merit-based scholarships increase both student time at school and particularly their test scores. These are generally administered as competitive-based rewards to meet future costs of schooling. Our results are based on three studies (Kremer et al., 2009; Blimpo, 2014; Friedman et al., 2011) which found positive and significant effects on test scores and enrolment. Blimpo (2014) found similar results equivalent to improvement in test scores of between 35% and 40% for individual, team and tournament-based merit scholarships. Most studies conducted to date in developing countries have been in Sub-Saharan Africa. The average cost of the scholarship per student was about $39.

4.5.3 New school supply

Although the number of studies of the impact of new school construction programs are few in number (Duflo, 2001; Handa, 2002; Alderman et al., 2003), they are of high quality and indicate a very high response to the availability of nearby school facilities. Our analysis indicates an average across the studies of an increase in enrolment of 45% and in test scores of 57%. Those that include girl-friendly facilities have been shown to be particularly successful (Alderman et al., 2003). The studies have been undertaken in a range of developing countries, such as Indonesia, Mozambique and Pakistan. One study looked at the effects of secondary school proximity in Ghana and Côte d'Ivoire (Tansel, 1997). The average value in this study for the attendance of those who did not have a school in the community was approximately 40% lower for boys and approximately 70% lower for girls, compared to adolescents with a secondary school in the community.

4.5.4 Rural school infrastructure supply

School proximity is an important determinant of school access, in particular for rural children. Having a school close to home is a critical determinant of enrolment and attendance, provided that teachers are available. On average, having a school nearby decreases the risk of not being enrolled by approximately one half. One study looked at the effects of secondary school proximity in Ghana and Côte d'Ivoire (Tansel, 1997). In this study, the attendance of those who did not have a school in the community was approximately 40% lower for boys and approximately 70% lower for girls, compared to adolescents with a secondary school in the community. In most cases, the children who do not have schools nearby are rural, so an intervention to increase school proximity is linked to the rural location barrier.

However, secondary schools in rural areas will often serve a catchment area with only a small number of potential students. Consequently, this may require innovative thinking such as very small secondary schools, with as few as three teachers, supported by a televised, radio or internet curriculum.

4.5.5 Remedial education

Remedial education or teaching at the right level has been shown to be very successful at raising PISA and TIMSS test scores. Three high quality Indian studies (Banerjee et al., 2007a, 2010; Lakshminarayana et al., 2013) recorded an overall average increase of 37%. The programs have been generally conducted at school premises, but also after school by specially trained and recruited volunteers at an average cost of about $32 per student.

Remedial education programmes are structured programmes that are designed to help students who need extra attention to improve their performance in the classroom. These programmes provide remedial instruction that supplements regular classroom teaching in specific subjects. Students who are lagging behind their peers receive more individual attention as they are taught in smaller groups.

Several studies have examined remedial education programmes in Chile, India and Mexico (Banerjee et al., 2007b; Cabezas et al., 2011; Lakshminarayana et al., 2013; Gutiérrez and Rodrigo, 2014). The programmes targeted students who had been identified as lagging behind their peers or being from particularly disadvantaged communities. The programmes provided tailored tutoring in core skills, such as numeracy and literacy, typically to groups that were smaller than the usual class. The tutors were either volunteers (Cabezas et al., 2011; Lakshminarayana et al., 2013; Gutiérrez and Rodrigo, 2014) or hired from the local community (Banerjee et al., 2007a). The tutors were not trained teachers, but the programmes offered either some training or supervision. In the VEM, remedial changes lead to a 0.19 SD improvement in learning gaps.

4.5.6 Performance pay/teacher incentives

There is good evidence that teacher incentives are positively associated with increased student test performance, although this depends on the design and continuity of the program.

Two studies examining the same intervention in Andhra Pradesh, India, have found that giving teachers additional payments as rewards for increasing their students' test scores led to increased student learning. Muralidharan and Sundararaman (2011) found that, two years after the programme started, the students in the teacher incentive schools had mathematics and language test scores that were higher than those of the students in the control schools by 0.27r and 0.17r, respectively. A five-year follow-up study of the programme found that these advantages persisted among students who participated in the teacher incentive programme for all five years. Comparable results were found in a study conducted in Chile study by Contreras and Rau (2012) with incentives equal to approximately 40% of a teacher's monthly income, equivalent to an annual salary increase of 3.33%.

We used the results of these studies to model the impact of teacher incentives on test scores. We assumed a 28% increase in test scores based on incentives equal to 3% of annual pay which translated to 1.4% of base units costs.

4.5.7 Computers and ICT assisted learning

We reviewed nine studies evaluating the impact of computers and information and communications technology (ICT)-assisted learning programs on learning, which produced eleven results, not all of which had significant outcomes. Particularly, the results for the impact on enrolment were not significant. We focussed on three studies conducted in India by Banerjee et al. (2007b) and Linden (2008), and in China by Mo et al. (2013, 2014), which generated seven study results. These were essentially remedial mathematics programs and were highly effective at the end of one year, with an increase in test scores of an average 31% across seven study results. The Banerjee et al. study (2007a) recorded the largest gain, equivalent to an 86% improvement in test scores after one year, but which reduced to 18% one year after the program ended, illustrating the need for ongoing programs.

Computers and television broadcasts have been used in various contexts to increase the quality of learning. McEwan (2015) reviewed studies on the use of computers in classrooms and found that if the introduction of computers is accompanied by teacher training, learning is improved by 0.15 standard deviations. Patrinos et al. (2005) found the introduction of 'telesecundaria' in Mexico reduced the learning gaps between average students and disadvantaged students by 30%.

4.5.8 School meals

For school meals programs, we reviewed six papers providing 14 set of results on the impact of time in school and test scores. The impact on time in school for most of the studies was a small positive or negative. Few of the results were significant. However, for the impact on the test score, five of the seven studies were positive, of which four were significant. The average impact was 28%. These were studies conducted in very different countries – Argentina, Philippines, and Burkina Faso – indicating that the intervention may be applicable to a wide range of conditions.

4.5.9 Private school vouchers

Vouchers to attend private schools have been advocated to encourage students to attend school. In some cases, it is to attend a higher quality school than the government school more readily available. Studies of the PACES program in Colombia has indicated that students with the vouchers have improved their performance. Those who fail to meet certain minimum standards lose their voucher (Angrist et al., 2002, 2006). Analysis of the various studies suggests a reduced learning gap of 24% and an increase in enrolments of 25%.

4.5.10 Pedagogical changes

Structured pedagogy programmes address several barriers to learning, such as inadequately trained teachers, lack of appropriate materials, curricula and instructional approaches. Structured pedagogy programmes usually combine the provision of both 'hardware' and 'software'. A central element of most interventions is the development of evidence-based curricula and instructional approaches, together with lesson plans and training for teachers in delivering new content and material for students. Some programmes also include regular monitoring and mentoring of, and feedback to, teachers on their delivery of the new material.

Numerous structured pedagogy programmes studied included different combinations of some of the key components of structured pedagogy programmes, with the majority focused on language. But a few focused on mathematics or a combination of both mathematics and language. In the VEM, pedagogical changes lead to a 0.13 SD (standard deviations) improvement in dropout rates and a 0.23 SD improvement in learning gaps.

4.5.11 Improve school infrastructure

A number of studies found that improving school buildings and making them more female-friendly, (e.g., providing electricity, fixing up classrooms and adding desks and blackboards, and latrines for girls), improves access and student learning and reduces dropout rates by 0.11 SD.

4.5.12 Bicycles for secondary students

The provision of bicycles to secondary students to ride to school has received enthusiastic support from schools that have implemented it, particularly for increasing access to school for girls, who would otherwise need to walk long distances to school and be subject to harassment and other dangers. While this intervention is not suitable in all settings, parents have welcomed this initiative as it shortens the time for the journey to school and increase its safety. In a study by Muralidharan and Prakash (2017), the overall enrolment rate increased by 5.2 percentage points or a 32% increase relative to the prior level of enrolment. The enrolment rate for girls increased by nine percentage points from 17.2% or 52% relative to the initial enrolment at a cost of $48 per student.

4.5.13 School-based management

School-based management has been suggested by the World Bank as helping address problems with overly bureaucratic education administrative structures. However, the results of four studies identified by Damon et al. (2019) are small or not significant.

4.5.14 Parent/teacher partnerships

Community-based monitoring interventions provide information about public services and forums for public participation to improve the accountability of service providers, governments and other public bodies to the communities (Westhorp et al., 2014). The purpose is to motivate parents to demand better education and to motivate schools to perform better. Some studies show that improved school responsiveness leads to improved teacher attendance, teaching quality, school management or resource allocation in the education sector, which in turn leads to improved learning outcomes for children.

Community-based monitoring interventions are usually centred on an information campaign, either to promote awareness of an existing accountability mechanism or to provide information about the current performance of education providers, often through report cards. The campaign is sometimes coupled with capacity-building activities, such as providing monitoring tools, training on how to monitor services or training on how to assess a child's learning. Interventions can involve active parental engagement through meetings in schools or in the village (Banerjee et al., 2010), or less direct approaches such as newspaper or local TV campaigns (Reinikka and Svensson, 2007). Information to parents and the community led to a 0.11 SD improvement in learning gaps at a cost of 1% of base unit costs.

4.5.15 Social and Emotional Learning programs

As discussed in Chapter 3, the focus of Social and Emotional Learning (SEL) is on the process of acquiring the attitudes, competencies, knowledge and skills essential for learning, being effective and having a sense of wellbeing. While SEL programs are recognised as being very valuable in developing countries (UNICEF, 2018), there is little supporting quantitative evidence. While Belfield et al. (2015) presented the costs and benefits of some (SEL) programs, these were for a developed country and would need to be adjusted for a developing country context. Only one of these SEL programs, Positive Action, has a correlation with educational outcomes. Another program, the Youth Readiness Intervention (YRI) was implemented in Sierra Leone post the civil war with an aim to improve mental health, social behaviour and school functioning (Newnham et al., 2015). The proposed interventions are summarised in Table 4.2.

Table 4.2: Effectiveness and cost of selected Social and Emotional Learning interventions

	Average effectiveness			% base unit cost		
	Learning/Test scores	Enrolment	Dropout	Learning/Test scores	Enrolment	Dropout
Positive Action			7.8%			1.5%
Youth Readiness Intervention	24.0%		37.6%	100.1%		100.1%

Positive Action

The Positive Action program (based on theory that positive action makes us feel good and so becomes self-reinforcing) is a school-based curriculum and supplemental set of school cultural and family activities designed to promote students' positive thinking, actions and self-concept. The program consists of a series of short lessons at each grade level organized into six units: self-concept; positive actions for your body and mind; managing yourself responsibly; treating others the way you would like to be treated; telling yourself the truth; and improving yourself continually. Positive Action can have many impacts such as improvements in personal behaviour, mental health, achievement, and academic and school climate, including bullying. Rates of bullying are correlated with dropout rates that have been included in the VEM with a figure of 7.8% reduction in dropout used for the Positive Action program.

Youth Readiness Intervention

As outlined in the discussion of the Youth Readiness Intervention (YRI) in Chapter 3 (Section 3.3.3), Betancourt et al. (2014) undertook a randomised control trial of the YRI in Sierra Leone for war-affected youth. It showed significant post-intervention effects on emotion regulation, prosocial attitudes/behaviours, social support, and reduced functional impairment; with significant follow-up effects on school enrolment, school attendance, and classroom behaviour. An education subsidy was associated with better attendance, but had no effect on mental health or functioning. Newnham et al. (2015) also assessed the YRI in Sierra Leone and found that a CBT-based intervention presented a feasible and acceptable intervention for use in a low resource setting.

The YRI program is included in the VEM with a 24% reduction in learning gaps and 37.6% reduction in dropout rates.

4.5.16 Non-formal education and training interventions

The VEM incorporates non-formal education and training interventions, as well as trade education aimed primarily at those who leave before the end of high school.

Dropout rates and learning gaps are not modelled for non-formal education and training, as there are no studies to draw upon in this area. The main benefit included in the modelling is the productivity benefits associated with non-formal education and training. These productivity improvements are included in the employment model that increases national GDP.

Trade certificates, vocational training programs and social innovation programs are modelled with a certain percentage of school leavers going into these programs, as well as social innovation and entrepreneurship programs. The modelling assumes 50% of those who leave school with incomplete secondary, i.e., Basic Education 2nd Cycle, or incomplete upper secondary school, go into either a trade certificate (20%), vocational training (50%) or UPSHIFT (30%). The VEM assumes 20% of those who complete secondary school will go into one of the post-secondary programs (trade certificate 10%, vocational training 60% or UPSHIFT 30%).

Vocational training

Non-formal vocational training comprises programmes outside the formal education system that offer skills training to young people to improve their employability and productivity, and facilitate their transition into the labour force. This type of non-formal education and training includes both specific technical skills and non-technical soft skills such as self-management, teamwork and communication (Kluve et al., 2017). These programmes may also include business skills training, and basic literacy and numeracy, depending on the education entry level.

Other interventions, such as enhancing access by youth to finance and social networks, address identified deficiencies that make it difficult for youth to find employment or establish themselves as self-employed workers. By themselves, some initiatives are not demonstrably effective, but when combined with others are much more so.

Trades certificates

Interventions are modelled to increase the quality and quantity of young people with trade-related skills and qualifications to improve the chances of post-school employment.

Social innovation and entrepreneurship – UPSHIFT

Youth social innovation and entrepreneurship programmes such as UPSHIFT are designed to build skills and opportunities for young people who are disadvantaged, due to either poverty, gender, disability, ethnicity or a combination of all of these factors. The programme combines social innovation workshops, mentorship, incubation and seed funding, to equip young people with the skills and resources they need to identify problems in their own communities and design solutions for them. While young people build skills for life, employment and social entrepreneurship through UPSHIFT, their wider communities benefit from the solutions they create.

Alongside the direct and indirect reach of the programme and its impact on young people, there are a number of other benefits, including:

- access to insight around the skills, interests and opportunities of young people globally and in specific countries
- shared events and communication opportunities, and
- building connections to a global network of young, skilled social entrepreneurs.

The UPSHIFT programme combines social innovation workshops, mentorship, incubation and seed funding.

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Chapter 5: The application of the education model to Syria

5.1 Introduction

Chapter 4 provided an outline of the education model and summarised the evidence provided by the literature for including interventions likely to improve educational outcomes in the form of improved learning, increased enrolments and reduced dropouts. This chapter focusses on the application of the model to the situation in Syria. It provides results for increased completions and years of schooling after the application of the interventions relevant to Syria. It also outlines the results of the so-called 'baseline' which estimates the education outcomes in the absence of the interventions.

5.2 Outline of the education model methodology

The core of the VISES education model (VEM) is the projected number of students by grade and year. While the focus is on adolescents, the model includes the entire school system starting in 1st Grade in order to obtain a realistic flow-through from primary into secondary school.

The number of students is based on the starting age distribution obtained from household survey data and projected intake, promotion, repetition and dropout rates from Syrian data. In addition to the consideration of sex and grades, the education model includes age-by grade, creating a four-dimensional student matrix consisting of sex, grade, age and year.

For the 1st Grade students, intake into 1st Grade is projected as the gross intake rate (an exogenously estimated variable dependent upon country enrolment data, population data and household surveys) times the population in the official entry age, distributed over age with a consideration of initial over-age entry, and an exogenous assumption about the reduction of over-age entry.

The projected number of students in higher grades is determined by the promoted students from the prior grade and repeating students from the same grade in the previous year, with the projected number of students who have dropped out or passed away deducted from this total. The rate of repetition and dropout varies according to the grade the students are in. The general trend is one of increasing repetition and dropout rates in higher grades, however, there is substantial variation for Syria. For example, in Syria dropout rates at the end of the Basic Education 2nd Cycle are very high (9th Grade), whereas the dropout rates in Syria in Secondary School (10th, 11th and 12th Grades) are quite low, meaning that many students drop out of school at the end of 9th Grade, but those who continue to 10th Grade are very likely to complete 11th and 12th Grades.

The VEM considers risk factors as co-drivers of promotion, dropout, repetition and learning rates. Risk factors such as poverty, rural location and female sex all increase the probability that an adolescent will leave school prematurely, repeat a grade, or fail to reach learning benchmarks.

Changes in the coefficients for dropout, repetition and learning are assumed to be affected by levels of investments in interventions. The intent of interventions is to reduce the **marginal effects** of risk factors on dropout and learning. Other interventions, not considered in the model, could reduce the prevalence of the risk factors. The impact of interventions is the combined effect of coverage – the per cent of the target population receiving the intervention – and the interventions' **effectiveness**.

The model categorises the school-age population into the following educational states:

- no schooling
- in school
- left school with primary only
- left school with lower secondary
- left school with incomplete upper secondary, and
- left school with completed secondary.

Most of the school-aged population transition from **no schooling** to **in school** and **leave school** classified as primary only or one of the secondary school states listed above. However, a portion never enter school, and these remain in the no-schooling state as they enter adulthood. This figure varies considerably from one country to another, with Syria, during the crisis period, having a higher figure than many countries.

The model allows intake up to age 15. Some of the interventions included in the model affect the exogenous variable leading to differences in the no-schooling figures for the 5 to 9-year-old cohort. However, the enrolment trends suggest that by the age of 10 in 2030, every child is likely to have attended school for at least some period of time. Consequently, differences are seen in the base case and intervention case for the 5 to 9 cohort, but there is no difference after 2030 for the 10 to 14, or 15 to 19 age cohorts.

The expected impact of returnees in the period to 2026, is to increase the number with no schooling from 200,000 to 300,000 (Figure 5.1). However, the effect of the interventions is to clip the increase in this number and reduce it below the base case. The base case assumes the same proportion of returnees will not enter school and the increase represents the increased population.

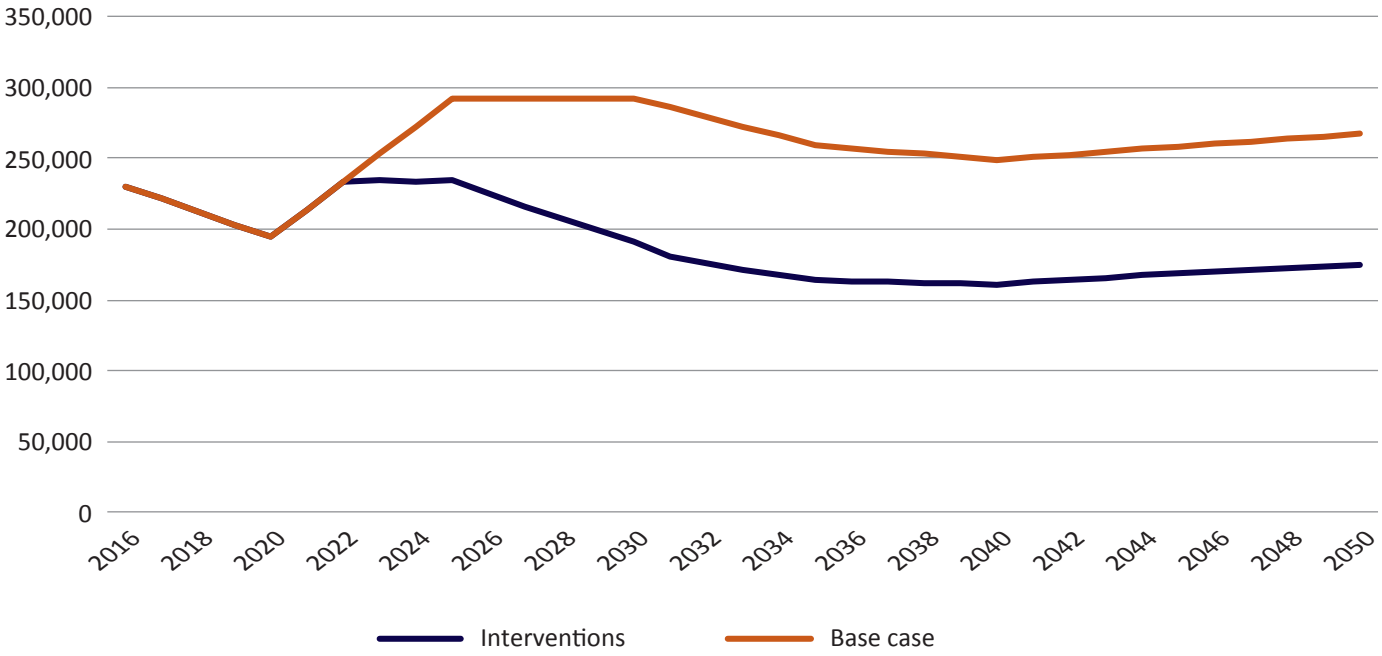

Figure 5.1: No schooling, base case and intervention, ages 5–9

Those who enter school remain in the **in school** category, progressing through grades until they leave school at the projected dropout rate or complete school. The model considers dropping out to be permanent and does not consider the phenomenon of a student dropping out and subsequently re-enrolling. While this undoubtedly occurs in a setting such as Syria, the lack of data as to how long they stay out of the school system, which students return to school, at what grade, how long they have been out of school and in what numbers, makes modelling re-enrolling students impracticable.

5.3 Projected baseline school completion rates

Projecting the baseline provides a view of the future decline of the Syrian education system in the absence of the proposed interventions in which the current system struggles to accommodate the displaced students returning to school. It shows for instance, the increasing proportion of students leaving at primary or lower and upper secondary before completing secondary school.

The baseline projections are conservative. We assume that the Syrian Government continues to fund the education system and provide schools and teachers at the current basic level (see Figure 5.7). It could be that the Government is unable for financial reasons to do so, and the outcomes could be considerably worse.

Measuring the education outcomes prior to including the effects of interventions in the Education Model in the baseline allows impact of the interventions to be isolated and quantified. The next section shows the baseline results for the predicted school completion rates. These rates include the number of students who never attend school, leave school with primary school only, lower secondary school, incomplete upper secondary or complete secondary.

5.3.1 School completion rates

We show the results for completions for two age groups. The first are those aged 15–19 and 20–24. The results for those aged 15–19 show students at a point of transition. Some have already left school, while others are still completing their education. For those aged 20–24, all have finished their secondary schooling and we can see the final proportions of this cohort with respect to their secondary education.

As shown in Figures 5.2 to 5.5, the secondary school completion rates are very low with both male and female 15–19 cohorts being just under 10%. By 2040, this is projected to have declined at only 8%. Most 15–19-year-old school leavers by 2040 are expected to leave with only lower secondary school (35.7% for females and 36% for males). School leavers with only primary school completion are expected to be 14% for females and 8% for males.

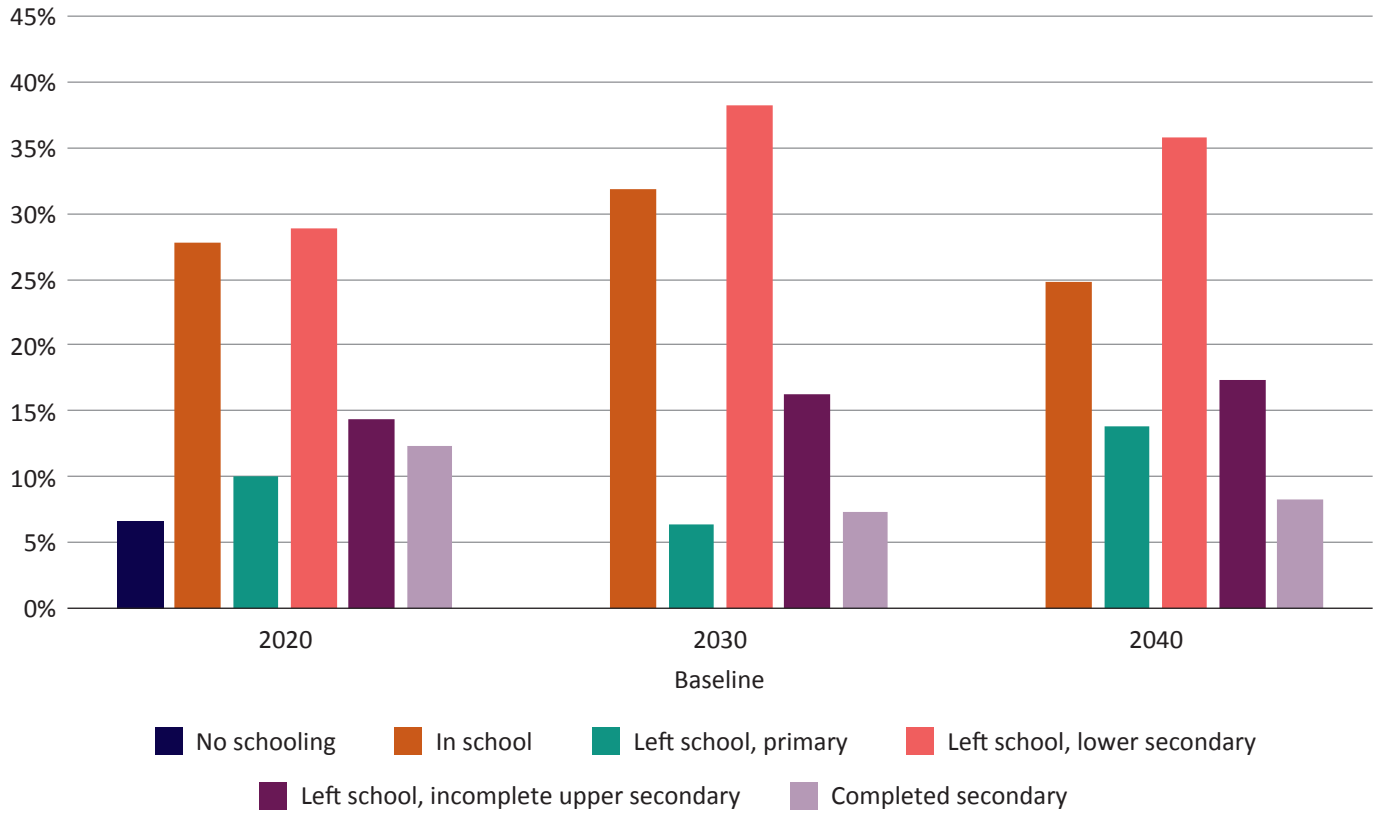

Figure 5.2: Female post-adolescence education distribution, ages 15–19

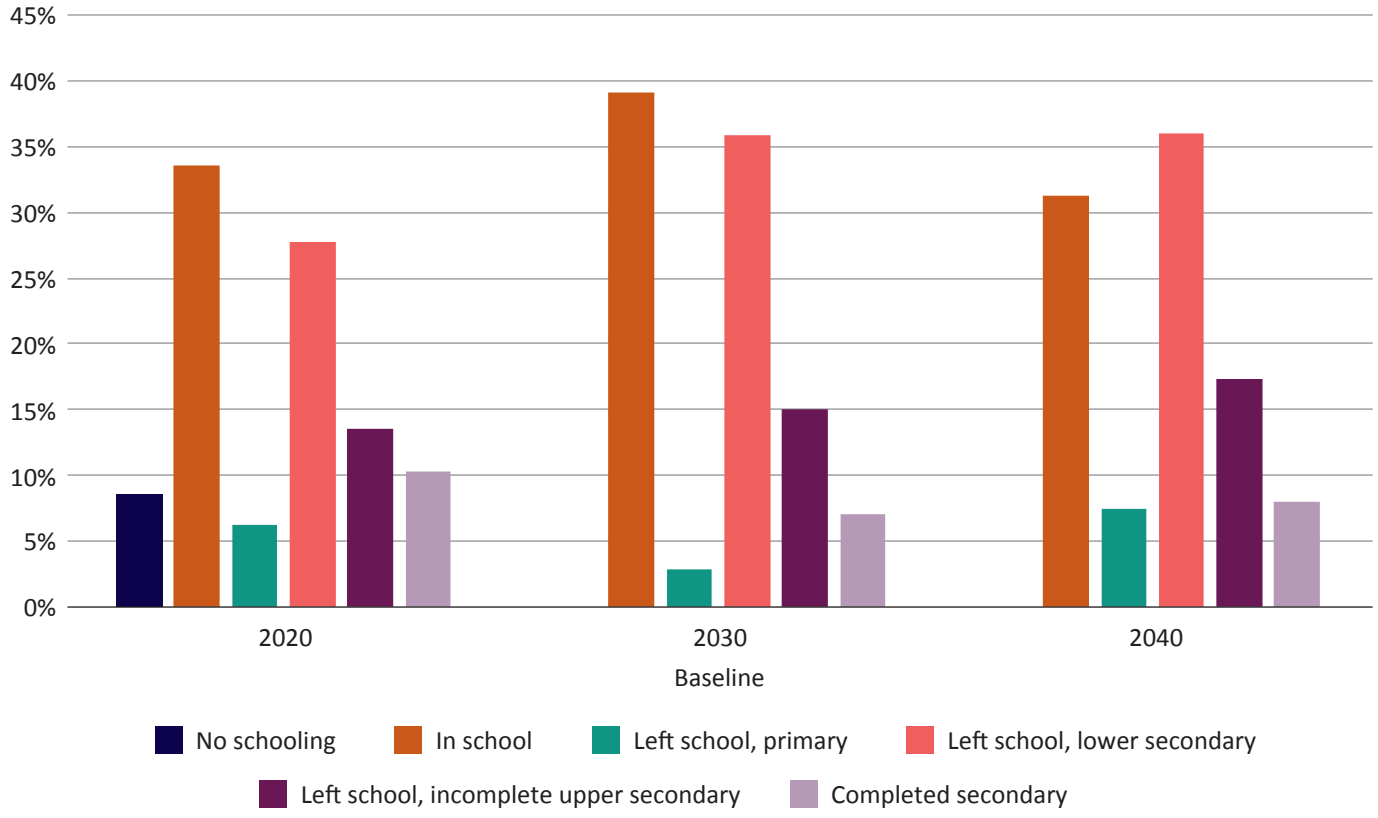

Figure 5.3: Male post-adolescence education distribution, ages 15–19

By 2040, only 31% of females aged 20–24 are expected to complete secondary school, a reduction from 42% in 2020, while 34% of males are expected to complete secondary school, a decline from 36% in 2020. Although the baseline assumes that all girls and boys will be absorbed into the education system by 2040, the outcome is a much-increased proportion of both females and males failing to complete secondary school. The proportion of females not completing secondary school increases from 25% in 2020 to 58% in 2040, while for males the increase is from 25% in 2020 to 58% by 2040.

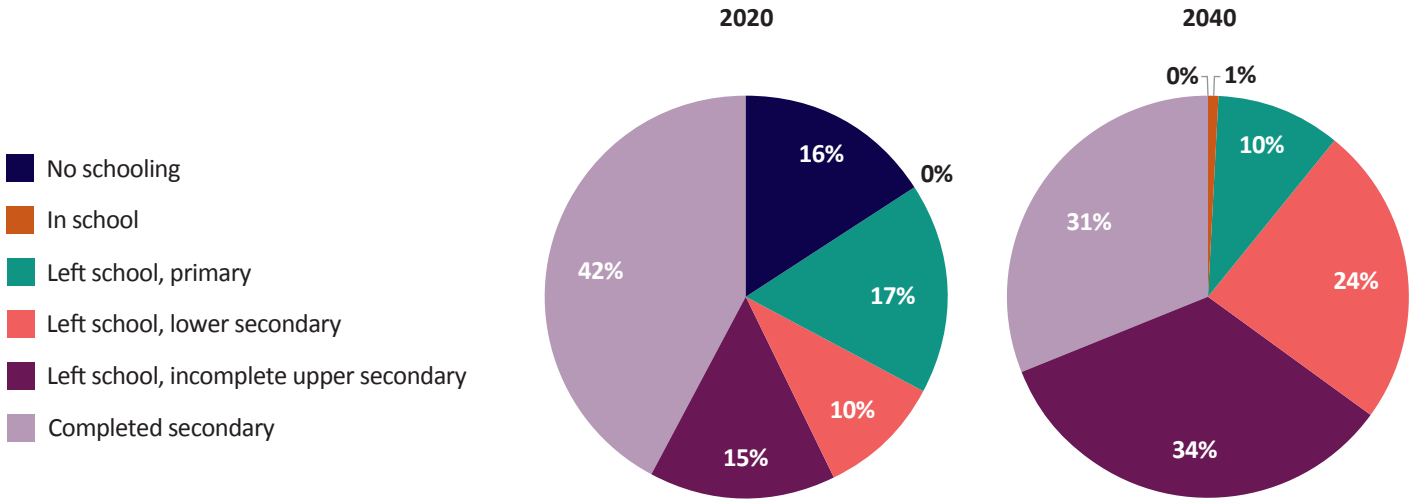

Figure 5.4: Female post-adolescence education distribution, ages 20–24

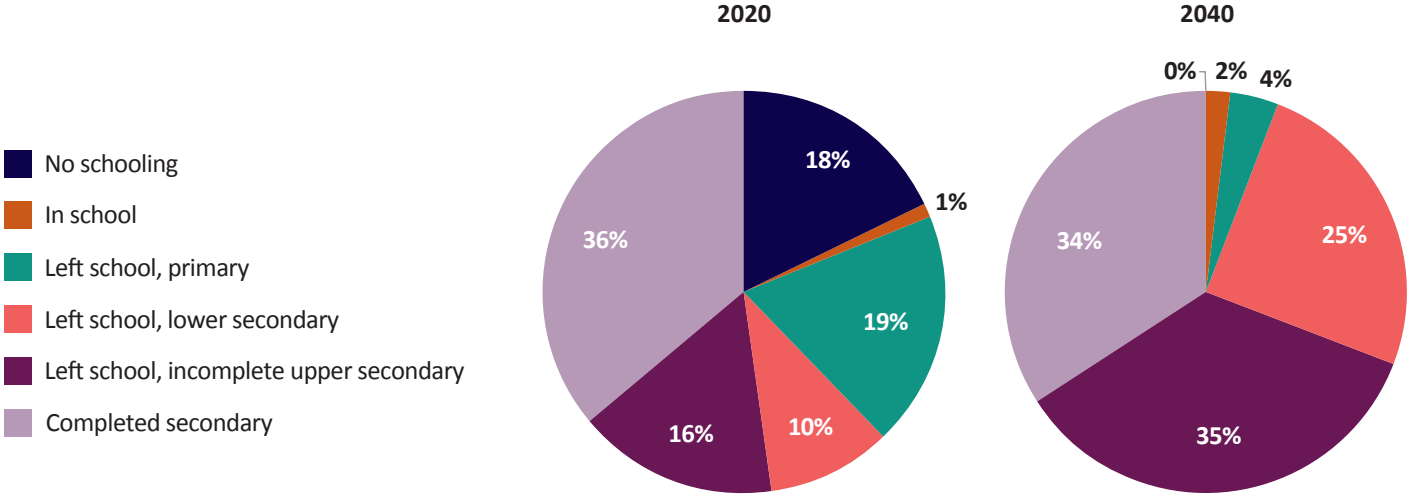

Figure 5.5: Male post-adolescence education distribution, ages 20–24

5.3.2 Implications of education outcomes

The education outcomes for the unchanged policy setting base case in Syria are very poor. Secondary school completions for 15 to 19-year-olds is expected to be below 10% for both males and females, with a large proportion of this cohort leaving school after lower secondary school. While outcomes for 20 to 24-year-olds have better education outcomes, secondary school completions are still only approximately 30% for both males and females. As a point of comparison with nearby countries, data from the World Bank indicates over 55% of Jordanians complete secondary school and over 40% of Egyptians do.

Prior to 2011, Syria was a middle-income country with gradually improving education outcomes and a literacy rate of over 80% among males and females, and primary school enrolment was nearly universal for both boys and girls by the early 2000s. While the current literacy rate in Syria is unknown, it is expected that it will have reduced considerably since the beginning of the crisis, whereas Jordan maintains a consistent literacy rate of 98%.

Enrolment rates in Syria have also reduced markedly since the crisis. In 2005, the gross enrolment figures for both primary and secondary were significantly higher than by 2013 (Figure 5.6).

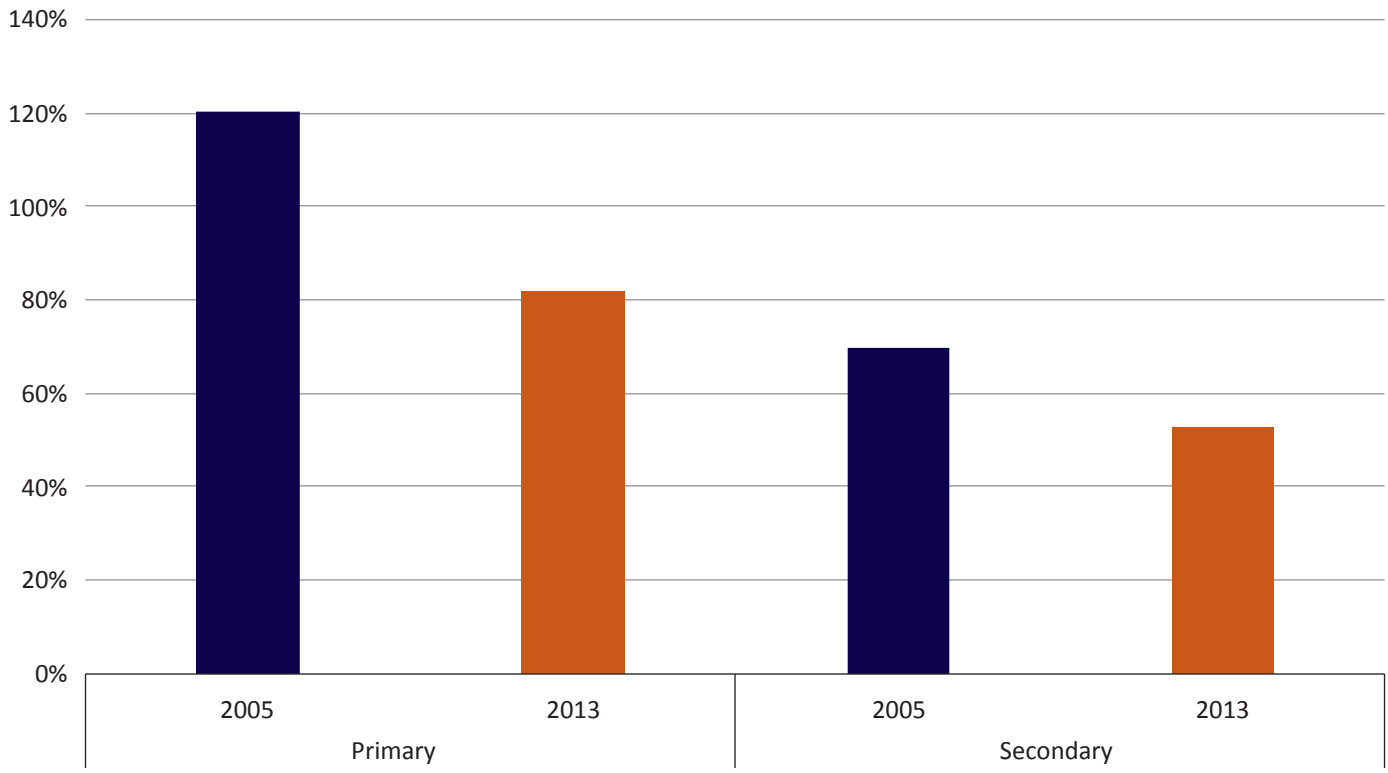

Figure 5.6: Gross enrolment rates in Syria

Prior to the crisis, the latest measure of the quality of education in Syria was the 2011 TIMSS survey with a score of 380 for mathematics and 426 for science for 8th Grade students. The centre point value for 8th Grade students is 500, meaning Syria had relatively poor education outcomes even prior to the crisis. This compares with the 2019 TIMSS survey where both Egypt and Jordan have increased their scores from 392 in 2015 to 413 in 2019 (Egypt) and 386 to 420 (Jordan). While these figures are still below the centre point value, they demonstrate an improvement in educational performance.

