

ISSUE PAPER

INVESTING IN EARLY CHILDHOOD EDUCATION AND CARE IN KYRGYZ REPUBLIC: An Assessment of Care Deficits, Costs and Impact on Employment, Gender Equality and Fiscal Returns



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Disclaimer:

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EXECUTIVE SUMMARY

Access to quality formal services in early childhood education and care (ECEC)¹ plays a crucial role from the perspective of two stakeholders: foremost, children as receivers of care and parents as primary providers of care. Quality ECEC centres (nurseries, kindergartens and pre-schools) constitute an important component of ECEC infrastructure, supporting early development of children with lasting effects over the life cycle. Access to centre-based services enables more active participation by parents in the labour market and enhances their abilities as family providers. For mothers, ECEC can support their equal access to jobs and contribute to their empowerment as individuals and as parents. It is essential that ECEC centres complement parental care so that children can benefit both from professional services as well as time spent with their parents and parents can simultaneously take care of their children and pursue careers. It is critical, therefore, to supplement centre-based ECEC services with labour market regulatory measures such as parental leave and regulated workplace hours to support work-life balance as well as other social care services targeting older persons, people living with disabilities and those who are ill.²

Countries with widespread access to ECEC centres feature either publicly-provisioned or subsidized services. When public provisioning or subsidization is of limited scope, a market for private centre-based services exists predominantly for high-income households. Consequently, lack of public intervention not only reinforces inequality among children and parents (especially for mothers) by socioeconomic status, it also entrenches gender gaps in the labour market. Expansion of ECEC services for all is a matter of the choices made regarding the allocation of public resources. As such, it is as much an issue of children's well-being and gender equality as it is an issue of economic policy and fiscal allocation. Fiscal policy design is of a short-run nature with public budget plans formed and assessed on an annual basis. Hence, even when fiscal policymakers acknowledge long-run returns from a resource allocation, it is likely to be outweighed by the assessment of short-run returns. **This study contributes to the policy debate on ECEC expansion in Kyrgyz Republic³ – particularly from a fiscal policy perspective that focuses on potential short-run economic returns.**

Following in the footsteps of recent country policy studies, this research report estimates the required increase in public expenditures on ECEC centres according to different policy scenarios specific to Kyrgyz Republic. The report estimates short-run, demand-side economic returns regarding employment creation, the gender employment gap, and the fiscal sustainability of the initial outlay of expenditures through increased tax revenues. The simulation for ECEC service expansion is compared to the counterfactual scenario where fiscal expenditure of identical magnitude is allocated towards physical infrastructure and construction projects, a common target sector for public spending. Importantly, the research indicates that increased ECEC public expenditures result in the following:

- robust generation of new jobs both directly in the ECEC sector as well as indirectly in other sectors through backward linkages;
- emerging labour demand that is pro-women and therefore contributes to a demand-driven narrowing down of the gender employment gap while raising the overall employment rate; and

- potential for self-financing through increased tax revenues is non-negligible.

In recent years, there has been a substantial increase in early childhood education and care services in Kyrgyz Republic. Nevertheless, as of 2017 the **ECEC enrolment rate for children under the mandatory school age (0-6 years old) stands at 24 per cent, the lowest in the Central Asia region after Republic of Tajikistan.**⁴ **This means that on average, three out of every four children do not have any access to childcare centres or preschools.** Inequality in access prevails against children in rural areas and from low-income families. Only 18 per cent of rural children,⁵ and just 12 per cent of children from the lowest income quartile are enrolled in an ECEC centre (NSC, 2014).

Beyond undesirable implications for children’s well-being, a weak ECEC infrastructure also negatively impacts women’s equal access to employment and income generation. Recent research and policy documents highlight **women’s unpaid care workload as an important source of the gender employment gap** – a difference which stands at 30 percentage points, the highest in Central Asia by a wide margin.⁶

The lack of sufficient decent jobs⁷ for women is another important factor contributing to the wide gender employment gap. Customary roles as primary caretakers and secondary earners, weak labour demand and poor working conditions lock women into traditional homemaker roles. At the same time, the lack of decent work opportunities leads many women and men to migrate to other countries in the region in search of work. This outmigration also means that many children are unable to receive proper care in their formative years as their parents need to travel to other countries to seek employment. Indeed, an estimated 50,000 people leave the country annually in search of work, mostly to Russia (FIDH, 2016), and the total number of citizens of Kyrgyz Republic working abroad has grown to between 700,000 and one million people, corresponding to almost one fifth of the total population (KSMS, 2018). Approximately 40 per cent of labour migrants are women. The high labour migration of parents creates a substantial care deficit for children left behind. Moreover, it also leaves many children

unable to receive proper care in their formative years since their parents migrate to other countries to seek employment. An estimate based on official figures of migrants who went abroad suggests that about 200,000 children in Kyrgyz Republic are without parental care; these children are often referred to as “social orphans”. Children left behind are less likely to attend kindergartens and schools, and consequently tend not to pursue vocational and higher education.

Recent national policy documents on education, as well as on women in employment, underscore consensus on the need to expand access to ECEC centres as a tool to both improve child well-being and women’s positioning in the labour market. The government plan 2018–2022 sets a target enrolment rate for preschool education at 80 per cent by 2022.⁸ While there is no specification of age group or duration, the target is likely set on the share of children engaged in one year of organized learning prior to starting school. Under a recent inter-ministerial initiative – with the technical support of the UNICEF Country Office – **Child Development Centres are being piloted in eight libraries across the country.** These centres are intended to offer developmental activities overseen by staff trained in early childhood development and to support parents and children in joint activities.

The policy simulations undertaken in this report foresee a more comprehensive system of ECEC service provisioning based on full-time continuous access to ECEC centres for three- to six-year-old children and part-time access for children up to two years old in line with the developmental needs of each age group. The centres are under full supervision of professional staff and require parental accompaniment. The simulation assumes that the centres will meet the primary objective of addressing children’s needs and improving well-being, while simultaneously reducing daytime requirements on parents – particularly mothers.

The report’s **simulations are conducted under two policy scenarios: SDG-based and regional best** (see Table I). One is a comprehensive expansion of ECEC services in line with a recent ILO-led interpretation of multiple Sustainable Development Goals (SDGs) whereby 50 per cent of children 0–2 years old, and

100 per cent of children 3-to-mandatory school age would be enrolled.⁹ The other scenario is a relatively more modest expansion that sets targets at regional best enrolment rates (in reference to Central Asia)¹⁰ whereby 30 per cent of children 0–2 years old, and approximately 80 per cent of children 3-to-mandatory school age are enrolled. These are ambitious policy targets requiring a substantial increase compared to the current levels of ECEC provisioning in Kyrgyz Republic whereby only 4.4 per cent of children 0–2 years old, 31.3 per cent of children 3–5 years old, and 59.4 per cent of children 6 years old are enrolled.

Beyond enrolment rates, the expansion scenarios are also guided by service quality and decent employment guidelines pertaining to student-to-staff ratios, wages, social security and formal employment. As such, the policy design is based on meeting multiple SDGs and targets, namely, SDG 4.2 on education for all and pre-primary education, SDG 5.4 on gender equality and unpaid work and SDG 8 on decent employment generation.

An assessment of the **care deficit in ECEC services** shows that to reach the targets under the two scenarios, an additional 530,000 (under SDG-based scenario) or 352,000 (under the regional best scenario) children need to be enrolled at ECEC centres on a full-day basis. We estimate that the cost (in 2017 prices) of closing

the deficit ranges from 15.85 billion Som, corresponding to 3 per cent of GDP for the SDG-based scenario, to 10.23 billion Som, corresponding to 2 per cent of GDP for the regional best scenario. This requires a two- to three-fold increase in total ECEC spending which is currently 5.04 billion Som or approximately 1 per cent of Kyrgyz Republic's GDP.

While a sizeable resource allocation, the short-run economic returns are also substantial. **Total job creation under the SDG-based scenario is over 120,000 jobs, which corresponds to an impressive 5.1% of total employment in Kyrgyz Republic.** Almost 97,000 new jobs are created in the ECEC sector (about three-quarters teaching jobs and one-quarter support staff); and a further 24,000 indirect jobs are generated in other sectors through backward linkages effects.

Women get the lion's share (72.4 per cent) of the new jobs. This pro-women composition of labour demand, generated through an ECEC expansion, contributes to boosting women's employment rate by 4.2 percentage points from its current level of 42.8 per cent to 47.0 per cent. The men's employment rate also rises by 1.7 percentage points. This disproportionate effect contributes to narrowing down the substantial gender employment gap in Kyrgyz Republic from 30 to 27.4 percentage points.

TABLE I.
Assessment of ECEC Service Deficit and Expansion Costs

Age group	Population	Current ECEC enrolment (enrolment rate) ¹	ECEC Expansion additional children (enrolment rate)		ECEC Expenditures in 2017 Som (in USD) (% GDP)		
			SDG-based	Regional Best	Current	SDG-based additional spending	Regional Best additional spending
0–2	466,757	20,446 (4%)	212,933 (50%)	119,581 (30%)	5,043,109,900 (73.2 million USD) (0.97% GDP)	15,853,491,066 (230.2 million USD) (3.0% GDP)	10,231,014,280 (148.6 million USD) (2.0% GDP)
3–5	462,061	133,270 (31%)	299,000 (100%)	213,981 (81.6%)			
6	146,141	29,325 (59%)	18,033 (100%)	18,033 (100%)			
Total	1,074,959	183,041 (24%)	529,966 (78%)	351,595 (62%)			

Source: National Statistics for population and enrolment data; the rest are authors' calculations for expansion and costing.¹ Enrolment rates include 5- and 6-year-old children enrolled in primary schooling.

The regional best scenario produces relatively smaller – but still impressive – results generating almost 77,000 direct and indirect jobs (2.4 per cent of current employment). The women’s share is high as in the SDG-based scenario given that the current gender composition of employment is used in both ECEC expansion scenarios. The women’s employment rate increases by 2.6 percentage points to 45.5 per cent and men’s employment rate by 1.1 percentage point; this increase narrows the gender employment gap by 1.6 percentage points.

As a counterfactual simulation to ECEC expansion, the construction scenario simulates an identical amount of expenditure (15.85 billion Som or 3 per cent of GDP)

directed to physical infrastructure and construction projects rather than ECEC services. Total job creation is under 95,000 – about 30 per cent fewer jobs created than through similar spending on ECEC services.

Employment demand through construction spending has a reverse gender composition whereby most of the jobs go to men. The gender imbalance is even higher; men receive 86 per cent of the new jobs while women get 72 per cent of the jobs in the ECEC expansion case. This boosts men’s employment rate by over 4 percentage points (versus a meagre 0.6 percentage point increase in women’s employment rate), further widening the already high gender gap in employment to 33.4 percentage points.

TABLE II.
Employment Impact of ECEC Expansion vs. Construction Boom

	SDG-based			Regional best			Construction		
	Women	Men	Total	Women	Men	Total	Women	Men	Total
Employment	Number of jobs								
Current (a)	895,100	1,444,800	2,339,900	895,100	1,444,800	2,339,900	895,100	1,444,800	2,339,900
Direct (b)	80,901	15,900	96,802	51,311	10,085	61,396	1,197	41,929	43,126
Indirect (c)	6,285	17,406	23,691	4,056	11,233	15,289	12,228	39,384	51,611
Sum (d=b+c)	87,186	33,306	120,493	55,367	21,318	76,684	13,425	81,312	94,738
Potential (a+d)	982,286	1,478,106	2,460,392	950,467	1,466,118	2,416,585	908,525	1,526,112	2,434,637
	Contribution to employment growth (%)								
Direct (b/a)	9.0	1.1	4.1	5.7	0.7	2.6	0.1	2.9	1.8
Indirect (c/a)	0.7	1.2	1.0	0.5	0.8	0.7	1.4	2.7	2.2
Total (d/a)	9.7	2.3	5.2	6.2	1.5	3.3	1.5	5.6	4.0
% new jobs	72.4	27.6	100	72.2	27.8	100	14.2	85.8	100
	Contribution to Change in Employment Rate (%)								
Current	42.8	72.7	57.4	42.8	72.7	57.4	42.8	72.7	57.4
New	47.0	74.4	60.4	45.5	73.8	59.3	43.5	76.8	59.7
Change in E.R. (p.p.)	4.2	1.7	3.0	2.6	1.1	1.9	0.6	4.1	2.3
	Contribution to Change in Gender Employment Gap (percentage points)²								
Current gap	29.9								
New gap	27.4			28.3			33.4		
Change	-2.5			-1.6			+3.5		

Source: National Statistics for current employment; authors’ calculations for all other reported values.

The fiscal sustainability analysis (Table III) shows that over a quarter (26.0 per cent) of initial expenditures on ECEC expansion would be recovered through increased tax revenues. Much of the revenue increase (23.1 per cent) is through the direct employment

impact, i.e. social contributions by employers and employees plus income tax by those newly employed in the ECEC sector. In the case of construction, the ability to recover costs is much less at 7.4 per cent, due to lower employment and lower wage share.

TABLE III.
Fiscal Returns, SDG-based versus Construction

	SDG		Construction	
	Million Som	% of cost	Million Som	% of cost
Cost of expansion	15,853	100	15,853	100
Direct impact				
Social contributions	2,676	16.9	150	0.95
Employers	1,694		95	
Employees	982		55	
Income tax	982	6.2	55	0.35
Subtotal	3,658	23.1	205	1.30
Indirect impact				
Social contributions	345	2.2	707	4.46
Employers	218		448	
Employees	126		260	
Income tax	126	0.8	260	1.64
Subtotal	471	3.0	967	6.10
<i>Total</i>	<i>4,129</i>	<i>26.0</i>	<i>1,172</i>	<i>7.40</i>

Source: Authors' calculations.

It is important to note that these findings on the overall and gendered employment outcomes of a hypothetical ECEC expansion represent lower bound, or minimum expected estimates, since they account for only the short-run labour demand-side effects. An increase in access to ECEC services would also be expected to enable labour supply-side effects for women through reducing unpaid workload and time constraints with a further boost to their labour force participation rate.

Reaching SDG targets in ECEC expansion would improve the well-being of younger children and have a lasting impact over their life cycle in terms of school and work success. This would also produce long-run economic returns, in the form of enhanced human capital, higher labour productivity and sustainable growth. **Hence, investing in ECEC is an effective policy option for instigating a virtuous cycle of inclusive growth.** A realistic implementation may entail an incremental expansion to universal access by 2030, targeting first the most disadvantaged segments of the population.

1. INTRODUCTION

An important challenge faced by the national economy concerns the generation of decent employment. The country suffers from a low employment rate of 56 per cent and a relatively high unemployment rate of 6.9 per cent in 2017 along with massive outmigration of labour and a poverty rate at 25.6 per cent. Starting in the mid-2000s, there was an explosion in Kyrgyzstani workers migrating to other countries, predominantly to Russia, in search of work. The World Bank (2017) reports that even by the most conservative estimates, the number of work migrants corresponds to 10 per cent of the working age population and remittances to 27.4 per cent of GDP (as of 2014), making Kyrgyz Republic the second most remittance-dependent economy globally. While remittances carry short-run advantages such as boosting domestic demand and growth and alleviating poverty, the World Bank report warns of the Dutch Disease paradox over the longer run whereby the domestic currency appreciates with negative outcomes for investment in export sectors, international and labour market competitiveness, and leading to increased vulnerability to external shocks.