5.4 Introduction to the interventions

The education interventions have a broad applicability to LMICs. However, Syria has specific circumstances due to the crisis and their cultural heritage, including cultural norms around education, meaning some interventions are more appropriate than others. In this chapter, we list the interventions that are considered the most appropriate for Syria in the current context.

5.5 Support for attendance

The following interventions are aimed at supporting attendance of students through either reduced dropout rates or increased enrolment rates.

5.5.1 Conditional cash transfers

Syria has a strong historical and cultural commitment to education, so issues regarding returns to education would not appear to be a major barrier for parents to send their children to school. For Syria, the issues relevant to transfers are more likely to concern safety (particularly for girls), out-of-pocket expenses and loss of income from the child's labour and child marriage. Consequently, the design, level and targeting of the program would need to reflect these particular objectives. Due to the uneven nature of impacts on the crisis on levels of enrolment and dropout across Syria, such transfers may be targeted at the more vulnerable segments of society in Syria to have the greatest impact. Given the levels of poverty in Syria, for modelling purposes this may be 75% of the student population (HRW, 2020).

The Conditional Cash Transfer for Education (CCTE) for Syrians and Other Refugees program provides bimonthly cash payments to eligible households. Through the program, households with children who are considered to be most at risk receive also targeted support in the form of child protection outreach visits. UNICEF Turkey contracted the American Institutes for Research (AIR) to evaluate the CCTE program. The AIR evaluation found the program's cash transfers and child protection components achieved positive results. Most children attended school regularly and did not miss the 80% attendance condition to receive transfers with regular attendance improving over time. School attendance was higher in provinces with child protection visits. The child protection program met with and assisted 75,390 children between May 2017 and March 2020 in the 15 provinces where the child protection services operated.

Qualitative findings suggest that child protection visits are important both to prevent and respond to risks that children face. These components seem to encourage children not only to attend school regularly, but also to begin to attend school at a developmentally appropriate age (6) or return to school if they have faced enrolment challenges. The fact that the program facilitated access to services that address the health, psychosocial, and economic needs of children and their families also appeared to have a positive effect (Ring et al., 2020).

5.6 Schools and infrastructure

5.6.1 New and rebuilt schools

The crisis in Syria has led to a significant number of schools being extensively damaged or unfit for use. Consequently, construction of new schools or replacing damaged schools is particularly pertinent for Syria. As with cash transfers, the applicability of new schools would vary considerably across Syria with reports of only 60% of previously existing schools still suitable for use. For modelling purposes, 40% of the population would be covered.

5.6.2 School infrastructure

Given the damage many schools have received through the crisis period, this intervention is particularly pertinent to Syria. In addition, updating schools to become more female friendly through the provision of facilities, such as separate latrines, is likely to be very effective. As 60% of the schools remain, this figure will be used for modelling purposes.

5.7 Teaching and learning

5.7.1 Remedial education

Remedial programs take many forms, and the success of any such programs in Syria would be heavily dependent upon their suitability to the Syrian setting. Consequently, the design, level and targeting of the program would need to be carefully considered. The costs of programs also vary substantially, and the cost for the type of remedial education intervention that is most appropriate would be linked to similar programs studied in the literature. An example of a program in Syria is remedial classes at community centres supported by UNHCR. These classes enable young people to complete education qualifications such as Basic Education 2nd Cycle (lower secondary school), even if they have dropped out of school for years (UNHCR, 2016).

Regional averages for TIMSS results suggest 40% of students meet the minimum level of mathematics. It is expected that such figures would be similar or slightly lower, consequently for modelling purposes remedial education would be assumed to apply to 60% of students. While the literature does not quantify the effects of remedial education, it is known from a large body of evidence that students are more likely to stay in school. Given this is the case, it is assumed remedial education programs lead to a 0.1 SD reduction in dropout.

5.7.2 Teacher incentives and training

For Syria, it is likely that teacher pay is a much bigger issue in attracting back the large number of teachers needed, especially with reports of many teachers going unpaid. A system backed by UNICEF to pay volunteer teachers in Turkish refugee camps has been very successful. The incentives do not only benefit the teachers and their children, they make the teachers feel wanted, enable them to go on working and encourage them to give their best (UNICEF, 2015).

5.7.3 Pedagogical changes

There is some evidence to suggest pedagogical changes would benefit education outcomes in Syria. The Joint Education Needs Assessment (JENA) (IMU, 2019) found 11% of out-of-school children did not attend school because teachers treated them badly (verbally insulting them), which is consistent with 8% of caregivers. Most of these children attended school for a short time and dropped out as a result of being abused by educational staff. As such, teaching methods may be contributing to dropout rates (IMU, 2019, p35):

> The lack of motivating methods for teachers like using illustrative methods during class contributes to increasing child dropout rates … Additionally, the use of intimidation methods of students by teachers during the class, and the complex procedures that the school take to enrol students, especially IDPs students, contribute significantly to increasing student dropout rates.

Some teachers in Syria were trained in modern teaching methods during their university courses. However, many schools in both government-controlled areas and out-of-control areas have not received training from the Ministry of Education on the new curriculum. Instructors and principals need updated skills to work effectively during the crisis due to the increased educational challenges posed by the crisis. Creative new teaching strategies need to be developed in the face of inadequate and poor condition furniture, equipment, textbooks and stationery. High quality and relevant professional development is needed, as 40% of surveyed teachers saw little relevance in the training courses they previously attended (IMU, 2019). Currently, the data indicate all teachers need training on how to teach effectively 'under current circumstances' and how to provide psychosocial support to their students.

The studies examining the costs associated with pedagogical change programmes are rare. Estimates provided to the Education Commission (Conn, 2017) on innovations suggests that costs to improve pedagogy range around 10% for training teachers, improving student-teacher interaction and materials, and this figure has been included in the VEM model.

5.7.4 Computers and IT

A lack of school buildings increases the importance of ICT in Syria in the short- to medium-term, as students may be able to undertake their schooling at home through very inexpensive radio-based instruction. Extensive online resources have been developed around the world during the COVID-19 pandemic that will provide inexpensive material for remote learning. These may be accessed through mobile phones with coverage providing access to over 95% of the population, even if this coverage is intermittent. Proposals for ICT educational frameworks for Syria already exist. Proposals such as those by Yafi et al. (2015) provide an educational framework that incorporates ICT into the education system in Syria. Such frameworks generate, analyse and test data to determine to what extent ICT educational applications are valuable tools in fostering the development of key life-skills and qualifications that can provide education outcomes for Syrians.

As 40% of schools are no longer fit for purpose and some students may have difficulty accessing some schools, for modelling purposes this intervention will apply to 50% of students. While the effect of computers and IT on dropout is not quantified in the literature, Syria is a unique case where the potential for IT to keep children in school is large. Consequently, a reduced dropout figure of 0.1SD is used for Syria.

5.8 Student support

5.8.1 Positive Action (bullying)

Data around levels of bullying in Syria are uncertain. However, the JENA found 8% of out-of-school children reported that the provision of school activities which address bullying and discrimination among children could contribute to children's return to school, which was corroborated by 9% of caregivers. Consequently, the reduced dropout effects of the Positive Action program may be estimated.

While an extensive body of evidence exists to support the value of SEL, especially in settings with children with mental health concerns, it is not unclear if these benefits can be quantified due to the absence of cost-benefit studies. Despite this, the JENA found 27% of out-of-school children reported that the provision of counsellors at schools to help solve problems could contribute to the children's return to school with 23% of caregivers agreeing (IMU, 2019).

5.8.2 Youth Readiness Intervention

The Youth Readiness Intervention is particularly suited to Syria given that it was implemented in post-conflict Sierra Leone. The same issues are expected to arise in Syria as in Sierra Leone. While this intervention proved to be very effective, it is also very expensive relative to base costs. Consequently, it is expected that this intervention will only apply to the most severely affected students. For modelling purposes, it is assumed this intervention will apply to 10% of students.

5.8.3 Social and Emotional Learning

As described in Chapter 3, broader Social and Emotional Learning (SEL) programs have a positive educational effect, though these have not been quantified in terms of dropout rates. Here we assume a set of SEL programs reduce dropout by 0.1 SD.

5.9 Non-formal education and training

Non-formal education programs that are most relevant to this project for Syria are those that offer education and skills training to improve the performance of youth in the service sector, industry, as well as agriculture. Boosting ICT training to facilitate participation in these sectors is also important for the youth skills set.

This does not include educational programs provided by NGOs to plug gaps in the current educational environment also known as 'non-formal' education. The model is predicated on the assumption that the end of the crisis would permit in-school educational programs and the vocational programs discussed here to comprise a comprehensive education service for all Syrian children and adolescents.

The education system in Syria includes technical and vocational education in upper secondary school, as well as vocational and technical education in the more than 150 intermediate institutes. However, the majority of young people leave school with only lower secondary school qualifications and are not eligible for entry to the intermediate institutes. Those who undertake upper secondary school do so primarily in order to gain entry into university or an intermediate institute. Consequently, there are currently limited opportunities for those with lower secondary qualifications to gain technical and vocational training, and non-formal education may address this lack of opportunity.

5.9.1 Trade certificates and vocational training

Trade certificates and vocational training programs aimed at those with lower secondary school qualifications, as well as social innovation and entrepreneurship programmes which have been implemented in other countries, can address issues of relevance for employment. As noted in the JENA, many out-of-school children state that the main reason for not attending school is that education is useless and doesn't secure job opportunities (IMU, 2019). Trade certification and vocational training aimed at job relevance can address this issue.

5.9.2 UPSHIFT

The UPSHIFT program is a combination of youth and adolescent development approaches with social innovation and social entrepreneurship (UNICEF, n.d.). It is designed to empower young people to identify challenges in their communities and create entrepreneurial solutions to address them. UPSHIFT aims to build transferable skills and create opportunities, with a focus on the most disadvantaged young people.

As UPSHIFT is modular, it can be adapted to different contexts and delivered in different settings – ranging from youth innovation labs to schools and non-formal education centres which are vital in the Syrian crisis setting. A primary outcome is to address youth employment, and it is included within the World Bank's Solutions for Youth Employment (S4YE) Impact Portfolio.[10]

5.10 Costs

The baseline costs for an unchanged policy setting are shown in Figure 5.7 (overleaf). These reflect the forecast changing population due to a substantial number of externally displaced persons returning and a change in the demographic profile post-2035.

The costs of the specific interventions and each non-formal intervention included in the education model is described in this section. The base unit costs also increase in the intervention case due to the increased number of students in school from the reduced dropout rates.

5.10.1 Specific intervention costs

Conditional cash transfers

The various studies that analysed the impact of conditional cash transfers examined increased enrolment, reduced dropout and improved learning. The costs associated with each of these studies varied considerably. The average costs for studies examining test scores was 64.6% of base unit costs (Baird et al., 2011, 2013; Barham et al., 2013; Barrera-Osorio and Raju, 2011; Filmer and Schady, 2014), 16.3% for increased enrolment and 9.7% for reduced dropout. A lower figure of 8% is used for all year levels with an additional 16.3% added to upper secondary school students to address the large dropout between lower secondary and upper secondary.

10. S4YE Impact Portfolio (IP) is a group of 44 diverse and high-potential youth employment projects that represent 38 developing countries from six regions, acting like a "learning laboratory" for the S4YE Coalition. Through the Impact Portfolio, S4YE aims to learn, assess, showcase, and potentially support the scaling of innovative youth employment interventions (https://www.s4ye.org/impact-portfolio).

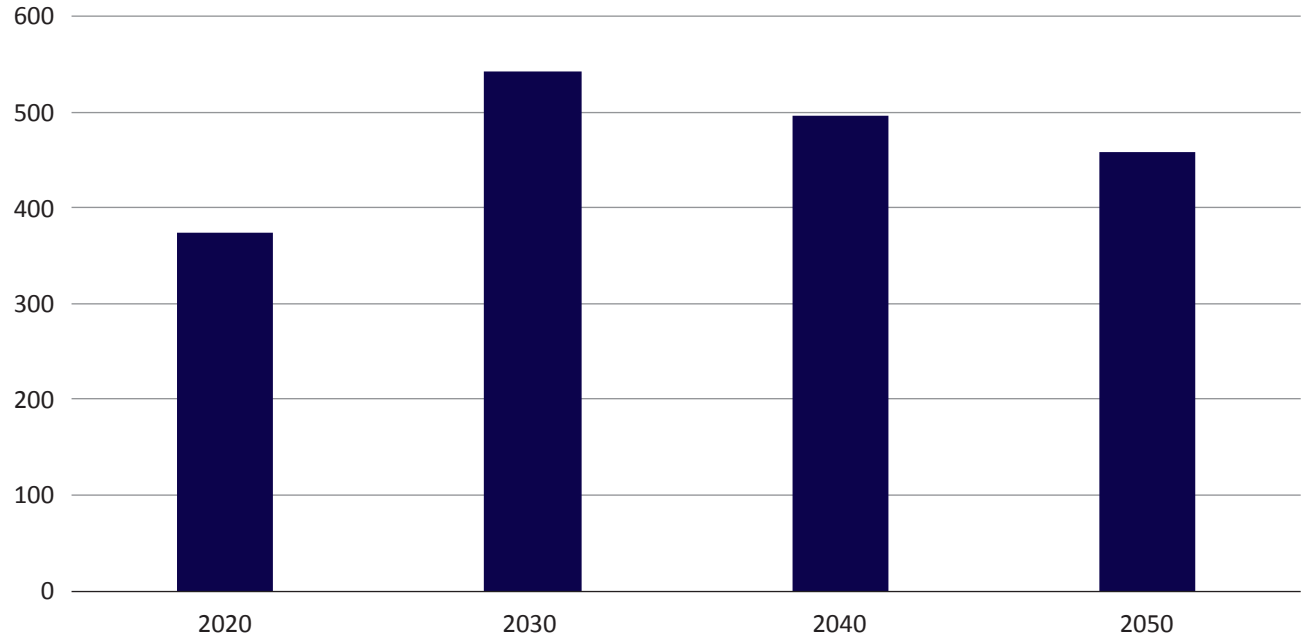

Figure 5.7: Baseline education costs, Syria, US$ million

New school infrastructure supply

New schools, in principle, have the same unit costs as existing schools (after accounting for construction). However, numerous studies conclude that schools built in more remote settings or areas with more challenging logistics settings, such as crisis areas, incur additional costs. The studies examined for this modelling found an average increase of 14% on base unit costs with positive effects on enrolments and learning gaps (Conn, 2017).

Remedial education

The additional costs incurred for remedial education were found to be 5.9% of base unit costs with an effect on learning gaps only (Banerjee et al., 2007a).

Teacher incentives/performance pay

While teacher incentives have been found to have a significant impact on learning gaps and test scores, the studies found this only added 1.4% to base unit costs (Muralidharan and Sundararaman, 2011).

Pedagogical changes

Studies examining the costs associated with pedagogical change programmes are rare. Estimates suggests that costs to improve pedagogy range around 10% for training teachers, and improving student-teacher interaction and materials, and this figure has been included in the VEM model (Conn, 2017).

School meals

School meals have a demonstrated effect on reducing dropout rates, particularly in areas with a lack of food security. These studies found the cost of providing school meals was 47.8% of base unit costs (Tan et al., 1999).

Computer, TV or radio-aided learning

In earlier versions of the VEM model, the results from a well-known program of computer and radio-aided learning, Telesecundaria, in Mexico were used. Patrinos et al. (2005) found costs were 16% higher per pupil than the costs of 'regular' secondary schooling in the Telesecundaria program. However, additional studies have found lower costs. We assume the costs of this intervention group adds 11.8% to the base cost per pupil in the VEM model (Banerjee et al., 2007b; Lai et al., 2012, 2013; Linden, 2008; Mo et al., 2013, 2014; Yang et al., 2013).

Improved school infrastructure

While the upfront costs of school renovation can be high, because such capital investments are long lasting and each classroom is used by scores of students at a time, the per student-year costs of renovation are low. Such costs are estimated to be 5% of base unit costs (Dumitrescu et al., 2011; Kazianga et al., 2013; Martinez et al., 2012), which is used in the VEM model.

Positive Action

The Positive Action program run for small groups over a long period of time is very cost effective and represents only 1.5% of base unit costs.

Youth Readiness Initiative

The YRI program was an intensive program run with a relatively small cohort and hence costs are high, being equivalent to 100% of base unit costs (Newnham et al., 2015).

Social and Emotional Learning

An average of costs for SEL programs described in Chapter 3 gives a figure of 5% of base unit costs used in the model.

5.10.2 Non-formal education costs

Trades certificates, training and vocational training

The non-formal and training programme costs, include costs associated with the trade certificates training and vocational training. Trade costs are assumed to be 150% of base unit costs (i.e., trade-related courses are assumed to cost 50% more than school education). Vocational training is assumed to cost the same as school education (i.e., 100% of base unit costs). The costs of the UPSHIFT programme are derived from implementing UPSHIFT in Sudan as a percentage of education base unit costs (13.1%) (Figure 5.8).

UPSHIFT

Based on a program run in Sudan, the cost of UPSHIFT is equivalent to 13.1% of base unit costs.

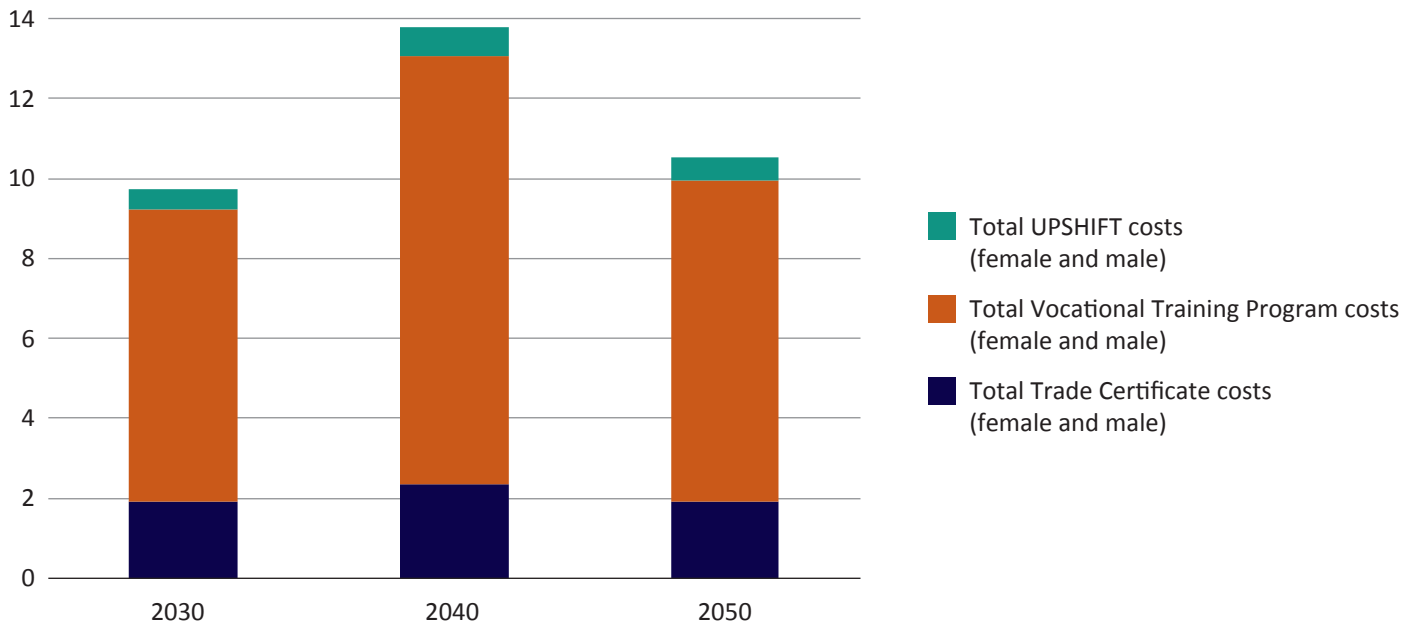

Figure 5.8: Modelled non-formal costs, US$ million

A summary of the five-yearly intervention costs is shown in Table 5.1 (overleaf). The cash transfer, pedagogical changes and the Youth Readiness program are amongst the more expensive programs, although each addresses critical aspects of improving enrolments and encouraging students to complete their education. Most of the programs are discontinued from 2040. Only the pedagogical changes, Upper Secondary CCT, and non-formal education programs are modelled as continuing to 2050.

Table 5.1: Annual cost of interventions at 5-year intervals, US$ million

Intervention	2022	2025	2030	2035	2040	2045	2050
CCT (all year levels)	$14.0	$38.8	$51.7	$55.2	$24.8	$0	$0
Improve school infrastructure	$2.6	$7.3	$19.4	$20.7	$18.6	$0	$0
New schools	$4.9	$13.6	$36.2	$38.6	$34.7	$0	$0
Remedial Education	$2.6	$7.2	$9.5	$10.2	$9.1	$0	$0
Teacher incentives/performance pay	$1.3	$3.5	$9.3	$9.9	$8.9	$0	$0
ICT	$5.2	$14.3	$38.2	$40.7	$36.6	$0	$0
Pedagogical changes	$8.8	$24.2	$64.7	$69.0	$61.9	$54.1	$51.1
Positive Action (bullying)	$0.4	$1.1	$2.9	$3.1	$2.8	$0	$0
Youth Readiness	$8.8	$24.3	$64.7	$69.1	$62.0	$0	$0
Social and Emotional Learning	$4.4	$12.1	$32.3	$34.5	$31.0	$0	$0
Upper secondary CCT	$3.0	$8.4	$25.3	$34.9	$32.9	$27.4	$23.1
Trade certificate	$0.3	$0.9	$1.9	$2.4	$2.3	$2.2	$1.9
Vocational training	$0.9	$3.0	$7.3	$10.5	$10.7	$9.6	$8.1
UPSHIFT	$0.1	$0.2	$0.5	$0.7	$0.7	$0.7	$0.6

5.11 Total modelled intervention costs

The costs of education in Syria are expected to increase slightly as displaced persons return, but then decline slightly over the period to 2035 and 2050. The costs of each type of intervention vary considerably from 1.5% to 100% and are based on the base unit costs of education in Syria. The base costs of education provision are the costs to provide education for a country and include teacher salaries, buildings, maintenance of school buildings, learning materials and administration. The total of these costs are then divided by the number of students to obtain an annual cost per student, or base unit costs. The costs of the interventions are then based on this annual cost per student. The basic costs of providing schooling also increase along with the costs of the interventions, due to increased enrolments and decreased dropout rates, meaning a larger percentage of the population is still in school. The cost of providing education and of funding the interventions is $5,550 million from 2022 to 2030, expressed as a net present value (NPV) at a 3% discount rate, and $15,781 million from 2022 to 2050. This represents an additional cost of the projected base education costs of $1,905 million and $3,645 million for the interventions from 2022 to 2030 and $6,355 million for increased base education costs and $9,426 million for interventions from 2022 to 2050 (Figure 5.9, overleaf).

5.12 Results

5.12.1 Formal education results

The outcome results here describe implementation of all the interventions highlighted previously in an increasing level of implementation over a 10-year period to 2030. The student outcomes resulting from implementing the interventions for secondary schools as previously discussed are shown from Figure 5.10 to Figure 5.18. These figures show how the education outcome distribution changes after the interventions are implemented, as well as the school leavers by grade and the average years of schooling. These results are compared with the base case that involves no interventions and continuing on with current trends.

The education outcome distribution for ages 15–19 and 20–24 without and with interventions are shown in Figures 5.10 to 5.13. These figures clearly show the significant increase in the number of students in school, and for the 20–24 age cohort, the number who have completed secondary school.

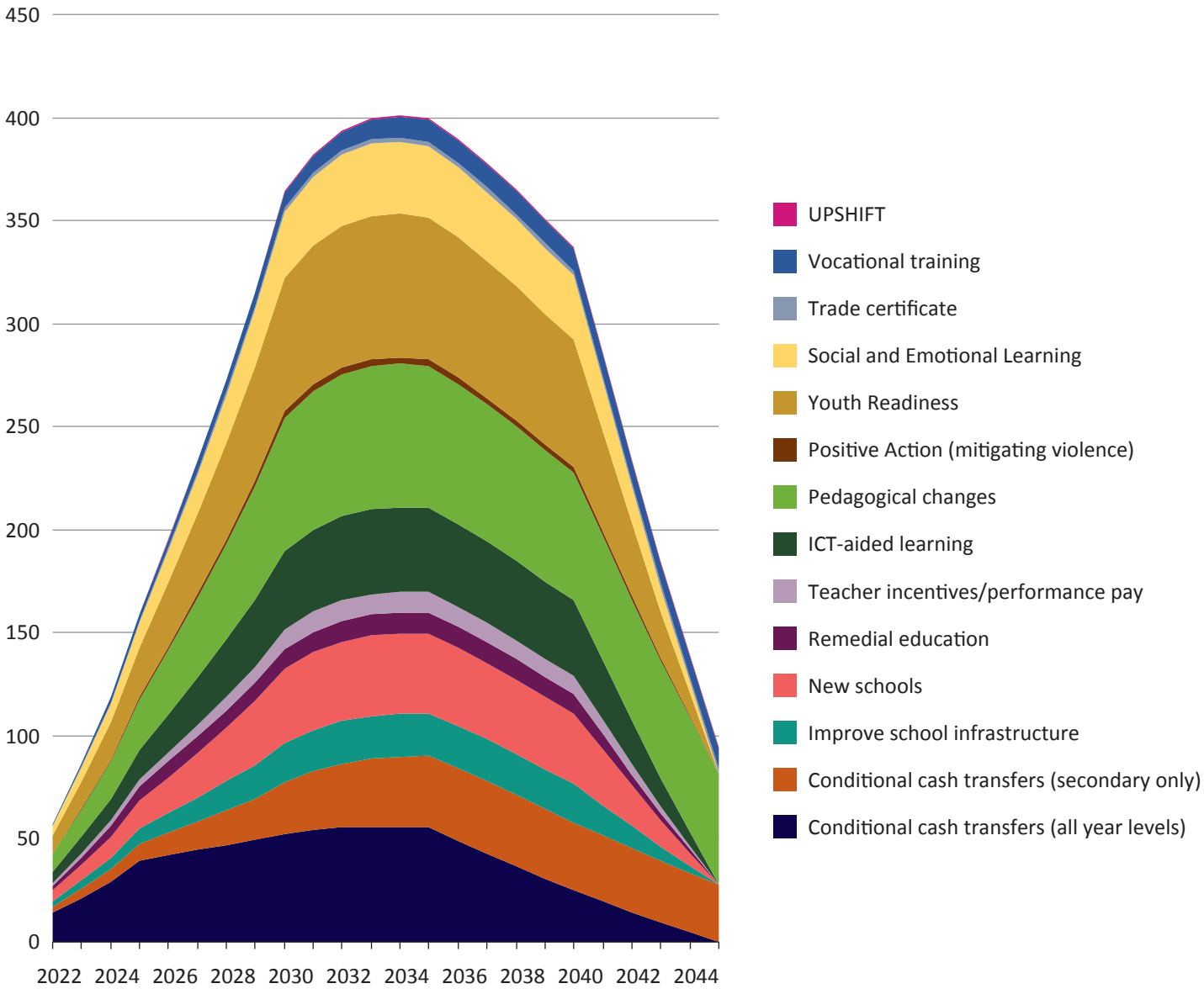

Figure 5.9: Modelled formal and non-formal intervention costs, US$ million. Source: Authors estimates.

Age 15 to 19 cohort

Figure 5.10 (overleaf) shows the differences in school qualification of 15–19-year-old females in Syria out to 2050. By 2030, there is a significant gain in secondary school completions from 8% to 12%. The greatest gain is the number of female students who have completed school that increases from 8% in the base case in 2050 to 25% by 2050 with interventions. There is also a significant drop in female students who have left school with only lower secondary school qualifications from 36% in the base case by 2050 to 29% with interventions by 2050.

The relatively low level of students who complete secondary school in the 15–19 cohort reflects the tendency for many students in Syria to leave school at the end of Basic Education 2nd Cycle, start school later due to the crisis, or come back to school after missing some years. The same trends are evident in the 15–19-year-old male cohort, with the greatest gains in the number of students completing secondary school rising from approximately 7% to 24% by 2040. The percentage of 15–19-year-old males who leave with only lower secondary school education drops from 37% to 28% and the number of males completing secondary school slightly increases (Figure 5.11, overleaf).

The interventions are fully implemented in the model by 2030. However, the flow on effects of the interventions are not fully seen until the mid 2030s and beyond. Removal of some interventions between 2040 and 2050 leads to a slight decrease in secondary school completions. The number of students who have no schooling is essentially the same for both cases, no interventions and interventions, as they both fall to zero by the early 2020s. The number of students who complete secondary school increases from approximately 1% to 3% by 2030, which reflects the decrease in the number of students who leave school with incomplete secondary.

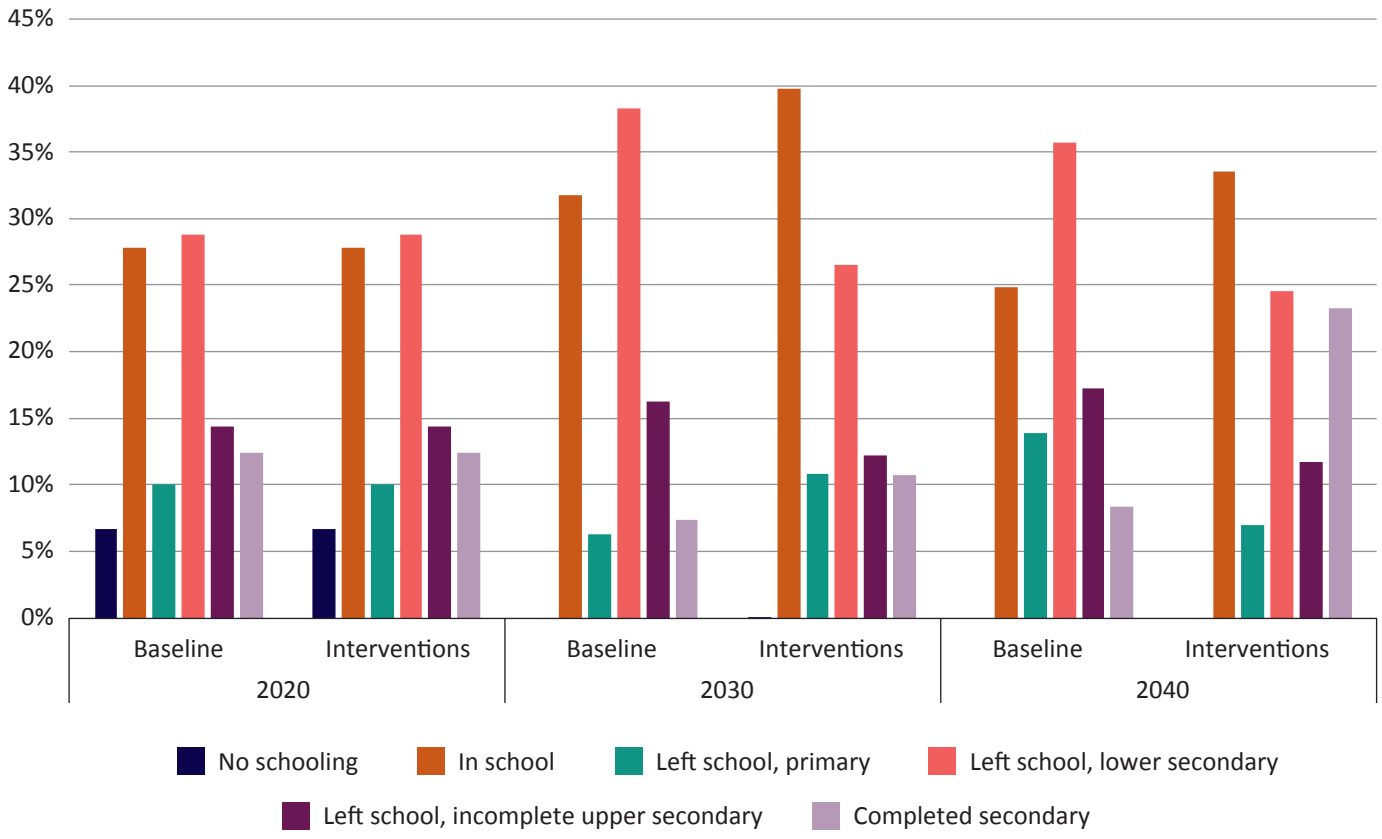

Figure 5.10: Education distribution for females, ages 15–19

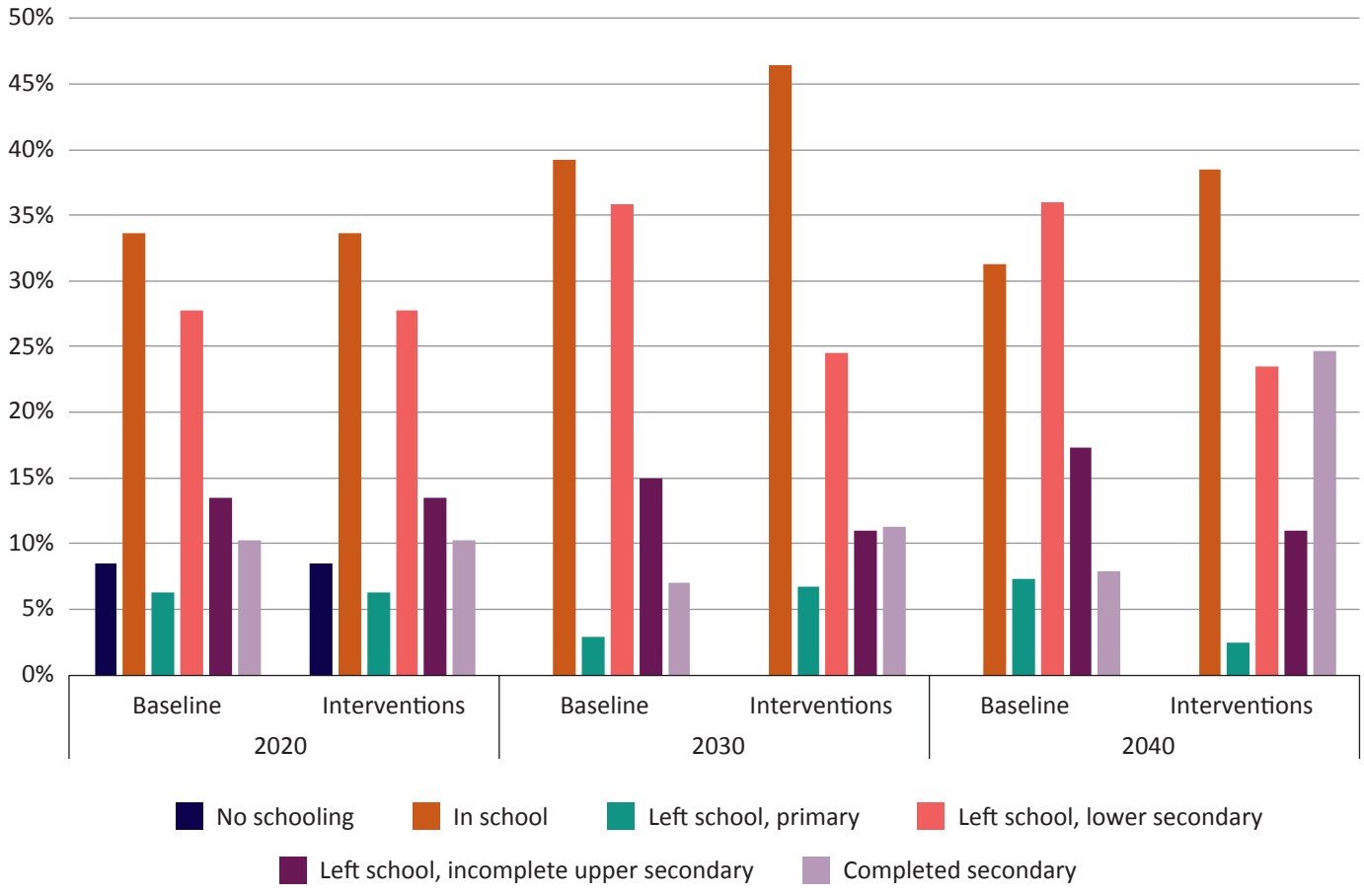

Figure 5.11: Education distribution for males, ages 15–19

Age 20 to 24 cohort

The most dramatic gains in education attainment are for the 20–24-year-old female and male secondary school completion rates. While the increase is modest in 2030 for females (rising from 32% to 35%), a substantial and significant shift is achieved by 2040. As shown in the charts in Figure 5.12 (females) and Figure 5.13 (males), there are three comparisons to be made. The first is between the 2040 baseline and 2040 intervention case. The second is between the 2020 base line and the 2040 intervention case. The third is between the two baselines.

For females, the difference in completion rates between the base case and the intervention case for 2040 is an increase from 31% to 54%, a gain of 23 percentage points (Figure 5.12). This compares with an increase in completion rates from 42% in 2020 to 54% in 2040, a difference of just 12 percentage points. This lower increase is explained by the fall in completion rates projected by the baseline from 42% to 31% between 2020 and 2040. The function of the interventions therefore has been to both offset an underlying decline, as well as achieve a significant increase in the completion rate. As would be expected, the interventions also resulted in a decline in the proportion not completing primary and secondary schooling from 41% in 2020 and 46% in 2040, with those out of school in 2020 of 16% all participating in some education by 2040.

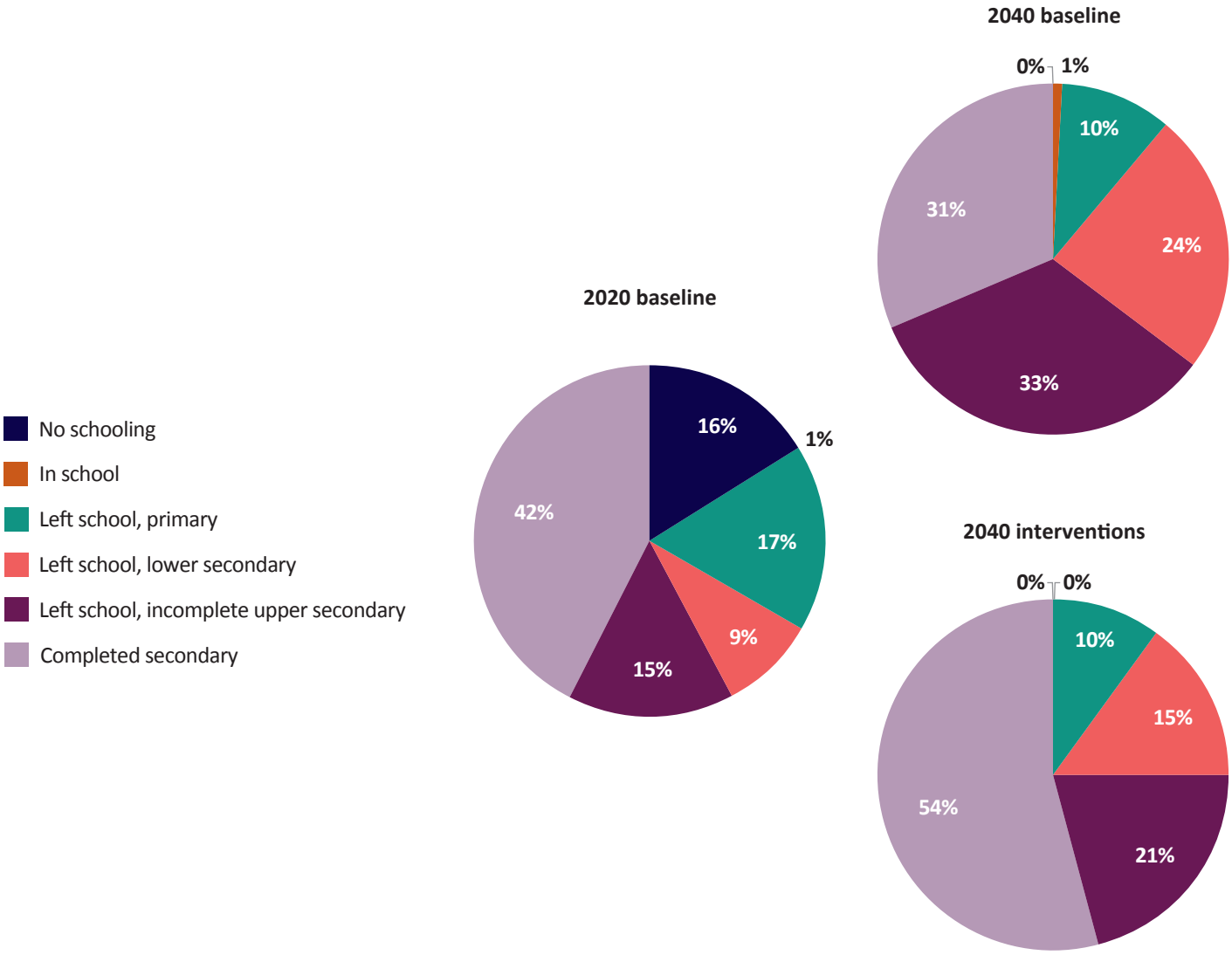

Figure 5.12: Education distribution for females, ages 20–24

For males, the increase in secondary school completions by 2040 rises from 35% in the base case to 61% with the intervention case in 2040, an increase in the proportion completing secondary school of 26 percentage points, a very substantial shift and higher than females. Unlike for females, there is little decline in the proportion of completions in the base case between 2020 and 2040, so all the impact of the interventions is reached by the increase between the 2020 base case and the 2040 interventions case. Those who leave before completing secondary school falls from 46% (2020 baseline) to 39% (2040 intervention case) (Figure 5.13). However, those out of school in 2020 decrease from 18% to zero, meaning all young males are expected to have participated in some education by 2040.

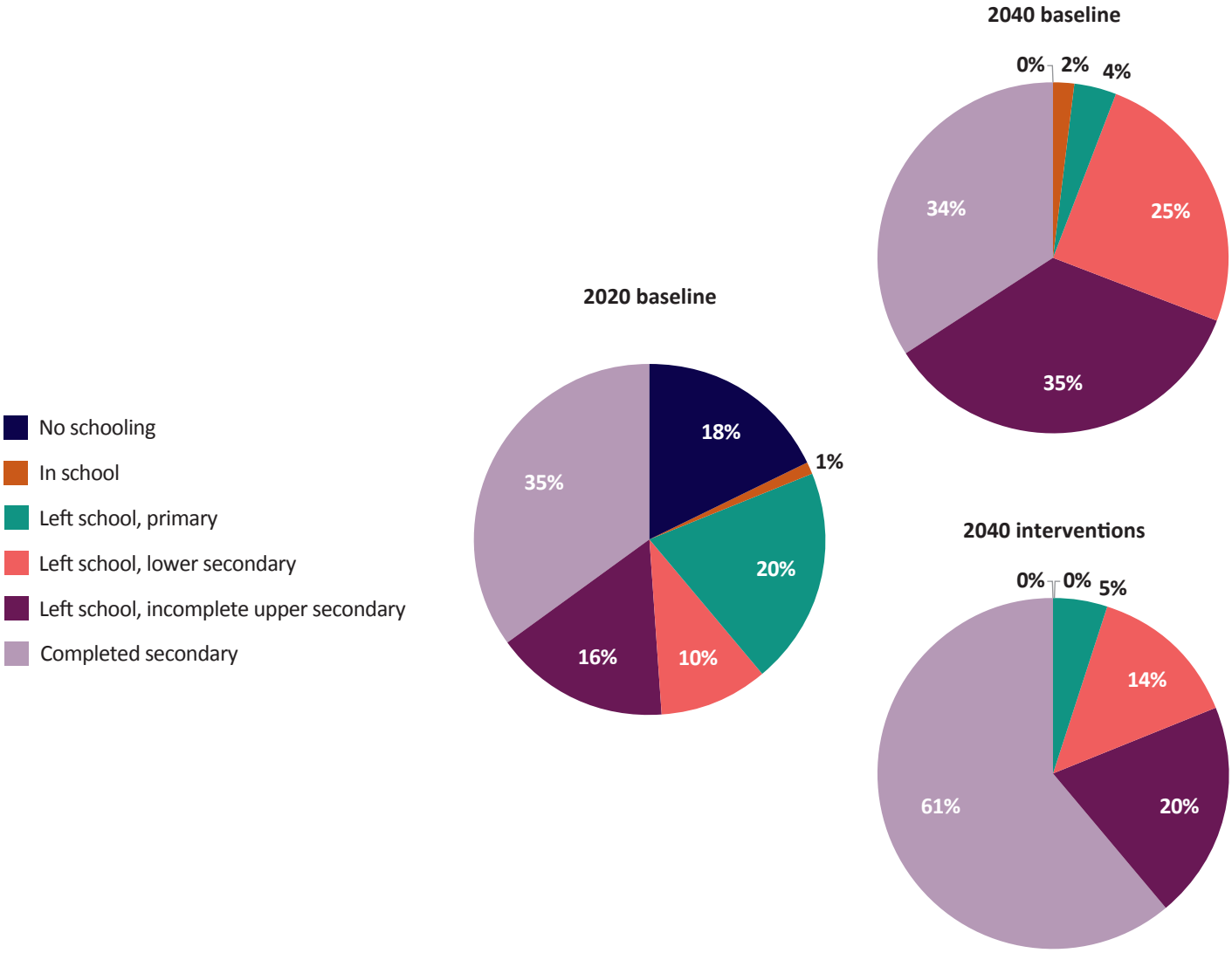

Figure 5.13: Education distribution for males, ages 20–24

School leavers by grade

Another way to view the benefits of the interventions is the grade at which students are forecast to leave school, as shown in Figure 5.14 and Figure 5.15 (overleaf). For females, the clearest benefit is shown by the more than the doubling of students expected to finish secondary school with 12 years of schooling by 2040. By 2040, the no interventions case has 83,000 completing secondary school, whereas the interventions case has 164,000, an increase of 81,000 or nearly double. For males by 2040, the increase is from 98,000 to 198,000, an increase of 100,000, more than double.

The complex interactions of demographics and different starting ages, promotion and repetition rates means the secondary school completions only begin to increase rapidly in the mid-2030s. The increase in secondary school completions is accompanied by a significant reduction in students leaving secondary school before completing. For females, there is still a significant number of students who leave with only primary school, by 2030 this figure reduces from 55,000 to 35,000 and by 2050 from 46,000 to 35,000. This figure is higher than females who leave with only lower secondary education (9th Grade). For males, there is a significant decrease in the numbers of students who leave after primary school (54,000 to 33,000 in 2030 and 47,000 to 30,000 in 2050), and those leaving school with only lower secondary education is similar, reducing from 44,000 to 30,000 in 2030 and 2050.

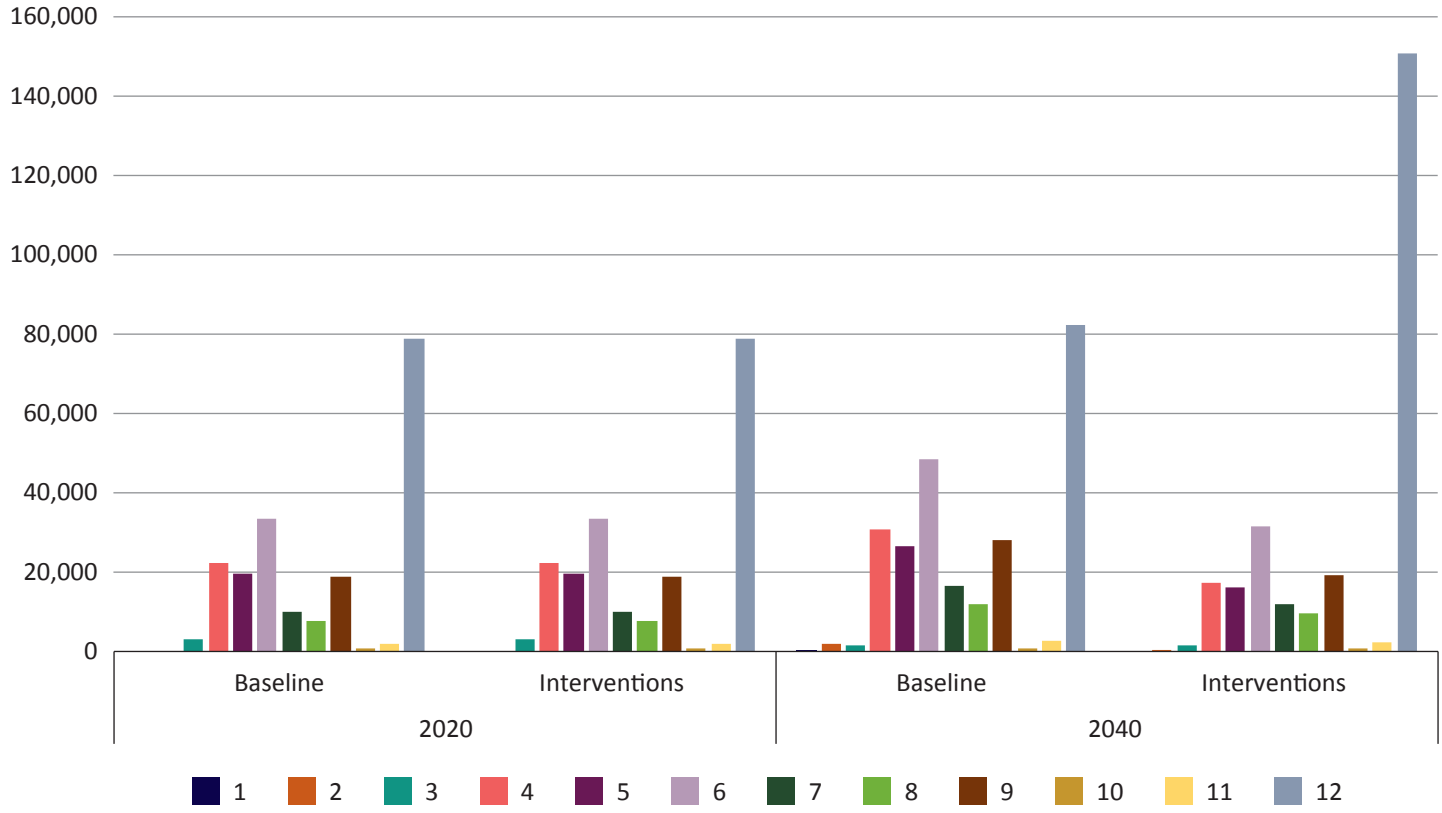

Figure 5.14: Female school leavers, by grade

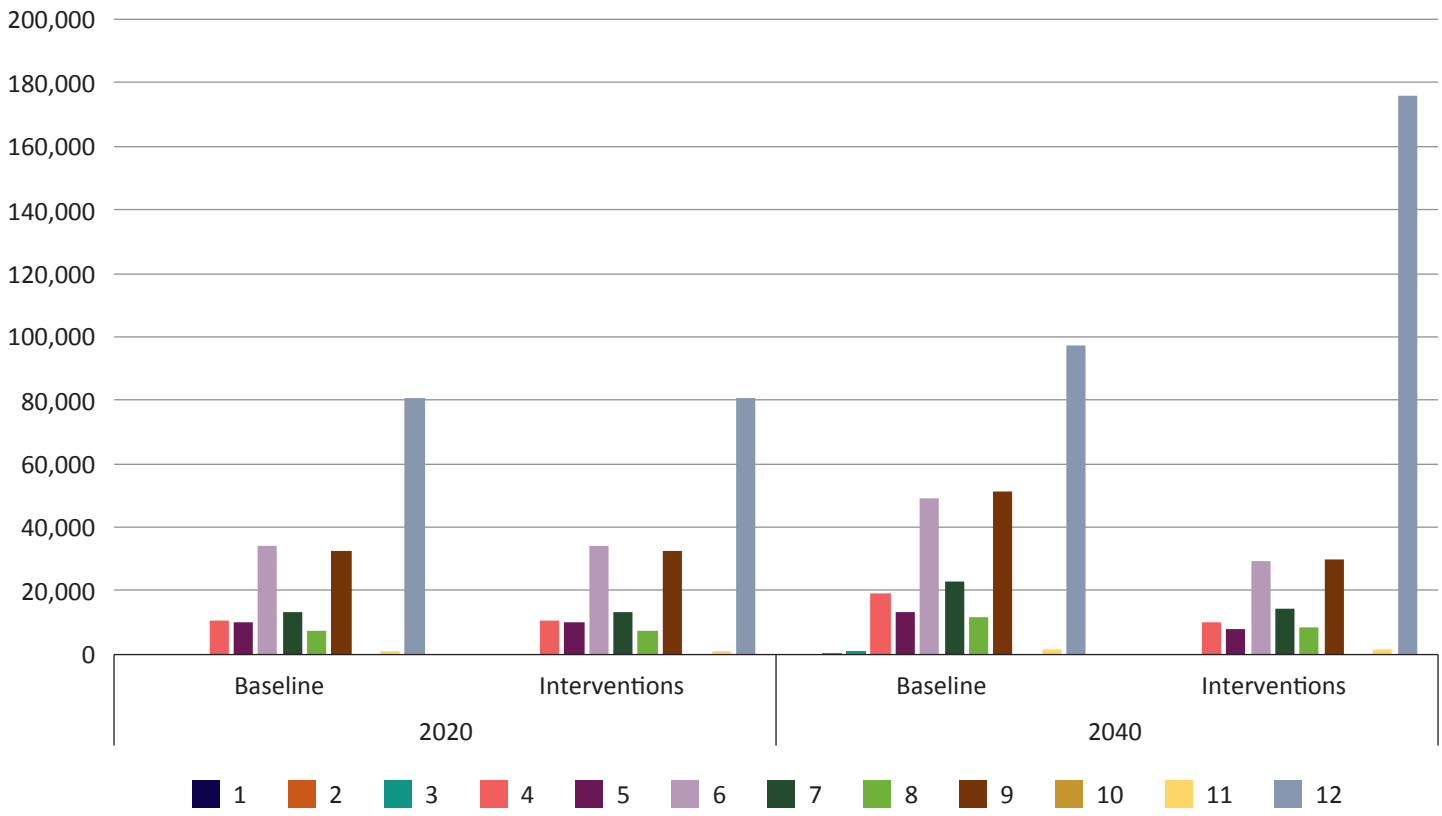

Figure 5.15: Male school leavers, by grade

Average years of schooling

The average years of schooling also clearly benefit from the proposed interventions. As can be seen in Figures 5.16 and 5.17, without interventions the average amount of schooling for females is expected to be 7.7 years by 2030. However, with the interventions this figure rises to 8.5 years by 2030, and continues to rise as the interventions are fully implemented to increase from 9.7 in 2040. While in absolute terms, two years may appear to be a relatively small increase, this is misleading as it represents a 26% increase in schooling and vast growth in the amount of schooling young people will undertake when considered across the entire population.

For males, with the interventions, the figure rises to 8.6 in 2030 and to 9.7 in 2040. With no interventions, these figures would be 8.2 in 2030 and 8.7 in 2040. These are increases of 11% by 2040.

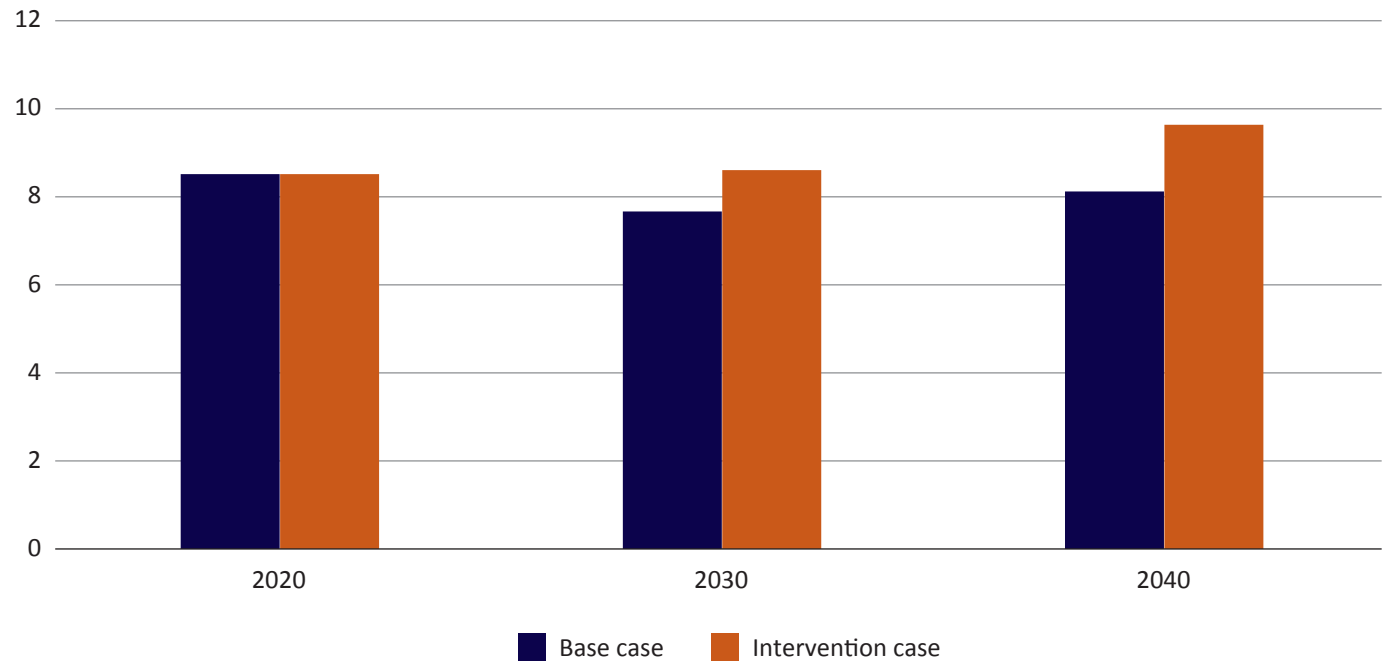

Figure 5.16: Female average years of schooling

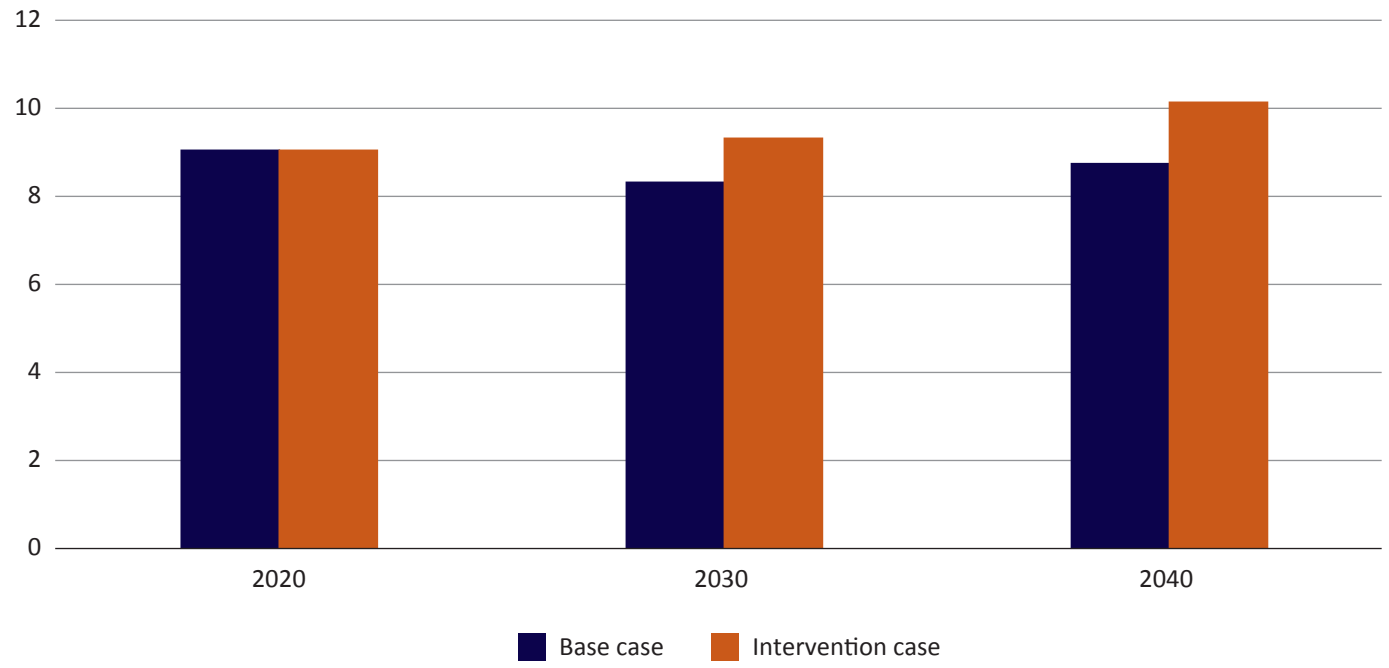

Figure 5.17: Male average years of schooling

5.12.2 Non-formal education results

As discussed in Section 5.9, in this context by non-formal education we mean programs that offer education and skills training to improve the performance of youth in the service sector, industry as well as agriculture. However, we do not include in this definition educational programs provided by NGOs to address gaps in the current educational environment also known as 'non-formal' education. The majority of young people leave school with only lower secondary school qualifications and are not eligible for entry to intermediate institutes. Consequently, there are currently limited opportunities for those with lower secondary qualifications to gain technical and vocational training, and non-formal education may address this lack of opportunity.

For the non-formal education interventions, the results were calculated according to the following assumptions. The coverage rate is assumed to be 50% of early school leavers and 20% of school leavers by 2030. For early school leavers (those who leave with primary school, lower secondary or incomplete upper secondary), half are assumed to undertake a vocational training course, 20% a trade certificate and 30% UPSHIFT. For those who leave after completing secondary school, 60% are assumed to undertake vocational training, 10% trade qualifications and 30% UPSHIFT. The resulting enrolments are shown in Figure 5.18. The total NPV cost of these interventions from 2022 to 2030 discounted at 3% is $40.5 million and $184.5 million from 2022 to 2050.

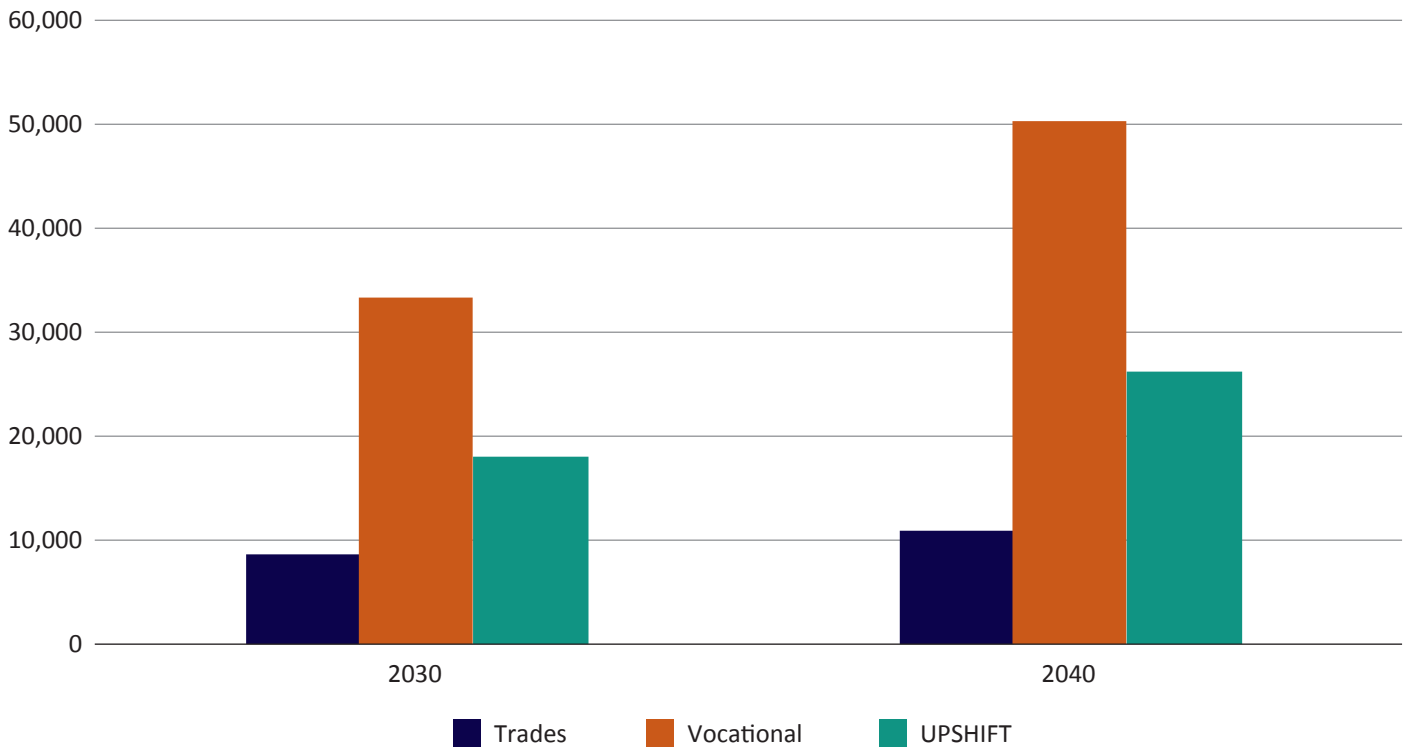

Figure 5.18: Non-formal education and training enrolments

5.12.3 Summary of education model outcome

This chapter has described the work undertaken to develop the VEM, which includes the varying effectiveness and costs of a range of interventions, in both a formal and non-formal setting, to improve the quantity and quality of education and training in Syria. The effectiveness and costs of formal education interventions are based upon extensive international research on programme design, cost and effectiveness with an emphasis on studies in sub-Saharan Africa; while for non-formal education, only evidence on costs is available.

The interventions modelled for formal education include conditional cash transfers, new school supply, remedial education, teacher incentives/performance pay, school meals, private school vouchers, pedagogical changes, ICT assisted learning, and improved school infrastructure. Non-formal education and training programmes modelled include trades certificates and vocational training, and social innovation and entrepreneurship. The formal education interventions have varying degrees of effectiveness on enrolment rates, dropout rates and learning gaps which flow through to secondary school completion rates and average years of schooling.

The costs of each type of intervention vary and are based on the base unit costs of education in Syria. The costs of the interventions are then based on the annual base cost per student. The base costs of providing education in Syria are expected to remain relatively stable out to 2050 without interventions. However, the basic costs of providing schooling also increase along with the costs of the interventions, due to increased enrolments and decreased dropout rates, meaning a larger percentage of the population is still in school. The cost of providing education and of funding the interventions is $5,550 million from 2022 to 2030, expressed as a NPV at a 3% discount rate, and $15,781 million from 2022 to 2050. The interventions are expected to reduce dropout rates and consequently increase the number of students in school, leading to an increase in the baseline costs of education which are calculated on a per capita basis. The increased enrolment leads to an additional cost of the projected baseline costs of $1,905 million from 2022 to 2030, and $6,355 million from 2022 to 2050.

The results from the interventions included in the VEM show a rise in 15–19-year-old students who complete secondary school (both male and female) to 2030 (8% to 12% for females and 7% to 12% for males). However, a much larger increase is shown out to 2050, with females increasing from 8% to 25% and from 8% to 24% for males. In addition, the numbers of students leaving school with only lower secondary school education falls from 30% to 29% for females by 2030 and 25% to 12% for males. There is also a significant drop in female students who have left school with only lower secondary school qualifications, from 36% in the base case by 2050 to 23% with interventions by 2050. The percentage of 15–19-year-old males who leave with only lower secondary school education drops from 37% to 28%, and the number of males completing secondary school slightly increases.

The most dramatic gains are for secondary school completions for the 20–24-year-old cohort out to 2050, with more modest gains by 2030. The increase is delayed due to a complex mix of demographics and different starting ages, enrolment rates, promotion and repetition rates as the interventions flow through the education system, but dramatically increase from the mid-2030s. For 20–24-year-old females, by 2030 secondary school completion rates increase from 32% with the base case to 35% with the intervention case. However, by 2040 secondary school completions increase from 29% to 56%, nearly double, while those who leave school only with lower secondary school education, drops from 24% to 16% by 2040. For males, the increase by 2030 in secondary school completions is from 34% to 42% and the increase to 2040 is from 31% to 62%, and those leaving only with lower secondary school education drops from 26% to 14% by 2040. The average years of schooling also increase by 26% for females and 11% for males by 2040, with similar values to 2050.

Non-formal education programmes result in increased numbers of students with vocational training, with over 8,000 students having a trade certificate by 2030, nearly 18,000 with UPSHIFT training and 33,000 with vocational training. These figures peak in the late 2030s, with nearly 12,000 enrolled in a trade certification, 29,000 in UPSHIFT and 56,000 in vocational training.

The chapter also outlines the results of the so-called ‘baseline’, which estimates the education outcomes in the absence of the interventions.

Projecting the baseline provides a view of the future decline of the Syrian education system in the absence of the proposed interventions in which the current system struggles to accommodate the displaced students returning to school. It shows the increasing proportion of students leaving at primary or lower and upper secondary before completing secondary school.

By 2040, only 31% of females are expected to complete secondary school, a reduction from 42% in 2020, while 34% of males are expected to complete secondary school, a decline from 36% in 2020. Although the baseline assumes that all girls and boys will be absorbed into the education system by 2040, the outcome is a much-increased proportion of both females and males failing to complete secondary school. The proportion of females not completing secondary school increases from 25% in 2020 to 58% in 2040, while for males the increase is from 25% in 2020 to 58% by2040.

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Chapter 6: Modelling the benefits of investing in education and training

In this project, we have set out to estimate the costs that Syria is bearing because of its inability to invest in the education system, particularly in relation to secondary schooling and post-school training. We can view these costs from two different perspectives, namely:

- the opportunity costs, that is the future benefits that are foregone by the failure to invest in the education system, and
- the actual, ongoing costs that are incurred as a result of the impacts of a broken education system on students, teachers, families and the community generally. These we refer to as the direct costs.

We discussed in the introduction that the distinction between opportunity costs and direct costs is not a distinction between two exclusive types of costs. Rather, it is about how we can best come to understand and, if possible, quantify, different costs.

It is possible to study many of the costs of failings in the educational system by using modelling techniques to estimate the benefits foregone over some future period. These costs we call opportunity costs and this form of analysis is reported this chapter and in Chapter 7. Many other costs are difficult to quantify by these methods and in many cases cannot be quantified at all, given current knowledge. Nevertheless, they are very important to Syrian society. These costs we call direct costs and discuss them in some detail in Chapter 2, which also pulls together our conclusions about all costs.

6.1 The Syrian context and the base case

At the time of publishing this report, the Syrian people continue to experience desperate economic and social conditions, arising mainly from more than ten years of destructive armed conflicts and its aftermath. With lifting of sanctions out of sight and the economies of neighbouring countries reeling, real GDP will be little more than one third of that achieved in the years immediately before the crisis started. A significant proportion of Syria's population is displaced, either internally and externally. The bulk of the country's physical capacity has been lost, as has much of its human capital. Key industries – such as agriculture, manufacturing and construction – have been much reduced, and the value of the Syrian pound has declined sharply. This has contributed to the rise in the cost of those imports which are still possible in the light of continuing sanctions, including food imports. Living standards have dropped sharply, and poverty and food insecurity is widespread, with the position of refugees especially acute.

We do so by examining the reverse question, namely what are the benefits that could be achieved through a substantial investment in Syria's secondary schooling and training systems. The costs that Syria is bearing through not investing in these systems are equal to the benefits foregone.

The future course of the Syrian economy is, of course, highly uncertain. At the time of writing, there is a stalemate in international diplomacy and a continuing absence of political solutions (see UN, 2022), Therefore, international aid considerations for supporting formal education services needed by children to return and integrate into formal schools that are affordable, accessible and child-friendly, is not currently anticipated. However, if there was a settlement that led to the lifting of sanctions and to substantial support and investment by the international community, the economy could see a sharp and sustained recovery. Even so, the economy would take more than a decade to return to its 2011 level. On the other hand, if the impasse continues, the economy could linger for years well below its full potential, with little or no growth, as has been seen in some other countries.

It is not our role to peer into the many national and international factors that will shape Syria's future, so as to project a future course for the economy. Nevertheless, we do need to establish an economic base case out to 2030 and beyond, broadly consistent with the education system continuing as it is, without any substantial new investment. We then compare this base case to an intervention case, arising from the substantial program of investment in education that is being studied here. For the base case, we start from an estimate of Syrian GDP in nominal US$ in 2021, and assume a modest recovery path of 4% per annum growth in real GDP to 2031, and continuing at that rate after 2031. This base case is a slow recovery path, which leaves GDP per capita below the 2011 peak until about 2040.

It is important to note that the base case is only a reference point, to which the intervention outcomes are compared. The estimates of the benefits and of the BCRs will not be invalidated, if Syria's actually economic path turns out to be far different from the base case. But the level of the base does have some modest effect on the scale of the benefits and the BCRs, for the level of GDP influences the size of the benefits derived from a given change in educational outcomes. If the economy recovers much more strongly than in the base case, the BCRs will be somewhat higher than calculated here, while if the economy remains very subdued, the benefits (and hence BCRs) from improved education, will be somewhat lower.

6.2 The structure of the overall benefits model

The revised benefits model is designed to take account of key features of the current economic and social situation in Syria. This model contains three components for studying the impact of enhanced education and training on economic output and population welfare in such an economy. The model is summarised in Figure 6.1.