Significant gender gaps in employment and unemployment further complicate the challenges posed by the labour market. The female employment rate is 31 percentage points lower than the male employment rate (42 per cent versus 73 per cent), and the female unemployment rate is three percentage points higher than the male unemployment rate (9 per cent versus 6 per cent). These gaps tend to grow over time despite women's high attainment of education in Kyrgyz Republic. A recent assessment finds that the gender employment gap costs the country at least 0.4 percentage point of GDP a year (EBRD, 2015). **An important factor contributing to women's weak labour force attachment is the unpaid workload that comes along with marriage and childbirth.** Indeed, the gender employment gap is highest in the prime working age group (20–39 year olds), given that this is when most women get married and bear children and subsequently experience binding time constraints on their labour.

A key factor underlying gender gaps in the labour market is the poor infrastructure of early childhood education and care services (EBRD 2019; 2015). Despite substantial improvement in the past decade through government efforts to expand ECEC, only about a

quarter of children under the mandatory school age are covered by existing services. Furthermore, access is highly unequal among children by rural-urban divide and household income.

In addition to constraints on their labour supply imposed by unpaid care work, the general lack of decent jobs constitutes another important factor underlying women's tenuous labour market attachment. While weak employment generation in the Kyrgyz economy affects both men and women, the effect is greater on women given their traditional primary roles as caregivers and secondary roles as wage earners. At this time, the government follows an expansionary fiscal policy, helping to stimulate demand, growth and employment generation. Expenditures focus on capital spending, as well as high levels of recurrent expenditures associated with presidential elections and one-off emergency spending in response to landslides in the southern regions. Fiscal expansion has been funded predominantly by a fiscal deficit as well as an increase in tax revenues and foreign grants. The government is committed to maintaining high levels of public investment despite a context of limitations imposed by pressures to keep the budget deficit at 4.4 per cent of GDP as of 2017 (World Bank, 2018). Hence,

strategic public investments and efficient allocation of national spending is critical.

Starting from this national context, our study explores a fiscal policy option that promises to help meet these multiple challenges faced by the Kyrgyzstani economy. We follow in the footsteps of a series of recent applied country studies and present a country-specific technical assessment of public investment in the ECEC services sector as a strategic use of fiscal policy towards multiple policy targets. **In the short-run, we examine boosting demand and jobs generation simultaneously with narrowing gender gaps in the labour market and increasing access to ECEC for all children** independent of their families' ability to pay. **In the longer run, we look at contributing to higher and better quality growth through enhanced supply-side inputs, namely human capital and labour productivity.** ECEC expansion also entails a strategy to build a sustainable and inclusive social protection system that decreases socioeconomic and gender inequalities and alleviates poverty.

The study simulates different policy scenarios. The preceding analysis assesses the extent of the ECEC deficit relative to different policy targets, undertakes a costing of the necessary increase in expenditures to

reach these targets, estimates the extent of decent employment generation for all – particularly for women – and at the same time assesses the short-run fiscal sustainability of such investment through increased tax revenues. The findings for ECEC expansion are compared against a benchmark scenario whereby a similar magnitude of spending is directed instead to physical infrastructure and construction, a common target for fiscal stimulus expenditures.

The next two sections provide an overview of the international and national background against which this study can be contextualized. Section Two presents an overview of global policy debates and research studies on economic and social returns from investment in ECEC. Section Three discusses the status of Kyrgyz Republic's ECEC services and looks at gendered labour market trends as well as public expenditures and the government's stance on fiscal policy. Section Four introduces the methodology used in the technical assessment and the policy simulation under different scenarios of ECEC expansion. Section Five presents the results on the ECEC services deficit, costing of additional public expenditures to close this deficit, estimated employment generation and its gender composition as well as short-run fiscal returns. Section Six concludes by outlining the policy implications of the findings.

2. ECONOMICS OF INVESTMENT IN ECEC: THE GLOBAL CONTEXT

Activities directed towards the well-being and development of children in their early formative years – early childhood education and care – entail a wide array of services provided through diverse modalities. **Care** includes health, nutrition and hygiene offered in a warm, secure and nurturing environment. **Education** includes stimulation, socialization, guidance, participation, learning and developmental activities. ECEC begins at birth and can be organized in a variety of formal and non-formal modalities, such as parenting education, health-based parent-child intervention, care institutions, child-to-child programmes, and home-based or centre-based childcare such as nurseries, kindergartens and preschools. Quality centre-based services provided through nurseries, kindergartens and preschools constitute a critical component of ECEC infrastructure, supporting early child development with lasting effects over the life cycle. Access to centre-based services also enables more active participation by parents in the labour market and enhances their ability to better provide for their families. Throughout this report, **ECEC services** refer to formal centre-based care and education services delivered by professional staff.

Investment in ECEC services is defined as a policy target at the intersection of several Sustainable Development Goals (SDGs) (see Figure 1). SDG 4 calls for “inclusive and quality education for all” and target 4.2 defines access of all children “to quality early childhood development, care and pre-primary education so that they are ready for primary education” as the primary means to achieve the goal. This target approaches the issue from a children’s rights perspective. SDG 4.2 is based on research and assessments concerning child development and education highlighting the necessity of early childhood education and care programmes for school preparedness. The consensus is that the first five years of a child’s life constitute a crucial developmental period during which the provisioning (or not) of effective care has lasting impacts over a lifetime as a determinant of health, psychological and social well-being as well as

educational and career-earnings outcomes (UNICEF 2018, 2016; Heckman et al. 2010, 2013). Given that in many countries preschool education through public services is not a guaranteed citizen’s right (unlike primary or secondary schooling), access to ECEC depends largely on household income. This uneven access reinforces lifetime socioeconomic inequalities for children, and, by implication, adults.

At the same time, SDG 5 calls for achievement of “gender equality and empowerment of all women and girls” and through target 5.4 defines recognition and valuation of “unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family” as a primary means to meet the goal. This target approaches the issue of ECEC from a women’s

rights perspective. SDG 5.4 reflects research and assessments on the sources of gendered economic gaps, noting that the unequal gender distribution of care work imposes a binding constraint on women's time. Thus, the extent to which women can commit to education, self-development, labour market and income-earning activities is limited. The expansion of social care services, including not only ECEC but also care services for older adults, people living with disabilities and those who are ill is crucial for women's equal access to time and their participation in the labour market.

Given the consensus on the importance of access to ECEC to achieve both quality education for all children as well as improve gender equality, service coverage in many countries around the world is improving. Globally, 207 countries have some form of formal ECEC; of these nations, 79 have free and 50 have compulsory pre-primary education. As of 2010, the gross global ECEC enrolment ratio is 44 per cent, according to UNESCO (2016).¹¹ This figure represents a substantial (64 per cent) increase in pre-primary enrolment rates compared to a 1999 baseline assessment (UNESCO, 2015). The improvement, however, includes gross inequalities by region as well as by socioeconomic status within each country. The gross pre-primary enrolment rate for low and lower-middle income countries is 37 per cent (Wils 2015, p. 17).¹² The rate is lower for regions such as Southern Asia (18.5 per cent), sub-Saharan Africa (21.5 per cent), and Western Asia (29 per cent) (UNESCO, 2016, p. 207). The higher-income economies of the OECD have substantially greater coverage with an average of 33 per cent for the aged 0–2 group, and almost 90 per cent for the aged 3–5 group.

Even in these relatively higher-income countries of the OECD, however, there is substantial variation in children's access to ECEC by socioeconomic indicators such as household income and mother's education. Approximately one quarter (26.6 per cent) of children aged 0–2 in the bottom third of income distribution have access to formal ECEC versus close to half (44.3 per cent) of children from the highest income tertile. Regarding tertiary education, 31 per cent of children

whose mothers have less than tertiary education enrol in ECEC versus 43 per cent of children whose mothers are tertiary graduates.¹³

The main bottleneck in ECEC expansion is the limited availability of public funds in the face of competing needs. Following an assessment of 45 countries,¹⁴ ILO (2018) noted a need to double public spending (corresponding to 1.1 per cent of their combined GDP) to meet ECEC targets as interpreted through the SDGs (see below for further discussion). Hence, ECEC expansion concerns choices in fiscal policy and public expenditure allocation. Given limitations on public funds, particularly in the context of a lingering global economic recession, the call for increased expenditures on ECEC faces various challenges. Thus, recent research and policy debates centre on the *economic returns* from public expenditures on ECEC.

An important economic return from investing in ECEC pertains to longer-run macroeconomic returns such as enhanced human capital and labour productivity. Garcia et al. (2016) calculated the long-term benefits from an influential early childhood programme targeting disadvantaged families. They estimated that lifetime returns – including health, children's future labour incomes, crime, education, and mothers' labour incomes – will yield an overall rate of return of 13.7 per cent per annum, and a cost-benefit ratio of 7.3.¹⁵

Since governments are usually short-lived (typically lasting four-year terms), they tend to be interested in short-range feasibility and returns. In other words, fiscal policy is of a short-term nature. A series of recent applied economic policy studies emphasized exploring the immediate demand-side effects of ECEC expenditures in terms of jobs generation, narrowing gender employment gaps, reducing household income inequalities, poverty alleviation and tax revenue returns. Antonopoulos and Kim's (2008) pioneering study compared the employment and income-generation impact of ECEC expansion, as well as HIV patient care in South Africa, to an identical increase in public expenditures on physical infrastructure (an important target of sectoral spending). Their findings indicated that investment in social care services doubled the

jobs generation outcome of investment in physical infrastructure. In addition, **social care expansion produced superior distributional outcomes in terms of alleviating poverty, reducing household income inequality and closing the gender employment gap.**

Following this groundbreaking research, studies by Antonopoulos et al. (2010) and Ilkharacan, Kim and Kaya (2015) applied a similar policy simulation. Antonopoulos et al. examined expenditures on ECEC and elderly care services in the United States of America to expenditures of similar magnitude on green energy (which was the target sector for stimulus spending under the economic crisis). Kim and Kaya compared expenditures on ECEC service expansion in Turkey to construction expenditures of a similar magnitude (again, an important target of sectoral spending in Turkey in the 2000s). The common finding is that spending on social care services has a substantially higher employment generation potential given the labour-intensive nature of the sector.

Such expenditures also show much better performance in promoting women's labour market activity given that access to social care relieves time constraints on their labour. These expenditures also lead to more pro-women labour demand due to gendered job segregation and is more effective at poverty alleviation and reducing household income inequality through more decent jobs for lower-skilled and inactive women. Based on these findings, both studies question the sectoral allocation of fiscal spending which typically overemphasizes public investments in physical infrastructure and construction.

Hansen and Andersen (2014) explored the effects of ECEC service expansion not only on employment generation but also on growth using a macroeconomic model for the eurozone countries and the United Kingdom. De Henau et al. (2016, 2017) applied a similar macroeconomic simulation with respect to pro-women job generation outcomes related to ECEC expansion in seven OECD countries and six developing economies. In research for the ILO, Ilkharacan and Kim (2018) assessed employment effects following an expansion in education (ECEC through tertiary level), as well as health care including long-term care, in 45 countries. Table 1 presents an overview of these studies.

In addition to the primary objective of ECEC investment to ensure the well-being of young children, centre-based high-quality ECEC infrastructure promises to reduce the time constraints of parents – particularly mothers – and promote equal opportunities in the labour market. The findings of these recent applied studies make abundantly clear that **the impact of ECEC expansion goes beyond meeting policy targets as identified in SDG 4 on education and SDG 5 on gender equality. Indeed, impacts also pertain directly to SDG 1 on ending poverty, SDG 8 on promoting sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all and SDG 10 on reduction of inequalities among and within countries.**

TABLE 1.

Applied studies on short-run returns from public investments in ECEC

	Country and Social Care Sector	Policy Target	Care Deficit and Cost (% GDP)	New Jobs Generation (women's %)	Other Outcomes
Antonopoulos and Kim (2008)	South Africa, ECEC and HIV patient care	Universal care for 0–4 year olds; home-based care for chronically ill patients in poor households	1% GDP	772,000 jobs (60%)	Pro-poor growth; fiscal returns (one third of cost)
Antonopoulos, Kim, Masterson and Zacharias (2010)	United States ECEC and elder care	50% increase in service delivery	\$50 billion (half of 2006 care output)	1.1 million (90%)	Pro-poor (45% of jobs to households in the bottom quartile income)
Ilkcaracan, Kim and Kaya (2015, 2017)	Turkey ECEC	OECD average rates	3.2 million children, 1.18% GDP	720,000 jobs* (75%)	28% of jobs go to poor HHs; poverty reduction up to 1.42 percentage points; gender earnings (and employment) gap narrows by 2.5 (and 1) percentage points; fiscal returns 39%
Hansen and Andersen (2014)	eurozone countries and the United Kingdom ECEC	universal	2.4% GDP	4.8 million jobs (56%)	Increase in the GDP growth rate by 2.4 percentage points
De Henau, Himmelweit, Lapniewska and Perrons (2016)	7 OECD countries ECEC	universal			
De Henau, Himmelweit and Perrons (2017)	6 developing countries ECEC	universal			
Ilkcaracan and Kim (2018)	45 countries ECEC - primary, secondary, tertiary education; health care, long-term ill care	SDG-based targets in SDG 3, 4, 5 and 8	\$1.26 trillion (1.26% combined GDP)	117 million jobs* (20.5 million in ECEC) (55%)	Fiscal returns 17.4% (at a minimum due to aggregate data and no induced employment effects are included)

* The jobs generation estimate does not include induced employment effects from household consumption.

3. ECONOMICS OF INVESTMENT IN ECEC: KYRGYZSTANI NATIONAL CONTEXT

As noted in the Introduction, **Kyrgyz Republic provides a highly relevant national context for undertaking a study on the exploration of the economic returns of investment in the ECEC services sector for three reasons.** First, decent jobs generation is an urgent need. The labour market suffers from weak employment demand and a general lack of decent jobs – both of which combine to accelerate massive outmigration of labour. Second, women’s employment is low and there are substantial gender gaps in the labour market. Third, ECEC coverage is also very limited with substantial room for improvement. Indeed, all three areas are reflected in the policy agenda of the government. This section provides an overview of the national context at the intersection of these three challenges facing Kyrgyz Republic.¹⁶

1.