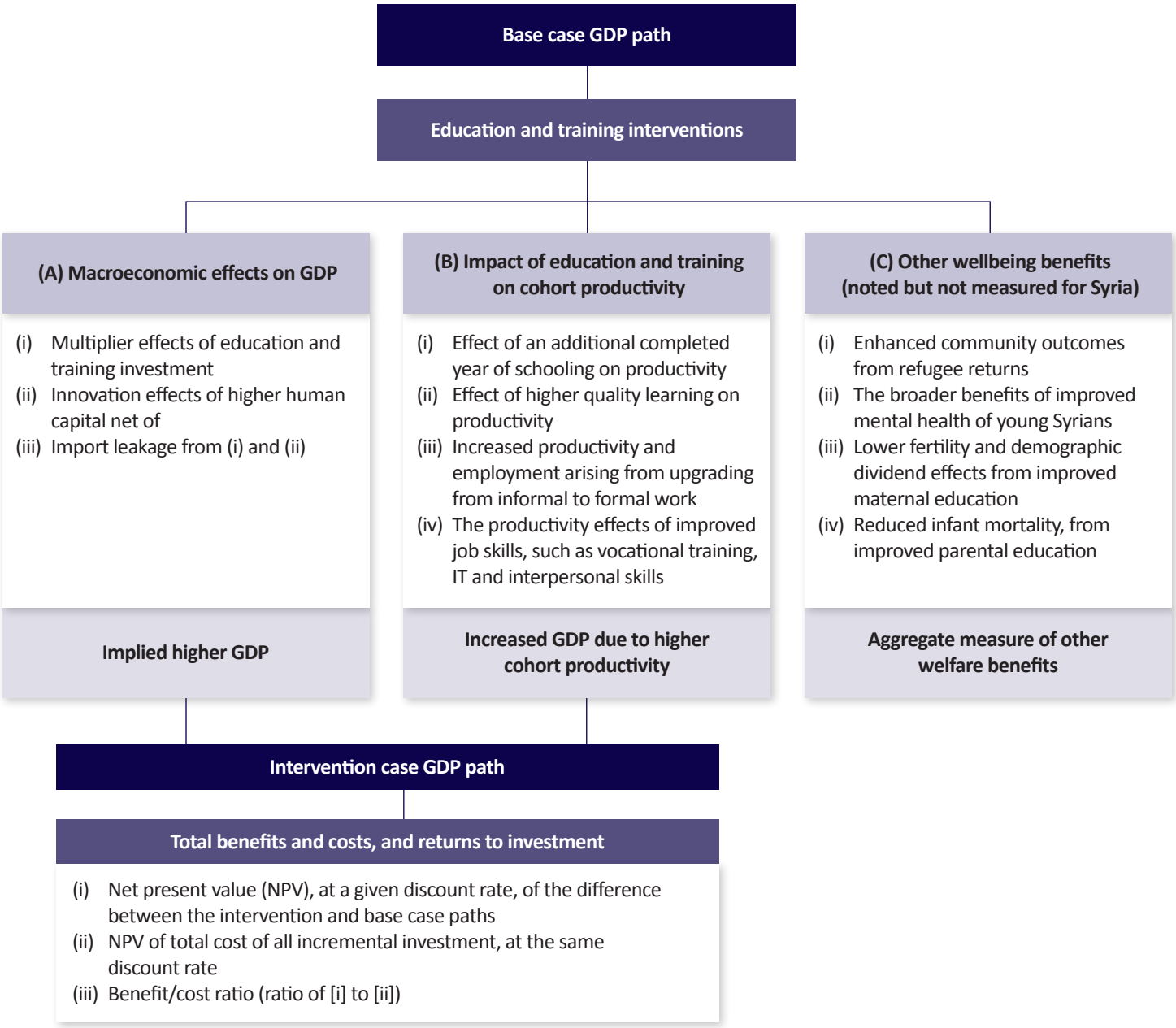

Figure 6.1: Overall benefits model

The benefits model uses the key outcomes (derived from the education model described in Chapter 4) of the impact of the 14 education and training initiatives discussed in Chapter 5. Figure 6.1 shows the basic approach of the benefits model. The starting point for the benefits model is the base case GDP path and the investment over time in the fourteen initiatives. As also shown in Figure 6.1, we identify three channels through which these investments, and the improved education and training outcomes to which they give rise, will provide benefits to the Syrian people.

First, substantial new investment in education and training will have macroeconomic effects. These are **the multiplier effects to the increased investment expenditure**, as well as **an enhanced ability for Syria to innovate**, both locally and by making use of technologies and practices in use in best-practice countries (but new to Syria because of the country's international isolation). The impact of these factors on Syrian GDP will be reduced by **the high leakage of Syrian expenditure into net imports**, which is likely to continue for some time.

The second component is **the impact of better education and training on the individual productivity** of the cohorts who receive that education and training. There are several aspects of this impact:

- an increase in productivity for each completed schooling year of schooling
- increased productivity when at work resulting from better quality learning while in school
- increased productivity and employment arising from upgrading a better-educated work force from informal to formal work, and
- the productivity effects of improved job skills, such as those arising from vocational training and the development of IT/internet skills and interpersonal skills.

The third component is **the effect of better education and training on the health (including mental health) and wellbeing** of the cohorts and their children. These will include:

- the benefits (in addition to improved school performance) of these programs on the mental health of young Syrians affected by war and displacement
- social benefits from the return of displaced persons to the Syrian community
- lower child marriage and cohort fertility arising from better education, and the demographic dividends arising from these changes, and
- reduced infant mortality arising from better maternal education.

Given the crisis prevailing in the country for a decade, there is a serious shortage of good data on many aspects of economic and social life in Syria over the past decade. This means that the benefits modelling must do the best it can with the available data, while recognising the substantial uncertainty surrounding our estimates. It also means that we are unable to estimate the impact of better education on the health and wellbeing of the cohorts being studied here. They remain important benefits from the investment package and should not be ignored because the present situation precludes measurement. The first two components are addressed in Sections 6.3 and 6.4.

6.3 Macroeconomic and innovation effects on GDP

6.3.1 The investment multiplier

Since the writings of John Maynard Keynes, the investment multiplier has been a staple of macroeconomic analysis. The basic idea is that expenditure by (for example, a government) will be income in the hands of those who do the work or sell the goods. The recipients of the income will spend part of the income and save the rest, leading to new spending, saving, and so on. The result of this process is that the increase in GDP is likely to be greater than the initial investment. If there are no other factors involved, the multiplier is equal to: 1–1/marginal propensity to consume. If the marginal propensity to consume was 60% the multiplier would be 2.4.

But there are always other factors involved. For example, some income will be spent on imports or other leakages. If the economy is fully employed, either the initial investment or subsequent spending rounds will substitute for, rather than be additional to, existing activity. So evidence from actual economies needs to be considered.

Economists at the Global Infrastructure Hub (the G20's infrastructure entity) (GI Hub, 2020) have recently reported results of the GI Hub's analysis of more than 3,000 estimates of the fiscal multiplier from more than 200 academic studies over the last 25 years. This meta-analysis, conducted to support the G20's Action Plan in Response to the COVID-19 Pandemic, found that public investment has an average fiscal multiplier of about 0.8 within 1 year, and around 1.5 within 2 to 5 years. These multipliers are higher than those found for public spending as a whole, across both timeframes. They found that this multiplier effect tends to be larger – at around 1.6 – during the contractionary phase of the economic cycle, suggesting that public investment is generally less likely to 'crowd out' private economic activity in times of recession.

The deeply recessed state of the Syrian economy makes the investment multiplier highly relevant, as the marginal propensity to consume will be very high and the propensity to save low. There is also little likelihood of additional spending 'crowding out' private spending in such an environment. On the other hand, Syria's propensity to import is likely to be very high (if sanctions allow). For this analysis, we use a preferred case multiplier of 1.5, with a high case of 1.8 and a low case of 1.2 (as per Table 6.3). As is also shown in that table, for the preferred case we assume an import leakage on the additional investment spending of 20% over 2021–31, falling gradually thereafter to 10%.

6.3.2 Education, innovation and human capital

The evidence is clear that better education has many benefits, from better health and increased empowerment to an increased likelihood of securing and being productive in a high-quality job. In this analysis, we concentrate on two aspects of these benefits: the general impact of better educational outcomes and improved human capital on innovation throughout the economy; and the impact of better education on the level and quality of employment obtained by individuals, and hence on their earnings and productivity.

There is a large amount of literature linking educational outcomes, both years of schooling and quality outcomes, to GDP growth at an aggregate level. Much of this literature has involved studying the impact of education and human capital more generally on economic growth, partly in the context of seeking to explain the existence of sharp differences between countries in GDP per capita levels, and hence in living standards. Two main methods have developed. One stream started from the demonstration by Mankiw et al. (1992) that introducing a human capital variable based on educational attainment into the production function much improved the predictive power of the Solow/Swan growth model (Solow, 1956). Although some 'single factor' analyses have continued, this literature quickly expanded into an analysis of the role of human capital as one of the many factors that shape cross-country differences in GDP per capita and growth rates. Much of this analysis has made use of successive generations of the Barro and Lee cross-country database (2013) and has focused on years of schooling as a measure of educational attainment and hence of human capital. Recently, there has been increasing emphasis on the growth effects of improving the quality of educational outcomes.

Devadas et al. (2019) have applied a version of this approach to Syria, using the World Bank Long-Term Growth Model with the public capital extension, which contains a production function following the Mankiw et al. (1992) specification. They construct and project a human capital variable based on years of schooling, and study the impact of different rates of growth in human capital on Syria GDP over the period 2019–38. Their results are, of course, highly dependent of the assumed values for the key parameters. Their specifications seem to imply that a 1% growth in human capital generates continuing growth in GDP over the period, equal to the labour share of income of about 0.6%.

The other standard approach has been to start from the Mincer equation (1974), in which log earnings is a function of schooling and experience, augmented by other variables that might effect this relationship. The result of estimating this equation – the percentage increase in earnings (or productivity) for an additional year of schooling – is often referred to as the return to education. In several studies, Montenegro and Patrinos (2012, 2014) have estimated such a return to education for many countries, using private sector earnings data, but very limited results are available for Syria.

A variant of these approaches, developed by Barro and Sala-i-Martin (2004) and exploited extensively by Hanushek (2013), is to undertake cross-sectional regressions across many countries to estimate the returns to education in terms of enhanced GDP. These analyses typically use five-year averages of human capital (education) and GDP growth over the long term to estimate the impact of education on growth. Given this methodology, this analysis does not produce a result for any specific country such as Syria.

Although this macroeconomic literature is vast, and there are many voices dissenting on various aspects, the central conclusion is that there are very high returns, in terms of higher GDP or higher GDP growth, to improvements in both educational outcomes measured in years of schooling and to educational quality measured by test scores. It is also widely agreed that the impact of education is in addition to that of other factors which contribute to higher growth (such as economic and social institutions and convergence in technologies), and that the role of education can be seen as, at least in part, a causal one in generating growth as a response to improved educational outcomes.

Although these conclusions can be (and have been) criticized in terms of both data and methodology, they undoubtedly point to a strong, long-term link between education and growth. They provide a solid context within which our more disaggregated model is developed.

In our earlier work (e.g., Sheehan and Shi, 2019), we have stressed the need to be more specific about the mechanisms underlying these aggregate effects and to take account of individual country variation, such as in the case of Syria. In doing so, the benefits model developed for this project has focused on two different types of human capital effect, emerging from the discussion above. The first is a generalised effect of higher human capital on growth, considered above and in the following paragraph, and the impact of better educational outcomes on individual and cohort productivity, discussed in Section 6.4.

At the economy-wide level, higher human capital would facilitate greater innovation and technology adoption throughout the Syrian economy. Given the long running crisis, Syria has been starved of innovation, both domestically and internationally. Higher human capital will increase the country's ability to innovate, both in terms of making use of technologies new to the country and of adapting technologies to meet local needs. While this effect is well understood, the precise magnitude of the effect in different countries and circumstances is hard to pin down. Given this uncertainty, and the complexity of the situation in Syria, we assume for the current model an elasticity of GDP with respect to secondary school completions of 0.1, with a suitable lag (see Table 6.3). This means that every 10% rise in secondary completions leads, in due course, to a 1% growth in GDP. This is a conservative assumption, and is well below the elasticities implied by the studies noted above.

6.4 The employment and training model

6.4.1 Structure of the model

In the modern world, education of good quality, to at least secondary level, is vital for adolescents to build the capabilities required to live productive, empowered and satisfying lives. However, in many developing countries, including Syria, only 40% or less of young people complete secondary school and, even when they do, the quality of their education is often limited. In this section, we concentrate on the impact of better education on the level and quality of employment obtained, and hence on the earnings and productivity of individuals and of the society as a whole. We also extend the analysis to various forms of post-school training, but do not cover higher education.

In doing so, we concentrate on two different types of effect. The first is the impact of additional schooling and better quality schooling on an individual's productivity and earnings in a given job, drawing on the extensive returns to schooling literature. The second effect is the role of education in allowing adolescents to move into better quality employment, given the current importance of low wage informal employment (own account workers and contributing family helpers) in developing countries.

These two effects – individual productivity in a given job and the range of job types available – remain separate in most of the development literature, with little interaction. But both are critical in shaping national productivity and growth, and an individual's productivity is affected not only by personal capabilities, but by the type of job in which those capabilities can be applied. The analysis for Syria reported here draws on a model built to address this issue for many developing countries, outlined in Sheehan et al. (2017) and documented in detail in Sheehan and Shi (2019). Here we describe how this model has been applied to the case of Syria.

In the employment model, increased years of schooling of better quality improve life-time productivity for the relevant cohort of school leavers, and completing secondary school improves an individual's chance of obtaining a formal job. Post-school training initiatives in trade skills, vocational training and non-formal training in innovation and entrepreneurship increase the individual's productivity when at work. The increased productivity of each cohort is traced through their working lives, tracking each cohort of school leavers from age 20–24 years, with the effect building up as successive cohorts of school leavers with enhanced productivity enter the workforce. We measure the impact of these interventions relative to an 'unchanged policy' base case, which is relative to the GDP path that would be generated by these cohorts without the enhanced educational and training outcomes.

Many of these educational interventions take a long while to take effect in terms of higher productivity. For these reasons, we calculate BCRs on three bases. In each case, the interventions start in 2022 and are fully phased in by 2030, remaining at that 2030 level out to 2045, before ceasing. The three bases reflect the periods for which costs and benefits are included in the cost-benefit calculation, as NPVs: one for the period 2022–30, one for period 2022–40, and one for the period 2022–50. Given the lag in realising the benefits, one would expect to find higher BCRs for the longer periods.

There are four key relationships driving the increased productivity of young people as a result of these initiatives:

- the increased productivity over the individual's working life arising from an additional year of schooling
- higher productivity over the working life resulting from higher quality learning in better schools
- better access to formal employment as a result of completing secondary schooling, and
- higher productivity arising from trade, vocational or innovation training.

Our specification of these four effects for the case of Syria is described below.

6.4.2 Return to years of schooling

The key parameter value that the model uses here is the percentage increase in earnings resulting from an additional completed year of secondary schooling. There is a massive literature on the private returns to schooling, and specifically on the returns through increased earnings arising from additional years of schooling. Much of the literature uses the simple model proposed by Mincer (1974), which has been successful and robust across a wide range of countries, both developed and developing. Consistent measures of the returns to schooling for a wide range of countries are available in Montenegro and Patrinos (2012, 2014), and many studies provide estimates of the rate of return to schooling for individual countries.

In our earlier work, for formal employment we used the country-specific values from Montenegro and Patrinos (2012), for males and females separately and for the latest available year. Although there is much less information for the informal sector, Ackah et al. (2014) find, for example, that the impact of increased education on earnings from informal work in Ghana is substantial and highly significant, and of a level comparable to that in the formal sector. We therefore assumed that the impact of increased years of schooling on productivity in the informal sector is the same in percentage terms as in the formal sector, but of course from a lower base level of productivity.

Montenegro and Patrinos (2012) and later studies provide only one estimate for the increase in earnings for males and females in formal employment for Syria, which is low (4.4), and is only for 2004. They also provide an estimate of 8.9 for Jordan, but for 2002. In a much more recent study, Rizk (2019) provided estimates for five MENA countries for 2010. These are Tunisia (8.5), Jordan (7.9), Palestine (7.4), Sudan (7.1) and Egypt (5.0). Given the paucity of data for Syria for recent years, we have adopted for our preferred case for Syria a return to an additional year of schooling of 6.0%.

6.4.3 Learning quality effects

Very strong macroeconomic results have also been obtained by Hanushek and Woessmann (2015a, 2015b) for the impact of school quality on GDP growth and of adult competencies on earnings. Studies for developing countries are limited in number, but Table 6.1 shows the results of seven published studies of the earnings return to increased cognitive skills. On an unweighted basis, the average percentage increase in earnings for a one standard deviation increase in cognitive skills is 17–23%. The implied elasticity of earnings with respect to cognitive skills depends on the relationship for each study between the mean and the standard deviation, that is on how dispersed the data on learning quality are around the mean. If the dispersion is high so that the standard deviation is close to the mean, the implied elasticity will be close to 0.17–0.23. But if the dispersion is much lower, with the standard deviation, say only 30% of the mean, the implied elasticity will be much higher (in this case 0.67). Here we take the conservative approach of assuming that the dispersion in the cognitive skills data is high, and for Syria, we assume an elasticity of earnings/productivity with respect to school quality of 0.15, in our preferred case.

Table 6.1: Estimated percentage earnings increase for a one standard deviation increase in cognitive skills

Country	Study	Estimated effect (%)
Ghana	Glewwe (1996)	14–17
Ghana	Jolliffe (1998)	5–7
Kenya	Boissiere, Knight and Sabot (1985), Knight and Sabot (1990)	19–22
Pakistan	Alderman, Behrman, Ross and Sabot (1996)	12–28
Pakistan	Behrman, Ross and Sabot (2008)	25
South Africa	Moll (1998)	34–48
Tanzania	Boissiere, Knight and Sabot (1985); Knight and Sabot (1990)	7–13
Unweighted average of seven studies		**17–23**

Source: Authors' estimates, drawn from the studies shown.

6.4.4 Change in employment type

In terms of the impact of education on the type of employment gained, there is a significant number of individual country studies focusing particularly on the impact of education on the move into formal employment from informal employment. Many studies have found that more education increases the probability of formal rather than informal work (Marcouiller et al., 1997; Pagan and Tijerina-Guajardo, 2000; Packard, 2007; Arias and Khamis, 2008; Tegoum, 2009). For example, Adams et al. (2013) examined the impact of education on entry into informal employment, and for four out of five countries studied in sub-Saharan Africa, found that increased education led to a shift out of informal employment.

Drawing on a previous analysis of employment data by type of employment for developing countries (but not including Syria) in Sheehan and Shi (2019), we make similar assumptions here to those made in that paper. These are that for each percentage point change in secondary school completions, there is a 0.18% rise in formal employment for the 20–24 cohort, a 0.135% decline in informal employment for that cohort, and hence a rise in overall employment of that cohort of 0.045%.

6.4.5 The returns to training

The employment model has also drawn upon evidence from developing countries on the productivity benefits of technical and vocational education and training. For example, research in Vietnam shows that farmers with vocational training have higher production per unit of land compared to farmers with all other types of education (Ulimwengu and Badiane, 2010). These farmers enjoy greater management capacities and efficiency levels, including few illness and injury incidences, which allow them to compensate for lower input application and less access to land. The results show that, in many cases, the performance indicators for households with vocational training are closer to that of households with junior college degrees, and are far better than those of households without training or with primary and secondary schooling only.

Wages for farmers with vocational training are also higher than for secondary school graduates. Vocational training raises efficiency levels and also eliminates productivity gaps across households. This contrasts with the lack of impact on farmers' efficiency from primary and secondary school (Ulimwengu and Badiane, 2010).

Dekker and Hollander (2017) provides a synthesis of some of the large amount of literature on interventions designed to raise the human capital of individual young people, equip them with greater resources and improve the environment in which they seek jobs. Of greatest relevance to this project for Syria are those that offer education and skills training to improve the performance of youth in agriculture and non-farm household enterprises. Boosting ICT training to facilitate participation in developing sectors is also important for the youth skills set.

Other interventions – such as enhancing youth access to finance, building social networks that address identified deficiencies making it difficult for youth to find employment or establish themselves as self-employed workers – are also relevant. By themselves, some initiatives are not demonstrably effective, but when combined with others are much more so. For instance, skills training programs for entrepreneurs are more effective when combined with access to business finance, including cash transfers.

In a systematic review by Kluve et al. (2017), supply-side education and skills training programs have been found to be effective in lower income countries, especially in the long run. Their review concluded that favourable employment outcomes for lower income countries arise from initiatives in skills training and entrepreneurship. The results of their meta-analysis are shown in Table 6.2.

Table 6.2: Employment outcomes from training and entrepreneurship promotion, low and middle-income countries

Intervention	Standardised means difference (SMD) and 95% confidence interval
Skills training	0.06 (0.02,0.1)
Entrepreneurship promotion	0.18 (0.06,0.29)

Source: Kluve et al. (2017, p153).

This review shows that the impact of skills training has been found to be significantly effective, with a standardised means difference (SMD) of 0.6 (0.02, 0.1), although less effective than entrepreneurship promotion which had a SMD of 0.18 (0.06, 0.29).

Skills training comprises programs outside the formal education system, that offer skills training to young people in order to improve their employability and facilitate their transition into the labour force, include training in specific technical skills, but also include training in non-technical soft skills, such as self-management, teamwork and communication (Kluve et al., 2017). This may include business skills training, as well as basic literacy and numeracy depending on the education entry level.

Entrepreneurship promotion programs offer access to finance, such as start-up grants and microfinance credit. The programs often include the development of business skills and access to business advisory services to help manage a business (Kluve et al., 2017).

The program mix will depend on the type of youth targeted for the program. Different groups of youth require different types of education and skills training. Young apprentices, for instance, require entrepreneurial and financial skills in addition to their trade training. Others require soft skills such as interpersonal skills (Dekker and Hollander, 2017). In a study focussed on women and youth working in the food system, Townsend et al. (2017) argued that food growing and distribution systems with effective training, such as in ICT, can provide jobs for women and youth.

While econometric evaluations of training programs in developing countries are relatively scarce, Biggs et al. (1995) demonstrate that African manufacturing firms show productivity gains from training their workers. In Kenya, manufacturing firms that undertake training were shown to exhibit significantly higher levels of labour productivity than firms that do not train their workers (Aggrey et al., 2010). Another study shows that workers also experience wage gains from participation in training, concluding that the returns to training are approximately 20% (Rosholm et al., 2007).

A study in Botswana showed that a coefficient of vocational and technical training is positive and significant (coefficient 0.186) at the 1% level, while that of university education is significant only at the 10% level. The partial R-squared for vocational and technical training (0.5779) is higher than that of university education (0.1482). These results suggest that vocational and technical education is vital to economic growth in Botswana (Mupimpila and Narayana, 2009).

Given these results, for the purposes of the employment model, the productivity increase for those who have undertaken an UPSHIFT program is 10% and for those who have undertaken a vocational training course, to certificate level, is considered to be 10%.

6.5 The overall benefits model

For the overall benefits model used to analyse the impact of improvements in Syrian educational outcomes (as estimated by the education model as described in Chapter 5 and here), we incorporate the macroeconomic and innovation effects (see Section 6.3) into the education and training model described in Section 6.4 above. Table 6.3 summarises the key parameter settings used for this analysis in the benefits model, for three cases: a preferred case, a high case and a low case. The high and low cases show variations in the parameter assumptions in the directions favouring a higher (or a lower) BCR, shown in the table.

Table 6.3: Parameter values for benefit model runs: preferred case and high and low variants

Parameter	Preferred case	High case	Low case
Macroeconomic			
Base case GDP growth rate	4%	5%	3%
Investment multiplier	1.5 (over 3 years)	1.8 (3 years)	1.2 (3 years)
Innovation effect – elasticity of GDP with respect to completions	0.1 (lagged 5 years)	0.125 (lagged 5 years)	0.075 (lagged 5 years)
Import leakage	20% falling to 10%	15% falling to 10%	25% falling to 10%
Education and training			
Return to a year of schooling	6.0%	7.5%	4.5%
Elasticity of productivity with school quality	0.125 (lagged 5 years)	0.15 (lagged 5 years)	0.10 (lagged 5 years)
Change in employment type with respect to the Year 12 completion rate (ppts per percentage change)	+0.18, –0.135, –0.045	+0.18, –0.135, –0.045	+0.18, –0.135, –0.045
Productivity increase (relative to average base case Years 9–12) > UPSHIFT > Trade certificate	 10% 20%	 10% 20%	 10% 20%
Participation rates: > Early school leavers > Persons 20–24 years	 0.2 0.6	 0.15 0.75	 0.2 0.6

The BCRs for these three cases are shown in Chapter 7.

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Chapter 7: Results and investment metrics

7.1 Introduction

The analysis in Chapters 4 and 5 described fourteen educational interventions that could be implemented in Syria and analysed the educational implications of introducing all of them simultaneously. These interventions interact with one another, so that the individual impact of a particular initiative as part of a package is less than if the initiative is implemented on its own. In Chapter 6, we outlined the models developed to analyse the benefits arising from these enhanced educational outcomes in the Syrian case, and the specific parameter assumptions made for the application of these models. Here we report briefly on the results obtained for the three cases studied: the preferred case, the high case and the low case.

7.2 The macroeconomic, innovation and productivity results

As discussed in Chapter 6, two types of benefit from the overall educational intervention program have been included in the modelling: the first is the investment multiplier and the aggregate response to improved human capital, while the second comprises the various channels through which better educational outcomes influence cohort productivity.

In studying the impact of such a program of interventions, the question of lags is very important. While the direct macroeconomic effect of the investment is felt quite quickly. If a student is induced, for example, to stay on to Year 12 rather than to leave, there are four additional years of schooling to be funded and it will be several more years before the person is a full and productive member of the workforce. Indeed, if there is a significant retention of students in secondary school, the immediate effect of this will be to reduce the labour force and hence GDP. It will only be later, when the person re-enters the workforce with higher capabilities, that the economic benefits are realised.

Figure 7.1 shows the relative contribution of the multiplier/innovation effects and the cohort productivity effects to additional GDP, for the period to 2050. In the initial years, the measured productivity effects are negative, for the reason discussed above, and it is not until 2026 that these effects become positive. But from about 2030, these effects start to build up strongly. By contrast the multiplier effects are felt quickly, but there are long lags before the innovation effects emerge strongly. The innovation effects are driven by the rise in secondary completions and the model assumes a five-year lag between higher completions and enhanced innovation.

Figure 7.1 not only brings out the different timing of these two factors, but also their relative importance, with the productivity effects dominating. By 2040, the productivity effects account for over 80% of incremental GDP, and by 2050 this proportion is 90%.

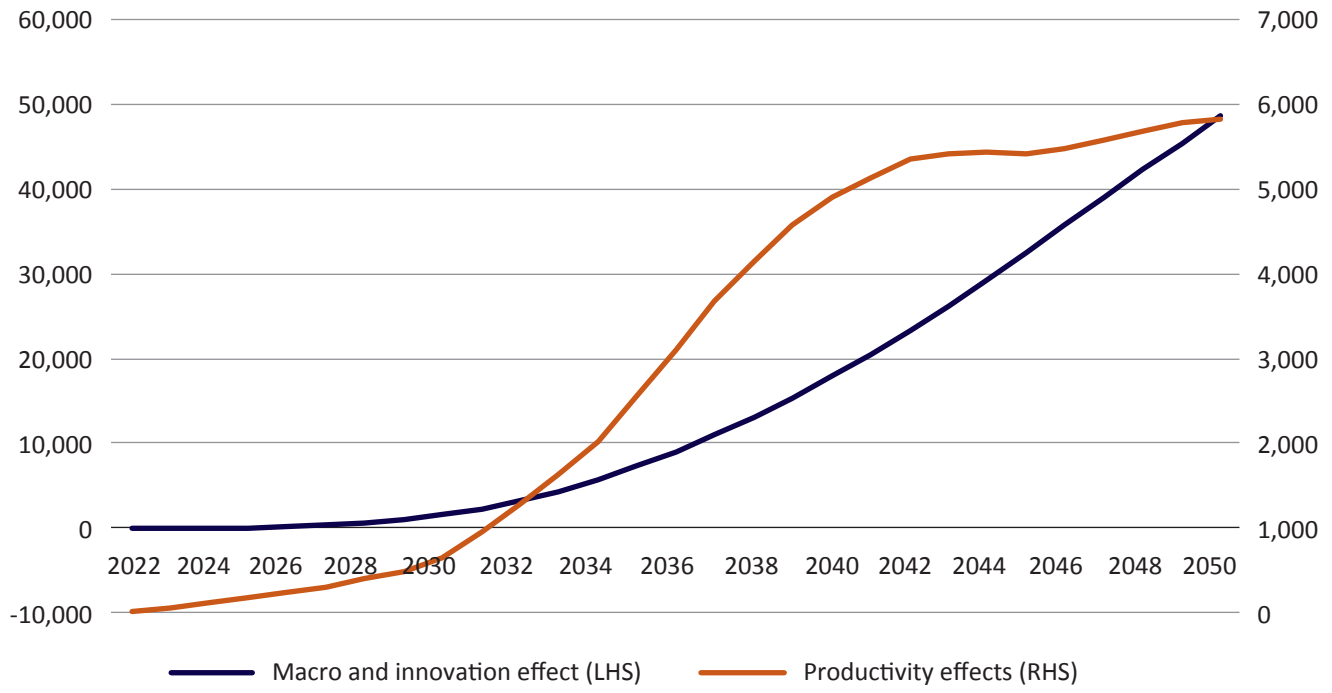

Figure 7.1: Relative contribution to additional GDP, for two areas of benefits, US$ million. Source: Authors estimates.

Table 7.1 summarises the results of the employment model for productivity and cohort GDP levels, for the outcomes from the priority set of education and training interventions. The first five lines (in the upper panel) show the impact of various educational changes on the productivity of the specific cohort of the population, which is 20–24 years of age in 2030, 2040 and 2050, as well as the cumulative impact of all five effects on that particular cohort. These effects are all measured as percentage changes relative to the base case.

Thus, the modelling suggests that the productivity of the cohort, which is aged 20–24 years in 2030, would be increased by about 25% as a result of these initiatives, while the increase in the productivity of the equivalent cohort in 2040 would be over 50%. The learning quality effect is the largest effect, because better quality schooling is assumed to affect the productivity of all school leavers, not just of those whose educational status is changed by the interventions. But all lines in Table 7.1 show a significant increase.

Table 7.1: Productivity and GDP outcomes from education and training initiatives, successive cohorts 20–24 years, percentage relative to the base case, priority package, high economic growth case

	2030	2040	2050
	Impact on productivity of 20–24-year cohorts by year shown (%)		
Years of schooling effect	3.0	12.3	7.1
Learning quality effect	12.6	17.8	9.9
Employment type effect	1.7	8.6	8.4
Overall employment	0.4	2.1	2.0
Non-formal education and training	5.2	5.2	4.6
Total 20–24-year cohort productivity	24.5	54.2	36.1
	GDP from accumulated 20–24-year cohorts by year shown (%)		
Total cohort GDP	8.5	31.8	39.3

Source: Authors' estimates.

In the modelling, we trace the working activity of each successive cohort as they age, and calculate the total contribution to GDP of all the cohorts influenced by the interventions at each year. The bottom line, in the lower panel of Table 7.1, shows the percentage increase in GDP by 2030, at the relevant productivity levels and relative to the base case, from all cohorts that have been affected by the interventions to 2030. Similar results are also shown for 2040 and 2050. It is important to note that these figures only relate to the GDP produced by the cohorts in question (cohort GDP) and not to overall national GDP.

The percentage change in GDP from the accumulated group of cohorts, influenced by the interventions, is lower than that for the individual cohorts, as it takes time for the later and better educated cohorts to have a major effect on GDP from the accumulated cohort. But this impact will continue to rise after 2050, and these are, by any standard, large effects.

7.3 Benefit-cost ratios for the education and training interventions

These education and training interventions would represent vital investments in Syria's future, changing the profiles of educational outcomes massively. They are costly and take time to realise their full impacts, but in due course their impacts will be profound.

For example, in addition to the impacts shown in Table 7.1, secondary school completion rates rise from an estimated 37% in 2019 to 56% by 2040. This would constitute a major increase in completion rates, while learning quality will also have increased substantially.

Of course, the costs of these interventions are high, in good part because of the dramatic rise in the number of students attending school. The costs of the interventions also rise sharply over time, as with the explosion in the population of adolescents, the number of students to which they apply rises sharply. Also, if they are successful, there is a sharply rising cost of educating the growing number of students who remain in school. In the period to 2030, the average annual cost expressed in NPV terms at a 3% discount rate, of all the fourteen initiatives, is about US$240 million. About one third of these costs are the costs of educating the students retained in school as a result of the interventions, rather than the interventions to change educational behaviour.

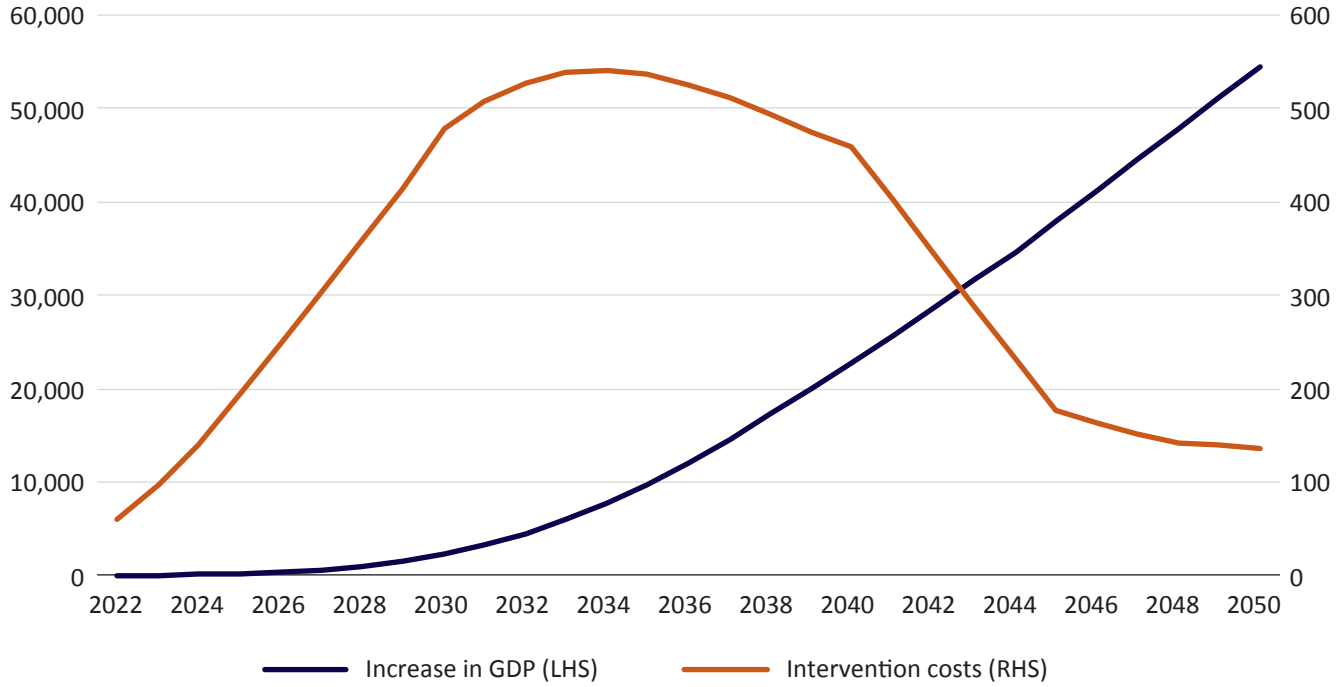

Figure 7.2: Total costs and benefits to 2050, US$ million (note different scales for costs and benefits). Source: Authors estimates.

The various costs and benefits being considered here are spread out in time, from 2022 to 2050. As Figure 7.2 illustrates, the costs are incurred in a much earlier timeframe than the benefits. To compare them on a common basis, we do so on the basis of NPVs, calculated using an appropriate discount rate. We use a 3% discount rate to account for the time value of money – a payment now has more value than the certain promise of a payment of the same amount five years from now. The situation in Syria is highly uncertain, and for the later years we add a further premium for risk to the discount rate. Thus in Table 7.2 (overleaf), we use a discount rate of 3% per annum for cash flows to 2030, and 5% and 7% respectively for cash flows to 2040 and 2050.

Table 7.2 shows the BCRs for the implementation of the fourteen initiatives previously discussed. The parameter settings are reproduced to aid interpretation. The strong variation of these returns over time is also evident in these estimates. For our preferred case for the parameter setting, the BCR of the interventions to 2030 is 2.5 rising to 14.5 to 2040 and 42.2 to 2050. A similar pattern is evident for the high case and low case. This is in comparison with the BCR of 14.5 for the preferred case in 2040, that for 21.4 for the high case and 13.7 for the low case. This suggests that the estimates are quite robust to significant variations in the assumptions.

These are by any standard high BCRs and show that the conclusion that these high return investments would be sustained even with substantial downward revision of the assumptions, as illustrated in the low case. The pattern of BCRs over time highlights the fact that these are long-term initiatives which could have a major impact on Syrian society. These long-term benefits are being foregone, while appropriate investment in education and training in Syria remains impossible.

Table 7.2: Parameter settings and benefit-cost ratios for three scenarios, 2030–50

Parameter	Preferred case	High case	Low case
Macroeconomic			
Base case GDP growth rate	4%	5%	3%
Investment multiplier	1.5 (over 3 years)	1.8 (3 years)	1.2 (3 years)
Innovation effect – elasticity of GDP with respect to completions	0.1 (lagged 5 years)	0.125 (lagged 5 years)	0.075 (lagged 5 years)
Import leakage	20% falling to 10%	15% falling to 10%	25% falling to 10%
Education and training			
Return to a year of schooling	7.5%	14%	6%
Elasticity of productivity with school quality	0.15 (lagged 8 years)	0.25 (lagged 8 years)	0.15 (lagged 8 years)
Elasticity of employment type with respect to completions	+0.18, –0.135, –0.045	+0.18, –0.135, –0.045	+0.18, –0.135, –0.045
Productivity increase (relative to average base case Years 9–12) > UPSHIFT > Trade certificate	 10% 20%	 10% 20%	 10% 20%
Participation rates > Early school leavers > Persons aged 20–24	 0.3 0.6	 0.2 0.8	 0.4 0.6
Results			
Benefit-cost ratios (discount rates) > To 2030 (@ 3% pa) > To 2040 (@ 5% pa) > To 2050 (@ 7% pa)	 2.5 14.5 42.2	 4.2 21.4 49.9	 1.7 13.7 34.2

APPENDICES

Appendix 1: Syrian education system – pre- and post-crisis

A1.1 Introduction

Up until the conflict in 2011, the Syrian educational system compared favourably with other countries in the region, and young people there were among the most educated in the Middle East and North Africa (MENA) region. Syria had achieved near universal primary education enrolment and a high rate of completed secondary education, mainly due to the Syrian Government's commitment and investment in education. According to the most recently available data (from 2009), the government spent 19.2% of its total expenditure on education compared with a world average of 14.0% (World Bank, 2020). This was equivalent to 5.1% of its gross domestic product (GDP) (WES, 2016; World Bank, 2020). Syria's expenditure on education was similar to Morocco at 5.3%, but higher than many MENA countries at that time – Egypt 3.8%, Turkey 2.7% and Lebanon 1.8% (World Bank, 2020). Much of Syria's relatively well-educated labour force (George, 2003) compared to other Arab countries, was due to not only the educational policies of the Syrian Government, but strong economic growth.

Before the crisis, according to the UNESCO Institute of Statistics (UIS), Syria had a primary school completion rate of 96% (UIS 2006), which was considerably higher than many surrounding countries and the MENA region. The transition rate from primary school to lower secondary school was 98.5% in 2010. Its youth literacy rate was 92%. The out-of-school rate for primary school-aged children fell from over 5% in the late 1990s to a low of 0.7% in 2008. The out-of-school rate for adolescents of lower secondary school age fell from nearly 40% in the late 1990s to 10% in 2011.

In 2010, there were 17,120 schools in Syria with 4.7 million pupils. The number of secondary school graduates more than doubled over the period 2000 to 2011 from 98,924 to 215,115 by 2011, an average growth rate of 7.3% per annum. Female secondary school graduates increased from 49,664 in 2000 to 111,648, and male secondary school graduates from 49,260 in 1998 to 103,467 over the same period (Central Bureau of Statistics Syria, various years).

Overall, within the vocational education system, there was growth of only 1.1% per annum in the number of pupils between 2000 and 2011 from 109,003 to 120,333.

Young people in Syria had high education levels, but labour force participation rates were low (43.5%), especially so for women. The returns to education are generally low in the Arab region (Onder and Hayati, 2017; UNICEF MENA, 2017). Montenegro and Patrinos (2014) provide a 2004 estimate of the total return to education of 4.4% for Syria. A more recent estimate by Tzannatos et al. (2016) indicates that an additional year of schooling adds around 5.4% to earnings compared to the world average of 10%.

The conflict in 2011 has had a devastating impact on the education system, with only 57% of schools still functioning as of 2017 (World Bank, 2020). By 2022, some 2.4 million children, aged 5–17 years, representing nearly half of the about 5.52 million school-aged children, were out of school and one in three schools in Syria are no longer used for educational purposes. They have been destroyed, damaged, continue to shelter displaced families or are being used for military purposes. In rehabilitated schools, classrooms are overcrowded, and tens of thousands of teachers and other education personnel have left the country (UNICEF, 2022).

OCHA (2022) reports that attendance at a national level was at 82%, mainly due to economic factors, with children working to support households, a key reason for non-attendance. At a national level, the report indicates that 18% of children were out of school, and half of these children had never enrolled. Rates of non-attendance were highest in Al-Hasakeh (30%), Idleb (28%), Aleppo (26%) and Der-ez-Zor (25%) (OCHA, 2022, p67). OCHA (2022) also reports that there was on average, one operational classroom for every 54 school-aged children. The highest ratios were in Idlib (1.178), Damascus (1.1010) and Rural Damascus (1.04) (p68). An estimated 18% of children were not attending any form of learning, over three quarters of 12–17-year-olds who were not at school had dropped out (p68). In 2020, the Ministry of Education (2021) reported that over two million children – over one third of Syria's child population – is out-of-school, 1.3 million children are at risk of dropping out and one in eight children per classroom requires specialised psychosocial support.

The impact on the education system has varied between regions. Al Hessan et al. (2016) indicate that since the crisis, the country has suffered from, in effect, four separate regions controlled by different groups. Ar-Raqqa was the hardest hit with the Governorate losing over 85% of its schools, followed by Aleppo which lost over 80% of its schools. Non-attendance was similarly high. In safer regions, non-attendance rates were low (Damascus 16%) to zero in Tartous; although even in relatively stable regions, many children are forced to work to support families facing economic hardship and deprivation.

The heterogeneous impact of the crisis within the regions suggests that the responses must be district-specific (Mizunoya, 2015). Overall, the response to the crisis needs to take into consideration:

- interventions that increase in-time in schools and those that improve learning outcomes
- infrastructure requirements
- teacher training and recruitment
- provision of safe places, and
- pedagogical interventions that match teaching to students' learning, etc. Education must also be risk-informed and aim to strengthen resilience, given continued exposure to socioeconomic and psychosocial hazards.

The low economic returns to education in the MENA region raises questions about the economic value of education and therefore the role of increasing investment in education as part of the economic recovery process. The low economic returns to education may suggest that the education curriculum is not providing the skills appropriate to the requirements of the work force or the low participation rate, especially for women, and reflects cultural impediments for more educated women seeking to enter the work force. These issues are expanded upon in a subsequent section in this paper and discussed in more detail in Appendix 2 on the economy and Appendix 3 on employment.

A1.2 The pre-crisis Syrian education system

As mentioned in Section A1.1, prior to the outbreak of conflict in 2011, the Syrian education system compared favourably with its neighbouring countries in the Middle East and North Africa (MENA) region.

An indicator of the status of the Syrian education system can be gleaned from the UNESCO UIS education database (UIS, 2020). The most recent years for data on Syria's education are 2004 and 2006. We selected five indicators where data were available for Syria. These include youth literacy, adult literacy, and completion rates at primary, lower secondary and upper secondary school. Of the surrounding MENA countries, only six countries – Egypt, Iraq, Jordan, Morocco, Turkey and Yemen – had all five indicators available between 2000 and 2006 (see Table A1.1).

Table A1.1: Education indicators, Syria and select MENA countries, 2000–06

Country	Youth literacy rate, population 15–24 years, both sexes (%)	Adult literacy rate, population 15+ years, both sexes (%)	Completion rate, primary education, both sexes (%)	Completion rate, lower secondary education, both sexes (%)	Completion rate, upper secondary education, both sexes (%)
Syrian Arab Republic	**92.5**	**80.8**	**95.6**	**46.0**	**28.5**
Egypt	84.9	71.4	83.9	69.7	28.9
Iraq	84.8	74.1	59.6	30.7	19.0
Jordan	99.0	91.1	98.1	86.3	54.7
Morocco	70.5	52.3	57.5	33.2	19.8
Turkey	95.6	87.4	90.2	68.0	43.5
Yemen	77.0	54.1	61.2	43.3	33.1

Source: UIS (2022).

Compared to its neighbours, Syria's youth literacy of 92.5% was the third highest of the seven countries after Jordan with 99% and Turkey with 95.6% (see Table A1.1). Adult literacy in Syria was also the third highest at 80.8%, again following Jordan with 91.1% and Turkey with 87.4%. The primary school completion rate for Syria at 95.6% was the second highest after Jordan with 98.1%. The completion rate for lower secondary education at 46% put Syria at the lower end of the range of countries, and the completion rate for upper secondary of 28.5% was the third lowest of all the countries.

The quality of education appears to be relatively low. The Trends in International Mathematics and Science Study (TIMSS) provides a comparative performance score for 8th Grade mathematics. While scores across the MENA region tend to be below global average, the score for Syria is the third lowest of a dozen MENA countries in the 2011 survey, with a score of 380, compared with, for example, 449 for Lebanon and 404 for Palestine (Mullis et al., 2012). The better-resourced UAE leads the MENA countries with a score of 456. The reasons for the low score given by the survey, include poor resources both in the school and at home. There are relatively few computers available in most classrooms and only 14% of students had access to the internet and their own room in which to study, compared with an international average of 53% for TIMSS surveyed countries. However, almost a third of parents had a university degree, close to the international average (Mullis et al., 2012).

A1.2.1 Structure of the education system

Overall, the formal education system in Syria is predominantly public: 97% of basic education schools (primary and lower secondary) and 94% of upper secondary schools are public, the rest are private (WES, 2016). In 2001, Syria's government authorised the privatisation of the higher education sector, and now there are 20 private and seven public universities (Al Hessan et al., 2016).

Basic education in Syria is compulsory and free, and is co-ed (i.e., host both girls and boys) up until 4th Grade. The three divisions of the levels of the school system are:

- First level of basic education (1st–4th Grades).
- Second level of basic education (5th–9th Grades).
- Secondary level of education (10th–12th Grades), including the application of this level on the vocational study branch such as agriculture, commerce, and industry.

Students in 10th–12th Grades are usually aged 15 to 18 years. All students pursuing the general/academic branch follow the same curriculum in 10th Grade. After that they must choose between two academic streams:

- Science: biology, chemistry, informatics, logic and humanities, math, and physics.
- Literature: Arabic society (including principles of economics and general philosophy,) art, geography, and statistics (WENR, 2016).

Students can also follow a technical or vocational education, which has three main streams:

- Commercial: accounting, administration, advertising, book-keeping, commercial law, computing, economics, financial math, secretarial skills, statistics, and tax.
- Feminine Arts: carpet-making, childcare, clothing and textiles, dressmaking, embroidery, and home economics.
- Industrial: computing, circuitry, electronics, television and radio, satellite maintenance (TV), and video recorders (WENR, 2016).

In commenting on the curriculum for schools, Al Hessan et al. (2016) notes the importance of religious education (Islamic education for Muslim students and Christian education for Christian students), which is compulsory from 1st Grade until the end of the upper secondary education.

Table A1.2 shows the number of 1st Cycle students from 2000 to 2011. The total number of students in the 1st Cycle increased from just under 2 million in 2000 to 2.5 million in 2011, an annual average increase of 2.4% per annum.

Table A1.2: Number of students in 1st Cycle, by grade, 2000–11

Year	1st	2nd	3rd	4th	Total
2000	564,708	487,167	443,930	445,097	1,940,902
2001	576,739	517,422	463,072	427,360	1,984,593
2002	602,160	537,217	492,143	444,341	2,075,861
2003	615,038	552,681	506,479	475,276	2,149,474
2004	615,744	561,936	521,814	488,191	2,187,685
2005	631,950	569,866	539,720	510,609	2,252,145
2006	635,195	578,150	543,214	522,986	2,279,545
2007	639,705	592,271	550,914	527,278	2,310,168
2008	656,477	598,079	565,160	536,687	2,356,403
2009	668,807	605,708	565,277	543,431	2,383,223
2010	692,933	617,947	573,348	545,222	2,429,450
2011	726,204	639,316	585,721	556,159	2,507,400

Source: Central Bureau of Statistics Syria, *Statistical abstract*, various years.

The number of 1st Grade students increased from 564,708 in 2000 to 726,204 in 2011, an increase of 29%. The number of 2nd Grade students increased by 152,419 between 2000 and 2011 and 3rd Grade students by 141,791 over the same period. The number of students in the 4th Grade increased more slowly than the earlier grades. It increased by 111,063 students or by 25%, which was an annual average increase of 2%.

The number of students in the 2nd Cycle of schools between 2000 and 2011 is shown in Table A1.3. This number increased by 649,241 between 2000 and 2011, an annual average increase of 3.1%.

Table A1.3: Number of students in 2nd Cycle, by grade, 2000–11

Year	5th	6th	7th	8th	9th	Total
2000	428,023	405,997	312,058	230,990	240,517	1,617,585
2001	435,332	415,098	321,794	242,825	243,664	1,658,713
2002	407,311	421,397	335,792	243,356	251,933	1,659,789
2003	433,838	401,522	358,122	270,009	268,286	1,731,777
2004	465,750	411,974	366,485	295,040	299,089	1,838,338
2005	482,696	441,761	397,923	308,849	323,666	1,954,895
2006	503,851	460,471	430,688	300,540	322,485	2,018,035
2007	516,189	478,729	443,321	327,362	318,525	2,084,126
2008	522,280	491,044	457,060	342,516	345,498	2,158,398
2009	526,007	491,134	460,726	349,371	353,628	2,180,866
2010	534,778	499,240	464,576	356,474	377,354	2,232,422
2011	540,068	510,098	476,362	360,381	379,967	2,266,876

Source: Central Bureau of Statistics Syria, *Statistical abstract*, various years.

Like the 1st Cycle, the earliest grades have the greatest number of students. While there are declines between the 6th and 7th Grade, the largest declines are between 7th and 8th Grades (see Figure A1.1). For example, in 2011, there were 33,736 fewer students in 7th Grade than 6th Grade and 115,981 fewer students in 8th Grade than 7th Grade. The number of students in 9th Grade increases in most years, perhaps implying that a number of students are repeating the grade.

The crude dropout rate was uniformly low between all grades until between 7th and 8th Grades. For earlier years, the dropout rate declines from 8% after the first year to only 2% between 4th and 5th Grades.

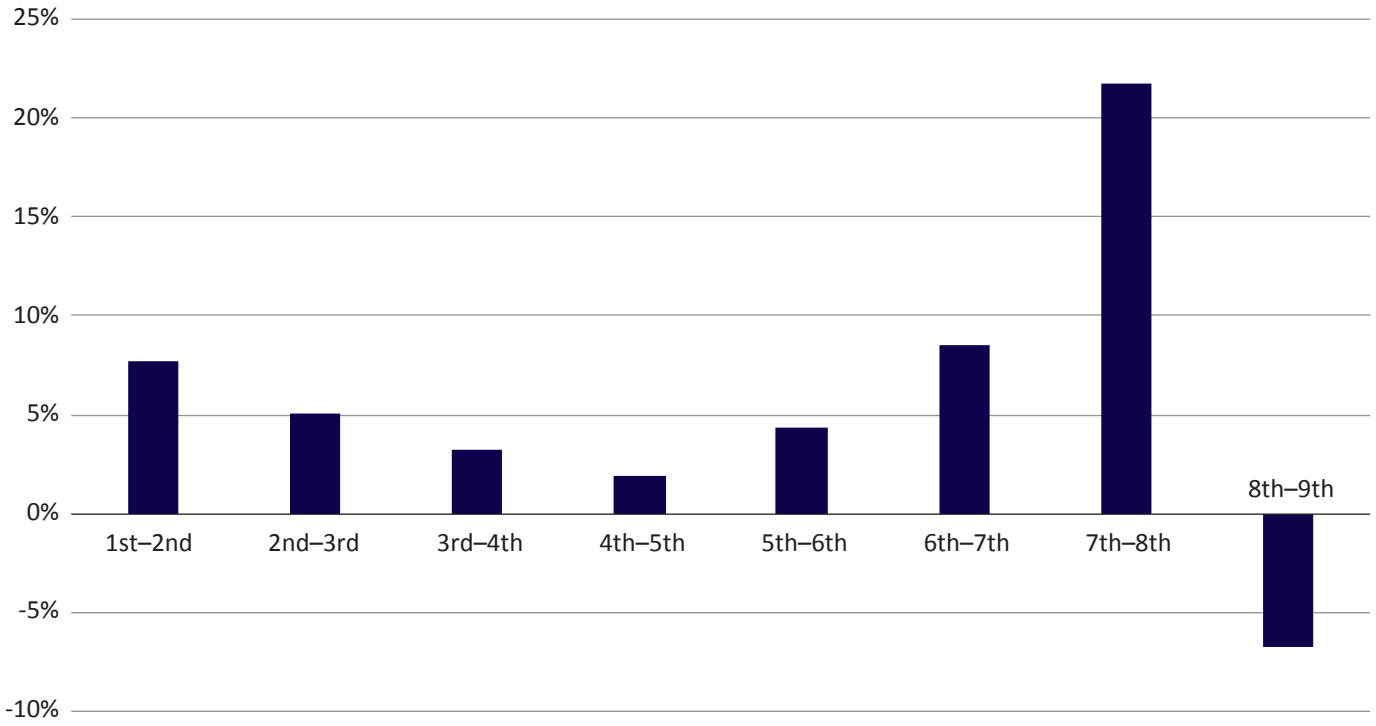

Figure A1.1: Crude dropout rate, by transition year. Source: Central Bureau of Statistics Syria, *Statistical abstract*, various years.

As shown in Table A1.4, the number of secondary school graduates more than doubled over the period 2000 to 2011 from 98,924 to 215,115 by 2011, an average growth rate of 7.3% per annum. The number of female graduates exceeded male graduates by about 10% over the period.

Table A1.4: Secondary school graduates, male and female, 2000–11

Year	Secondary school		
	Female graduates	Male graduates	Total
2000	49,664	49,260	98,924
2001	56,394	49,260	105,654
2002	59,985	54,816	114,801
2003	71,288	61,516	132,804
2004	70,945	63,615	134,560
2005	74,787	65,462	140,249
2006	76,346	69,647	145,993
2007	87,497	81,768	169,265
2008	89,748	80,399	170,147
2009	89,376	74,780	164,156
2010	83,894	70,119	154,013
2011	111,648	103,467	215,115
Annual average growth rate 2000–11	7.6%	7.0%	7.3%

Source: Central Bureau of Statistics Syria, *Statistical abstract*, various years.

Within the vocational education system, there was overall growth of only 1.1% per annum in the number of pupils between 2000 and 2011 from 109,003 to 120,333 (Table A1.5). Pupils in the Industrial stream increased from 38,440 to 61,752, an average growth rate of 4.4% per annum over the same period. Pupils in the Commercial stream increased from 30,740 in 2000 to 33,628 in 2011, However, in the Feminine Arts the numbers declined by 3.2% per annum. The number of students pursuing vocational education has been affected by changing mandated ratios of vocational education to general secondary school. There is no data on the number completions/graduations at the vocational level.

Table A1.5: Vocational school pupils by stream, 2000–11

Year	Commercial	Feminine Arts	Industrial	Total
2000	30,740	39,823	38,440	109,003
2001	31,894	36,515	40,809	109,218
2002	32,182	34,850	50,473	117,505
2003	32,772	35,566	53,406	121,744
2004	33,300	37,882	57,280	128,462
2005	30,632	34,624	57,100	122,356
2006	28,290	30,901	54,803	113,994
2007	26,412	26,336	50,825	103,573
2008	26,308	23,901	50,049	100,258
2009	26,954	24,327	50,486	101,767
2010	28,678	24,345	53,420	106,443
2011	33,628	27,953	61,752	123,333
Annual average growth rate 2002–11	0.8%	–3.2%	4.4%	1.1%

Source: Central Bureau of Statistics Syria, *Statistical abstract*, various years.

The Central Bureau of Statistics Syria *Statistical abstract* (various years) only publishes data on the number of technical/vocational teachers (see Table A1.6). There are no data for teachers in the 1st or 2nd Cycle or General Secondary level. Table A1.6 shows that the number of Industrial teachers peaked at 11,321 in 2012.

Table A1.6: Number of technical/vocational education teachers by stream, 2008–12

Year	Industrial	Feminine Arts	Commercial	Agricultural and veterinary	Oil	Irrigation and drainage	Transport and marine	Religious
2008	9,839	5,186	2,524	376	–	–	–	3,267
2009	10,450	5,402	2,587	376	–	–	–	3,419
2010	8,755	8,308	3,050	390	–	–	–	3,275
2011	10,612	5,273	2,722	438	–	–	–	3,574
2012	11,321	10,959	2,999	417	45	83	25	3,574

Source: Central Bureau of Statistics Syria, *Statistical abstract*, various years.

Overall, by 2011 Syria had made considerable progress in educating and training its adolescents for transition to the labour force. However, the quality of education provided was low compared with other MENA countries, as well as global averages.

A1.2.2 Returns to education, participation rates and employment

A particular concern within the region is the inverse correlation between education and employment (UNICEF MENA, 2017, p20). UNICEF suggests that unemployment rates tend to increase with education level, particularly for women, and are highest of all for female university graduates. The growing number of 'educated unemployed' suggests weak links between the education and training system, and the labour market. The rates of return to education (RORE) are also low in Arab countries. Tzannatos et al. (2016) indicated that an additional year of schooling adds around 5.4% to earning compared to the world average of 7%, and sharply decreases as youth reach higher education levels. The study further suggested that while the economic RORE is relatively high for basic education (9.4% against the world average of 10.3%), it is low for post-basic education, with rates half of the world average (3.5% against the world average of 6.9% for secondary education, and 8.9% against the world average of 16.9% for tertiary education). The study further noted that interestingly, economic RORE are higher for women than for men (nearly 8% versus 5%). Employment, however, only carries a premium when a woman works in the public sector; work does not pay sufficiently in self-employment or in many private sector roles.

Young people in Syria had high education levels, but participation rates – especially for women – were low. Labour force participation rates for male youths had fallen quite dramatically from 74.7% in 1990 to 49.7% in 2011 (see Table A1.7). Female youth participation rates had not been high in 1990 at 28%, but then continued to fall to 8.9% in 2011. This may be associated with extraordinarily high unemployment rates for young women, which would act to discourage participation in the work force, increasing from 23% in 1990 to 43% in 2011 for those aged 15–24. It is also doubtless a product of much higher enrolment rates for girls, which rose rapidly after 2000, and meant that many girls were no longer seeking work.

Table A1.7: Youth labour force participation rate and unemployment rate by gender, 1990 to 2011

Year	Labour force participation rate for ages 15–24, female (%)	Labour force participation rate for ages 15–24, male (%)	Labour force participation rate for ages 15–24, total (%)	Unemployment, youth female (% of female labour force ages 15–24)	Unemployment, youth male (% of male labour force ages 15–24)	Unemployment, youth total (% of total labour force ages 15–24)
1990	28.0	74.7	51.7	23.0*	12.4*	15.2*
1995	25.1	70.1	48.0	24.8	13.7	16.5
2000	19.3	64.0	42.1	36.8	19.2	23.1
2005	14.6	56.8	36.3	39.1	13.6	18.6
2010	9.0	49.9	29.9	43.0	16.1	20.1
2011	8.9	49.7	29.9	43.0	16.6	20.4

Note: * 1991. Sources: World Bank, 2020; ILO, 2021.

Data for 2008 indicates that Syria's participation rate exhibits a pattern that is typical of the countries in the MENA region (Table A1.8). The overall rate is low at 49.7% but is second highest of the selected countries. The youth participation rate of 40.2% reflects the low female participation rate of 22%, not dissimilar to the other selected MENA countries (Fortuny and Husseini, 2010).

Table A1.8: Employment-to-population ratios and labour force participation rates, Syria and selected MENA countries, per cent, 2008

	Syria	Jordan	Morocco	Algeria	Turkey
Participation rate	**49.7**	**43.4**	**51.1**	**41.7**	**46.7**
Male	78.1	69.8	79.4	69.0	69.6
Female	21.2	15.5	24.4	14.1	24.0
Employment to population ratio	**44.8**	**37.9**	**46.1**	**26.6**	**42.3**
Male	72.5	61.2	71.9	Na	63.0
Female	16.9	13.3	22.0	Na	21.7
Youth participation rate	**40.2**	**25.5**	**41.1**	**Na**	**37.2**
Male	57.9	40.7	60.9	Na	49.8
Female	22.0	9.5	21.4	Na	24.2
Youth employment ratio	**32.3**	**19.8**	**34.7**	**Na**	**30.7**
Male	49.2	31.9	51.0	Na	41.0
Female	14.8	7.1			20.0

Source: KILM, 6th Edition, National Statistical Offices, from Fortuny and Husseini (2010, p11).

The World Bank (2019) provides several reasons for the low participation rates in the MENA region, which include: slowing economic growth; technological change requiring skills not available in the region; general lack of relevant/necessary skills; curricula dependent heavily on rote memorization, rather than the development of critical thinking skills; and traditional practices and norms that inhibit students from realising the potential of education or participating in a changing world.

One of the major reasons for low female participation is socio-cultural reasons, as women's role is seen to be in the home. Sparre (2008) argues that in Syria, the government had earlier promoted equality in education, reduced illiteracy, increased enrolments in universities and guaranteed women jobs in the public sector. However, following the economic recession in the 1980s, attitudes towards female employment changed. High population growth, rapid urbanisation and high unemployment led to the role of women being promoted as mothers and home makers. The government promoted the idea that women needed to be educated so they could be good mothers and bring up her children properly. It saw the value of having an educated woman as a mother, as she would bring up her children well.

Table A1.9 shows the share of total employment by sector for Syria from 1991 to 2011. Agriculture was an important source of employment in Syria. However, the share of employment in the sector has fallen from over 28% in 1995 to 14.3% in 2010. Much of this was due to the massive privatisation of state-run farms, as part of the Tenth Five-year Plan (see Alajaty and Anchor, 2018). The decline in the agricultural sector is also the reason for low female participation rates, since it was a major source of female employment (Fortuny and Husseini, 2010).

Table A1.9: Share of total employment by sector, 1991 to 2011

Year	Agriculture	Industry	Services
1991	28.2	25.0	46.8
1995	28.4	30.5	41.1
2000	32.9	26.1	41.0
2005	22.7	27.3	50.0
2010	14.3	31.2	54.6
2011	13.2	31.4	55.3

Sources: World Bank, 2020; ILO, 2021.

A1.3 The post-crisis Syrian education system

As can be seen from Table A1.10, the number of pupils in the 1st Cycle fell by nearly 600,000, between 2010 and 2017. In 2012 and 2013, there were over 2.5 million students. By 2017 there were nearly 1.9 million students. As each grade progresses there are fewer students. For example, in 2010 there were 147,411 fewer students in 4th Grade than 1st Grade, and in 2017 there were 125,390 fewer students.

Table A1.10: Number of 1st Cycle school students, by grade, 2010–17

Year	1st	2nd	3rd	4th	Total
2010	692,933	617,947	573,348	545,222	2,429,450
2011	726,204	639,316	585,721	556,159	2,507,400
2012	730,582	652,710	603,999	565,583	2,552,874
2013	443,230	380,714	356,896	340,161	1,521,001
2014	593,461	464,468	431,780	411,607	1,901,316
2015	572,114	486,782	414,974	395,221	1,869,091
2016	538,345	503,613	456,809	391,459	1,890,226
2017	529,807	494,396	427,959	404,417	1,856,579

Source: Central Bureau of Statistics Syria, *Statistical abstract*, various years.

The number of pupils in the 2nd Cycle fell by 30% from 2.2 million pupils in 2010 (peaking at 2.3 million in 2012) to 1.6 million in 2017, which was an annual average decline of 4.9% (Table A1.11). The largest falls were in the 5th and 6th Grades, which each lost over 170,000 students between 2010 and 2017. Similar to the pre-crisis, the number of students in 9th Grade was higher than 8th Grade. For example, in 2010 there were 356,474 students in 8th Grade, and the following year 2011 there were 379,967 students in 9th Grade. In 2016, there were 288,600 8th Grade students and in the following year, 2017, there were 293,725 students.

Table A1.11: Number of 2nd Cycle school students by grade, 2010–17

Year	5th	6th	7th	8th	9th	Total
2010	534,778	499,240	464,576	356,474	377,354	2,232,422
2011	540,068	510,098	476,362	360,381	379,967	2,266,876
2012	546,226	514,405	473,917	387,433	385,493	2,307,474
2013	326,495	313,718	282,067	253,832	269,733	1,445,845
2014	393,800	377,499	337,830	299,607	329,864	1,738,600
2015	378,119	369,762	344,678	310,528	332,685	1,735,772
2016	369,648	353,686	330,860	288,600	304,921	1,647,715
2017	363,361	323,201	310,506	277,768	293,725	1,568,561

Source: Central Bureau of Statistics Syria, *Statistical abstract*, various years.

In secondary education, the number of graduates in 2017 was similar to those in 2001 and 2002. Figure A1.2 (overleaf) shows that the number of graduates of general secondary school peaked in 2012, with a little over 230,000 students. By 2017, the number of graduates had fallen to a little over 100,000. Despite the decline, notably the number of female graduates was almost 38% higher than male graduates.

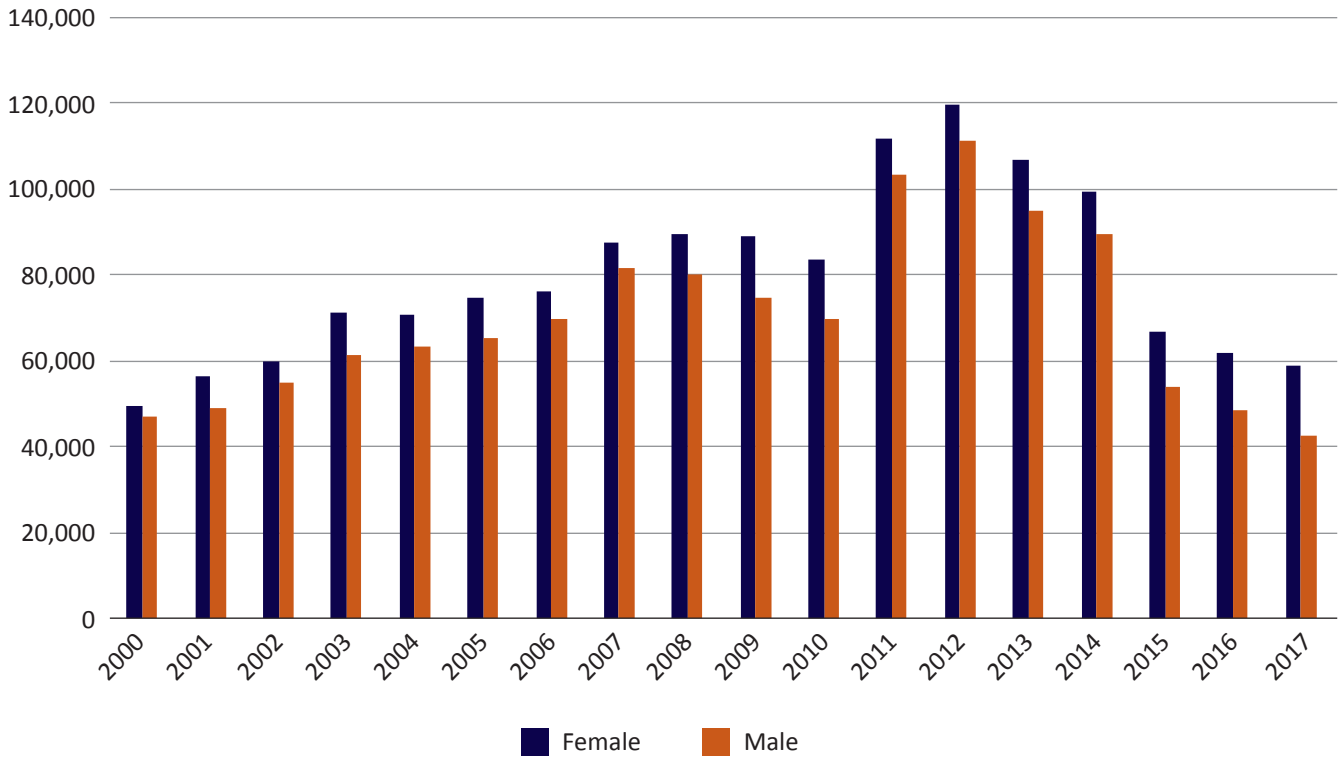

Figure A1.2: Syria number of general secondary school graduates, by gender, 2000–17.
Source: Central Bureau of Statistics Syria, *Statistical abstract*, various years.

After the crisis commenced, the transition rate from primary school to lower secondary school fell to 57% in 2012. The out-of-school rate for primary school-aged children increased to 28% by 2013, and the out-of-school rate for adolescents of lower secondary school age jumped to 38%. The out-of-school rate for upper secondary school age youth increased to 66% in 2013 from a low of 53% in 2012 (Central Bureau of Statistics Syria, various years).

The number of students pursuing vocational education has fallen by about 40% from a peak of 128,675 in 2012 to 79,413 in 2017 (Table A1.12). The number of Commercial students has fallen from a peak in 2012 with nearly 35,000 students to a little over 20,000 in 2017. The Feminine Arts stream has been severely curtailed – falling from nearly 28,131 in 2012 to only 11,312 in 2017. The Industrial stream, which reached nearly 66,000 students in 2012, fell to about 48,000 in 2017.

Table A1.12: Number of vocational education students by stream, 2010–17

Year	Commercial	Feminine Arts	Industrial	Total
2010	28,678	24,345	53,420	106,443
2011	33,628	27,953	61,752	123,333
2012	34,823	28,131	65,721	128,675
2013	22,905	17,096	48,568	88,569
2014	20,975	12,962	44,599	78,536
2015	18,334	10,212	42,596	71,142
2016	19,986	11,589	46,722	78,297
2017	20,148	11,312	47,953	79,413

Source: Central Bureau of Statistics Syria, *Statistical abstract*, various years.

A1.4 Teachers

The Central Bureau of Statistics Syria *Statistical abstract* (various years) only publishes data on the number of technical/vocational teachers. There are no data for teachers in the 1st or 2nd Cycle or General secondary level. Table A1.13 shows that the number of Industrial teachers has declined from 11,321 in 2012 to 9,316 in 2017. The number of Feminine Arts teachers experienced a dramatic loss of 7,270 teachers between 2012 and 2017. The number of Commercial teachers declined by only a few hundred, whereas Agriculture and veterinary, although small in numbers, fell by over 60% between 2012 and 2017. The number of Religious teachers fluctuated quite widely.

Table A1.13: Number of technical/vocational education teachers by stream, 2012–17

Year	Industrial	Feminine Arts	Commercial	Agricultural and veterinary	Oil	Irrigation and drainage	Transport and marine	Religious
2012	11,321	10,959	2,999	417	45	83	25	3,574
2013	9,716	4,019	2,490	323	46	64	25	661
2014	9,832	3,611	2,200	196	45	44	42	661
2015	9,081	324	2,254	123	31	54	38	608
2016	9,398	3,699	2,265	123	62	44	43	2,386
2017	9,316	3,325	2,397	151	67	49	44	427

Source: Central Bureau of Statistics Syria, *Statistical abstract*, various years.

A1.4.1 Regional differences in education services

Al Hessan et al. (2016) describe the different educational systems operating after the crisis in the various regions of Syria (although it is acknowledged that the situation is changing all the time):

- the government-controlled regions
- the opposition-controlled regions
- the Kurdish-controlled regions
- the areas controlled by the Islamic State of Iraq and Levant (ISIL), and
- outside of Syria.

Syrian education in government-controlled regions then was more stable than in the opposition's region because, broadly speaking, these regions are safer. However, as Al Hessan et al. (2016) suggest, the relative stability attracts students, so many schools in these regions have overcrowded classrooms, especially in basic education.

Many of these schools run double shifts to accommodate increasing numbers of students. Teachers at these schools are mostly recruited through public education institutions and their classes follow a fixed timetable, with some additional courses available to support students in achieving higher marks on their exams. For the most part, teachers and students who are enrolled, go to school on a regular basis, except when there have been rising tensions or an incident such as a random bombardment. Some areas in these regions have a large influx of internally displaced persons (IDPs), and many children are out of school (particularly displaced children) for a variety of reasons, including a lack of available learning spaces, a lack of official documentation allowing for children to enrol, etc. (Ministry of Education, 2021). Tertiary education exists exclusively in government-controlled areas.

The Kurdish curriculum offers choices along three branches: (1) a Kurdish branch with all subjects in Kurdish but with Arabic and English as additional languages; (2) an Arabic branch with all subjects in Arabic and with Kurdish and English as additional languages; and (3) a Syriac branch following the same pattern. Though there are some similarities in the choices or content of subjects proposed at each class level between the curriculum of the Government of Syria and the Kurdish curriculum, differences remain significant in both subject offerings and subject content. Also, for example the subject of sciences is not taught in 1st, 2nd and 3rd Grades of Kurdish curriculum, while it is within the choice of subjects offered in the government of Syria curriculum. The Kurdish curriculum is not officially recognised by the Syrian government, which is why some parents oppose it. Furthermore, children taking the Kurdish curriculum are less likely to meet the requirements of the Government of Syria (GoS) official exams. Given that the Kurdish certificates are not recognized by any other entity, large numbers of students need to cross borderlines to take the GoS exams.

There are large numbers of displaced people outside of Syrian borders including those in Turkey, Jordan, Lebanon, Iraq and Egypt. While most of these countries have not signed the 1951 Refugee Convention, for the most part, Syrian children have been allowed to access host country public schools, although many still remain out of school.

One of the major reasons for the increase in out-of-school children is the loss of infrastructure. As mentioned in the introduction to the Appendix 1, data from the Central Bureau of Statistics Syria show that in 2010 there were 17,120 schools in Syria, but by 2017 there were only 10,279, a loss of 6,841 schools (Table A1.14). This is a county-wide loss of 40% of schools. Ar-Raqqa was the hardest hit Governorate loosing over 85% of its schools, followed by Aleppo, which lost over 80% of its schools. Only Tartous managed to increase its number of schools.

The SCPR report (2016) and the Ministry of Education (2021) suggest that in 2014–15 non-attendance rate was highest in Ar-Raqqa and Der-ez-Zor (almost 95%), due to ISIS' decision to close schools under their control. Non-attendance in Aleppo was 74%, rural Damascus 49% and Idlib 48%, which reflected the continuing intensification of military operations. In safer regions, non-attendance rates were Tartous 0%, Damascus 16% and Lattakia 17%. The Out-of-School Children (OOSC) survey published by the Ministry of Education (2021) suggests that OOSC can be found across the country, yet their numbers are particularly elevated in the Northern and North-Eastern governorates. This regional inequality is accompanied by inequality of opportunities, as children become IDPs or refugees. Even in relatively stable regions, many children are forced to work to support families facing economic hardship and deprivation.