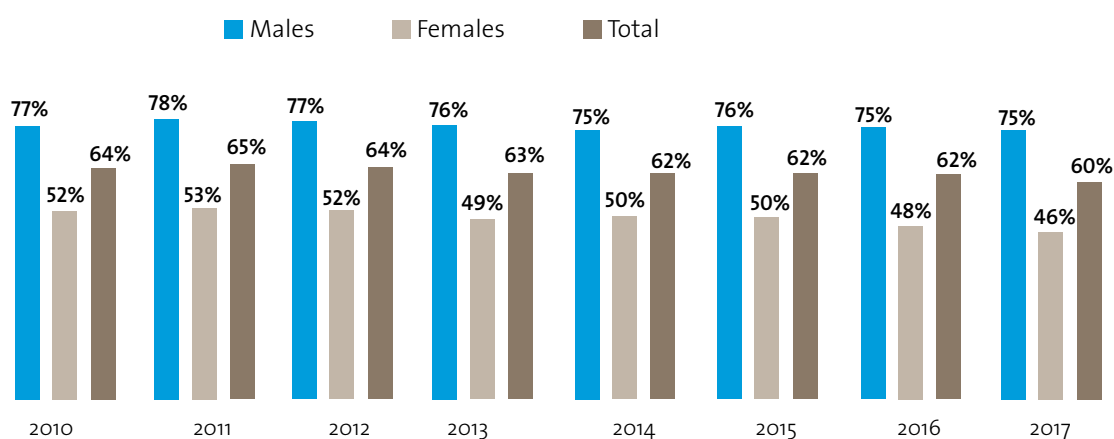
Employment creation and labour outmigration

The labour force in Kyrgyz Republic grew by 3 per cent in the last seven years from 2.46 million workers in 2010 to 2.53 million in 2017,¹⁷ while the overall labour participation rate dropped from 64 per cent in 2010 to 60 per cent in 2017 (Figure 1). The decline in the female labour force participation rate is higher at 6 per cent over a relatively short span of seven years (from 52 per cent in 2010 to 46 per cent in 2017) versus a 2 per cent decline in the male participation rate (from 77 per cent to 75 per cent in the same period).

Contributing to the decline in labour force participation is high outmigration of labour. More than 50,000 people leave the country annually in search of work, mainly to Russia, (FIDH, 2016) and the total number of Kyrgyzstani citizens working abroad is approximately between 700,000 and one million people, corresponding to almost one fifth of the total population (KSMS, 2018). The clear majority (over 95 per cent) of labour migrants work in the territory of the Eurasian Economic Union (EAEU).¹⁸ In general, about 76 per cent of labour migrants are under 35 years of age and about 40 per cent are females (KSMS, 2015). A recent survey shows about 74 per cent of females migrate for work in Russia and about 82 per cent of female migrants stated that their husbands were left behind in Kyrgyz Republic (FIDH, 2018).

FIGURE 1.

Labour-force/economically active population rates by gender



Source: National Statistical Committee of Kyrgyz Republic, <http://www.stat.kg/ru/statistics/zanyatost/>

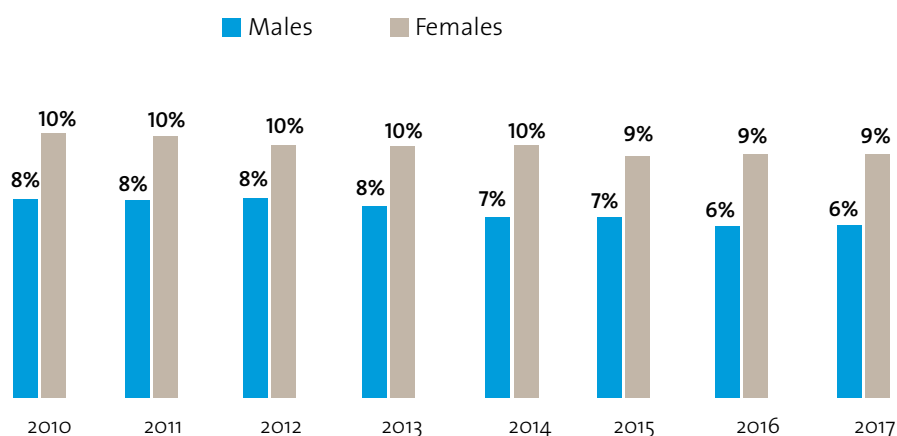
Women migrants who left independently are predominately from the northern oblasts (provinces) of Kyrgyz Republic and from urban areas. Females who leave rural areas without husbands and from the southern oblasts may face disapproval from family and community members. The high rate of women's labour migration creates a substantial care deficit for children left behind. Based on official migration figures, **experts estimate that about 200,000 children in Kyrgyz Republic are without parental care; these children are often referred to as "social orphans"**.¹⁹ Unofficial statistics suggest that children left behind are less likely to attend kindergartens and schools

and therefore tend not to receive vocational and higher education.²⁰

Despite substantial labour outmigration, the unemployment rate is relatively high at 9 per cent for women and 6 per cent for men as of 2017 (Figure 2). Unemployment rates among those with professional or higher education are almost the same as those with secondary education or lower – this is particularly the case for women. The educational system is not able to respond in a timely or effective manner to labour market demands and does not prepare qualified employees with adequate knowledge and skills.

FIGURE 2.

Unemployment rates by gender



Source: National Statistical Committee of Kyrgyz Republic, <http://www.stat.kg/ru/statistics/zanyatost/>

Clearly, Kyrgyz Republic's economy, with a stable but relatively low growth rate, is not able to generate enough jobs to absorb its growing population into productive employment; furthermore, women are among the most disadvantaged groups.²¹ The Ministry of Labour and Social Development states that 110,000 new jobs were created in 2015, constituting 4.7 per cent of total employment. Most new jobs (93 per cent) were created in the informal sector (self-employed on peasant farm enterprises plus wholesale and retail trade and motor vehicle repair). As for the few jobs created in the formal sector (7,500 jobs in total), the largest shares were in education (18 per cent), hotels and restaurants (13 per cent) and manufacturing (13 per cent). In the informal sector, more than a half of

all new jobs are seasonal and mostly in agriculture and forestry.²²

The government states that the design and implementation of an effective employment strategy is a priority. The main intervention is through active labour market policies, including job search assistance and career counselling, public works, development of vocational education and microcredit as part of entrepreneurship assistance (GIZ, 2013). While these are important supply-side measures, the main problem lies on the demand side with weak employment generation. At the same time, improving economic opportunities for women is stated as the top priority in the National Strategy on Gender Equality (NSGE) for the period 2012–2020.

2.

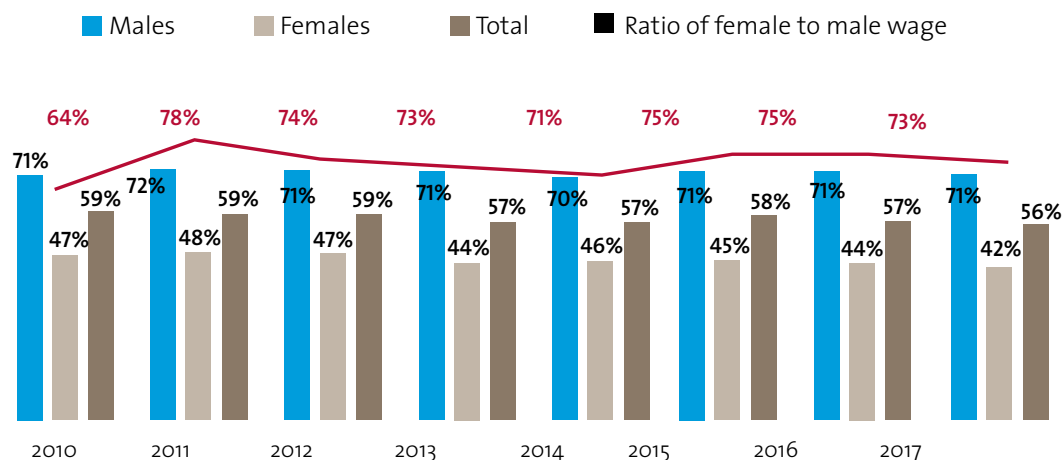
Gender Gaps in the Labour Market

The **labour force participation rate of females in Kyrgyz Republic is the lowest among EAEU member states.**²³ Despite high educational attainment by women, the gender employment gap is growing. The

women's employment rate has declined from 47 per cent in 2010 to 42 per cent in 2017, whereas the men's employment rate remained stable in the same period at around 71 per cent. The **gender employment gap climbed from an already high 24 per cent in 2010 to a staggering 31 per cent in 2017** (Figure 3).

FIGURE 3.

Employment rates by gender and ratio of female to male wage



Source: National Statistical Committee of Kyrgyz Republic, <http://www.stat.kg/ru/statistics/zanyatost/>

The gender employment gap is the highest in the prime working age group (20–39 year olds) as most women get married and have their first children at this time (Figure 4).²⁴ The gap decreases for those in their forties since many women return to paid work. The gap increases slightly for the aged 55–64 group when women usually become pensioners and are involved in the second reproductive cycle by caring for elderly parents or other family members. A recent study notes that besides age, having young children (aged 0–4), a spouse living in the same household, or being a member of a minority ethnic group (Dungan, Uighur, Tajik or Kazakh) decreases the likelihood that a woman will participate in the labour force (EBRD, 2015).

Although the principle of equal remuneration for equal work is stipulated by law,²⁵ the **average wage for women is approximately 73 per cent of the average wage for men** (Figure 3). **Persistent horizontal and vertical gender segregation in the labour market, facilitated by women’s intermittent career patterns throughout the life cycle, is a major source of this wage disparity.** In addition, **there is substantial gender job segregation in the Kyrgyz labour market.**

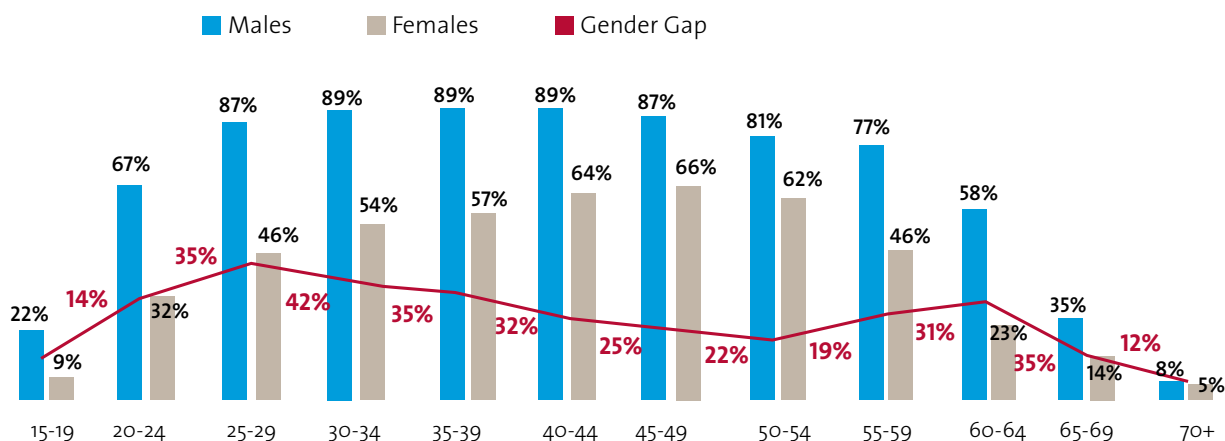
About 30 per cent of men work in construction and transportation, whereas about 27 per cent of women are employed in lower-paid public work including in education, health care, and social work (where the wage gap is to women’s advantage). Women are underrepresented in better-paid sectors such as financial and insurance activities and electricity, gas and energy supply sectors.

The comparatively lower share of women employed in well-paid technical jobs can be partly attributed to the concentration of women in tertiary schooling in education and health-care majors and the preponderance of men in technical majors such as computer science and engineering, the power industry, agriculture and fisheries, construction and architecture, and working with technological machines and equipment. There is also considerable vertical gender jobs segregation. For example, overall just 27 per cent of managers at state institutions, organizations and enterprises are women as of 2017 (NSC, 2017). The underrepresentation of women in senior positions is likewise observed in predominately “female” sectors of the workforce (ADB, 2005).

Women's primary reason for non-participation is engagement in homemaking (67 per cent of non-participant women), followed by their status as pensioners (19 per cent of non-participant women) (Figure 5). According to 2017 NSC data, about 38 per cent of non-participant women report that they have quit their jobs due to

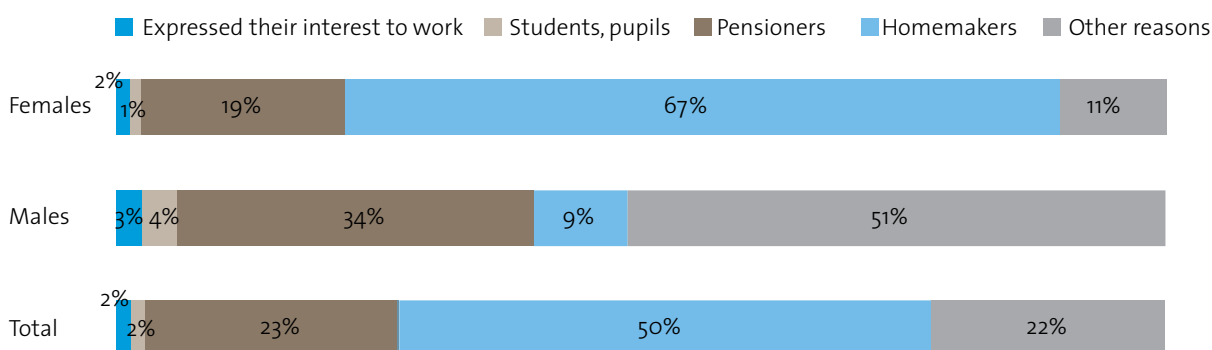
personal/family reasons (versus 11 per cent of men).²⁶ Given that close to three quarters of men are employed and also that many men of prime working age are labour migrants, inactive men are usually pensioners (34% of non-participant men). Some women report other reasons (51%) including disability or illness.

FIGURE 4.
Gender gap in employment rates by age groups in 2016



Source: National Statistical Committee of Kyrgyz Republic, <http://www.stat.kg/ru/statistics/zanyatost/>

FIGURE 5.
Reasons for non-participation in the labour market by gender, 2017



Source: National Statistical Committee of Kyrgyz Republic, <http://www.stat.kg/ru/statistics/zanyatost/>

The Kyrgyz Republic 2015 Time-Use Survey reflects the concentration of women in full-time homemaking. Data indicate that on average women spend 165 minutes more than men daily on unpaid domestic work (housekeeping, parenting, work in a garden or orchard) and 82 minutes less in paid employment (Table 2). The gender gap in unpaid work remains the same irrespective of the employment status of women. When combining paid and unpaid work, data indicate that women’s daily work hours are substantially higher than the combined hours spent by men. On average, women spend 523 minutes daily on paid and unpaid work versus 353 minutes of total work time spent by men. For employed women, the total daily workload is as high as 630 minutes (10.5 hours per day) versus 567 minutes for employed men. Leisure

time is less for employed women at 188 minutes daily (183 minutes for self-employed women) versus 256 minutes daily for men (390 minutes for self-employed men).

The Kyrgyz Republic National Survey **Gender in Society Perception Study 2016**²⁷ found that out of 16,145 respondents, about 80 per cent of both females (79.5%) and males (83.3%) believe that “women should take care of the house and children, and men should earn a living” (UNFPA, 2016). The pressure for women to combine household work with employment limits their paid work opportunities and impedes labour market participation by restricting job choices to work that is close to home and offers flexible working hours.

TABLE 2.
Time Use Survey 2015

	Total	Employed	Self-employed	Working on an individual basis	Working on household land, household livestock	Helping other family members	Pensioners	Unemployed	Dependents
Males									
Total minutes in a day, including:	1440	1440	1440	1440	1440	1440	1440	1440	1440
Working time	186	403	241	384	42	33	21	14	6
Work-related time	30	77	26	53	0	3	2	1	1
Housekeeping	94	64	76	76	142	117	122	160	78
Study, advanced training	50	3	1	1	2	33	0	19	229
Work on the garden, orchard	35	13	51	18	135	103	40	34	19
Parenting	8	10	11	9	11	4	9	15	1
Free time	371	256	390	262	406	449	535	474	422
Satisfying physiological needs	652	608	629	627	676	677	697	699	670
Help for relatives and friends	9	3	13	5	20	17	6	17	11
Other time	5	3	2	5	5	4	8	6	4

	Total	Employed	Self-employed	Working on an individual basis	Working on household land, household livestock	Helping other family members	Pensioners	Unemployed	Dependents
Females									
Total minutes in a day, including:	1440	1440	1440	1440	1440	1440	1440	1440	1440
Working time	104	344	270	376	14	11	11	5	4
Work-related time	17	63	35	51	0	0	1	0	0
Housekeeping	271	205	234	186	353	397	242	399	247
Study, advanced training	42	3	1	1	1	12	0	11	165
Work on the garden, orchard	14	5	13	8	76	37	17	10	8
Parenting	17	13	17	11	23	23	13	30	14
Free time	313	188	249	183	314	289	461	306	337
Satisfying physiological needs	652	615	606	619	650	659	684	666	655
Help for relatives and friends	5	2	6	1	4	9	4	6	6
Other time	4	2	10	4	5	3	6	5	5

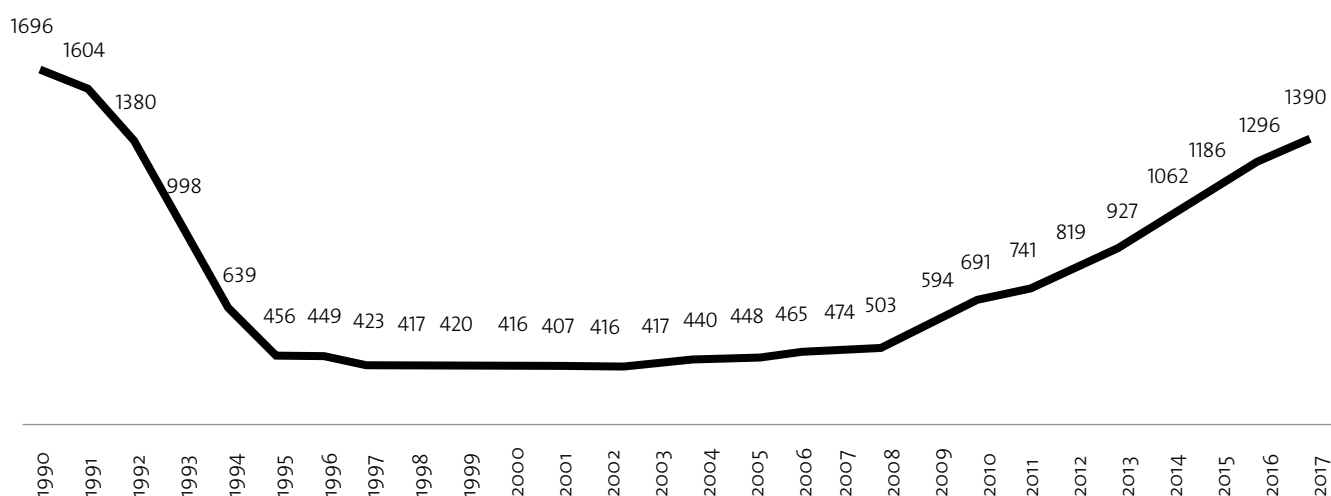
Source: National Statistical Committee. Time Use Survey 2015, <http://www.stat.kg/ru/publications/obsledovaniya-byudzhetna-vremeni/>

The erosion of social services provision, especially the system of free ECEC services, lies at the heart of the problem. The post-communist transition period from 1990 to 1994 saw a drastic decline in the number of preschool institutions by a quarter of the initial number (Figure 6). There has been a reversal of this decline and a gradual increase from 2008 onwards. However, by 2017 the number of preschool institutions still had not reached 1990 levels. This is despite the fact that the number of children aged 0-6 increased by 1.26 times from 855,354 children in 1990 to 1,074,959 children in 2017.²⁸ The current ECEC coverage rate is about 24 per cent, with enrolment almost twice as high in urban areas (34 per cent) as in rural areas (18 per cent).

The lack of free public ECEC infrastructure restricts the improvement of women's labour force participation in Kyrgyz Republic given the trends discussed above such as women's unpaid reproductive workload and intermittent labour-force participation patterns, where prime working-age women exit the labour market due to marriage and childbirth (EBRD, 2015). Contrary examples elsewhere in the region, such as Republic of Kazakhstan, indicate that a steady increase in preschool coverage boosts female labour participation rates (Khitariashvili, 2016).

FIGURE 6.

The number of preschool institutions in Kyrgyz Republic 1990-2017



Source: National Statistical Committee of Kyrgyz Republic <http://www.stat.kg/ru/statistics/obrazovanie/>

A recent assessment of countries covered by the European Bank for Development and Reconstruction (EBDR), including Kyrgyz Republic, estimates that, on average, increasing the share of government expenditure on ECEC (as a percentage of GDP) by 1 per cent can reduce the gender gap in labour-force participation by as much as 10.2 per cent (Sultana et al., 2019). For Kyrgyz Republic, **increasing ECEC expenditures by 1.5 per cent of GDP would have the potential to decrease the gender gap from 28 per cent to 4 per cent.**

The National Strategy on Gender Equality (NSGE) for the period 2012–2020 establishes the creation of working conditions that balance work and family responsibilities as one of its three strategic pillars. The other two pillars entail the reduction of gender wage gaps and occupational segregation, and moving women out of informal into formal employment. The National Plan of Action on Achieving Gender Equality in Kyrgyz Republic for 2018–2020 lists the following measures to facilitate work-life balance:

- Conduct **nationwide analysis of the reasons that impede the combination of work and family responsibilities** and explore needs and opportunities related to the creation of after-school groups in kindergartens and elementary schools and additional places in kindergartens.
- Create an inter-agency working group to **develop a mechanism for the effective combination of work and family responsibilities** through the creation of day-care groups in elementary school and kindergartens and additional places in kindergartens.

3.

ECEC services

Education has been a priority in Kyrgyz Republic over the past decade. In 2017, the government allocated 22.5 per cent of state budget expenditures to education. Public expenditure on education as share of GDP (corresponding to approximately 7.2 per cent of GDP) is the highest in the Central Asian region and Eurasian Economic Union (EAEU).²⁹

As noted above, there was a sharp decline in the number of ECEC institutions in the post-communist transition period of the 1990s, remaining at very low levels until a gradual increase started in 2008. ECEC coverage has almost doubled in the last decade. However, given that it was as low as 13 per cent in

2010, the doubling merely achieved a 24 per cent enrolment rate by 2017 (Table 3). In urban areas, the rise in enrolment was achieved mainly through an increase in the number of children per preschool institution (on average there are about 230 children per urban preschool and 93 children per preschool) plus an expansion of private centres. In rural areas, the number of children enrolled in preschool institutions has increased more rapidly than in urban areas, due in part to the growing number of community-based kindergartens, the operation of which does not require considerable financial resources. The enrolment rate in preschool institutions varies significantly by the level of family income; 50 per cent of children from the highest income quintile households attend such programmes, compared with only 12 per cent in the poorest quintile (UNICEF, 2014).

TABLE 3.

ECEC enrolment rate for children (aged 6 and younger, %)

	2010	2011	2012	2013	2014	2015	2016	2017
Total	12.9	14.5	16.1	17.4	19.5	19.9	22.1	23.5
Urban settlements	28.0	29.9	32.1	31.6	32.3	31.1	32.3	34.2
Rural settlements	6.3	7.4	8.8	10.6	13.2	14.2	16.6	17.9

Source: National Statistical Committee of Kyrgyz Republic. 2018. Education and Science in Kyrgyz Republic Statistical bulletin, <http://www.stat.kg/media/publicationarchive/500720d5-e440-4bfd-9e9c-b05c210f5f92.pdf>

The Education Development Strategy of Kyrgyz Republic for 2012–2020 identifies the expansion of preschool education as a top priority. The strategy reflects an assessment that highlighted five major problems with preschool education:³⁰

1. Low coverage
2. Unequal starting positions of preschool-aged children due to inadequate preparation for primary school compared to children who have undergone preschool education programmes
3. Inefficient resource allocation to preschool educational organizations
4. Low quality teaching in preschool educational institutions
5. Lack of continuity between preschool and primary school curricula

Total spending on preschool education in 2017, including household expenditures, was 6.5 billion Som with the state providing about 77 per cent of the costs and parents paying 23 per cent. State expenditures on ECEC (5.043 billion Som) constituted 14 per cent of total public education expenditures (marking an increase from 11 per cent in 2013) corresponding to 0.97 per cent of GDP.³¹ The World Bank (2013) points out that such a substantial share of the budget should achieve a higher coverage rate than 24 per cent and points to inefficient use of the current budget as well as weak institutional and management capacity in the educational system. These problems prevent the system from using funding sources in an effective manner to introduce equitable and inclusive education and to improve its quality.

According to data compiled by the National Statistical Committee of Kyrgyz Republic, the average unit cost (cost per child, per year) for education in state preschool organizations has increased from 6,500 Som in 2010 to 28,200 Som in 2017. In response to this high unit cost, the state decided to introduce half-day kindergarten and a series of additional measures in 2017 to increase the enrolment rate. Private preschools were exempted from multiple taxes such as VAT and land, profit and income taxes. In addition, state and municipal educational organizations (including preschool organizations) could forgo licensing.³² As well, the government has dropped a requirement that owners of private kindergartens should own the buildings that house the schools.

From 2013 to 2017, the number of teaching staff in ECEC increased 1.5 times, from about 7,000 to 11,000. Teaching staff include directors, methodologists, educators, music teachers, pathologists, and speech therapists. More than two thirds of teachers have higher education and about a quarter (23 per cent) have specialized training. Teaching staff in preschool institutions are paid following established pay scales dependent upon level of education, pedagogical experience, and monthly workload. Legislation states that teachers in preschool should have the same level of compensation as teachers in primary schools.³³ However, since the workloads in primary and preschool educational institutions are not necessarily similar, the monthly salaries of preschool and primary school teachers may not be directly comparable. Preschool educational organizations can independently set up bonuses and supplements for teaching staff and local governments have the right to establish other types of allowances, bonuses and rewards for employees of preschool educational organizations.³⁴

Education in the country's preschool establishments reflects state standards stipulated in the Preschool Education and Childcare Act. However, there is no evidence-based data on the quality of private and state preschool organizations. Starting from 2018, the Association of Children's Educational Institutions in Bishkek launched an internal certification project to increase parental confidence in children's non-governmental institutions. The initiative was pioneered by

twenty-three private kindergartens, of which sixteen preschool organizations confirmed compliance with requirements concerning the quality of education and development of preschool-aged children.³⁵

The Kyrgyz Republic Development Programme for the period 2018-2022 – Unity, Trust, Creation – sets a target enrolment rate for preschool education of 80 per cent by 2022.³⁶ While there is no specification regarding age group or duration, it is likely that the target reflects the share of children engaged in one year of organized learning prior to starting school. Recent years have seen the emergence of several government initiatives to create alternative models that increase children's access to early learning; however, these efforts do not include full-day care services. Rather, the focus is on the learning and development of children prior to starting first grade. One such initiative is the **Nariste programme** which started in 2015 and targets 5-year-old and 6-year-old children with the objective of preparing them for school. Nariste is a 480-hour programme lasting a full academic year. The expansion of the programme was implemented with the support of the Global Partnership for Education within the framework of the Education Development Strategy of Kyrgyz Republic (2012–2020). The overall share of first graders that went through the preparation programme increased from 56 per cent in the 2015–2016 academic year to 79 per cent in 2017–2018.

Under another recent initiative, **Child Development Centres** (CDCs), offering spaces for early childhood learning and development, are being piloted in eight libraries across the country. This pilot is being implemented from September 2018 to September 2019 by the Ministry of Culture and Tourism (MoCT) of Kyrgyz Republic. The pilot receives cross-sectoral support from the Ministry of Education and Science (MoES), Ministry of Health (MoH), Ministry of Finance (MoF), and the State Agency for Local Self-Government and Ethnic Relations (GAMSUMO) and benefits from technical assistance through UNICEF's Kyrgyz Republic Country Office. Staff trained in early childhood development oversee developmental activities and the centres are provided with the toys, games, books, and ideas to effectively lead parents and children in joint activities. UNICEF (2018) states that this is “a

high-quality but cost-efficient way to provide early childhood education and development across the country”.

While these recent initiatives are noteworthy for making progress in ECEC outreach, they fall short of two important objectives. Most importantly, they are of limited outreach to children because they do not provide ongoing access to centre-based quality ECEC. It is likely that a minority of children from higher income urban-based households will continue to benefit from continuous access to centre-based ECEC, while the majority from lower income households must make do with limited access through such programmes. Moreover, since these programmes are of limited duration or conditional on parental accompaniment, they fail to relieve time constraints for mothers. The policy simulation in this study foresees the evolution of ECEC service infrastructure that is more comprehensive, of national scope and based on quality ECEC centres that provide continuous access to professional care and education services. **While the costs of a more comprehensive approach to ECEC service infrastructure are greater, the aim of this analysis is to show that the returns from undertaking higher costs are substantial not only in terms of social and longer-term benefits but also in the form of shorter-run economic outcomes.**

Kyrgyz Republic in the context of Central Asia

Table 4 sums up the main indicators for Kyrgyz Republic and compares the country against its neighbours in Central Asia. **Kyrgyz Republic has the lowest ECEC coverage rate as well as GDP per capita after Republic of Tajikistan.** Republic of Kazakhstan is the best performer in the region in terms of ECEC coverage at an impressive 66 per cent overall rate and provides almost universal coverage for children three to six years old. It is also the highest GDP per capita country in the region, in part due to its wealth of natural resources.

The women’s employment rate in Kyrgyz Republic is the lowest at 41.8% along with Republic of Tajikistan. It lags almost 20 percentage points behind Republic of Kazakhstan, again the best performer in the region. The Kyrgyz gender employment gap at 29 per cent is the highest in the region and much higher than that of Republic of Tajikistan (since the latter has a very low labour force participation rate all around). An interesting observation, however, is that despite low enrolment, Kyrgyz Republic’s spending on ECEC at 0.97% of GDP is higher than that of Republic of Kazakhstan (0.5% of GDP) in relative terms. This observation echoes the assessment by the World Bank of inefficiencies in education expenditures. A comparison to Republic of Kazakhstan shows that the per child ECEC expenditure as share of GDP per capita is also higher (29 per cent versus 8 per cent).