Table A1.14: Number of schools by Governorates, 2010 and 2017

Governorates	2010	2017	Change 2011 to 2017
Damascus	609	521	–88
Aleppo	3,384	576	–2,808
RuralDamascus	1,157	923	–234
Homs	1,330	955	–375
Hama	1,600	1,118	–482
Lattakia	890	781	–109
Idleb	1,217	726	–491
AL-Hasakeh	2,126	1,649	–477
Der-ez-Zor	1,086	700	–386
Tartous	902	937	35
AL-Rakka	1,338	197	–1,141
Daraa	816	652	–164
AL-Sweida	386	377	–9
AL-Quneitra	279	167	–112
Total	**17,120**	**10,279**	**–6,841**

Source: Central Bureau of Statistics Syria, *Statistical abstract*, various years.

The number of pupils has also fallen significantly. Table A1.15 (overleaf) shows the number of pupils in the 1st and 2nd Cycles by Governorate in Syria in 2010 and 2017.

Aleppo sustained the largest loss of pupils between 2010 and 2017. There were 813,169 fewer pupils in 2017 than 2010, which is a loss of 75%. Ar-Raqqa had about 50% fewer pupils over the period. However, a number of Governorates in safer regions were able to increase the number of pupils between 2010 and 2017. These include Lattakia, Al-Hasakeh and Tartous. Deir-ez-Zor also saw an increase in the number of pupils. In the early parts of the crisis, it was one of the few Syrian Government strongholds in eastern Syria, but was captured by Islamic State militants in 2015, and had a huge drop in pupils due to ISIS' decision to close schools under their control. Deir-ez-Zor was retaken by the Syrian armed force more recently, which is the reason for the increase in the number of students. Al-Sweida has also seen an increase in the number of pupils, as it is one of the cities held by the government forces during the conflict. Overall, there were well over one million fewer pupils in Syria by 2017.

Table A1.15: Number pupils in the 1st and 2nd Cycle by Governorate, 2010 and 2017

Governorate	2010	2017	Change 2010 to 2017
Damascus	316,100	288,561	–27,539
Aleppo	1,087,368	274,199	–813,169
Rural Damascus	522,360	467,463	–54,897
Homs	389,193	283,212	–105,981
Hama	367,631	320,972	–46,659
Lattakia	173,916	214,152	40,236
Idleb	372,312	210,350	–161,962
AL-Hasakeh	326,038	377,631	51,593
Der-ez-Zor	333,570	358,003	24,433
Tartous	138,350	177,592	39,242
AL-Rakka	230,439	117,387	–113,052
Daraa	238,776	178,555	–60,221
AL-Sweida	61,957	81,522	19,565
AL-Quneitra	103,862	75,541	–28,321
Total	**4,663,882**	**3,427,157**	**–1,236,725**

Source: Central Bureau of Statistics Syria, *Statistical abstract*, various years.

The 2021 OOSC survey published by the Ministry of Education (2021) lists some of the other reasons for children not attending schools:

- financial restrictions and unaffordability to pay for school transportation or stationery
- boys must help generate income for the family
- community social norms on education for adolescent girls, or education for children with disabilities, and
- schools too far away for children to be reached safely, or unaccommodating school environment.

The Joint Education Needs Assessment (JENA) found that the reasons for children dropping out of school included: the frequent displacement; no nearby schools; no acknowledged certificates issued by the schools; the limitations of education, which doesn't secure job opportunities by their perspective; schools are gender-mixed, and parents do not allow their children to study there; and having no one in their family to help them do their homework and follow up on their educational level (IMU, 2019).

Factors that would contribute to a return to education included: the provision of a safe and suitable educational environment (suitable schools equipped with all educational supplies); a mechanism for recognizing the certificates issued by the schools or link them to universities at which students can further their higher education; support for their families; having single-sex schools (separate schools for female students and other schools for male students); and provision of special classes for students lagging behind to provide accelerated learning for them so they can catch up with their peers in the grades commensurate with the ages of out-of-school children.

A1.4.2 School-aged Syrian refugee children and education

The data from the Central Bureau of Statistics Syria (various years) includes children in Syria. However, since the outbreak of conflict, millions Syrian children have become refugees in neighbouring countries. Table A1.16 shows that as of December 2018 there were over two million children in five neighbouring countries – Turkey, Lebanon, Jordan, Iraq and Egypt. Turkey had over one million or 50% of the children, followed by Lebanon which had 666,491 children. Fifty-five per cent of the children are in formal education programmes and a further 6% are in non-formal education. Unfortunately, this leaves 39% of the refugee children receiving no formal or non-formal education. Lebanon had the largest percentage of children with no schooling at 46% and Egypt the least with only 8% of children receiving no schooling.

Human Rights Watch (n.d.) indicates that host countries have taken generous steps to increase enrolment, such as offering free public education and opening afternoon 'second shifts' at schools to accommodate more children. But barriers to education include issues such as child labour, enrolment requirements, language difficulties, and a lack of affordable transport. Children with disabilities and secondary school-age children are at particular risk. While 80% of Syrian refugee

children living in camps have a chance to attend formal education, only a small number of children are attending Turkish schools. A study by Kuçuksuleymanoğlu (2018) found that language problems impeded both educational achievement and integration (making social cohesion difficult), but this could be ameliorated through non-formal education.

Overall, problems with education faced by Syrian refugee children included language barriers, cultural problems and teachers poorly equipped to address the stress due to the trauma experienced by children suffering the effects of war (Pelin and Ozge, 2018; Aydin and Kaya, 2019). In addition to these problems, Hattar-Pollara (2019) found that for Syrian girls in refugee camps in Jordan, access to education was further impeded by the complex interplay of patriarchy, tradition, and religious practices, combined with the added vulnerabilities of protracted warfare displacement. This exposed them to even greater health risks including coercion into early marriage. The study found that repeated exposure to threats and physical abuse seem to be the mechanisms that reinforce the girls' perceived gender-based vulnerabilities, submissiveness and educational truancy.

Poverty and dwindling financial means are making it almost impossible for families to get by in these countries. In a recent study conducted by UNICEF Jordan (UNICEF, 2017), more than 85% of refugees outside the camps – in host communities – live in poverty, struggling to meet their basic needs, including providing education for their children (Table A1.16).

Table A1.16: Refugee education snapshot, December 2018

Host country	Total number of children	Number of children in formal education	Number of children in only non-formal education	Number of children in education (either formal or non-formal)	Number of children out of formal and non-formal education	% of children out of formal and non-formal education
Turkey	1,047,536	645,140	17,727	662,867	384,669	37%
Lebanon	666,491	290,102	67,456	357,558	308,933	46%
Jordan	235,616	134,121	17,575	151,696	83,920	36%
Iraq	66,919	29,730	16,629	46,359	20,560	31%
Egypt	47,507	42,557	1,269	43,826	3,681	8%
Total	**2,064,069**	**1,141,650**	**120,656**	**1,262,306**	**801,763**	**39%**

Source: No Lost Generation (2019).

A1.5 Conclusion

Up until 2011, the prior decade had been a period of substantial progress for the Syrian educational system. Syria had achieved near universal primary education enrolment and a high rate of completed secondary education. This was supported by a strong economy growing at about 4.5% per annum.

Unfortunately, the full benefits of this expansion in education were not captured by the economy because of low participation rates in the labour force, especially for women. For various reasons, the increasingly credentialed workforce did not readily find avenues of employment. UNICEF suggests that unemployment rates tended to increase with education level, particularly for women, and are highest of all for female university graduates (UNICEF MENA, 2017). The growing number of 'educated unemployed' suggests weak links between the education and training system, and the labour market. This pattern was reproduced across the MENA region and which contributed to low estimates of the economic returns to education (Tzannatos et al., 2016). The link between education and more productive employment is critical to the generation (and therefore modelling) of economic benefits. We will need to better understand these linkages in Syria.

Since the crisis, the educational infrastructure has been significantly degraded, the country has lost many teachers and a high proportion of pupils are out of school. The impact of this has been highly variable with some governorates hardly affected and others where the losses of schools has exceeded 85% (Al-Rakka). The number of 1st and 2nd Cycle pupils has fallen from 4.66 million in 2010 to 3.43 million in 2017. Of this reduction in pupils of 1.24 million, over 800,000 were from Aleppo. Some two million children are surviving in refugee camps, sometimes in school, but about 40% are not. In any recovery program, a significant proportion will need to be re-accommodated, and their lost years of education remedied.

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Appendix 2: The economy and industry structure

A2.1 Pre-crisis Syria

A2.1.1 Structure of the economy

During the period 2001–2010, the Syrian economy had achieved an average growth rate of 4.45% in GDP, in addition to the following: a decrease in the inflation rate, public debt, and deficit in the governmental budget; an improvement in industrial exports due to the decline in oil exports; and the unemployment rate remaining stable at 8% (SESS, 2018).

The Syrian economy had faced significant restructuring since the early 1990s (see Figure A2.1), with the share of employment in agriculture declining, while it increased in manufacturing, but much more significantly in the services sector. The services sector employed over 46% of the workforce in 1991, but this share had increased to 54.6% in 2010 (Figure A2.1). In 1991, agriculture employed 28.2% of the workforce, but this share had declined to 14.3% by 2010. Industry employed 25% of the workforce in 1991, but this share had increased to 31.2% by 2010.

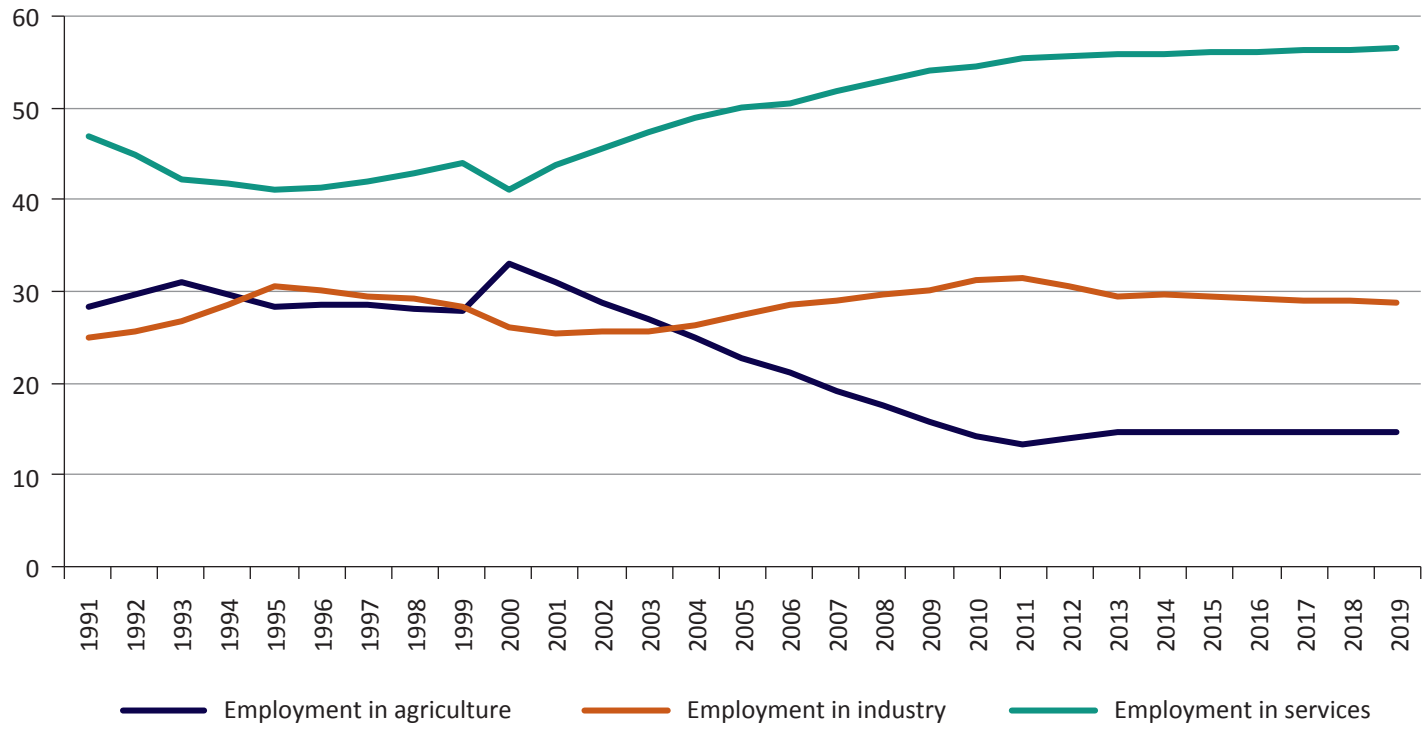

Figure A2.1: Syria share of employment, by industry sector, 1991–2019. Source: World Development Indicators (World Bank, 2020).

The informal sector is a large employer in the Syrian economy. In 2010, it accounted for 65.6% of total workers, with the remaining 34.4% in the formal sector (SESS, 2018). Workers in the informal sector are classified as follows: 16% in trade, hotels and restaurants, 14% in agriculture, building and construction, 11% in industry, 5% in transport, storage and communications, 4% in services, and 2% in finance, insurance and real estate. The breakup of workers in the informal sector are mostly aged 20–39 years and are primarily primary-school holders (SESS, 2018). Most work in small or micro enterprises. Small, medium and micro enterprises (SMMEs) in Syria account for more than 90% of the total employment and investment of the Syrian private sector (SESS, 2018). SESS (2018) indicates that most have fewer than 10 workers employed in trade.

A2.1.2 Net domestic product

As Table A2.1 (overleaf) indicates the share of agriculture in net domestic product declined from 25.2% in 2000 to 16.3% in 2010, while that of mining, quarrying and manufacturing declined from 29.1% to 22.8% in the same period, but that of the services sector increased from 42.4% in 2000 to 57.3% in 2010.

Table A2.1: Syria sector share of net domestic product at market prices, base year 2000, million SP

	2000	2005	2010	% rate of growth since 2000
	Percentage share of total			
Agriculture, forests and livestock	25.2	23.3	16.3	0.7%
Mining, quarrying and manufacturing	29.1	23.2	22.8	2.6%
Building and construction	3.3	4.1	3.6	6.1%
Services	42.4	49.4	57.3	8.4%
Total million SP	**867,121**	**1,112,058**	**1,437,661**	**5.2%**

Source: Central Bureau of Statistics Syria (2017), National accounts, at http://cbssyr.sy/yearbook/2017/Data-Chapter15/TAB-15-15-2017.pdf

Agriculture

Some of the decline in the contribution from the agricultural sector was due to the catastrophic drought thought to be the driest on record (Cook et al., 2016) Syria experienced between 2006 and 2011, leading to a massive shift of population to the cities. The water scarcity and its effect on food production necessitated the adoption of modern irrigation techniques. The Syrian Government announced a new strategy to modernize the use of groundwater in 2005, but it was only implemented from 2008 to 2011 (Bayram and Gok, 2020).

A SCPR report (2019) indicates that the results of the food security index show high levels of food insecurity in Syria, with the index falling by 8% between 2014 to 2018. The results also indicated significant disparity between governates, with the greatest declines in Al-Hasakeh, Ar-Raqqa, Aleppo, Quneitra, Der-ez-Zor and Idleb. The report indicates that agricultural GDP decreased by about 50% compared to 2010, and both animal and plant products declined by 49% and 51% respectively. Much of the deterioration in agricultural production was due to adverse climatic conditions rather than conflict.

Mining and manufacturing

Daher (2019) indicates that:

> … the level of public and private investment in manufacturing industries has constantly decreased since the early 1990s as a result of an acceleration of economic liberalisation policies … In 2009, the manufacturing sector contributed only 6.9% of GDP, while it employed around 15% of the Syrian workforce. (p3)

In comparison, manufacturing represented 18.1% of GDP in Jordan, 15.6% in Egypt, 12.6% in the UAE, 9.1% in Lebanon and 6.8% in Qatar.

Table A2.2 (overleaf) indicates that manufacturing contributed just over 53% of gross output of the total industrial sector in Syria, and mining and quarrying contributed 13%. The chemicals and petroleum is the most important sector within manufacturing, with oil refining the dominant activity (Owen and Arbach, 2010).

The food, beverages and tobacco sector is the second most important sector, contributing almost 20% to the output of the manufacturing sector, and mostly by the private sector. Textiles, clothing and footwear represented 14% of manufacturing, and metal products and engineering 10%.

Albaladejo and Lall (2004) argue that Syria became increasingly dependent on oil exports in the 1990s, but then the share of refined and processed products in oil exports declined (from 29% in 1990, worth $440 million, to 9% in 2000, worth $330 million). Alajaty and Anchor (2017) indicate that oil formed 70% of Syrian exports and contributed around 50% of fiscal revenues between 2001 and 2004; but subsequently oil production fell and being unable to meet demand, Syria became a net oil importer for the first time in 2006 (PRS, 2009).

In 1985, the public industrial sector employed around 140,000 workers, almost 40% of the country's industrial workforce. By 2009, the public manufacturing sector was still a significant actor, but the private sector was the largest employer (Daher, 2019). The increase in private sector investments was in pharmaceuticals, food processing and textiles, and the public sector retained interest in textiles, chemicals, engineering and cement (see Table A2.3, overleaf). In the second half of the 2000s, Iraq, became Syria's largest single export destination with sales of $2.3 billion in 2010 out of a total of $12.3 billion (Daher, 2019).

The pharmaceutical industry had flourished in Syria. At the end of the eighties, the industry in Syria just covered 6% of the national needs, but with government support, it managed in less than 20 years to finally cover almost 90% of the national needs and exported drugs to around 52 Arabian countries (Kutaini, 2010). Kutaini also indicates that exports of drugs from Syria were worth around $150 million per year and provided jobs for 17,000 Syrian people, out of which around 85% were women.

Table A2.2: Gross output of the Syrian industrial sector at factor cost, 2006, at current prices in SP billions

	SP billions	% of manufacturing	% of total industry	SP billions	SP billions
				Private	Public
Food, Beverages and Tobacco	126.2	20	10.7	78.5	47.7
Textiles, Clothing and Leather	90.1	14	7.6	68.3	21.9
Wood and Furniture	34.8	6	2.9	34.5	0.3
Paper, Printing and Publishing	10	2	0.8	8.9	1.1
Chemicals and Petroleum	245	39	20.7	22.4	222.6
Non-metallic Minerals	51.8	8	4.4	36.2	15.5
Basic Metals	10.23	2	0.9	6.9	3.4
Metal Products and Engineering	60.4	10	5.1	51.2	9.2
Miscellaneous	1.6	0	0.1	1.6	0
Total Manufacturing	630.1	100	53.2	308.5	321.6
Mining and Quarrying	159.3		13.4	2.8	456.5
Electricity and Water	95.1		8.0		95.1
Total for sector	**1,184.5**		**100.0**	**311.3**	**873.2**

Source: Owen and Arbach (2010, p10).

Table A2.3: Structure of Syrian manufacturing, 2009

2009	Private manufacturing sector*	Public manufacturing sector
Number of establishments officially registered	127,000	96 enterprises organised in six public institutions
Total capital value	370 billion SYP (around US$7.4 billion)	510 billion SYP (around US$10.2 billion)
Main fields of investment/production	Pharmaceuticals Food processing Textiles	Textiles Chemical Engineering Cement
Structure of the sector	Small, medium and large enterprises: Small enterprises (with an average of three workers): 76% of total employment in the private industrial sector with an average capital investment of 2.5 million SYP (around US$50,000). Medium-sized enterprises (with an average of six workers): 23% of employment, with an average capital investment of 6.2 million SYP (around US$124,000). Large enterprises (with an average of 51 workers): less than 1% of employment, with an average capital investment of 223 million SYP (around US$4,460,000).	Eight public institutions: > The General Organisation for Textile Industries: 26 branch companies employing about 44% of the workforce in the public industrial sector > The General Organisation for Chemical Industries: 13 companies employing 18% of the workforce > The General Organisation for Engineering Industries: 13 companies employing 15% of the workforce > The General Organisation of Food Processing Industries: 22 companies employing 7.6% of the workforce > The General Organisation for Sugar: Nine companies employing 5% of the workforce > The rest: the General Establishment for Cement and Building Materials, the General Organisation for the Ginning and Marketing of Cotton, and the General Organisation for Tobacco.

Note: * Lahham (2010), cited in Daher (2019). Source: Daher (2019, p5).

Syria is one of the few Arab countries to have the entire textile industry production chain (Lahham, 2009). The industry was nationalised in the mid 1960s to help expand and modernise the sector. Owen and Arbach (2010) indicate Syria was a significant exporter of cotton, yarns and synthetic yarns. Lahham (2009) indicates that in May 2007, the industrial modernization and development program was launched in Syria in cooperation with the United Nations Industrial Development Organization (UNIDO) and funded by the Italian government in the amount of 2.2 million euros to enhance the competitiveness of the Syrian industry.

In 2009, the government created four industrial cities to provide the necessary infrastructure and services for the establishment of industrial projects (Mohsen et al., 2015; Daher, 2019). These were constructed close to major transport networks in Aleppo (Sheik Najjar), Homs (Hessia), Damascus (Adra) and Der-ez-Zor.

The energy sector

In 2010, there were 14 Syrian power plants, 11 of which operated with fossil fuels and the remaining three of which depended on hydro energy (Hatahet and Shaar, 2021), with the combined-cycle turbines producing 48.9% of the total electricity supply, compared with 44.5% from steam turbines and 5.6% from hydro.

Owen and Arbach (2010) indicate that revenues from exporting oil and petroleum products accounted for about 30% of total foreign currencies earned and financed around 40% of the state budget.

Construction

The share of employment from the construction sector increased from 11.8% in 2000, to 14.1% in 2005 and to 16.2% in 2010.

Owen and Arbach (2010) indicate that there was an increase in the number of private companies in the construction industry, but the large state-owned companies, through their sheer size managed to get access to large projects, particularly government projects. Private companies were competitive in some infrastructure projects and tourism, as they were flexible, favoured by international donor agencies, and private banks were more willing to fund them than the state-owned banks had been in the past.

Services

As Table A2.4 indicates, in 2000, wholesale retail trade and repair was the most important sector of the services sector representing 36.1% of the services' net domestic product, and this share increased in 2005, before declining in 2010. Transport, storage and communications is the next most important sector, but its share of net domestic product also declined by 2010.The finance, insurance and real estate, and government services, along with social and personal services were increasing their share in that time period.

Table A2.4: Syria net domestic product at market prices, by services sector, base year 2000

	2000	2005	2010	% rate of growth since 2000
	Percentage share of total			
Wholesale, retail trade and repair	36.1	42.3	35.8	8.3%
Transport, storage and communications	29.0	21.4	21.8	5.4%
Finance, insurance and real estate	8.8	9.1	9.5	9.2%
Social and personal services	5.6	5.4	6.9	10.8%
Government services	20.4	21.7	25.8	11.0%
Non-profit institutions	0.1	0.1	0.1	8.3%
Total	**100.0**	**100.0**	**100.0**	**8.4%**

Source: Central Bureau of Statistics Syria (2017), National accounts, at: http://cbssyr.sy/yearbook/2017/Data-Chapter15/TAB-15-15-2017.pdf

Wholesale, retail trade and repair

Small, medium and micro-sized enterprises represent a significant proportion of this sector. The SESS (2018) indicates that 63% of employees were in establishments with less than two employees in trade, 22.7% were in enterprises with five to nine employees, 6.7% were in trade, and 6.7% in restaurants and hotels. This sector also encompasses the tourism sector.

The retail sector in Syria has long been characterized by *souqs* or bazaars, which have been important tourist destinations. Owen and Arbach (2010) indicate that in 2010, the introduction of shopping malls had just commenced in Syria, with several located around Damascus, all of which were Syrian-owned, with possible finance provided by overseas interests.

Tourism

Alhammoud et al. (2019) recount how Syria had been one of the most important tourist destinations in the Middle East and in the world, because it had all the elements of tourism, ancient archaeological and religious monuments, the oldest urban areas in the world, and picturesque nature of the sea and deserts, mountains and rivers, all located at the point of contact between Asia and Europe. The study indicates that the number of tourists arriving in Syria reached about 8.5 million in 2010, which was equivalent to 40% of the population of Syria.

Transport, storage and communications

The World Bank (2017) indicates that before the crisis, Syria's roadway network expanded rapidly to keep pace with the fast-growing economy and population increasing by 10%, of which 70% was asphalted. The number of registered vehicles almost doubled, from 1.2 million in 2006 to 2.1 million in 2010 (p34).

Owen and Arbach (2010) indicate that the telecommunications sector had grown by nearly 21% per annum over the period 1993 to 2003 compared to national production, which grew by just under 4.5%. The sector's contribution to GDP had grown from less than 1% in 1992 to nearly 4.2% in 2003. The state-owned Syrian Telecommunications Establishment (STE) had an exclusive right to provide communications services in Syria.

In 2000, two private sector companies, Syriatel and Areeba (later called MTN) were each given a 15-year Build, Operate and Transfer (BOT) contract to set up and operate the cell phone networks, and progressively increase their contribution to the government over the period. The government had the right to introduce a third provider after seven years (Owen and Arbach, 2010). The introduction of the cell phone and internet had a major impact on STE's income, which had to provide the costly nationwide service to small numbers of people in rural locations. In 2010, the government offered tenders for a third mobile operator, but despite several bids, any deals had been postponed (Advani, 2020).

Syriatel, Syria's largest mobile operator has become highly profitable, reporting a net profit of SYP 59 billion in 2019, and is said to be the biggest private company in Syria (Advani, 2020). By 2007, the number of subscribers to the two operators increased to 4.6 million from just 400,000 in 2002. Syriatel alone grew by 31.5% in 2005 and increased profits by over 20% over the subsequent years. In 2006, the sector accounted for 3.7% of Syria's total GDP and paid approximately SYP 21.6 billion (US$430 million) in license fees and SYP 17.6 billion (US$350 million) in taxes, which were estimated to be equivalent to roughly 9% of the government's budget revenue and were a vital source of income for the state as oil revenues began to decline. By 2009, both companies paid SYP 41.1 billion – almost US$900 million at the time – in fees to the government, in addition to taxes.

Compared to telecommunications, growth in the information technology sector has been slower due to slow uptake by both government and businesses (Owen and Arbach, 2010). The Syrian Computer Society (SCS) provided internet access to the World Wide Web in 2001, and in 2003 there were an estimated 110,000 internet accounts in Syria; but because of multiple usages, the number of users was estimated at 700,000, and it hasn't been very successful in introducing new value-added services. Owen and Arbach (2010) also indicate that software development has been slow too, with most importing hard and software.

Finance, insurance and real estate

As indicated in Table A2.4, net product for finance, insurance and real estate increased from 8.8% of the services sector in 2000 to 9.5% by 2010, following substantial restructuring of the finance and banking sector with net product growing at 9.2% per annum over the period.

In 2001, privately owned banks were permitted, leading to 12 private banks opening, in addition to six state-owned banks and three Islamic banks (Lord, 2010). The Damascus Securities Exchange was established in 2009. The *Investment Banks Law 2010* allowed for the creation of private investment banks, which could also have up to 60% foreign ownership with holdings by individuals limited to no more than 5% of any institution.

In 2010, the central bank increased the limit on foreign stakes in privately-owned Syrian banks to 60% from the previous 49%, but major banks from the west were mostly absent from the Syrian market (Lord, 2010).

Government services

Government services contribution to net product from the services sector increased from 20.4% in 2000 to 25.8% in 2010 (see Table A2.4). In 2009, 5.1% of Syria's GDP was allocated to education (WENR, 2016). In 2010, more than 400,000 were employed by government in education, representing 34% of total government employment (Central Bureau of Statistics Syria, 2017).

Up until the beginning of the crisis in 2011, the Syrian educational system expanded with increasing enrolment rates. But participation rates were low (43.5%), especially for women. The returns to education are generally low in the Arab region (World Bank, 2017; UNICEF MENA, 2017). Tzannatos et al. (2016) indicated that an additional year of schooling adds around 5.4% to earnings compared to the world average of 7%, and sharply decreases as youth reach higher education levels.

Health was the second largest employer of government services. In 2010, 94,622 people were employed in health by the government, representing about 9% of total government employment, although a higher proportion of government employees were female (13.3%) (Central Bureau of Statistics Syria, 2017).

Kheralla et al. (2012) indicate that health indicators improved considerably in Syria since the 1970s, according to data from the Syrian Ministry of Health. Life expectancy at birth increased from 56 years of age in 1970 to 73.1 years of age in 2009 (Ministry of Health, 2009); infant mortality dropped from 132 per 1,000 live births in 1970 to 17.9 per 1,000 in 2009; under-five mortality dropped significantly from 164 to 21.4 per 1,000 live births; and maternal mortality fell from 482 per 100,000 live births in 1970 to 52 in 2009. They also state that Syria was in epidemiological transition from communicable to non-communicable diseases with the latest data showing that 77% of mortalities were caused by non-communicable diseases (WHO, 2009). Total government expenditure on health as a percentage of GDP was 2.9 in 2009 (WHO, 2020).

Cardiovascular disease (CVD) and type II diabetes mellitus were the main contributors to morbidity and mortality (Rastam et al., 2012), with half of all deaths in Syria occurring before the age of 65 (Maziak et al., 2007). As in other countries, much of the burden of CVD in Syria is attributed to adverse trends in risk factors such as smoking, obesity, blood pressure, cholesterol and diabetes (Rastam et al., 2012; Al Ali et al., 2013). By 2010, the private sector offered a wide range of ambulatory and secondary healthcare services in nearly 400 small hospitals and more than 12,000 pharmacies and clinics (Ahmad et al., 2015).

A key development has been the introduction of public–private partnerships in the hospital sector, where up to 20% of major public hospitals were transformed after 2008 into 'autonomous organisations', with some degree of independence from the Ministry of Health control (Dashash, 2009, p10).

A2.2 Post-crisis Syria

The protracted crisis in Syria, along with rising inequality and economic hardships worsened by the COVID-19 pandemic and then further by both earlier sanctions and those imposed by the *Caesar Act*, have all had an enormous impact on the Syrian economy. Various media reports also confirm that the economic crisis caused by the political crisis was exacerbated firstly by the COVID-19 pandemic, and then by a second round of US sanctions against the Government of Syria (Ozalp, 2020; Center for Global Policy, 2020; Al-Khalidi, 2020). Gobat and Kostial (2016) detail the impact of the crisis in Syria which included a massive reduction in the population. They estimate that it stood at 22.1 million in 2010, and was reduced by at least 20%, with more than 250,000 killed and more than 800,000 injured, with 2.4 million having fled to neighbouring countries and almost 900,000 refugees having declared political asylum in the EU by December 2015. With 4.9 million refugees, 6.6 million internally displace persons (IDPs), and nearly 250,000 asylum-seekers, an estimated 11.7 million Syrians were displaced by the end of 2015, and seeking protection within Syria or abroad (UNHCR, 2016, p6). By October 2020, there were 11.06 million people in need of humanitarian assistance including over 6 million IDP, due to vulnerabilities stemming from displacement, exposure to hostilities and limited access to basic goods and services (UNHCR, 2020, p2). In 2020, over 371,600 IDPs chose to return to their places of origin (p2). The World Food Program (WFP) Syria Emergency Dashboard indicates that in Syria there were: 9.3 million people food insecure; 2.2 million people at risk of food insecurity; 6.7 million IDPs (WFP Syria 2020b); 5.6 million refugees in neighbouring countries (UNHCR, 2020); 12,600 children under five acutely malnourished; and 38,200 children under five moderately malnourished (SMART Survey, 2019) (WFP Syria, 2020a). By the end of October, food prices had increased by 247% year-on-year, and were 22.8 times the five-year pre-crisis average (WFP Syria, 2020b). The dramatic increase in food prices has contributed to the increase in number of Syrians living with food insecurity

There was also widespread destruction of the economic infrastructure, particularly in sectors such as housing, manufacturing, electricity and power generation, which implies a significant transformation in productive capacity (UN ESCW, 2020a). Overall, electricity production capacity fell from nearly 9,344 MW in 2010 to 5,150 in 2021 (Ghanem, 2021). Newspaper reports suggest that electricity production decreased from 49 billion kilowatt-hours in 2011 to about 19 billion kilowatt-hours in 2016, but has since has returned to growth, reaching 27 billion kilowatt-hours in 2020 (Muhammed, 2021).

A World Bank (2017) report indicates that 7% of housing stock was destroyed due to the conflict and 20% partially damaged. It also estimated that from 2011 until the end of 2016, the cumulative losses in GDP were at US$226 billion, about four times the Syrian GDP in 2010. The report further estimated that about 53% of education sector facilities were partially damaged and 10% destroyed.

The destruction of the educational and health infrastructure has had drastic consequences for an entire generation of school-age children in the country, as well as increasing inequalities and fragmentation of the social structure. There has also been a massive impact on the mental health of children, which is discussed in detail in Chapter 3 on mental health.

Disruptions in economic networks, human capital and connectivity have greatly magnified the effects of physical damage on public service delivery (World Bank, 2017).

The mental health situation was worsened by the blanket economic sanctions, which have negatively affected the economy and had an impact on ordinary people, diminishing the capacity to fulfil basic needs and meet urgent humanitarian concerns. Sanctions led to a dramatic fall in fiscal revenues. By the end of 2011, the Central Bank had already used more than a third of its foreign currency reserves, which fell to US$14 billion by December 2011 (*The Syria Report*, 2011a).

The crisis has also seen administrative control of Syria fragmented. According to Mehchy et al. (2020) the Syrian government controls the majority of the country (around 65–70%), while the Kurdish-led Self Administration controls around 20–25% of the country. The remainder in the northeast is held by various factions. Non-government areas have seen the rise of de facto authorities which have seized the physical assets of state institutions and repurposed them to provide similar functions, but under rival governing structures. Despite their differences, there is cooperation between the government and de facto authorities to continue to supply some services (Mehchy et al., 2020).

Sanctions have complicated international transactions with state entities, including the Central Bank, the Commercial Bank of Syria and the Syrian Petroleum Company being blacklisted and the US Treasury banning the supply of any type of services to the Syrian banking sector, forcing Syrian banks to turn to non-dollar transactions. The EU and the US also sanctioned a large number of Syrian individuals, including many of the country's most prominent businessmen. Al-Khalidi (2020) reported that the sanctions imposed by the US via the Caesar Act are expected to further deter investment in Syria and have an impact on the reconstruction effort leading to economic conditions worsening further.

During the period 2010–2016, the economy of the Syria declined significantly (see Table A2.5) at an annual average rate of 13% per annum between 2010 and 2016, with the largest decline in the mining, quarrying and manufacturing sector, which declined at an annual average rate of 26%. The share of the services sector has increased from just over 57% in 2010 to almost 70% in 2016. The share of agriculture has increased somewhat, while declining at an annual average rate of 12%, and net product from the building and construction sector, as well as services, have each been declining at an annual average rate of 10% per annum between 2010 and 2016. Figure A2.1 indicates that employment in the agricultural sector declined heavily from 2001 to 2011, but has remained stable since then, while it has been declining in the manufacturing industry since 2011, but increasing in the services sector.

Table A2.5: Syria sector share of net domestic product at market prices, base year 2000, million SYP

	2010	2012	2016	% rate of growth since 2010
Agriculture, forests and livestock	16.3	18.6	17.3	–12%
Mining, quarrying and manufacturing	22.8	13.4	8.4	–26%
Building and construction	3.6	3.0	4.4	–10%
Services	57.3	64.9	69.8	–10%
Total	**1,437,661**	**1,088,379**	**612,483**	**–13%**

Source: Central Bureau of Statistics Syria (2017), National accounts, at http://cbssyr.sy/yearbook/2017/Data-Chapter15/TAB-15-15-2017.pdf

The *Statistical abstract* (Central Bureau of Statistics Syria, 2017) provides share of employment by various economic activities, although it is not clear what the services sector comprises. Table A2.6 suggests that it comprises mainly of government services, which include, education, health and armed forces. Of the total, services represented 46.3% of total employment in 2015.

Table A2.6: Syria distribution of employees, 15 years and over, by economic activity sectors, selected years

	2010	% share of total	2013	% share of total	2015	% share of total	% rate of growth since 2010
Agriculture	724,013	14.3	481,675	12.7	247,713	9.5	–19.3%
Industry	830,496	16.4	383,851	10.1	278,337	10.7	–19.6%
Building and construction	820,198	16.2	459,976	12.1	221,172	8.5	–23.1%
Trade, hotels and restaurants	902,417	17.9	606,469	15.9	419,887	16.1	–14.2%
Transport, storage and communications	393,456	7.8	278,430	7.3	171,720	6.6	–15.3%
Finance, insurance and real estate	132,876	2.6	123,695	3.3	62,382	2.4	–14.0%
Services	1,251,001	24.8	1,480,371	38.9	1,209,984	46.3	–0.7%
Total	**5,054,457**	**100.0**	**3,804,552**	**100.3**	**2,611,195**	**100.0**	**–12.4%**

Source: Central Bureau of Statistics Syria (2017), p56, at http://cbssyr.sy/yearbook/2017/Data-Chapter3/TAB-7-3-2017.PDF

Table A2.7 demonstrates that most of the employment in the services sector is in the public sector (84.5%), whereas the other sectors related to the services industries are in the private sector: trade, hotels and restaurants (97.6%); transport, storage and communications (76.3%); and finance, insurance and real estate (74%).

Table A2.7: Syria distribution of employment, 15 years and over, by economic activity sectors, public, private or other, 2017

	Numbers				Proportions			
	Public	Private	Others	Total	Public	Private	Others	Total
Agriculture	7,929	379,532	866	388,327	2.0	97.7	0.2	10.5
Industry	81,175	337,279	2,373	420,827	19.3	80.1	0.6	11.4
Building and construction	28,799	282,203	1,865	312,867	9.2	90.2	0.6	8.5
Trade, hotels and restaurants	12,877	629,749	2,797	645,423	2.0	97.6	0.4	17.5
Transport, storage and communications	48,281	162,001	2,151	212,432	22.7	76.3	1.0	5.8
Finance, insurance and real estate	27,920	82,700	1,175	111,796	25.0	74.0	1.1	3.0
Services	1,350,486	229,202	18,502	1,598,189	84.5	14.3	1.2	43.3
Total	**1,557,467**	**2,102,666**	**29,729**	**3,689,862**	**42.2**	**57.0**	**0.8**	**100.0**

Source: World development indicators (World Bank, 2020).