TABLE 4.

Selected indicators on Kyrgyz Republic and other Central Asian countries

	Kyrgyzstan	Kazakhstan	Tajikistan	Turkmenistan	Uzbekistan
Enrolment rate¹ (%)					
0–6 years	24	66	10	58	27
<i>0–2 years</i>	4	30	n.a.	n.a.	n.a.
<i>3–6 years</i>	31 (3–5 yrs.) 59 (6 yrs.)	91	9	n.a.	24
GDP (billion dollars; current prices)	7.703	162.887	6.927	42.360	66.500
GDP per capita, dollars	1,297	9,030	990	7,318	1,502
Public spending (% GDP)	24	24	36	10	20
ECEC spending (% GDP)	0.97	0.5	n.a.	0.8	0.8 ²
Per child ECEC cost (% GDP per capita)	29.3	8.0 ³	n.a.	n.a.	n.a.
Women's employment rate	41.8	60.4	40.54	53.4	45.8
Gender employment gap (p.p.)	29	12.5	19	13.8	8.4
Unemployment rate (%)	6.9	4.9	6.9 ⁴	8.6	5.8
Labour force participation rate (%)	60.1	81.8	45.7	66	73.5

Sources: For Kyrgyz Republic, the National Statistical Committee of Kyrgyz Republic; for Turkmenistan, <https://tradingeconomics.com/turkmenistan/gdp>; for other countries, Commonwealth of Independent States, 2017 Statistical yearbook, www.eurasiancommission.org and www.worldbank.org, unless otherwise noted.

1 Enrolment rates are the most recent available; the earliest are for Turkmenistan for 2014.

2 World Bank Document - Report No. 71930-UZ. Republic of Uzbekistan, Improving the system of preschool education and upbringing 2013. <http://documents.worldbank.org/curated/en/18651146831116542/pdf/719300ESW0P1295860Box37432700PUBLIC00ACS.pdf>

3 National report on the state and development of the education system of the Republic of Kazakhstan, 2016. Ministry of Education and Science of the Republic of Kazakhstan / Informational Analytical Center.

4 Labour Force Survey 2016. Republic of Tajikistan.

Macroeconomic context and fiscal policy

Macroeconomic policy in Kyrgyz Republic over the past decade, particularly following the onset of the 2008 global economic crisis, remains significantly expansionary. On the fiscal side, capital as well as recurrent spending is high, while monetary policy is accommodative. The World Bank (2018) notes that while fuelling economic activity, expansionary policy also comes at the cost of continued fiscal imbalances, concerns over increased public debt and debt sustainability, and inflationary pressures.

The public budget deficit stood at 4.1 per cent of GDP in 2018, down from 6.3 per cent in 2016, but significantly

above the levels of previous years (3 per cent in 2015). This deficit was mainly driven by significant capital spending as well as fiscal stimulus spending directed at current expenditures that were primarily increases in wages and pensions as well as social protection. Government spending as share of GDP stands at a very high 37 per cent of GDP. Government spending is supported by increases in tax revenues and grant support which amount to 33 per cent of GDP, with tax revenues about 25 per cent of GDP. The World Bank (2018) notes that improved domestic activity, as well as higher rates for excises for tobacco and alcohol, also boosted tax revenues. Non-tax revenues (about 8 per cent of GDP) increased due to higher profits from state-owned enterprises.

TABLE 5.

The breakdown of state expenditures

	2010	2011	2012	2013	2014	2015	2016	2017
Overall expenditures (million Som)	68781	91544	107240	104271	121303	134572	151558	166023
State budget expenditures as % GDP	31	32	35	29	30	31	32	32
BREAKDOWN OF EXPENDITURES								
General government services	12%	11%	11%	11%	11%	12%	11%	11%
Defence	5%	4%	3%	4%	4%	4%	4%	5%
Public order and security	9%	8%	7%	8%	8%	8%	9%	8%
Agriculture, forestry, fishing and hunting	2%	1%	1%	2%	1%	1%	1%	1%
Fuel and energy	0%	0%	0%	0%	0%	0%	0%	0%
Mining, manufacturing, construction	0%	0%	0%	0%	0%	0%	0%	0%
Transport	3%	2%	2%	3%	2%	3%	2%	2%
Communication	0%	0%	0%	6%	0%	0%	0%	0%
Economic issues not classified elsewhere	15%	18%	20%	4%	13%	13%	13%	15%
Environmental protection	1%	1%	0%	1%	1%	1%	1%	1%
Housing and communal services	6%	4%	4%	5%	5%	5%	5%	5%
Health care	10%	10%	11%	12%	11%	10%	9%	10%
Leisure, culture and religion	3%	3%	2%	3%	3%	3%	4%	3%
Education	19%	21%	21%	23%	21%	22%	24%	23%
Social protection	16%	16%	16%	20%	19%	18%	17%	16%

Source: National Statistical Committee of Kyrgyz Republic, <http://www.stat.kg>

Social expenditures on education, social protection and health care are the three items with the largest shares and all three have been stable over the past decade (Table 5). Education receives over one fifth (23 per cent) of the total budget, social protection 16 per cent, and health 10 per cent. General government services, together with defence and security, absorb about one quarter, followed by “economic expenditures not classified elsewhere” at 15 per cent.

The combination of fiscal stimulatory spending and the high share of expenditures directed at social spending have helped with efforts to reduce the

poverty rate and promote inclusive growth. The absolute poverty rate³⁷ fell by more than half in a relatively short span of time (2005 to 2009), from as high as 52 per cent to 21 per cent. However, poverty reduction stalled between 2010 and 2016 and the absolute poverty rate rose to 23 per cent. This increase was due to a rise in urban poverty and despite continuing gradual declines in rural poverty. The World Bank (2018) notes that macrofiscal policies can achieve greater poverty reduction with increased efficiency in social spending, including better targeting of social protection spending and programmes including health, education, and ECEC services.³⁸

4. DATA AND METHODOLOGY

Previous applied studies on public investment in social care services assess service expansion for different target groups catering to children, older persons, people living with disabilities or those who are ill. The Kyrgyz Republic study focuses particularly on ECEC services and follows earlier country studies to:

1. Specify policy simulation scenarios for ECEC service expansion
2. Assess deficits in ECEC services
3. Cost the necessary additional expenditure to eliminate the deficit
4. Estimate employment generation directly in the sector and indirectly in related sectors
5. Estimate the gender composition of newly emerging labour demand and hence the effect on the gender employment gap
6. Assess short-run fiscal feasibility by estimating returns from increased tax revenues.

In this study, we use two ECEC expansion scenarios corresponding to different target enrolment rates (Table 6):

- **SDG-based scenario:** A comprehensive ECEC expansion in line with Sustainable Development Goals (SDGs) as defined by a recent ILO study (2018): 50 per cent for ages 0–2 and 100 per cent for ages 3–6.³⁹
- **Regional best scenario:** A more modest ECEC expansion following Republic of Kazakhstan, the best performing country in the Central Asian region (see Table 4).

Regarding the first scenario, as noted in Section Two, improvement of ECEC is explicitly defined as a target under SDG 4.2 and implicitly under SDG 5.4. Nevertheless, the monitoring framework for SDGs does not set any quantitative targets for ECEC improvement. In developing the SDG-based scenario, we follow the ILO (2018) which provides a first-ever

current and comprehensive assessment of paid and unpaid care work around the world as well as future developments. The ILO adopts a broad reading of the SDGs and goes beyond the monitoring framework to define quantitative targets for coverage by education and health services in line with current indicators in the high-performing countries. Enrolment targets, as well as regulatory guidelines in ECEC, are often disaggregated by two age groups: 0–2 years of age and 3 years old to mandatory school age (for aged 3–6 group in Kyrgyz Republic). The SDG-based enrolment target rates are 50 per cent for the aged 0–2 group and 100 per cent for the 3 years old to mandatory school age group.⁴⁰

Under the regional best scenario, the target rates are set relatively lower (Table 6), in line with those observed in Republic of Kazakhstan: 30 per cent for the aged 0–2 group; 82 per cent for the aged 3–5 group and 100 per cent for 6 year olds (including those who are already enrolled in primary schooling). As in Kyrgyz Republic, while childcare centres were widely available in Republic of Kazakhstan under the Soviet period as part of the social support infrastructure, in the post-transition period they were largely dismantled. In recent years, the country has launched several initiatives to invest in ECEC and increased spending with the twin objectives of improving access and better integrating the ECEC system into the health and social protection systems. Republic of Kazakhstan has achieved a robust increase of 49 per cent in its ECEC coverage rate for children aged 3–6 years over a relatively short period from 2005 to 2013 (Gotsadze and Karzhaubayeva, 2017).

The state is the biggest provider of childcare and early childhood education and care in Republic of Kazakhstan, with only about 16 per cent of childcare centres run privately. Nevertheless, the cost of private childcare in that country remains prohibitive for many lower-income families – especially childcare for children up to 2 years of age – with adverse impacts also on women’s labour-force participation (Sultana et al., 2018). Despite these impacts, women’s labour-force participation in the country remains one of the highest in the region (Table 4).

The Republic of Kazakhstan government has made a commitment to close the childcare gap by 2020 through expanding the supply of public childcare services and providing subsidies to parents (OECD, 2017a). Beyond direct public provisioning of services, the government has also employed public-private partnerships, contracting private institutions as well as lowering the licensing requirements for childcare centres to expand the network of childcare and pre-schools (Gotsadze and Karzhaubayeva 2017).

Despite high and increasing ECEC coverage rates in Kazakhstan, however, service quality remains an important concern (Sultana et al., 2018). The OECD (2017b) notes that both recruitment and retention of qualified staff are challenging; unattractive salaries (half of the national average wage), and the low status of ECEC workers, both contribute to a lack of interest in the sector. Thus, the student-to-staff ratio remains higher than desired and affects service quality.

Beyond the coverage rates, the specification of SDG-based ECEC targets by the ILO (2018) also entails setting guidelines covering the quality of service provisioning and employment. SDG target 4.2 on early childhood development explicitly emphasizes education of good quality. The quality of ECEC services is crucial to ensuring children’s mental and social development and engendering lifelong positive impacts. There are no internationally agreed guidelines, but commonly-used quantitative criteria for ECEC quality include ceilings on children-to-teacher (and other support staff) ratios and class/group size as well as teacher qualifications. Teacher qualifications depend in part on the quality of employment

conditions.⁴¹ Quality of employment is assessed through work conditions such as salaries, social security and other benefits and is defined in line with SDG 8 on full and productive employment and decent work for all. Decent work conditions, beyond quality employment, also act as a determinant of service quality through worker productivity and motivation.

This study follows the ILO (2018) in setting these additional targets on quality with respect to student-to-staff ratios and employment conditions (salary and social security). For the ratios, we follow the regulatory legislation on ECEC in Kyrgyz Republic, which is for the most part in line with international standards:⁴² namely (Table 6), in the aged 0–2 group, two teachers plus one assistant teacher for a group size of 10–15 children and three professional staff plus seven support staff for an establishment of 165 children. For the aged 3–6 group, the ratios are two teachers plus one assistant teacher for a group size of 25–30 children and three professional staff plus seven support staff for an establishment of 330 children. For employment conditions, all job creation is envisioned in the formal sector based on year-round permanent contracts covered under social security. Wage levels are set again by regulatory legislation.⁴³ Wages range from the highest at 11,430 Som (about \$166) for teachers (approximately 10 times the minimum wage) to the lowest at 4,200 Som (about \$61) for assistant teachers (four times the minimum wage).

The expansion scenarios predict a dramatic improvement over the current situation in both ECEC coverage and quality, particularly regarding student-to-teacher ratios. The SDG-based scenario includes a more than ten-fold increase in coverage for the aged 0–2 group, more than a three-fold increase for the 3–5 year olds and almost a doubling for the 6-year-old children. The regional best scenario is more modest but still reaches the targets. There must be a nearly seven-fold increase in coverage for the aged 0–2 group, a more than doubling for the aged 3–5 group and almost a doubling for the 6-year-old children. As seen in Table 6, the current teacher-to-student ratios are high at one teacher per 20 children as opposed to the regulatory ratios that call for at least one teacher per five children

(aged 0–2) or 10 children (aged 3–6). It is not possible to predict the extent of improvement in employment since accurate data on current conditions of ECEC

workers are not available. Yet, the declining student-to-teacher ratios already indicate an improvement in terms of workload and job stress.

TABLE 6.
Policy scenarios on ECEC service expansion

	Current		SDG-based		Regional Best	
	0–2	3–6	0–2	3–6	0–2	3–6
Enrolment rate (%)	4	31 (3–5) 59 (6)	50	100	30	82 (3–5) 100 (6)
Group Size (no. of children)¹	n.a.		10–15	25–30	10–15	25–30
Staff-to-Child ratios						
Teacher:child	1:20		2 for 10–15	2 for 25–30	2 for 10–15	2 for 25–30
Assistant Teacher:child			1 for 10–15	1 for 25–30	1 for 10–15	1 for 25–30
Professional support staff:child²	1:11		3 for 165	3 for 330	3 for 165	3 for 330
Other support staff:child²			7 for 165	7 for 330	7 for 165	7 for 330
Staff wages (monthly in 2017 Som)³ (ratio ECEC wage/minimum wage)						
Teachers	n.a.		11,430 (10)			
Assistant teachers	n.a.		4,200 (3.7)			
Professional support staff	n.a.		9,360 (8.2)			
Other support staff	n.a.		5,400 (4.7)			

¹ Regulatory group size.

² 165 children of aged 0–2 group based on 10–15 children per group x 11 groups per establishment; 330 children of aged 3–6 group based on 25–30 children per group x 11 groups per establishment as defined by legislation.

³ Regulatory wages with 20% surcharge based on permanent contracts with social security benefits.

Once these policy targets under different scenarios are set, it becomes possible to assess the extent of the care deficit in ECEC and to undertake a costing of the increase in expenditures required to close the deficit. Gap analysis of the care deficit requires gathering information on the existing supply of ECEC services as captured by the number of children by age group already enrolled in ECEC centres, and assessing disparities with policy targets. The upper boundary for the policy target would be universal access to childcare for all children under the mandatory school

age. A more narrowly-defined policy goal is made in line with the target enrolment rates set by the two policy scenarios as shown in Table 6. Even narrower short-run policy targets can be defined; for example, targets may be limited to disadvantaged households and disadvantaged regions. Nevertheless, the long-run policy target should ideally be universal coverage by publicly-provisioned or subsidized services.

The care deficit reflects the difference between the supply (current enrolment) and the policy target: ‘the

number of children in each age group who would need to be enrolled in an ECEC centre for Kyrgyz Republic to achieve the policy target' minus 'the number of children in each age group who are currently enrolled in ECEC centres.' This difference yields the number of additional childcare places to be created to meet the assessed need.

First, estimation of the costs involved in undertaking an expansion of ECEC services to close the gap assessed in the first step requires an assessment of the average annual cost of ECEC service provisioning per child. The per child cost can be derived from existing data on the per child cost of current public and private (household) expenditures and the number of children enrolled. The current cost per child reflects, however, present service quality (in terms of prevailing children-to-teacher ratios) as well as employment conditions. For instance, the national average ratio is 20 children per teacher, which is higher than the maximum regulatory ratio as shown in Table 6. Costing is revised to reflect additional expenditures for not only expanding the quantity of services (the additional number of children enrolled) but also abiding by the regulatory ratios on staffing, group size and employment laid out in Table 6. The non-wage costs are taken at the current level, if the present quality of the physical structure and materials is satisfactory.

The estimation of new employment creation expected from ECEC service expansion is done in two steps. Direct employment creation in the ECEC sector is derived from child-to-staff ratios by type of job (teachers, teacher assistants and other support staff). Investment in childcare provision will not only generate direct jobs in childcare, it will also have 'indirect' multiplier effects on job creation in supplying industries (partly reflecting overhead costing for food, transportation, electricity, etc.). This indirect employment creation, in sectors other than ECEC, is estimated through input-output (I-O) analysis.⁴⁴

An input-output table is a data matrix presenting the production and expenditure structure of the different sectors of the national economy. The matrix presents the intersectoral transactions whereby each sector purchases from and/or sells to other sectors

intermediate inputs for its production of goods and services. By using this data, it is possible to calculate output multipliers to show the effect of an increase of one unit of output of a sector on the output of other sectors. Household Labour Force Survey aggregate employment figures enable us to derive the employment multipliers based on the amount of labour employed in each sector per unit of output. It is possible to estimate the number of jobs likely to be generated through an expansion of ECEC services in the sector itself as well as in the various other industries interacting with ECEC.

The total necessary increase in expenditures calculated in the previous step is fed into the ECEC sector through I-O analysis to estimate the total amount of employment to be created in the other sectors from which it procures inputs. However, there is no separate ECEC sector in the Kyrgyz Republic I-O table. Instead, the activities of childcare centres and preschools are included in the education sector along with higher-level educational institutions such as primary, secondary and tertiary schools as well as other adult or extracurricular educational establishments.

The exact input composition of the ECEC sector may differ from the input composition of the aggregated education sector in the I-O table that includes primary, secondary and higher education. If we use the input composition of general education as a proxy, the inaccurate input composition may yield a biased result, called aggregation bias. For an accurate assessment of the indirect impact, it is important to have an accurate input composition of the ECEC sector in an I-O table. To avoid bias as much as possible, we use published administrative data on the state budget expenditures for preschool education by economic classification. The data contains state expenditure on 13 non-wage items for preschool education. We extrapolate the information into 34 commodities in the I-O table, based on the intermediate input composition of the education sector. The input structure is then incorporated into the I-O table using a synthetic sector method that does away with a technical balancing of the table after the modification (Kim, 2011).

To conduct a realistic assessment of the employment effects of proposed policy targets, in this study we impose a supply constraint on the agriculture sector. This constraint is intended to address two issues. First, the type of employment in agriculture is likely to be informal, low productivity self-employment and unpaid family work in small-scale subsistence farming. As our policy scenarios aim to identify employment generation based on decent jobs, we do not include the impact on agricultural employment in our reporting of total employment effects.

Second, the constraint also allows us to account for the inelastic nature of agricultural production in the country. In the context of Kyrgyz Republic, agriculture accounts for 12.3 per cent of GDP and 26.7 per cent of employment (WDI, 2017). Despite its significance, the sector has faced the peculiar challenge of persistent low productivity in food crop production, while the export of agricultural commodities – meat, tobacco and cotton – have grown on average 15 per cent per year since 2010. Plus, 87.3 per cent of agricultural land is used as pasture for livestock, limiting the potential growth for food crops.⁴⁵ It is unlikely that the structure of agriculture will shift swiftly to food production – even with a strong demand stimulus from the policy simulation. Thus, agricultural production may not be able to cope with an increase in demand due to the policy intervention. In fact, excess demand for food in the short-run may be met by an increase in imports of food items, which already accounted for 13 per cent of total imports in 2017. Hence, with the supply constraint imbedded in our model, the multiplicative effect of the investment through agriculture is muted in this study.

Beyond estimation of the aggregate number of new jobs, it is also possible to determine the composition of new jobs by gender in each industry. This is done using the current gender distribution of jobs observed in household labour force survey (HFLS) data. As a reference point for assessing the employment generation capacity of increased expenditures on the ECEC service sector, we also estimate that an increase in expenditures of similar magnitude on physical infrastructure and the construction sector will instigate impacts on potential employment.⁴⁶

Finally, assessment of the short-run financial feasibility of increased public spending is based on an estimation of expected tax revenues. The expected annual return of additional fiscal spending is estimated in terms of additional income tax receipts and the social security contributions of employees and employers. A simple income tax rate schedule and social contributions are calculated based on aggregate earnings from new jobs by sector. The income tax rate schedule is a flat rate of 10 per cent. Employee pension contributions and the state-owned accumulated pension fund are 8 per cent and 2 per cent respectively. Employer contribution to pension and compulsory health insurance are 15 per cent and 2 per cent of payroll respectively. In addition, employers contribute to a special fund for the rehabilitation of workers at a rate of 0.25 per cent of payroll. In total, employees and employers contribute 10 per cent and 17.25 per cent of payrolls to social security programmes.⁴⁷ With the flat income tax, 37.25 per cent of payrolls accrue to the government.

5. FINDINGS

5. a.

Assessment of the deficit in ECEC services and costing

The total child population aged 0–6 in Kyrgyz Republic as of 2017 is 1,074,959 million, of which 466,757 were in the aged 0–2 group; 462,061 of these children were in the aged 3–5 group and 146,141 were 6 years old (Table 7). The current supply of ECEC services means that a total of 187,078 children are enrolled (plus 27,791 5-year-old and 98,783 6-year-old children in primary school).

Under the SDG-based scenario, to achieve a 50 per cent enrolment rate for the aged 0–2 group, 212,933 additional places are needed in ECEC centres. For universal coverage in the aged 3–6 group, the ECEC gap stands at 317,033 additional places, totalling 529,966 children. Including those already enrolled, this would expand Kyrgyz Republic’s total coverage rate for children under 6 from the current 26 per cent to an impressive 78 per cent.

Under the regional best scenario, to achieve a 30 per cent enrolment rate for the aged 0–2 group, 199,581 additional places would be needed in ECEC centres; and for an 82 per cent and 100 per cent coverage target in the aged 3–5 and aged 6 groups respectively, the ECEC gap stands at 213,981 and 18,033 additional places, totalling 351,595 children. Including those already enrolled, this would more than double the total coverage rate to 62 per cent.

The costs involved in reaching the ECEC targets as indicated in the SDG-based scenario amount to 15.8 billion Som in 2017 prices, corresponding to a sizeable increase by 3.0 per cent of GDP.⁴⁸ **Total public expenditures on ECEC, including current ones, would reach 4 per cent of GDP in this extensive universal coverage scenario (SDG-based).** In the case of the regional best scenario, the necessary increase in expenditures is lower at 10.2 billion Som, approximately 2 per cent of GDP. **Total public expenditures on ECEC would reach 3.0 per cent of GDP in this more modest coverage scenario (regional best).**

TABLE 7.

Assessment of ECEC service deficit and costs

Age group	Population	Current ECEC enrolment (enrolment rate)	Expansion No. of Additional Children (enrolment rate)		Expenditures in 2017 Som (in USD) (% GDP)		
			SDG-based	Regional Best	Current	SDG-based	Regional Best
–2	466,757	20,446 (4%)	212,933 (50%)	119,581 (30%)	5,043,109,900 (\$73.2 million) (0.97% GDP)	15,853,491,066 (\$230.2 million) (3.0% GDP)	10,231,014,280 (\$148.6 million) (2.0% GDP)
3–5	462,061	133,270 (31%)	299,000 (100%)	213,981 (81.6%)			
6	146,141	29,325 (59%)	18,033 (100%)	18,033 (100%)			
Total ¹	1,074,959	183,041 (24%)	9,966 (78%)	351,595 (62%)			

Source: National Statistical Committee of Kyrgyz Republic for population and enrolment data; the rest are the authors’ calculations for expansion and costing. Enrolment rates include 5-year-old and 6-year-old children enrolled in primary schooling.

5. b.

Employment generation and composition

There are 22,545 women and 4,431 men working in the ECEC sector as of 2017, accounting for 2.5 per cent and 0.3 per cent of female and male employment. Total sectoral employment of almost 27,000 accounts for 1.2 per cent of total economy-wide employment (Table 8). Women are the predominant workforce in the sector, representing 96.7 per cent and 63.9 per cent of teaching and support staff respectively and 83.6 per cent of all workers in the sector. Hence, the expansion of the ECEC sector is likely to generate more jobs for women than for men.

The growth of the ECEC sector built on the SDG-based scale may generate 96,802 jobs in the sector, of which 80,901 (or 83.6 per cent) would be for women, assuming the constant gender ratio observed in the data. The increase in employment amounts to 9.0 per cent and 1.1 per cent of female and male employment in the country. A strong labour intensity (6.1 jobs per one

million Som worth of service), contributes to this large employment potential.⁴⁹

The expansion based on the **regional best practice enrolment rate may generate 61,396 jobs in the sector**, as the scale of investment is smaller than with the SDG-based scale. Nevertheless, the number of direct jobs is proportionate to the investment scale. The regional best expansion may still contribute to the employment of women and men in the order of 5.7 per cent and 0.7 per cent respectively and 2.6 per cent in total employment.

The employment projection presented in the table is a reasonable approximation of the likely direct employment impact of increased ECEC expenditures over time. It is unlikely that the one-to-one relational and hands-on care of teachers would be easily replaced by advances in technology. Any productivity gains in the sector are more likely to appear as improved service and employment quality. Moreover, economies of scale are unlikely to apply as demand for care and support staff increases proportionate to the number of children.

TABLE 8.

Direct employment generation in the ECEC sector

	Current (2017)			SDG-based (additional employment)			Regional best (additional employment)		
	Women	Men	Total	Women	Men	Total	Women	Men	Total
Teachers and assistant teachers	15,650	532	16,182	71,847	2,442	74,290	45,569	1,549	47,118
Support staff	6,895	3,899	10,794	14,380	8,132	22,512	9,121	5,158	14,278
Total	22,545	4,431	26,976	80,901	15,900	96,802	51,311	10,085	61,396
Share of employment by sex and total (%)	2.5	0.3	1.2	9.0	1.1	4.1	5.7	0.7	2.6

Source: National Statistical Committee of Kyrgyz Republic for current employment; authors' calculations for expansion.

Through the multiplicative linkages of the ECEC sector to the rest of the economy, the expansion is likely to **generate indirect employment opportunities in other sectors, adding 23,691 and 15,289 new non-ECEC jobs in the case of SDG-based and regional best scenarios respectively** (Table 9). In terms of the gender composition of new jobs under the SDG-based scenario, 6,285

non-ECEC jobs (26.5%) are likely to be held by women while the remaining 17,406 jobs (73.5%) are held by men. Under the regional best scenario, the numbers of new non-ECEC jobs for women and men go down to 4,056 and 11,233 respectively.

The sectoral distribution of new indirect jobs is consistent in both scenarios (Table 9). Some of the industries benefiting the most in terms of indirect employment generation are food and beverage, wood and paper products, retail sales and transportation, among others. These industries are linked to the ECEC sector

directly and indirectly through meal provision, school stationery, sales, and the transportation of goods for intermediate input use. Note that there are no new jobs created in agriculture due to the supply constraint modelled in the analysis.

TABLE 9.
Indirect employment generation in other sectors

SECTORS	SDG –based scenario			Regional best scenario		
	Women	Men	Total	Women	Men	Total
Agriculture	--	--	--	--	--	--
Mining	112	707	819	72	456	529
Oil and Gas	8	25	33	5	16	21
Metal ore mining	0	0	0	0	0	0
Mining of other minerals	0	4	4	0	3	3
Food and beverage	1,259	1,904	3,163	813	1,229	2,041
Textile	521	103	624	336	66	403
Wood/paper	168	2,780	2,948	109	1,794	1,903
Printing	421	717	1,138	271	463	734
Chemical	69	85	154	44	55	99
Non-metallic mineral products	51	238	289	33	153	186
Manufacture of base metals	5	28	33	3	18	21
Manufacture of finished metal products	75	360	435	48	232	281
Manufacture of machinery and equipment	397	1,204	1,601	256	777	1,033
Other production, repair and installation of machinery and equipment	40	316	357	26	204	230
Electricity	121	900	1,021	78	581	659
Gas	0	629	629	0	406	406
Steam/air conditioning	9	47	56	6	30	36
Water/waste management	64	172	236	41	111	152
Construction	40	1,384	1,423	25	893	918
Wholesale trade	37	84	121	24	54	78
Retail	1,395	1,406	2,800	900	907	1,807
Car maintenance and repair	7	596	603	4	385	389
Accommodation/food	439	353	792	283	228	511
Transportation	120	2,305	2,425	77	1,487	1,565

Information and communication	128	196	324	83	127	209
Financial services	128	233	361	83	150	233
Real estate, professional, scientific and technical activities, research and development, administrative and support activities	393	439	832	253	283	537
Public administration and defence; compulsory social security	14	27	41	9	17	26
Education*	0	0	0	0	0	0
Public health and social services	127	25	153	82	16	99
Art, entertainment and recreation	38	47	85	24	30	55
Activities of public associations	0	0	0	0	0	0
Other service activities	100	93	193	65	60	125
TOTAL	6,285	17,406	23,691	4,056	11,233	15,289

Source: Authors' calculations.

* The new jobs in the education sector are related to the ECEC sector.

The findings suggest that ECEC expansion may generate female-intensive jobs in the sector, countering existing gender disparity in the labour market. Table 10 shows that the number of new jobs under SDG-based expansion amounts to 120,493, of which over 87,186 jobs would be for women. The boost for women raises total female employment from 895,100 to over 982,000. For men, 33,306 jobs would be created, raising male employment from 1.44 to 1.48 million. Under the regional best scenario with the smaller scale of investment, the total number of new jobs amounts to 76,684, of which 55,367 would be for women. This would increase female employment to over 950,000. For men, 21,318 jobs would be created, growing male employment to almost 1.47 million. To reiterate, **the gender-based employment impact of investment in ECEC may raise female employment by 9.7 per cent and male employment by 2.3 per cent.** Direct job creation in the ECEC sector contributes roughly 93 per cent of total female employment growth. Under the regional best scenario, the impact is proportionately smaller at 6.2 per cent and 1.5 per cent for women and men respectively.