As Table A2.8 (overleaf) indicates, net domestic product in the services sector declined at a rate of 10% per annum since 2010, with the largest decline in the wholesale, retail trade and repair sector, which declined at a rate of 25% per annum, and its share of net product from services declining from almost 35.8% in 2010 to 12.6% in 2016. There was also a strong decline in the finance, insurance and real estate sector of an average of 20% per annum between 2010 and 2016, and its share of the services sector declined from 9.5% in 2010 to 4.8% in 2016. The government services sector's contribution to net product from the services sector increased from 25.8% in 2010 to almost 47% in 2016 (see Table A2.8). Government services includes government-run educational establishments, the public health service, the military, as well as local and central government.

Table A2.8: Syria net domestic product at market prices by services sector, base year 2000, selected years, million SR

	2010	2012	2016*	% rate of growth since 2010
Wholesale, retail trade and repair	35.8	30.3	12.6	–25%
Transport, storage and communications	21.8	23.6	26.4	–7%
Finance, insurance and real estate	9.5	13.0	4.8	–20%
Social and personal services	6.9	4.8	8.6	–7%
Government services	25.8	28.3	47.0	–1%
Non-profit institutions	0.1	0.1	0.5	14%
Total services	**823,949**	**706,449**	**427,734**	**–10%**

Note: * Primary data. Source: Central Bureau of Statistics Syria (2017), National accounts, at http://cbssyr.sy/yearbook/2017/Data-Chapter15/TAB-15-15-2017.pdf

A2.2.1 Agriculture

The specific impacts of the crisis in Syria on agriculture and rural livelihoods of thousands of people in Syria have been detailed by FAO (2016), Bayram and Gok (2020) and others, and include:

- disruption in the supply of agriculture inputs
- sharp decrease in crop production
- significant reduction in livestock number
- US$80 million loss to the fisheries sector
- damage and sometimes irreversible destruction of physical assets
- widespread insecurity and the destruction of infrastructure (roads, electricity networks), and
- displacements and migration of rural populations.

Syria formed a significant trade route for agricultural and food exports from Jordan, Lebanon and Iraq to the Black Sea markets, and from Lebanon, and Turkey to Jordan and the Gulf (Byram and Gok, 2020). The crisis has had an adverse impact on the trade route and new export routes have emerged, changing trade volumes and flows (RFSAN et al., 2016). Crisis-related disruptions and international sanctions imposed on Syria saw exports decline by 92% between 2011 and 2015 (Byram and Gok, 2020). Aita (2020) specifically indicates that the scarcity and high cost of fuel for pumped agricultural irrigation due to the sanctions resulted in a major reduction of irrigated planted land and crop production, which significantly affected food security in the country, as agriculture became highly dependent on volatile rainfall.

The UNCT Syria (2020) assessed that the contribution of agriculture to GDP growth due to the COVID-19 pandemic was likely to decline by 11.7% for the second quarter.

A2.2.2 Manufacturing

Oil

Overall, oil production is the dominant activity in the industrial sector comprising a little less than 58% of the output. The State provides 74% of output of the sector, of which most is crude oil and 51% of oil refining (Owen and Arbach, 2010). Syria had played a role in international terms both as an oil producer and as an energy transit hub, with pipeline connections to Egypt, Jordan, Lebanon and Iraq (*The Syria Report*, 2020). *The Syria Report* (2020) indicates additional pipeline projects have been stalled due to the crisis, and the entire oil and gas sector has been impacted by violence and sanctions. Sanctions have impacted not only exports (Yazigi, 2014), but also imports of refined products indirectly (*The Syria Report*, 2020; Aita, 2020). *The Syria Report* (2020) goes on to detail that by mid-2013, much of Syria's oil-rich territory had fallen out of the hands of the government.

Other manufacturing

The main impact of the displacement of people on the manufacturing industry was a drastic fall in available labour. Gobat and Kostial (2016) indicate that the manufacturing sector had also been affected by shortages in fuel, power and other raw materials, limited access to trade finance, and severe destruction to infrastructure. The centers of Syria's manufacturing base were in Aleppo, Homs, and the suburbs of Damascus – areas which have been most affected by the crisis, most notably in Aleppo (World Bank, 2017). Aleppo was the manufacturing center of Syria and a hub for sectors including pharmaceuticals, textiles and garments, chemicals, and agroprocessing (World Bank, 2017).

Several businesses moved their production to safer locations along the coast or regions such as Turkey, Egypt (particularly for garment and textile businesses) and Jordan (Gobat and Kosial, 2016; World Bank, 2017), taking with them capital and equipment, and several selling their goods back to Syria. In 2014, Syrians accounted for 26% of new businesses registered in Turkey, while Turkey's exports to Syria recovered to their pre-crisis level of $1.8 billion in 2014 from $500 million in 2012.

The destruction of irrigation structures and resulting lack of water (FAO, 2019), low availability of farm labour (World Bank, 2017) and the cessation of government support for cotton (Karim et al., 2018) had an impact on cotton, and hence on cotton ginning and fibre production, and overall on the textile and garment industry in Syria.

Ghisn (2020) reports that a total of 19 factories in the pharmaceutical industry were out of action and there was varying degrees of damage to infrastructure, equipment and production lines. The impact of sanctions has been significant on the manufacturing sector, particularly for those sectors that export, requiring a substantial share of imported inputs, or that were closely linked to external partners who had severed ties (World Bank, 2017). Private banks stopped providing any foreign currency services or letters of credit for exporters, with none of the interviewed private banks reported that they were providing any foreign currency services or letters of credit, due to the sanctions. Several state-owned banks were directly sanctioned for their links to the government. Manufacturers were unable to access import and export finance. The *Toll of War* report (World Bank, 2017) suggests that sanctions were of greater concern to manufacturers, than the physical damage to their facilities.

Services sector

Net domestic product from the services sector has been declining at an annual average of 10% since 2010, with the sharpest decline in the wholesale, retail trade and repair sector, which has been declining at an annual average rate of 25% per annum (see Table A2.8 above). The share of the wholesale, retail trade and repair sector of the total services sector has declined from almost 36% in 2010, to below 13% in 2016. In 2016, government services was the largest component of the services sector, representing 47% of net domestic product from the services sector.

As Table A2.9 indicates, 32% of government employees were in the education sector, 9.1% in health and 4.1% in higher education.

Table A2.9: Syria distribution of government employees, by selected institution and gender, 2017

	Total (no.)	% of total	Female (no.)	Male (no.)	Female (% of total)	Male (% of total)
Higher education	37,949	4.1	20,673	17,276	54.5	45.5
Education	296,214	32.1	193,782	102,432	65.4	34.6
Health	83,621	9.1	51,644	31,977	61.8	38.2
Total	**921,719**	**100.0**	**386,852**	**534,869**	**42.0**	**58.0**

Source: Central Bureau of Statistics Syria (2017), Distribution of government employees by institution and educational status in 2017, Table 14/3.

Tourism

Alhammoud et al. (2019) recount how Syria had been one of the most important tourist destinations in the Middle East and in the world, and the number of tourists arriving in Syria reached about 8.5 million in 2010, which was equivalent to 40% of the population of Syria. However, in the period between 2011–2018, there was a significant decline in the contribution of the tourism sector to GDP and employment due to the ongoing war in Syria.

The crisis in Syria in 2011 reduced the number of arrivals drastically. The number of foreigners arriving fell by over 26% per annum since 2012, and Arab arrivals by close to 6% (Table A2.10).

Table A2.10: Syria number of arrivals, Arabs and foreigners, 2012–16

	2012	2013	2014	2015	2016	Annual average rate of growth
Foreigners	381,774	51,635	55,268	81,940	111,945	–26.4%
Arab	1,182,546	619,940	621,499	672,670	931,387	–5.8%
Total	**1,564,320**	**671,575**	**676,767**	**754,610**	**1,043,332**	**–9.6%**

Source: Central Bureau of Statistics Syria (2017), Chapter 8.

The number of nights spent by foreigners at hotels declined by almost 32% per annum between 2012 and 2016 (Table A2.11). Over the same period, the number of Arab visitors has increased by over 20% per annum. The number of nights by Arabs and Syrian expats and residents represents almost 80% of total Arab nights, which increased by over 119% per annum.

Table A2.11: Syria number of nights spent at hotels by guests, Arabs and foreigners, 2012–16

	2012	2013	2014	2015	2016	Annual average rate of growth
Foreigners	478,700	48,181	615,125	73,267	102,962	–31.9%
Arabs	293,288	123,655	109,318	255,162	619,130	20.5%
Syrian expats and residents	NA	1,991,793	2,652,197	2,473,251	2,479,634	5.6%
Total Arabs	**293,288**	**2,115,448**	**2,761,515**	**2,728,413**	**3,098,764**	**119.4%**
Total	**771,988**	**2,163,629**	**3,376,640**	**2,801,680**	**3,201,726**	**42.7%**

Note: NA = not available. Source: Central Bureau of Statistics Syria (2017), Chapter 8.

Alhammoud et al. (2019) also indicate that most of the workforce in the industry would have been between 20 and 28 years of age. Many of these workers were lost in the Syrian crisis. The authors argue that there is significant potential in Syria to boost the tourism industry, because of its inherent tourism strengths.

Transport and communications

The crisis had a major impact on the transport structure in Syria, particularly in Aleppo. The World Bank (2017) suggests the damage can be classified in two major categories: (i) damage due to exploding bombs and ordinance, causing craters and surface depression; and (ii) collateral damage due to falling debris from destroyed buildings, road cuts and checkpoints, making large sections of the road inaccessible and restricting the movement of people and vehicles.

There has also been significant damage to Syria's airports, railways and ports. In 2017, the Damascus Airport was the only airport operating international flights (World Bank, 2017). The World Bank (2017) report also indicates that the Syrian railway system (2,423 km in total length) was non-operational due to the crisis.

Budde Communications (2020) indicate that the telecommunications sector in Syria paid a heavy toll due to the crisis. The years of civil unrest in Syria have taken their toll on telecom infrastructure, and while the capital Damascus has survived reasonably well, it is the outskirts, rural and remote areas which have felt the brunt of the destruction.

The low mobile broadband penetration in Syria, despite quite a high population coverage of 3G networks and some deployment of wireless broadband communication for mobile devices and data terminals infrastructure, may provide potential opportunities for growth, once infrastructure and economic reconstruction efforts make headway and civil issues subside (Budde Communications, 2020).

However, the crucial nature of telecom services, both for general communication, as well as a tool for working at home, will offset market pressures. In many markets, the net effect should be a steady, though reduced, increase in subscriber growth.

The international aid network known as the Emergency Telecommunications Cluster has been operating in Syria for many years and provides emergency internet connectivity and telecommunications services.

Overall, the government plans to: increase access to telephones; increase areas covered by cell phone networks; increase access to internet and establish IT centres in rural areas; establish public-private partnerships for new value-added services; and increase the computerization of government work (Owen and Arbach, 2010).

Finance, insurance and real estate

The finance, insurance and real estate sector represented an estimated 3.4% of GDP in 2016 and had declined by 7.4% per annum since 2010 (Central Bureau of Statistics, 2017).

As Table A2.7 indicates, there were 111,796 people employed in the sector, of which 74% were in the private sector Table A2.12 (overleaf) indicates that most of the employment in the sector is male.

Table A2.12: Syria distribution of employment in finance, insurance and real estate sector, 15 years and over, by gender, by public, private and others, 2017

	Public			Private			Others		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
Finance, insurance and real estate	17,453	10,468	27,920	68,183	14,517	82,700	594	581	1,175
% of sector employment	62.5	37.5	100.0	82.4	17.6	100.0	50.6	49.4	100.0
% of total employment	1.6	2.2	1.8	3.8	4.6	3.9	3.1	5.4	4.0

Source: Central Bureau of Statistics Syria (2017), Chapter 3.

Banks from the west (such as HSBC ATMs or Citi credit card) are mostly absent from the Syrian market, possibly due the sanctions imposed by the US government in 2010 (Lord, 2010). Yazigi (2014) indicates that sanctions have complicated international transactions in Syria, and have led to a fall in foreign reserves held by the Central Bank and a precipitous decline in the value of the Syrian pound.

Aita (2020) explains how the unilateral measures led to a reduced role for the public Commercial Bank of Syria, a decline in the growth of private banks and to the prevalence of Arab Gulf's traditional and Islamic banks in the Syrian banking market. These Gulf banks were able to maintain some relations with corresponding banks. Most foreign financial transactions were moved out of the Syrian banking system toward the informal *Hawala* system and similar informal money transfer means. The Syrian economy became more dependent on informal financial transactions through neighbouring countries (especially Turkey and Lebanon), with the Central Bank of Syria unable to intervene on the exchange rate. The Lebanese financial crisis, hence, had a severe impact on the Syrian economy, with many assets of the Syrian middle class and businesses, including most SMEs, blocked (and probably lost). The *Caesar Act* added to the effects of the Lebanese crisis, leading to the depreciation of the Syrian pound to unprecedented levels and to hyperinflation.

The government has found financial support from both Iran and Russia. In 2013, Iran granted two credit facilities worth a combined $4.3 billion to Damascus. In 2011, after the announcement of the sanctions, the Central Bank of Syria opened several rouble accounts at Russian banks – VTB, VEB, and Gazprombank (*The Syria Report*, 2011b) – to deposit the assets that Syrian state banks had to withdraw from European institutions.

As Table A2.13 indicates, 32.1% of government employees were in the education sector, 9.1% in health and 4.1% in higher education.

Table A2.13: Syria distribution of government employees, by selected institution, by gender, 2017

	Total	% of total	Female	Male	Female	Male
Higher education	37,949	4.1	20,673	17,276	54.5	45.5
Education	296,214	32.1	193,782	102,432	65.4	34.6
Health	83,621	9.1	51,644	31,977	61.8	38.2
Total	**921,719**	**100.0**	**386,852**	**534,869**	**42.0**	**58.0**

Source: Central Bureau of Statistics Syria (2017), Chapter 3.

Education and health

The crisis starting in 2011 has had a devastating impact on the education system, with schools destroyed, children dropping out of school, and caused a huge shortage of teachers (the details are available in Appendix 1 on education). The heterogeneous impact of the crisis within the regions suggests that the responses must be district-specific (Mizunoya, 2015). Overall, the response needs to take into consideration:

- interventions that increase in-time in schools and those that improve learning outcomes
- infrastructure requirements
- teacher training and recruitment
- provision of safe places, and
- pedagogical interventions that match teaching to students' learning, etc.

Okasheh (2020) examined the impact of COVID-19 on education in Syria. Their report indicates that thousands of children in Syria have lost access to formal and non-formal education services. The absence of coherent remote learning systems, coupled with insufficient or no internet/phone coverage and the lack of money needed to purchase credit that children

need to access internet and phone-based learning activities, poses a significant challenge for education actors, who report a constant decrease in the number of children attending these activities. They quote the Humanitarian Needs Overview (HNO) (OCHA 2020) that indicates that there are 2.45 million school-age children in Syria out of school, while 1.6 million are at risk of dropping out. In Northwest Syria, Save the Children's partners reported losing access to nearly 50% of students enrolled in their activities in some areas after schools' suspension in March 2020 (Save the Children, 2020). Around 57% of children surveyed in Northwest Syria and 84% of respondents in Northeast Syria reported being affected by the closure of schools according to a recent survey conducted by Save the Children (Okasheh, 2020). About 60% of 489 teachers surveyed in Syria cited the threat of COVID-19 as one of the biggest reasons that forced children to drop out of school. Around 63% of teachers reported that endemic poverty prevents caregivers from sending their children to school, with 61% of teachers citing child labour as one of the primary reasons that prevent children from attending school. Child labour is particularly a concern in Northeast Syria as nearly 71% of teachers reported child labour as one of the main reasons leading children to drop out of school. COVID-19 further compounds existing issues that curtail children's access to education (Okasheh, 2020).

The *Joint Education Needs Assessment for Out-of-School Children (JENA)* report (IMU, 2019) indicates that the number of school-age children in the northwest of Syria (within the assessed districts) reached 1,712,468; and 34% (582,239 children) of those school-age children are out of school. The assessment found that among the surveyed out-of-school children, 8% (190 children) who were over 12 years old were married and 51% (1,858 children) were involved in labour to provide for their families. The surveyed children answered questions regarding reasons for dropping out of schools, classified according to educational environment, educational process, living conditions, customs and traditions and personal reasons. The main reasons for children included:

- frequent displacement and no schools in places of displacement under educational environment
- no acknowledged certificates issued by the schools under educational process
- uselessness of education, which doesn't secure job opportunities under living conditions
- gender-mixed schools under customs and traditions, and
- no one in the family to help them with homework because of personal reasons.

The same reasons were given for those children who had never attended school at all.

The factors contributing to return to school included:

- the provision of a suitable school environment (equipped with all educational supplies) in addition to the provision of safe schools
- a mechanism for recognizing the certificates issued by the schools or linking them to universities, where students can further their education
- support for families
- single sex schools, and
- special classes for students lagging behind to provide accelerated learning to help them catch up with their peers.

The deterioration of living conditions since the crisis has significantly eroded the health system in Syria. Kherallah et al. (2012) detail some of the impacts of the crisis and sanctions at the time of their report:

- vital infrastructure compromised or destroyed, resulting in lack of shelter and energy sources, deterioration of water and sanitation services, food insecurity and serious overcrowding in some areas
- severe restrictions placed on access to health care, hampered by security factors
- treatment for chronically sick, interrupted and elective surgeries, and non-urgent medical treatments delayed
- many of the primary health care centres (PHC) either not functioning or inaccessible due to distances, safety concerns and difficulties in public transportation or lack of staff, equipment and medicine, and
- quality of health care affected by deterioration in the functionality of medical equipment (Al Faisal et al., 2012).

As discussed earlier, there have been significant impacts of the crisis on the mental health of Syrian children, adolescents and adults. The mental effects include symptoms of post-traumatic stress disorder (PTSD), and the trauma and extreme grief of injury or loss of close family members among children, adolescents and adults (McDonald et al., 2017). The crisis has also seen children separated from their families and these are seen to be at increased risk of psychological and social challenges (Bean et al., 2007; Hodes et al., 2008).

The Syrian health system was put under further pressure by the spread of the coronavirus (Advani, 2020).

More generally COVID-19 has exacerbated the situation caused by the crisis. The UNCT Syria (2020) assessed that:

- Syria's real GDP was projected to decline by -7.3% in 2020 and public revenues were expected to drop by 8%, while public expenditure soared by 2.7%, thus increasing the budget deficit to an estimated 17% of GDP in 2020
- the 2010-based consumer price index (CPI) jumped from 856 in June 2019 to reach 1,232 in March 2020, and then rose to 2,019 in June 2020
- public debt reached an average level of 100% GDP in 2019, and
- remittances were US$4.4 million per day in 2017 (US$1.6 billion a year), then dropped further by more than 50% reaching US$2 million per day (around US$730 million a year).

The impact of COVID-19 on the micro, small and medium enterprises sector estimated by the UNCT Syria (2020) included:

- a decrease of 19.83% in average employees in the sector
- a decrease in employment of 18.77%
- most enterprises lost significant revenue ranging from 40% to 100%
- about 13% had to close their operations, only 18% continued normally, others adopted strategies like part-time work or went into other businesses, and
- the most essential supports requested by women business owners to reactivate their business included help with household care (47.3%) and childcare facilities (32.2%).

With the significant reduction in employment opportunities, much of the labour force, especially displaced workers and residents who lost their jobs and resources, have been working in the informal sector to secure livelihoods (SESS, 2018). However, a significant proportion of the informal sector is represented by illegal activities (SESS, 2018), and unfortunately the sector is also linked to the use of child labour (ILO, 2012).

At the household level, the most important problem induced by COVID-19 included low or non-existent income, a lack of access to transportation and lack of access to education and learning, with women in particular facing increased burdens in the household and mental stress (UNCT Syria, 2020).

The gender dimensions of COVID-19 as assessed by the UNCT Syria (2020) included an increase in the tasks and burdens of women in the household, while men's roles in family protection (e.g., through seeking additional income, etc.) also increased. Gender-based violence, which existed prior to COVID-19, but exacerbated by the pandemic, was perceived to have increased during the lockdown, while access to support and communications was reduced. Reproductive rights and access to health services were disrupted, which impacted negatively on pregnant women and newborns by increasing health risks and limiting prenatal care visits.

Specific impacts of the pandemic on children and youth as assessed by the UNCT Syria (2020) included:

- only 6.6% had access to education compared to 67.5% of those who had access to education before the onset of COVID-19
- during the lockdown, only 4.5% of households indicated that their children had access to an e-learning platform; however, around 70% of household used at least one form of distance learning, while 13.5% were not using any, and
- child labour increased by about 7%.

A2.3 The way forward

The economic returns generated by possible recovery paths for the education sector are ultimately dependant on the recovery of the economy. The crisis has nullified the progress made in the transformation of the Syrian economy to a more modern services-based economy. The output of agriculture can be improved by the adoption of modern water management and the productivity of manufacturing raised through additional investment. However, much of the growth in the period leading up to the crisis was in the services sector, arising from deregulation of private sector services, such as finance and communications, and expansion of government services, such as health and education. A return to these growth drivers needs to form part of the economic recovery.

Any recovery of Syria is complicated by the need to address the humanitarian requirements of the huge numbers of IDPs and the refugees who might return to the country.

The way forward to rebuilding the economy would need to address the following issues:

- the need for the reconstruction of the physical infrastructure, estimated at $117.7 billion (UN ESCWA, 2020), which would include rebuilding the infrastructure for irrigation, utilities, oil and gas, education and health, housing, restoring transport networks, repairing roads and urban infrastructure, including sewage, and removing rubble and remnants of war
- ensuring the reconstruction is sustainable, particularly with respect to water resources, renewable energy technologies, etc.

- human development through improving health (particularly mental health) and educational services, creation of income-generating activities, economic empowerment of women, measures to protect children from child labour and early marriages to reduce dropout rates, specific training programs for required skills required for the reconstruction
- improving financial services, communications, internet and ICT, through incentives such as support for software developers to set up software incubators, and
- support for small business and ensuring availability of inputs for different sectors of the economy.

Very little progress is likely in Syria's economic outlook unless sanctions are reversed or modified.

A2.3.1 Implications for employment

Analysis of the agricultural sector suggests the following.

- There is a need for people with skills for efficient water management and energy saving technologies and practices, (i.e., climate change adaptation, agricultural intensification and diversification and environmental protection):
  - technical skills, such as livestock specialists and veterinarians
  - skills in sustainable rangeland management practices
  - skills in modern irrigation techniques to build the irrigation infrastructure, and
  - marketing skills.
- There is a need for agricultural support service providers including government and non-governmental research institutions, academic institutions, extension services, non-government organisations, cooperatives and private sector input suppliers, traders, agro processors and food wholesalers and retailers.

In the manufacturing sector, Karim et al. (2018) found that the shortage of skilled labour was impeding the capacity of the sectors. These included engineers, technicians, tailors, bookkeepers, and farmers with specialist knowledge of milking and animal health. Vocational skills that were in short supply included: workers in soap and textile manufacturing; packaging and marketing; languages; as well as computer literacy, particularly in the area of online marketing, social media and communications. Training for these specific skills would be vital.

In the services sector, there is a need for everyone to have good IT and internet skills, and others to have advanced skills in software design and communication. Training is needed for hospitality workers (particularly for the tourism industry), and marketing staff. In particular, there is an urgent need to train teachers, as well as health workers to fill in the extreme shortages in the health and education sectors. These also provide promising opportunities for women.

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Appendix 3: Influence of education on employment trends, 2002–2017

A3.1 Introduction

The purpose of this appendix is to discuss the trends in employment in Syria for the pre-crisis and post-crisis periods, with particular attention paid to role of education in improving employment opportunities especially for women. It contrasts the experience of the two periods by examining the data largely taken from the Syrian Labour Force Survey (Central Bureau of Statistics Syria, 2017) and, where relevant the ILO (2021), to look at the regional and structural trends and their impact on employment by age, gender and marital status.

As outlined in the Appendix 2 on the economy, GDP grew at a reasonably rapid rate of 4.5% for the period 2002 to 2010. It was a period of significant structural change with the services sector expanding rapidly, such that its share of net domestic product increased from 42.4% in 2000 to 57.3% in 2010. The agricultural sector grew very little, and its share of net domestic product fell from 25.2% in 2000 to 16.3% in 2010. Despite privatisation and other attempts to increase the productivity of manufacturing, little headway was made in increasing its growth rate, which lagged that of services over the period.

In contrast, privatisation and deregulation in the services sector led to rapid growth in telecommunications and banking and finance. Government services also expanded significantly.

These large structural changes had major implications for employment. For female employment in particular, as the share of those engaged in agriculture fell dramatically, and according to the labour force surveys, the number employed in the sector declined while those employed in the high growth services sector increased rapidly.

In the post-crisis period, employment has fallen significantly, with some governorates much more adversely affected than others. Although the data for the post-crisis period is patchy with not all governates reporting, there has been some apparent recovery in 2017. Very different patterns in female and male employment, both pre- and post-crisis, have emerged.

The following two sections provide greater detail on these trends. The first describes the trends and characteristics of the labour force. The second focuses on the transition from education to employment both in the pre-crisis and post-crisis period. This analysis shows the strong association for females between increased education level and participation rate drawing on Nasser and Mehchy (2012). While the overall participation rate of women is low, the prospect suggested by this analysis of increased response of women to higher education levels is an important input in the modelling of the benefit-cost ratio of investing in education.

A3.2 Labour force[11]

The labour force grew very modestly over the period 2002 to 2011 at 0.7% per annum. Much of this modest growth was due to structural change, which in particular adversely affected the female labour force, which declined by almost one third between 2002 and 2005 (see Figure A3.1). It recovered between 2005 and 2011, to close to its 2002 level, growing at an average of 3.6% per annum. The male labour force grew much more consistently for whole period, managing a growth rate of about 2% per annum over the whole period.

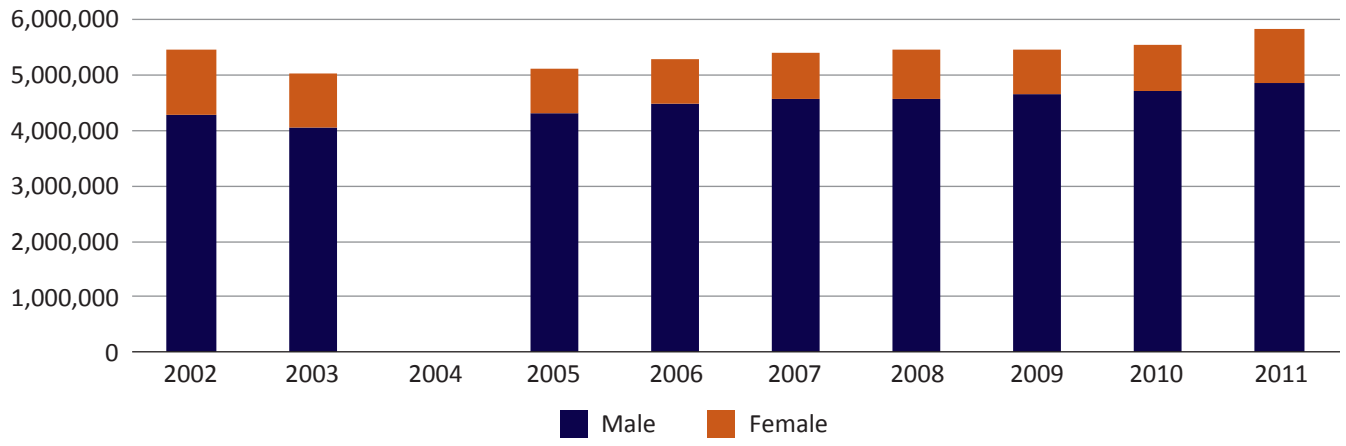

Figure A3.1: Syria labour force, by gender, 2002–11

11. Source of labour force data for this chapter is Central Bureau of Statistics. (Various years). *Syrian labour force survey 2017*, Chapter 3.

The extension of years of schooling was also a likely factor in the decline in the labour force from 2002 to 2005 (SESS, 2018). The number of youths aged 15–24 in the labour force fell from 1.9 million in 2002 to 1.36 million in 2005. The most dramatic fall was in the number of young females (15–24) whose number in the work force declined from 531,000 in 2002 to 175,000 in 2010 (Figure A3.2). The largest fall was in those aged 15–19 from 274,000 in 2002 to 41,000 in 2010. The reasons for the increase in numbers in 2015 are likely complex (other age groups also increased), but may also reflect increased numbers of school and tertiary completions entering the work force.

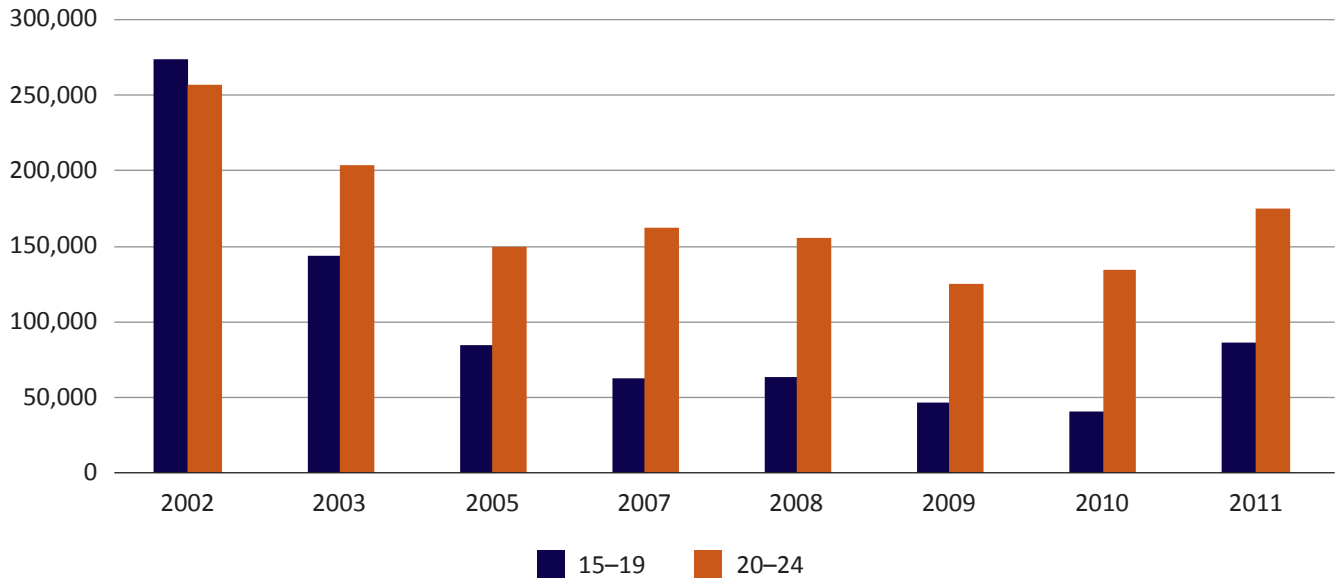

Figure A3.2: Syria female labour force, ages 15–24, 2002–11

Labour force data by marital status are only available for 2002, 2005, 2011 and 2017. Figure A3.3 shows this data for the first three of those years, which confirms the likelihood that much of the fall in labour force is related to increasing school enrolments, as all the decline in the female labour force is for those never married. Those never married declined from 755,000 in 2002 to 386,000 in 2005. The small declines in the other marriage categories are of no consequence by comparison. The decline in those never married of 369,000, is very close to the decline in those aged 15–24 of 356,000 discussed above.

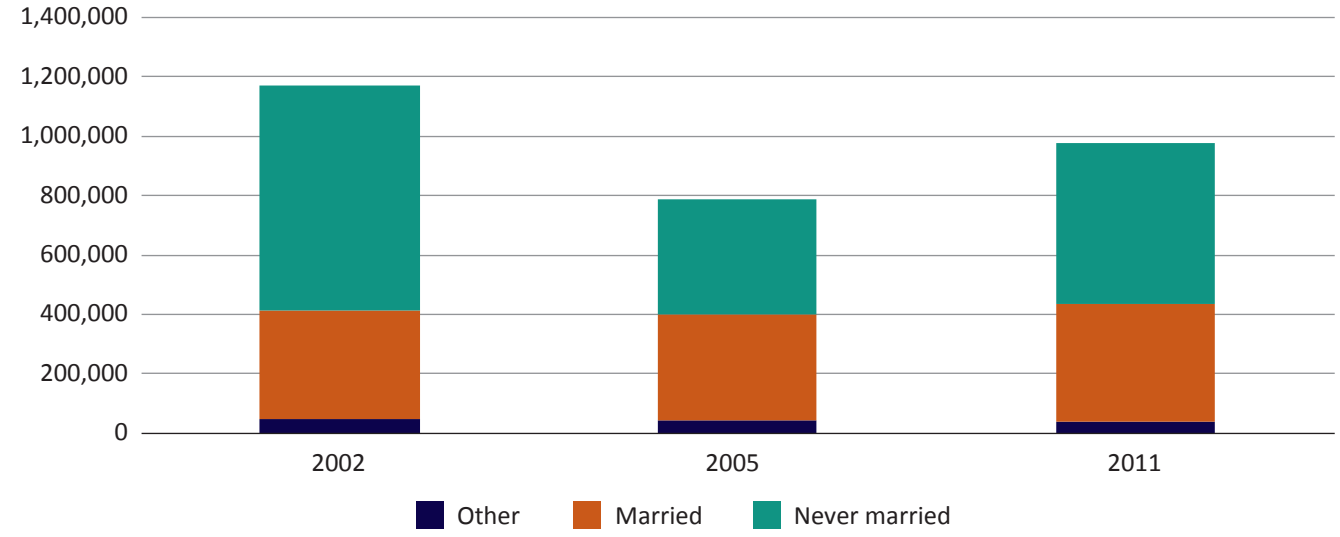

Figure A3.3: Syria female labour force, by marital status

The decrease in never-married men between 2002 and 2005 is significant, 269,000, but less than for never-married women. This decline takes place in the context of strong growth, almost 4% per annum in the married-men labour force. Overall jobs for men were growing reasonably strongly. The different employment outcomes for men and women are discussed in more detail in the next section.

A3.2.1 Employment and unemployment

In the context of a small overall increase in employment, the experience of men and women over the period 2002 to 2010 was very different (Figure A3.4). Employment for men increased from 3.9 to 4.4 million. Employment for women fell from 888,000 to 651,000, a decline of 27%. Most of this decline occurred in the period 2002 to 2005 when the number of females employed was reduced to 630,000.

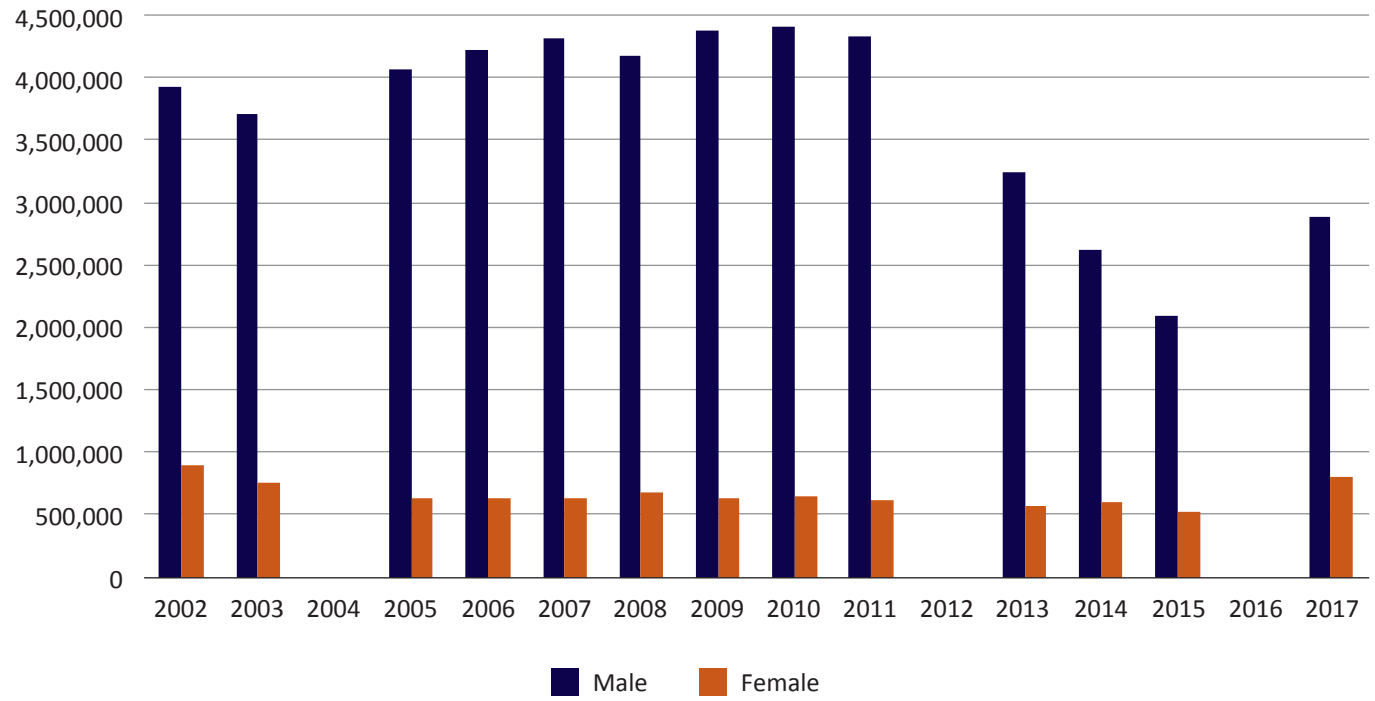

Figure A3.4: Syria employment, by gender, 2002–17

In the crisis period, male employment declined rapidly to 2.1 million by 2015, less than half the 2010 level. Female employment also declined, but not to the same degree. It fell to 520,000, a reduction of about 20%.