By comparison, the impact in the construction scenario of the same scale of investment as the SDG-based scenario appears in the last two columns of the Table 10. The investment could generate 43,126 jobs in construction, 51,611 jobs in other sectors and 94,738 jobs in total. **The gender distribution of the**

construction jobs follows the highly male-biased job distribution in that merely 3 per cent are for women.

Indirect job distribution is better since about 24 per cent are for women. Such highly unequal employment distribution results in a marginal growth of female employment by only 1.5 per cent, compared to 5.6 per cent growth in male employment.

Overall, compared to investment in the ECEC sector, investment in construction generates fewer employment opportunities in total (94,738 versus 120,493), and disproportionately fewer for women (14.2 per cent versus 72.4 per cent). Hence, **an increase in ECEC spending has the potential to generate not only more jobs in total than construction but also narrows down the gender employment gap.** By contrast, an increase in spending of equal magnitude generates not only fewer jobs than ECEC spending, but also exacerbates an already high gender employment gap.

The latter half of Table 10 shows the likely impacts in terms of the employment rate and the gender employment gap. The current gender gap in employment stands at 29.9 per cent (based on an employment rate in 2017 of 42.8 per cent for women versus 72.7 per cent for men). A comprehensive ECEC expansion under the SDG-based scenario promises to increase women's and men's employment rates by 4.2 and 1.7 percentage points respectively and decrease the gender gap by

2.5 percentage points to 27.4 per cent. A more modest expansion under the regional best scenario increases women's and men's employment rates by 2.6 per cent and 1.1 per cent respectively and cuts the gender gap by 1.6 per cent. A construction boom, however, increases women's employment by only 0.6 per cent versus a 4.1 per cent increase in men's employment. This leads to a further widening of the gender employment gap by 3.5 per cent to 33.4 per cent.

We should also note that the effects reported here on the women's employment rate and the gender

employment gap constitute lower bound estimations since they are based only on the short-run demand-side effect of an ECEC expansion. However, **an ECEC expansion would also result in positive effects on women's labour supply through reducing the burden of unpaid care work.** Hence, the increase in the women's employment rate (and the total employment rate) as well as the narrowing of the gender gap under ECEC expansion would be much larger. Spending on construction is not expected to have any such impact on the labour supply-side hence the impact reported here is a realistic assessment.

TABLE 10.
Employment impact summary

	SDG-based			Regional best			Construction ¹		
	Women	Men	Total	Women	Men	Total	Women	Men	Total
Employment	Number of jobs								
Current (a)	895,100	1,444,800	2,339,900	895,100	1,444,800	2,339,900	895,100	1,444,800	2,339,900
Direct (b)	80,901	15,900	96,802	51,311	10,085	61,396	1,197	41,929	43,126
Indirect (c)	6,285	17,406	23,691	4,056	11,233	15,289	12,228	39,384	51,611
Sum (d=b+c)	87,186	33,306	120,493	55,367	21,318	76,684	13,425	81,312	94,738
Potential (a+d)	982,286	1,478,106	2,460,392	950,467	1,466,118	2,416,585	908,525	1,526,112	2,434,637
	Contribution to employment growth (%)								
Direct (b/a)	9.0	1.1	4.1	5.7	0.7	2.6	0.1	2.9	1.8
Indirect (c/a)	0.7	1.2	1.0	0.5	0.8	0.7	1.4	2.7	2.2
Total (d/a)	9.7	2.3	5.2	6.2	1.5	3.3	1.5	5.6	4.0
% new jobs	72.4	27.6	100	72.2	27.8	100	14.2	85.8	100
	Contribution to Change in Employment Rate (%)								
Current	42.8	72.7	57.4	42.8	72.7	57.4	42.8	72.7	57.4
New	47.0	74.4	60.4	45.5	73.8	59.3	43.5	76.8	59.7
Change in E.R. (p.p.)	4.2	1.7	3.0	2.6	1.1	1.9	0.6	4.1	2.3
	Contribution to Change in Gender Employment Gap (percentage points)²								
Current gap	29.9								
New gap	27.4			28.3			33.4		
Change	-2.5			-1.6			+3.5		

Source: National Statistical Committee of Kyrgyz Republic for current employment; authors' calculations for expansion.

¹ In the construction scenario, the spending increase is identical to that of the SDG-based scenario; hence, construction results are comparable to SDG-based results but not to the regional best scenario, which entails a lower total spending increase.

² The effect on the women's employment rate and the gender employment gap includes only short-run demand-side effects operational through the generation of jobs for women. The positive effects of an ECEC expansion on women's labour supply are not included.

5. c.

Fiscal returns

The direct and indirect employment impacts of the ECEC sector also lead to an increase in payrolls which in turn raises the government's revenue via social security contributions and income tax receipts. Table 11 displays the extent to which the expansion contributes to revenue, and thus how much of the cost of expansion can be recovered due to the demand-side effects on increased spending. The SDG-based expansion costs 15.85 billion Som of which 62 per cent is the payroll of ECEC workers. The social security contributions of employers and employees (17.25 per cent and 10 per cent of payroll) and the income tax amount (10 per cent) to almost 3.66 billion Som, or 23.1 per cent of the cost of expansion. In addition, the increase in

payroll from indirect impacts leads to additional social security contributions and income tax receipts in the order of 1.47 billion Som, or 1.9 per cent of the cost of expansion. In total, 4.13 billion Som, or over a quarter of the cost of expansion, may be recovered in the short run. Under the regional best scenario, the fiscal returns from direct and indirect impacts are similar at 22.7 per cent and 3.0 per cent or 2.3 billion and 222 million Som respectively. In total, the fiscal return amounts to 2.6 billion Som, or 25.6 per cent of the cost. The short-term fiscal returns under the regional best scenario are similar as social security contributions and income tax rates are the same regardless of income level.

TABLE 11.

Fiscal returns, SDG-based and regional best expansion

	SDG		Regional-best	
	Million Som	% of cost	Million Som	% of cost
Cost of expansion	15,853	100	10,231	100
Direct impact				
Social contributions	2,676	16.9	1,697	16.6
Employers	1,694		1,074	
Employees	982		623	
Income tax	982	6.2	623	6.1
Subtotal	3,658	23.1	2,320	22.7
Indirect impact				
Social contributions	345	2.2	222	2.2
Employers	218		141	
Employees	126		82	
Income tax	126	0.8	82	0.8
Subtotal	471	3.0	304	3.0
<i>Total</i>	<i>4,129</i>	<i>26.0</i>	<i>2,624</i>	<i>25.6</i>

Source: Authors' calculations.

For comparison, we conduct a fiscal impact assessment of investment in physical infrastructure and construction; this serves as a counterfactual to our proposed policy simulation. Table 12 displays the fiscal returns of the construction sector – the main beneficiary sector

from the investment. The direct fiscal returns from social security contributions and income tax receipts are much smaller at 1.3 per cent as the wage share of the construction sector is only 3.4 per cent of gross output. Moreover, the indirect impact on fiscal returns is not

better than that of the ECEC investment, despite construction's large share of intermediate input demand (68.6 per cent). The low share of wages in other major upstream sectors, i.e. manufacturing of construction material, retail sales and transportation of the material, put downward pressure on the indirect fiscal impact.

Hence, the **short-term fiscal return of the investment in construction is only 7.4 per cent or less than a third of the rate from investment in ECEC**. The findings suggest that **in the short run, ECEC investment may be more fiscally sustainable than investment in physical infrastructure**.

TABLE 12
Fiscal returns, construction

Construction	Million Som	% of cost
Cost of expansion	15,853	100
Direct impact		
Social contributions	150	0.95
Employers	95	
Employees	55	
Income tax	55	0.35
Subtotal	205	1.30
Indirect impact		
Social contributions	707	4.46
Employers	448	
Employees	260	
Income tax	260	1.64
Subtotal	967	6.10
Total	<i>1,172</i>	<i>7.40</i>

Source: Authors' calculations.

6. CONCLUSIONS

Our research findings indicate that investment in ECEC may be an effective strategy towards inclusive growth in Kyrgyz Republic through two channels in the short-run. First, the ECEC sector has strong potential to boost employment opportunities for many because it is a highly labour-intensive sector; indeed, the number of jobs generated per unit of spending is higher than most other sectors. Second, the composition of labour demand instigated through ECEC spending is pro-women in that it helps narrow the gender employment gap by creating relatively more jobs for women. By contrast, some sectoral spending – such as construction – creates labour demand predominantly for male workers, further widening already significant gender gaps in the labour market.

To quantify the extent of these effects, the foregoing analysis compares two policy scenarios for Kyrgyz Republic whereby an identical amount of fiscal spending is allocated either to the ECEC service sector or the construction sector. The amount of spending was determined based on what we called an SDG-based scenario. This scenario targeted an ECEC expansion to achieve a 50 per cent enrolment rate for children aged 0–2, and 100 per cent for children aged 3–6. We found that to reach these targets, Kyrgyz Republic would need to create an additional 530,000 ECEC places. For this to reflect the service quality guidelines in the national legislation, as well as decent employment conditions, ECEC spending would need to increase by a sizeable 15.85 billion Som (in 2017 prices) – an amount equivalent to approximately 3.0 per cent of GDP.

In Kyrgyz Republic, like elsewhere, expansion of quality service delivery through ECEC centres engages the question of how to allocate limited public resources against competing needs in an era of growing public debt and a fragile external economic environment. Given the magnitude of the required resource allocation, an assessment of additional short-run economic returns from increased ECEC expenditures becomes even more important. **Our estimation of the employment effects of an identical amount of spending on the ECEC service sector versus the construction sector suggests that the former has the potential to generate almost 30 per cent more jobs.** Furthermore, we estimate that **as high as 72 per cent of the jobs generated**

through ECEC spending would go to women, thus potentially reducing the gender employment gap by a minimum of 2.5 percentage points. By contrast, construction spending had the opposite impact, whereby only 14 per cent of the newly created jobs would engage women, further widening the already substantial gap by as much as 3.5 percentage points. In addition, an assessment of short-run fiscal feasibility finds that the fiscal return of ECEC expansion is three times as high as that of construction expansion.

Certainly, the aim of the comparative exercise is not to undermine investment in physical infrastructure, as this is essential for a productive economy. Rather, the objective is to better inform decision-making regarding the allocation of fiscal resources across sectors. This is especially critical given that fiscal allocations typically favour physical infrastructure over social infrastructure (particularly in times of fiscal expansion). The foregoing analysis shows that given the multiple social and economic benefits of investing in ECEC services – plus the gendered and overall employment implications of sectoral choices – fiscal spending decisions need to attain better balance.

The employment generation, gender gap and fiscal return effects in this report are lower bound estimates due to several reasons. In estimating overall indirect employment effects, we did not include the new jobs expected to emerge in agriculture because those are likely to be informal, low-productivity, low-wage or

unpaid family jobs in small-scale peasant farming. We also omitted the induced effects (further employment generation via increased household spending), again to avoid any overestimation bias.

Moreover, our assessment of gendered employment impact was based solely on demand-side effects through the generation of jobs for women. **An ECEC expansion, however, is also likely to produce robust labour supply effects through decreasing women's unpaid care work and easing the time constraints on their labour supply.** The estimation of these supply-side effects, however, was beyond the scope of this study. As such, the estimated boost to women's employment through an ECEC expansion, ranging from 2.6 to 4.2 percentage points under the different scenarios (and the narrowing down of the gender employment gap by 1.6 to 2.5 percentage points) is due purely to the short-run demand-side impact. The actual medium- to long-run gender equality impact would be even stronger once the supply effects become operational.

Such labour supply-side effects (not to mention the supply-side effects operational through children being better prepared for school and work and enhanced human capital) would also contribute to the long-run fiscal sustainability of initial expenditures through increased productivity and growth.

It is important to note that while access to quality ECEC services is crucial to easing the constraints on women's labour supply, it is not sufficient by itself. Certainly, there is a need for a comprehensive framework of work-life balance, an issue which is rightfully emphasized in the two recent national

policy documents of Kyrgyz Republic on gender equality. Both the National Strategy on Gender Equality for 2012–2020 and the National Plan of Action on Achieving Gender Equality for 2018–2020 call for working conditions that enable the combination of work and family responsibilities.

The elements for building an enabling environment for work-life balance go beyond access to ECEC services to encompass the following: a wider range of social care services for other dependent household members (older persons, people living with disabilities and those who are ill); regulation of the labour market for care leave and work hour requirements and other decent work conditions; and intervention to support equal sharing of the unpaid work load by men.⁵⁰

In addition, particularly in regions where physical infrastructure is inadequate, such as underdeveloped rural regions, public investment in physical infrastructure would be required to improve access to a supply of drinking water, sewage or heating. Clearly, such improvement has the potential to promote the well-being of children and their families as well as substantially reduce the unpaid work burden, particularly of women.⁵¹

Nevertheless, ECEC expansion constitutes an important starting point and a priority area for policy intervention not only regarding work-life balance and gender equality in access to labour markets and income, but also for improving children's well-being, reducing socioeconomic inequalities and poverty, enhancing human capital and productivity, and instigating a virtuous cycle of both short-run demand-led and long-run supply-led inclusive growth.

APPENDIX

Explanatory note on indirect employment impact assessment and synthetic sector approach

The indirect employment impact stems from the circular linkages of sectors supplying inputs to each other. An external increase in the final demand for a sector's output subsequently increases the demand for intermediate inputs for the production of the good (the first round). In turn, the production of intermediate inputs increases the demand for intermediate inputs throughout the sectors that supply them (the second round). Hence, the initial boost of final demand eventually increases the output of all sectors multiplicatively through the circular linkages. In other words, ECEC investment generates additional demand for goods and service of suppliers, which in turn generates more demand for goods and services of subsequent suppliers, and so on. This interdependence of sectors (linkages) ends up stimulating production throughout the economy more than the amount of the initial investment. As the output increases, so does the demand for labour. The employment impact assessment can be derived from the multiplicative linkages by constructing an employment multiplier matrix. The employment multiplier is a product of an output multiplier matrix – direct and indirect input requirements necessary to produce a unit of final output – and a vector of employment intensity by industry, a ratio of total number of workers to final output.

For a correct assessment of the indirect impact, it is important to have an accurate input composition of the sector in an input output table. In the case of early childhood education and care in Kyrgyz Republic, its input composition is aggregated into that of all levels of education in the IO table. If we use the input composition of general education as a proxy, the inaccurate input composition may yield a biased result, called aggregation bias.

To avoid the bias as much as possible, we use published administrative data: state budget expenditures for preschool education by economic classification. There are 14 expenditure items that are then mapped out to 34

commodities classified in the input output table. Before mapping, some modifications are made to reflect the wage-to-non-wage cost difference between what is observed in the data and what our costing based on the regulatory children-to-staff ratio suggests. In the data, the wage share is 59.6 per cent while it is 61.9 per cent of total expenditure in our costing exercise. We adjust the relative shares of intermediate inputs proportionately so that they add up to 38 per cent, down by 2.3 per cent of the total cost (Table A1).