Unemployment had been fairly steady for both males and females for the period 2002 to 2010, albeit at very different levels (see Figure A3.5). The male unemployment rate averaged 6.7% for the period, while the female rate averaged 23%. The much higher unemployment rate meant that despite being only 15% of the workforce, the number of females out of work was not dissimilar to males. For the period 2002 to 2010, the average number of men out of work was 294,000, compared with the average number of women, 206,000.

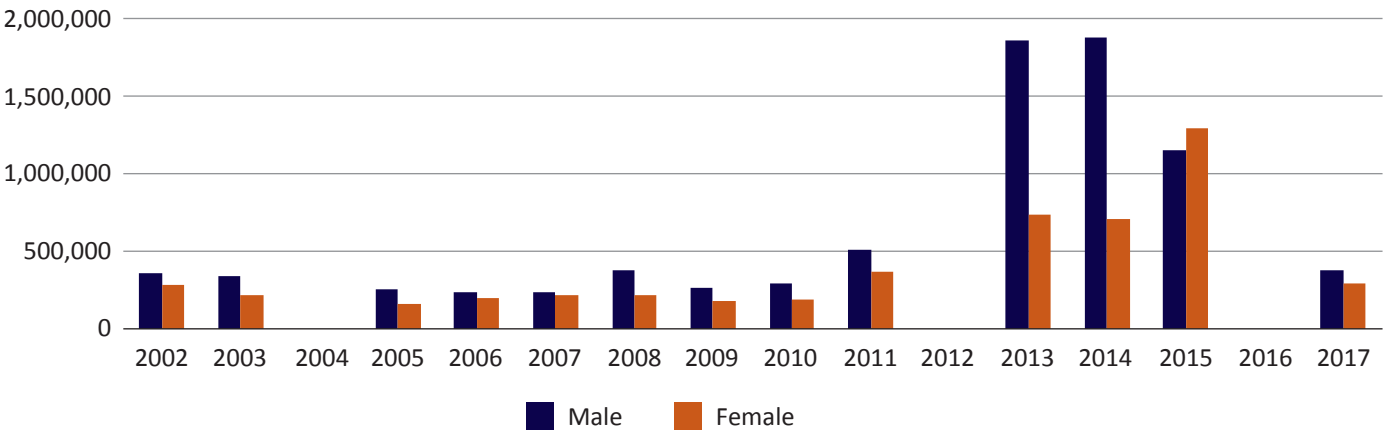

Figure A3.5: Syria number unemployed, by gender, 2002–17

In the post-crisis period, the number of persons out of work increased rapidly to reach 2.6 million in 2013. The number of unemployed men, compared with 2010, increased by a factor of 6.4 times, much larger than for women (3.8 times). This reversed in 2015 when more women were unemployed, 1.3 million compared with 1.1 million men, presumably as men withdrew from the workforce, either through discouragement, disability or a greater preoccupation with the crisis (Buecher and Aniyamuzaala, 2016).

The decline in employment post crisis was unevenly distributed across Syria. Some governorates such as Damascus and the ports of Lattakia and Tartous were relatively intact, while others such as Aleppo, Homs and Daara were badly damaged (see Table A3.1). This doubtless had a major impact on employment levels.

Table A3.1: Syria employment, by selected governorates

	2010	2015	Change
More affected			
Aleppo	1,031,263	507,435	–51%
Homs	465,702	200,014	–57%
Daraa	200,882	38,903	–81%
Less affected			
Damascus	486,023	352,281	–28%
Lattakia	296,130	262,900	–11%
Tartous	244,115	217,303	–11%
Hama	464,406	292,814	–37%
Al-Sweida	93,434	118,073	26%

Damascus, one of the less affected, nonetheless suffered a reduction in employment of 28% over the period 2010 to 2015. This compares with the two ports Lattakia and Tartous, which had a decline in jobs of 11%

Some governorates however, lost more than half of their employment. This includes Aleppo, the largest city and an important industrial centre, where employment declined by 51% from over 1 million to half a million. Other major centres to suffer major declines in employment included Homs (57%) and Daraa (81%).

A3.2.2 Employment in the public and private sectors

Most employment, about 72%, was in the private sector for the period 2005–2010. Appendix 2 on the economy discussed the importance of small and micro businesses, and a large proportion of the work force is employed in such enterprises. The government sector employs the remaining 28% of the work force. However, the pattern of employment by gender is significantly different.

About three quarters of men find their jobs in the private sector, whereas in 2005 about half of working women were employed in the public sector. By the end of the decade, this had increased to around 60%, as female jobs in the public sector grew from 306,000 in 2005 to 413,000 in 2010. On the other hand, private sector employment for women declined from 319,000 to 199,000 over the same period. These trends are shown in Figures A3.6a and A3.6b (overleaf).

The proportion of females employed in the government sector has steadily increased from 24% in 2005 to 28% in 2011. A large proportion of female employment (29% in 2011) in the government sector are university graduates, and a further 49% are trained in ‘intermediate institutes’ compared with 19% and 22% respectively for men. The government sector employs over three quarters of total employed female graduates, many in services such as health and education.

A significant proportion of female employment is also in the non-government services sector, including hotels, restaurants and trade, transport and storage, finance, etc., which increased as share of total female employment from 4.1% in 2002 to 10.9% in 2010. Big increases occurred in hotels, restaurants and trade from 2.5% to 6.4%, and in finance which increased from only 1.0% to 2.9%. Female employment in just these two sectors doubled from 30,000 to 60,000.

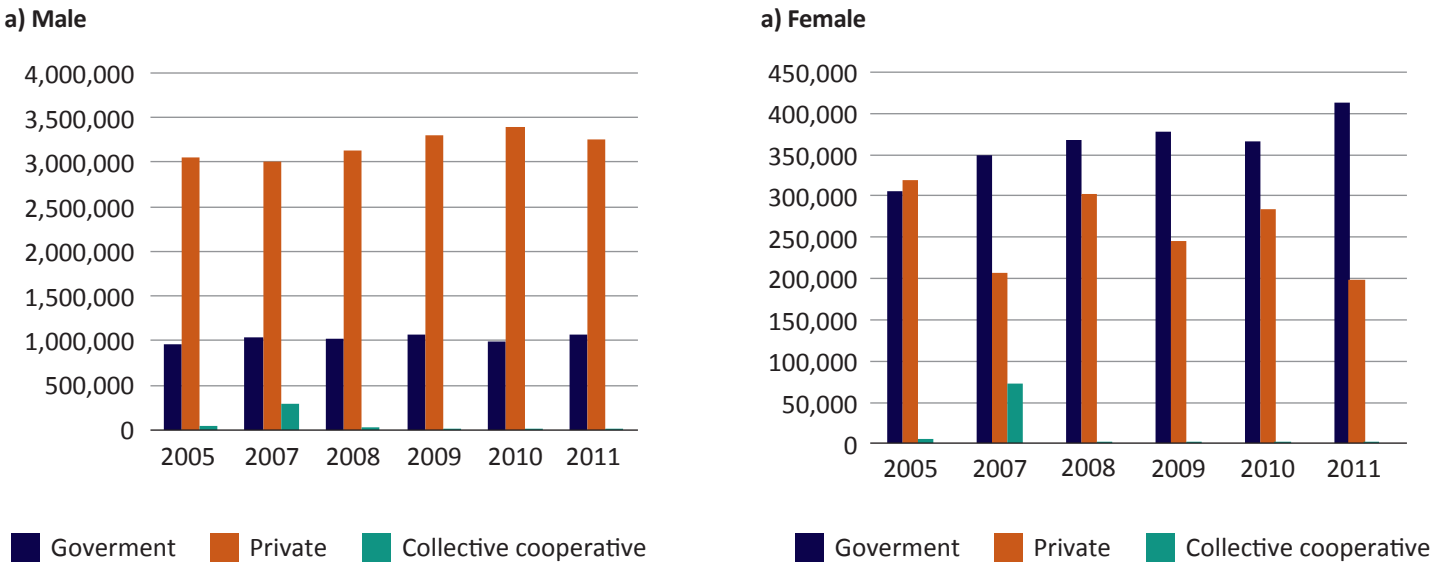

Figure A3.6: Syria employment in the private and public sector, male and female, 2005–11

Between 2002 and 2010, the share of females employed in both government and private services almost doubled, increasing from 35% to 69%. The largest increase was in other services, which largely comprise government services, growing from 275,000 to 375,000 over the period 2002 to 2010.

Over the same period, there was a dramatic fall in the number of women employed in the agriculture sector from 516,000 to 170,000 (Figure A3.7). The proportion of women employed in the agriculture sector fell between 2002 and 2006 from 58% to 27%. The share declined further to 22% by 2010 as other services grew. This decline has been challenged by Abdelali-Martini and De Pryckz (2015), who argue that much of the female labour in the agriculture sector is under-reported because it forms part of unpaid household labour. While this is doubtless an important economic contribution and the cultural biases favouring male role recognition is acknowledged (Sparre, 2008), it is difficult to see this entirely offsetting the very substantial structural change in which both reported agricultural output and employment fell, and there was an increasing shift of better qualified females to employment in the services sector.

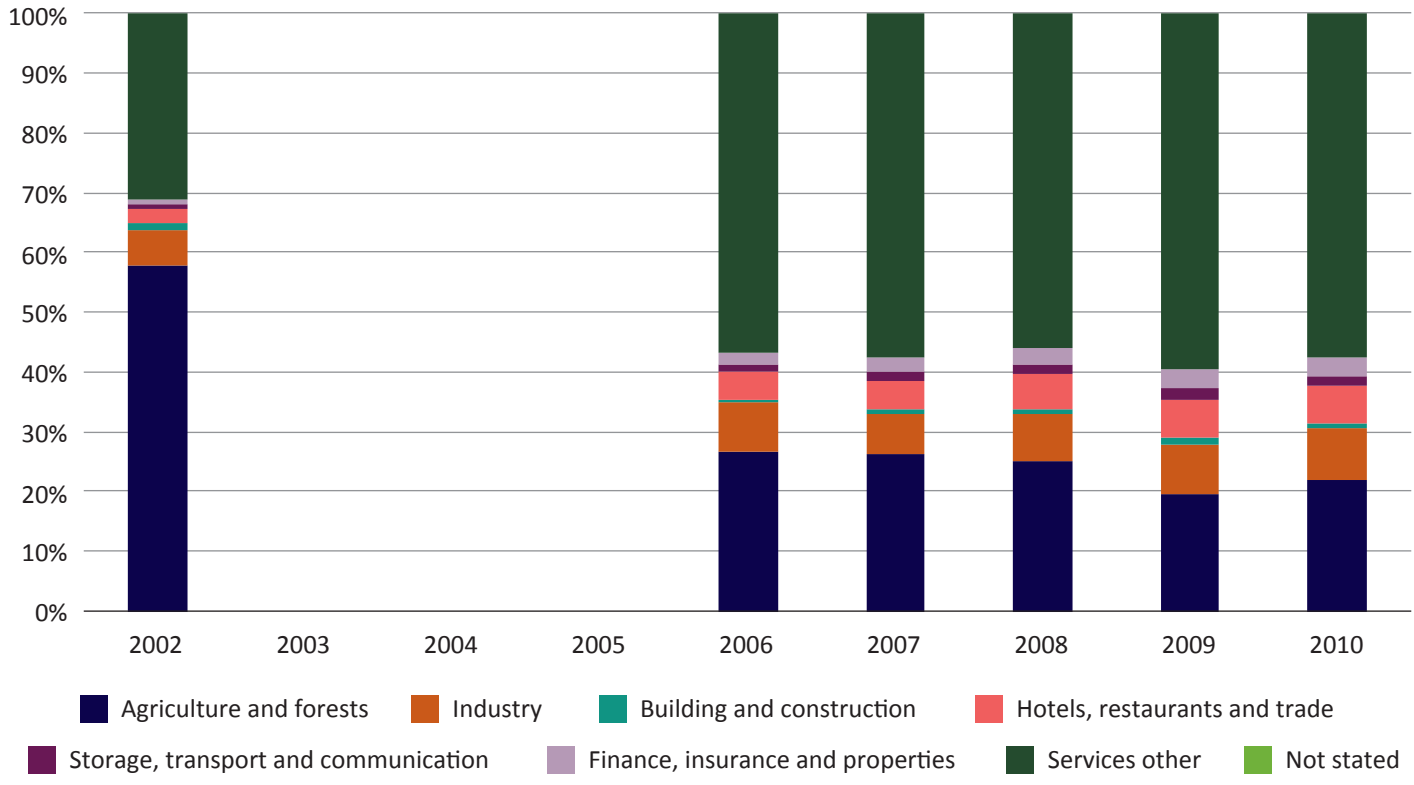

Figure A3.7: Syria share of female employment, by economic sector, 2002–10

The sector shares for male employment showed little change. As shown in Figure A3.8, the main change over the period 2002 to 2010 is the decline of agriculture from 24% to 13%. This decline is taken up reasonably evenly by the other sectors, such as industry which gained two percentage points increasing from 15.5% to 17.5%, and building and construction which increased from 15.3% to 18.5%.

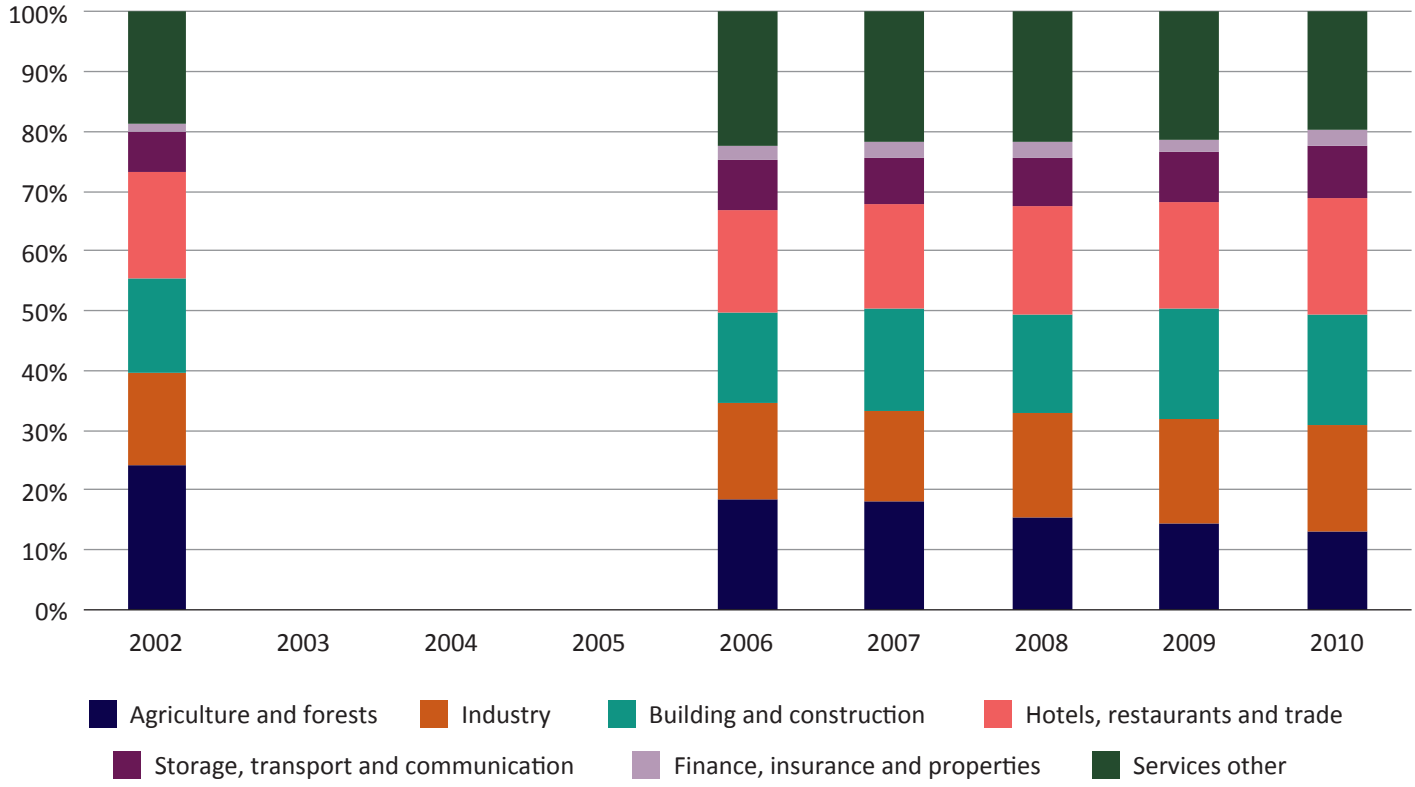

Figure A3.8: Syria share of male employment, by economic sector, 2002–10

A3.3 The transition from education to employment

One of the best indicators of the transition from education to employment is the labour force participation rate by age. The participation rate is the proportion of those in work (employed) or seeking work (unemployed) as a proportion of the relevant age population cohort. Broadly speaking as the youth population age, the proportion in or seeking work increases. How successfully this transition is made can be judged by the relationship between the participation rate and unemployment rate by age.

Based on the results of the 2010 Labour Force Survey (*Statistical abstract*, Central Bureau of Statistics Syria, 2017, Chapter 3), the labour force participation rate and unemployment rate by age and sex clearly illustrate the difference in employment experience for women and men as they entered the work force in the pre-crisis period. As men entered the workforce from age 15, their labour force participation rate increased from about 40% for those aged 15–19 to 70% for those aged 20–24, and steadily rose with age to be almost 100% by age 30–34. Although the unemployment rate was high for those in the younger cohorts, 19% for those aged 15–19 (see Figure A3.9, overleaf), it falls to only 3.7% for those aged 30–34. This indicates that in the pre-crisis period, by age 30 most men who wanted a job were able to find one.

The experience for young women is quite different. Firstly, the participation rate is very low. Less than 4% of those aged 15–19 sought a job. Of these almost 30% were unemployed. Of those aged 20–24, 15% sought a job, of whom almost half were unemployed. Even for those aged 30–34, the participation rate was less than 20%, of whom about one fifth were unemployed. So, not only did a low proportion of women seek employment, but a high proportion were unsuccessful at finding a job.

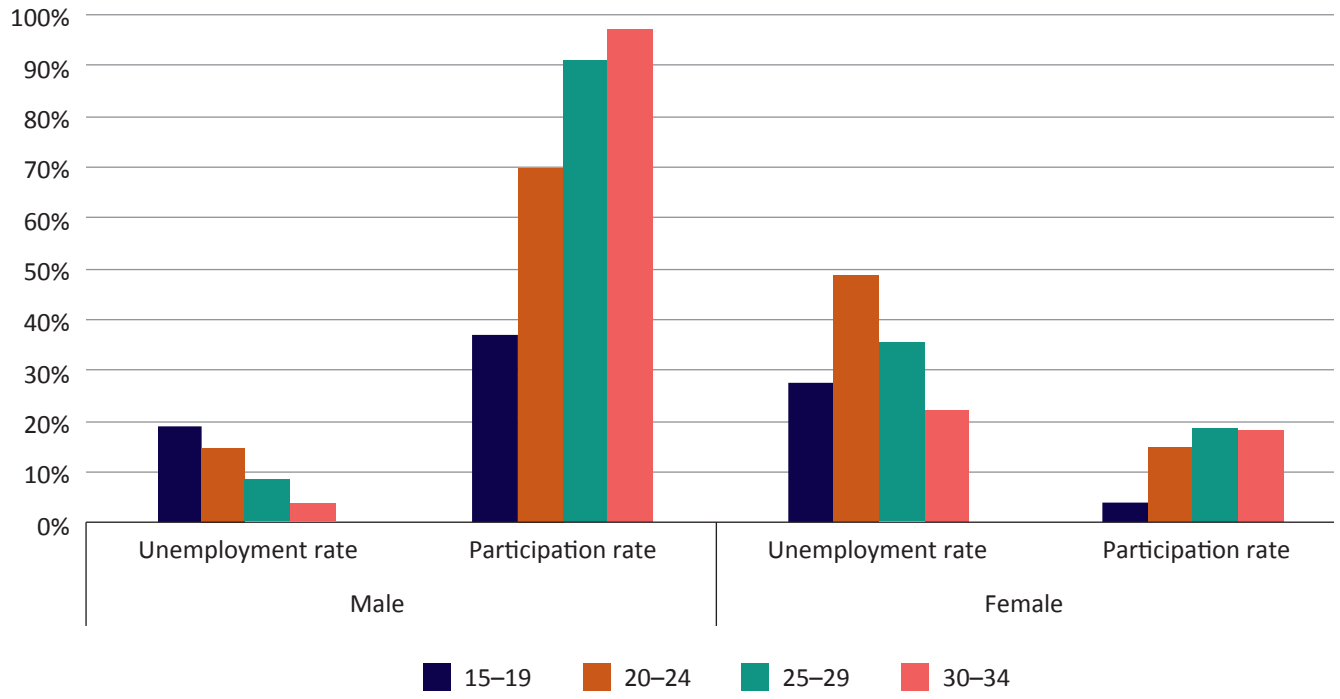

Figure A3.9: Syria participation and unemployment rates by age and gender, 2010

As discussed in Appendix 1 on education, this has important implications for the economic benefits of education. Men, after a period, become largely fully employed using their education to advantage, while relatively few women enter the workforce. The investment in their education yields much less in economic benefits (future earnings) than would have been the case if a higher proportion were employed.

A3.3.1 Role of education in employment, especially for women

Over this period of structural transformation, 2002 to 2011, particularly as it affected employment for women, the employed work force become significantly better educated. The proportion of those employed who had at least secondary education increased from 22.4% to 32.5%. Those with tertiary education, either university or intermediate institute graduates, represented most of this growth, increasing from 13.1% to 21.6% between 2002 and 2011. Although the share of men with secondary and post-secondary qualifications increased from 18.5% to 27.0%, it was the increase in the proportion of females with these qualifications that was most dramatic (Figure A3.10).

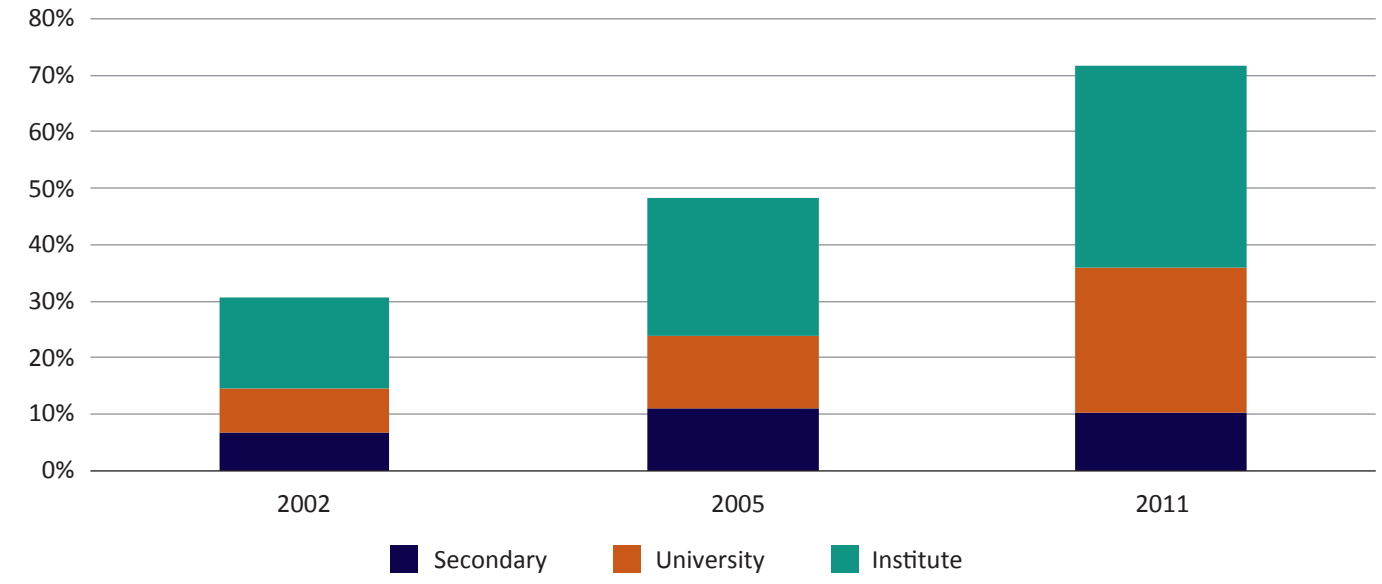

Figure A3.10: Syria proportion of total female employment with secondary and post-secondary education

The proportion of the female employees with secondary and post-secondary qualifications has increased from 30.7% in 2002 to 71.7% in 2011. Most of this increase has occurred in those with either university or intermediate institute qualifications, which grew from 24.0% in 2002 to 61.4% in 2011. The number of employed female university graduates increased from 69,000 in 2002 to 158,000 in 2011. The number of those with intermediate institute qualifications increased from 144,000 to 220,000 over the same period. The raw numbers compared with men are smaller. The number of employed male university graduates increased from 240,000 to 353,000 over the same period. Nonetheless, the participation of post-secondary educated women in the structural transformation of the Syrian economy over the second half of this period (2005–11), was almost comparable to that of men (see Figure A3.11). While the number of employed men with these qualifications increased by 189,000, the number of equally qualified women with increased by 143,000 representing 43% of the total.

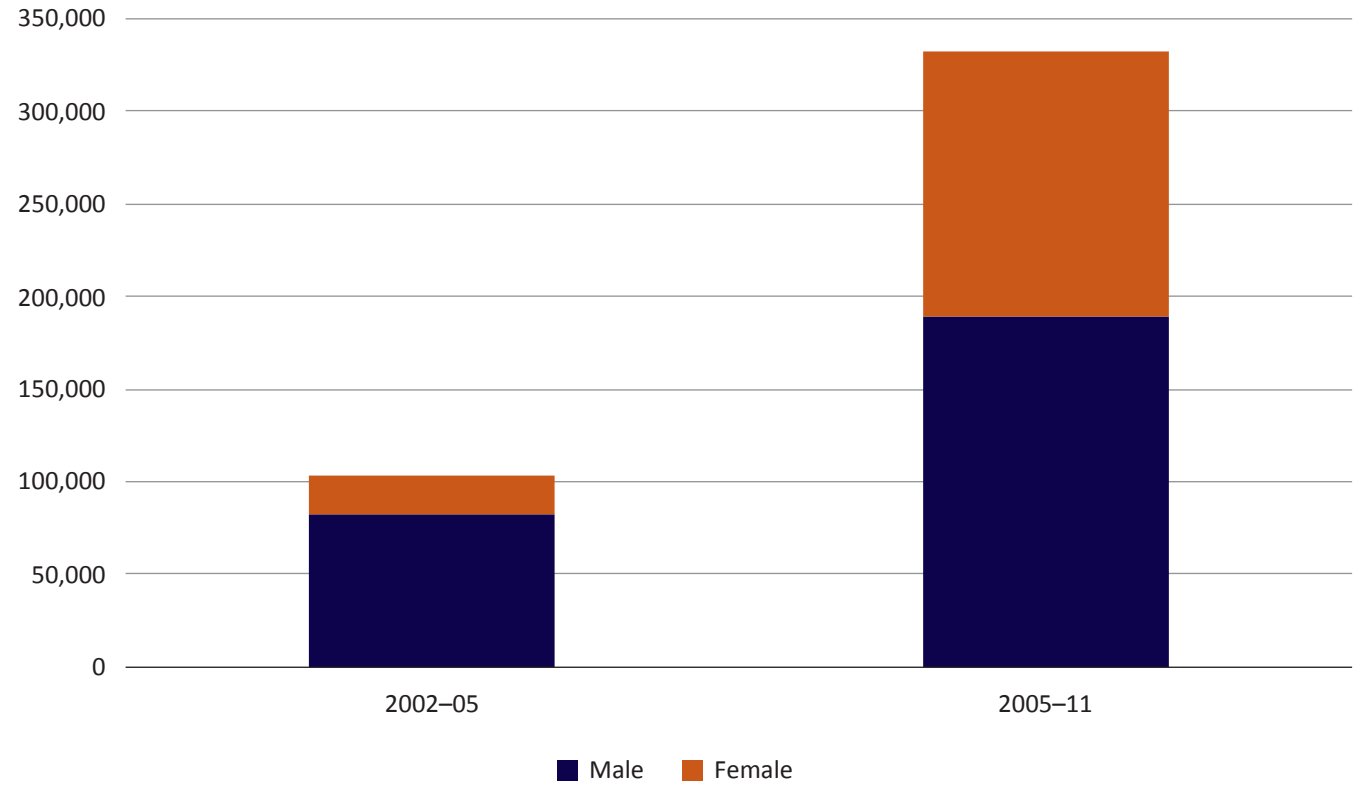

Figure A3.11: Syria increase in employment by those with post-secondary education, by gender

The reasons for the differences between men and women participation rates have been analysed in Nasser and Mehchy (2012) using a logit model to investigate the impact of age, gender and education, as well as other variables such as location and marital status. The study confirms the favourable impact of education, especially post-secondary, on labour force participation for women.

While completing secondary education results in a much higher probability of being in the labour force than primary education, the probability is increased by about four times to a probability of over three for those with a tertiary education (Figure A3.12).

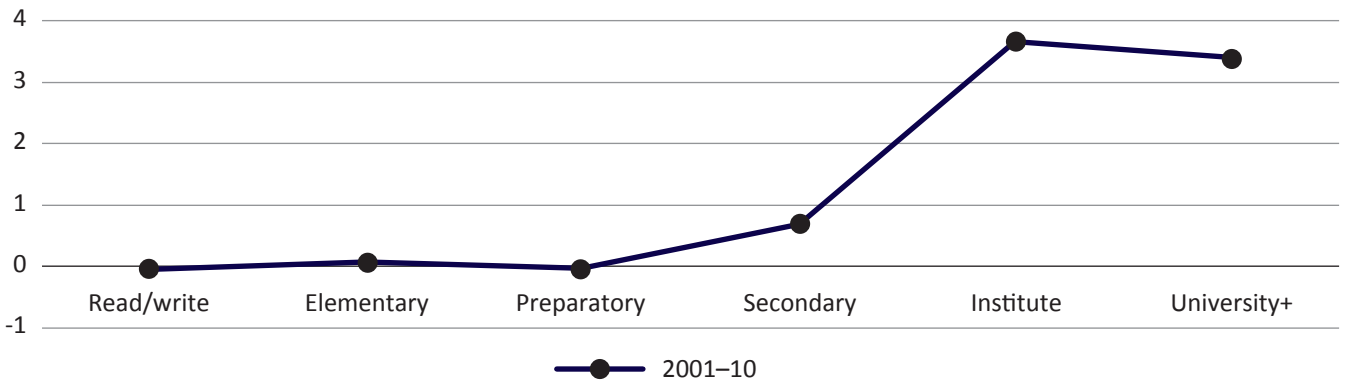

Figure A3.12: Probability of participation in the labour force, females, 2001–10

For women, public sector employment played a big role, with an increase in employed female university graduates of 70,000 compared with 58,000 males. Nonetheless as discussed above, women graduates have played an important role in the growth of private services, with female university graduate employment in the private sector doubling from 18,000 to 36,000.

At the same time, the number of employed women with elementary education or less has fallen from 539,000 in 2002 to 115,000 in 2011. Half this decline occurred between 2002 and 2005. It doubtlessly reflects the decline of women employed in the agriculture sector, and therefore as discussed above, may be to some extent overstated.

Nonetheless, overall this analysis suggests that increased education for women has played an important role in providing them with relevant skills to participate in the economic transformation in the decade before the crisis. As discussed in other sections of this report, women participation rates in Syria are very low even compared with other MENA countries; and while it is commonly argued that these estimates understate the extent of female work and that cultural factors inhibit women joining the work force, this analysis is encouraging. It suggests that education can facilitate much increased female participation in the formal employment sector.

As previously discussed, in the post-crisis period male employment has borne the brunt of the associated economic downturn. Between 2011 and 2017, male employment is reported by the Syrian labour force surveys to have fallen 1.45 million, while female employment has increased by 186,000 (Figure A3.13).

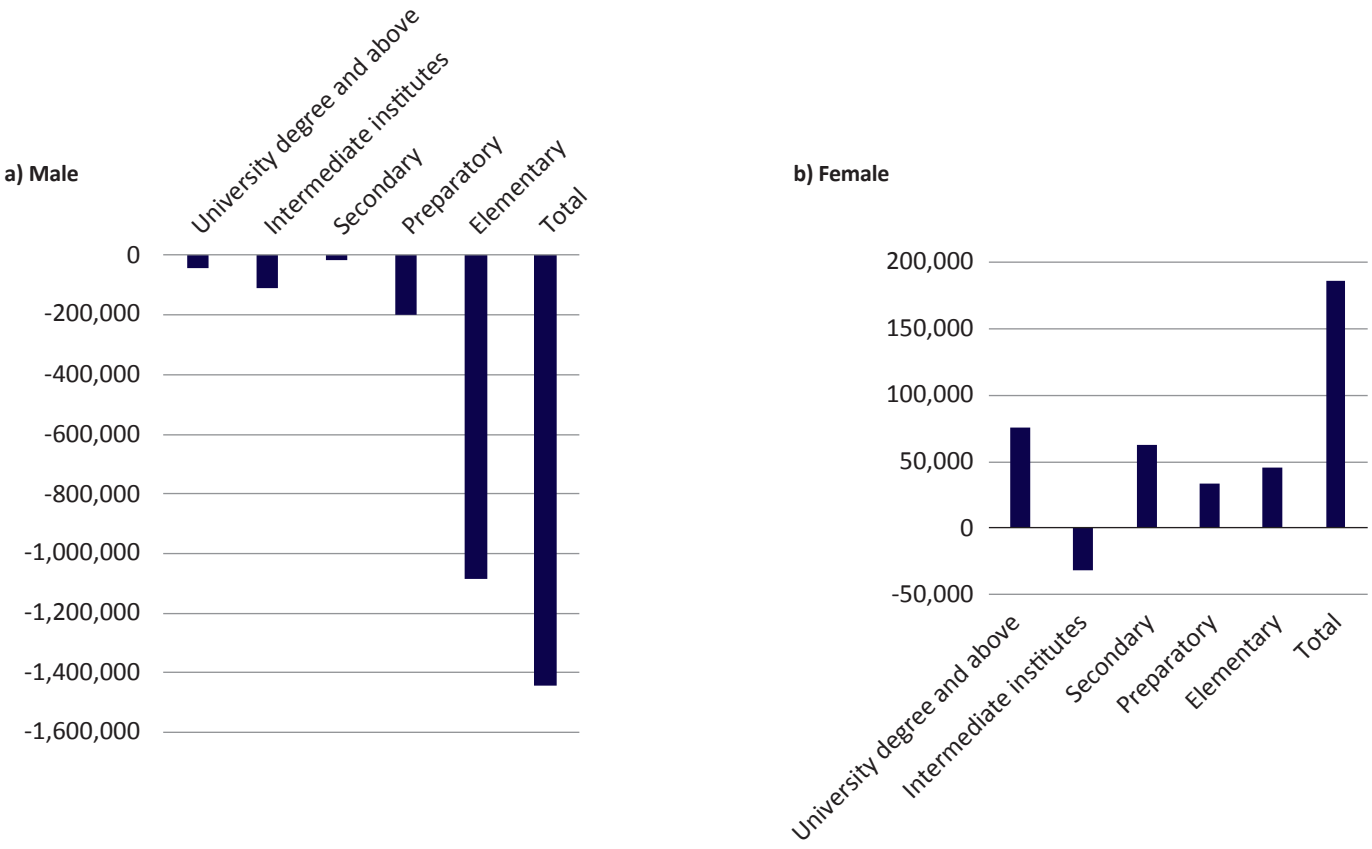

Figure A3.13: Syria change in employment by education level, male and female, 2011–17

As shown in Figure A3.13a, males with elementary level education have suffered by far the largest decline in both percentage and absolute terms. Employment of males with only elementary level education has fallen by 1.1 million or 45% between 2011 and 2017, representing 75% of the fall in male employment. Including those with preparatory level, the proportion increases to almost 90%. By comparison, the employment of male university graduates fell by 12%.

Anecdotal and other evidence (Buecher and Aniyamuzaala, 2016) suggests that many women have become head of their households due to the absence or death of their husbands or other male household members. More women have entered the work force, although as shown in Figure A3.5 many have failed to find employment. Of the 186,000 women (net) who found employment in the period in 2011 to 2017, the better educated appear to have an advantage. The largest increase (76,000) was for university graduates (Figure A3.13b). The survey suggests that these jobs were in the government sector. However, the government employment numbers by ministry provide no evidence of the source of the gain. There were increases in employment levels for a range other education levels.

A3.4 Conclusion

For the pre-crisis decade, the Syrian labour force grew at a very modest pace of less than 1% per annum, well below the population growth of about 2.5% per annum. The male labour force grew at about 2% per annum, while the female labour force was 16.5% lower in 2011 than it was in 2002. While cultural factors may in part explain this difference in experience, the decline in agriculture and the growth of services had very differential effects for women. Illustrating the difficulties of females getting a job, female unemployment for the period 2002 to 2010, averaged 23% while the male unemployment rate averaged 6.7%. One factor that acted to supress labour force growth for both sexes was increased education enrolments. However, this was most evident for the number of young females in the labour force.

Most Syrians (78%) are employed in the private sector. This however, conceals large differences between the sexes. Three quarters of men work in the private sector, but by 2011, 60% of women worked in the public sector, most particularly in health and education. Growth in the private services sector also provides growth for women's, as well as men's jobs.

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