For the mapping, some self-explanatory items such as transportation services, acquisition of security services, school uniforms, and coal and other fuels are directly mapped to relevant commodities: transportation, business support activities, textile, and coal mining. Other items may map with more than one commodity such as utilities and communication, business trips, acquisition of other services, purchase of items and materials for current business purposes and acquisition of non-financial fixed assets.

The amount spent on each of these items is distributed over relevant commodities based on the relative shares of these commodities. For instance, utilities and communication can be mapped to three commodities: electricity, gas and information and communication, and their relative shares are 72 per cent, 14 per cent and 13 per cent of their combined total based on the input composition of the education sector. Then, the sum of over \$4 million spent on the item in 2017 for preschools by state is distributed over the three commodities accordingly. Some modifications need to be made to reflect the wage-to-non-wage cost difference between what is observed in the data and what our costing based on the regulatory children-to-staff ratio suggests. In the data, the wage share is 59.6 per cent while it is 61.9 per cent of total expenditure in our costing exercise. We adjust down the relative shares of intermediate inputs proportionately so that they add up to 38 per cent, down by 2.3 per cent of the total cost.

TABLE A1.

The original distribution of inputs in the state budget expenditure for preschool education by economic classification and the adjusted distribution (unit: percentage of total cost)

Items	Original	Adjusted
Compensation of employees	59.7	61.9
Business trips	0.1	0.1
Utilities and communication services	5.5	5.2
Rent Payments	0.0	0.0
Transportation services	0.0	0.0
Acquisition of other services	1.0	0.9
Acquisition of medical supplies	0.0	0.0
Acquisition of food supplies	24.5	23.1
Expenses for maintenance of property	1.5	1.5
Purchase of items and materials for current business purposes	1.7	1.6
Acquisition, tailoring and repair of clothing and other items of uniform	0.0	0.0
Acquisition of coal and other fuels	0.9	0.9
Acquisition of security services	0.1	0.1
Expenditures for acquisition of non-financial assets	5.0	4.7

Source: Administrative data from the National Statistical Committee of Kyrgyz Republic for the original data; authors' calculation based on the original data and the input output table.

Table A2 displays the intermediate input composition of the education sector recorded in the IO table and that of our synthetic ECEC sector. The education sector in the IO table includes preschool education and its input composition is an aggregation of intermediate inputs of all levels of education. Hence, any difference in the input composition may generate bias in our calculation of the indirect impact of ECCE expansion. Note that the expenditure on intermediate inputs accounts for 19.9 per cent of total expenditure by the education

sector and accounts for 39.9 per cent of the ECEC sector's total expenditure. This implies that the indirect multiplicative impact would be assessed as less than what it would be if we used the education sector as a proxy for the ECEC sector. Looking at the relative shares of some items, we find that the ECEC sector uses agricultural commodities and food and beverage much more than the education sector. At the same time, the ECEC sector uses less construction and retail and trade of motor vehicles than the education sector.

TABLE A2.

Intermediate input composition of education sector in the IO and the synthetic ECEC sector

Commodity	Education	ECEC
Agriculture, Forestry and Fisheries	10.6	26.1
Mining of coal and brown coal (lignite)	0.6	2.2
Extraction of crude oil and natural gas	0.1	0.0
Metal ore mining	0.0	0.0
Mining of other minerals, the provision of services for the extraction of minerals	0.2	0.0
Food production, (including drinks), and tobacco products	12.9	31.7
Textile manufacture; manufacture of clothing and footwear, leather and other leather goods	7.7	0.1
Wood processing and production of wood and cork products (except furniture), wicker products, paper and cardboard production	1.2	4.1
Printing and reproduction of recorded media	1.2	3.8
Production of coke and refined petroleum products, production of chemical products, the production of pharmaceutical products	0.3	0.0
Production of rubber and plastic products, production of non-metallic mineral products	0.3	0.0
Manufacture of base metals	0.1	0.0
Manufacture of finished metal products, except machinery and equipment	0.1	0.0
Manufacture of computers, electronic and optical equipment, production of electrical equipment, manufacture of machinery and equipment not included in other groups, production of vehicles	4.9	1.7
Other production, repair and installation of machinery and equipment	2.5	0.1
Production (generation) of electricity, its transmission and distribution	6.3	9.4
Gas production; distribution of gaseous fuels through gas supply systems	1.2	1.8
Provision (supply) with steam and air conditioning	1.0	0.0
Water supply, cleaning, waste treatment and receiving secondary raw materials	0.2	0.0
Construction	15.8	5.5
Wholesale trade, except of motor vehicles and motorcycles	2.1	0.0
Retail, trade of motor vehicles and motorcycles	13.0	5.3
Car maintenance and repair	0.2	0.0
Activities of hotels and restaurants	3.9	0.1
Transport activities and storage of goods, postal and courier services	1.5	0.1
Information and communication	1.2	1.7
Financial intermediation and insurance	1.5	0.0
Real estate, professional, scientific and technical activities, research and development, administrative and support activities	0.7	4.1
Public administration and defence; compulsory social security	0.0	0.0
Education	5.9	1.5
Public health and social services	1.9	0.5
Art, entertainment and recreation	0.8	0.2
Activities of public associations (organizations)	0.0	0.0
Other service activities	0.0	0.0
Total	100	100

Source: Input Output table from the National Statistical Committee of Kyrgyz Republic and authors' calculation.

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ENDNOTES

- 1 'Care' includes health, nutrition and hygiene in a warm, secure and nurturing environment. 'Education' includes stimulation, socialization, guidance, participation, learning and developmental activities. ECEC begins at birth and can be organized in a variety of formal and non-formal modalities, such as parenting education, health-based parent-child intervention, care institutions, child-to-child programmes, and home-based or centre-based childcare, such as nurseries, kindergartens and preschools. Throughout this report, the term 'ECEC services' refers to formal centre-based care and education services delivered by professional staff.
- 2 Such regulatory measures entail care leave (parental, maternity and paternity leave), decent full-time work and commuting hours, non-discrimination based on parental or care-provider status, among others. For further discussion, see Ilkcaracan (2018).
- 3 Kyrgyz Republic is the formal name for Kyrgyzstan.
- 4 National Statistical Committee of Kyrgyz Republic; World Bank Data, Pre-primary School Enrolment Rate. Available from <https://data.worldbank.org/indicator/SE.PRE.ENRR>.
- 5 Source: National Statistical Committee of Kyrgyz Republic. 2018. Education and Science in Kyrgyz Republic. Statistical bulletin. Available from <http://www.stat.kg/media/publicationarchive/500720d5-e440-4bfd-9e9c-bo5c210f5f92.pdf>
- 6 World Bank Data, Employment Rate. See <https://data.worldbank.org/indicator/SL.EMP.TOTL.SP.ZS>.
- 7 ILO defines 'decent jobs' as "opportunities for work that is productive and delivers a fair income, security in the workplace and social protection for families, better prospects for personal development and social integration, freedom for people to express their concerns, organize and participate in the decisions that affect their lives and equality of opportunity and treatment for all women and men." See <https://www.ilo.org/global/topics/decent-work/lang-en/index.htm>.
- 8 Development Plan of Kyrgyz Republic 2018-2022: Unity, Trust, Creation, p. 69.
- 9 Under SDG 4 on education for all, ECEC is set as an explicit goal. SDG Target 4.2 calls for universal access to quality early childhood development. Under SDG 5 on gender equality, there is an implicit reference to ECEC as SDG 5.4 calls for reduction of women's unpaid work. There are no concrete target enrolment rates defined by the SDGs except for indicator 4.2.2. which foresees participation in organized learning the year before the primary entry age. In defining the target ECEC enrolment rates for the aged 0–2 and aged 3–6 groups, this study follows an interpretation of SDG 4.2, combined with SDG 5.4 and SDG 8, in the ILO Report (2018) entitled Care Work and Care Jobs for the Future of Decent Work. Here the target enrolment rates of 50 per cent and 100 per cent respectively are based on best-performing country averages. See ILO 2018, pp. 256–257.
- 10 The best performing country in the region is Republic of Kazakhstan, which has the highest ECEC enrolment rates in each age group (as well as the highest employment rate for women).
- 11 Pre-primary gross enrolment ratio is the number of children enrolled in pre-primary education as a percentage of the population of children in the relevant age group. This is the most common indicator with the widest country coverage (UNESCO 2016, p. 207).
- 12 This is the average value for the 82 countries included in Wils (2015), p. 3.
- 13 OECD Statistics, Family Database, Chart PF3.2.B and Chart PF3.2.C.
- 14 These 45 countries account for 85 per cent of total global GDP and 58 per cent of global population. Higher-income countries are overrepresented in this sample, but there are four lower-middle-income countries (India, Indonesia, Philippines, and Viet Nam) and nine upper-middle-income countries (Argentina, Brazil, Bulgaria, China, Mexico, Peru, Romania, Russia, and Turkey).
- 15 See also Heckman et. al. 2010, 2013 and Conti and Heckman 2012.
- 16 This section is based on a background paper by Mehriqul Ablezova and Gulkhumar Abdullaeva prepared for this research project.
- 17 National Statistical Committee of Kyrgyz Republic. See <http://www.stat.kg/ru/statistics/zanyatost/>.
- 18 EAEU is a political and economic union of states located in central and northern Asia, including Armenia, Belarus, Kazakhstan, Kyrgyzstan and Russia.
- 19 Мигрантские дети составят целое поколение (Migrant children make up a whole generation). See https://www.gezitter.org/migranty/60351_migrantskie_deti_sostavyat_tseloie_pokolenie/
- 20 Социальное сиротство: дети мигрантов (Social Orphanhood: Children of Migrants). See <http://pikir-klub.kg/v-centre-vnimanija/530-socialnoe-sirotstvo-deti-migrantov.html>
- 21 GDP per capita has increased from 42,400 Som (\$920) in 2010 to 87,700 Som (\$1,273) in 2017. National Statistical Committee of Kyrgyz Republic. See <http://www.stat.kg/ru/statistics/nacionalnye-scheta/>
- 22 Ministry of Labor and Social Development of Kyrgyz Republic data cited in the National Statistical Committee of Kyrgyz Republic report. See <http://www.stat.kg/media/files/7499823a-6ae4-4c13-be2d-cef10b83965f.pdf>

- 23 See <https://data.worldbank.org/indicator/SL.TLFACT.FE.ZS>.
- 24 On average, Kyrgyzstani women get married and give birth to their first child between 23 and 24 years of age. The average number of children is three. See <http://www.stat.kg/ru/news/8-marta-kyrgyzstan-otmechaet-mezhdunarodnyj-zhenskij-den/>.
- 25 Article 5, Law “On state guarantees of equal rights and equal opportunities for men and women.”
- 26 NSC. 2018. Employment and unemployment in Kyrgyz Republic. See <http://www.stat.kg/ru/publications/zanyatost-i-bezrobotica-itogi-integririvannogo-vyborochnogo-obsledovaniya-byudzhetov-domashnih-hozyajstv-i-rabochej-sily-v-2013g/>.
- 27 The survey report in English is available at https://kyrgyzstan.unfpa.org/sites/default/files/pub-pdf/GSPS_english.pdf
- 28 National Statistical Committee of Kyrgyz Republic . See <http://www.stat.kg/ru/statistics/naselenie/>.
- 29 See <https://data.worldbank.org/indicator/SE.XPD.TOTL.GD.ZS> .
- 30 Education Development Strategy of Kyrgyz Republic for 2012-2020
- 31 Total education spending in 2017 was 37.4 billion Som corresponding to 22.5 per cent of total public expenditures and 7.2 per cent of GDP.
- 32 Temporary regulations on the procedure for licensing educational activities in Kyrgyz Republic.
- 33 The Law on Status of Teachers of Kyrgyz Republic (No. 9 dated January 14, 2001).
- 34 This is in accordance with Article 20 of the Law of Kyrgyz Republic “On Preschool Education”.
- 35 Частные детские сады Кыргызстана начали проходить сертификацию с целью повышения доверия родителей {Private kindergartens of Kyrgyzstan began to pass certification in order to increase parental confidence}, 20 April 2018. See <http://www.news-asia.ru/view/ks/accidents/11247>.
- 36 Development Plan of Kyrgyz Republic 2018–2022, Unity, Trust, Creation, p. 69.
- 37 In reference to the absolute poverty line measured at the international \$3.2-a-day line (2011 PPP).
- 38 In addition, it is noted that improving agricultural productivity, makes a larger contribution to poverty reduction than either industry or services.
- 39 See ILO (2018) and Ilkaracan and Kim (2018, pp. 1–13) for an explanation of how these targets are defined.
- 40 The aged 0–2 group target of 50 per cent is based on an average population-weighted gross enrolment ratio in the high-performing countries with lowest use of informal childcare. The latter policy target (i.e. in preschool education) is based on the observation that most high- and upper-middle-income countries have achieved close to universal coverage for this age group.
- 41 Qualitative criteria, on the other hand, entail child-friendly, play-based and rights-based environments where children’s developmental and learning needs are effectively supported.
- 42 For ECEC regulations in Kyrgyzstan governing student-to-staff ratios, group size and establishment size, see <http://edu.gov.kg/ru/docs/tipovye-shtaty-doshkolnyh-uchrezhdenij/>.
- 43 Salaries of preschool teachers are determined according to the new instruction for payment of educational officers of Kyrgyz Republic No. 270 (March 31, 2011) and dependent upon the level of education, pedagogical experience, and workload per month. According to the Law on Status of Teachers of Kyrgyz Republic (No. 9 dated January 14, 2001) teachers in preschool should receive the same level of compensation as teachers in primary schools. In accordance with Article 20 of the Kyrgyz Republic law “On Preschool Education”, preschool educational organizations can independently set up bonuses and supplements for teaching staff and local governments have the right to establish other types of allowances, bonuses and rewards for employees of preschool educational organizations.
- 44 The output growth due to multiplicative linkages may increase earnings of workers, and, in turn, may raise household demand. Household demand is another channel of multiplicative effect referred to as ‘induced effect’. This particular multiplicative effect is not accounted for in this study due to a potential upward bias in the impact assessment (Miller and Blair 2009). One could avoid the bias if there were robust estimates of propensity to consume for all the commodities listed in the IO table; however, this is beyond the scope of this study.
- 45 FAO country programming framework in Kyrgyz Republic (2015).
- 46 This is following the analytical framework of some of the earlier studies on other countries as reported in Section 2. For example, Ilkaracan, Kim and Kaya (2015) writing on Turkey compare the relative job generation impact of ECEC spending versus construction spending and show that ECEC has more than double the potential to create new jobs than construction

and physical infrastructure spending, which is a common target of stimulatory fiscal expenditures. The contribution of the construction sector to the GDP in Kyrgyz Republic reflects an increasing trend from 4.9 per cent in 2011 to 8.2 per cent in 2017.

47 ILO World Social Protection Report 2017–2019.

48 The cost estimates here do not consider the initial outlays for constructing and equipping new facilities. They entail only recurrent operational and maintenance costs of the facilities once they are up and running. This is because the analysis is interested only in identifying the employment generation that will emerge on a sustainable basis through recurrent costs while the initial outlay of expenditures for construction and refurbishing of new facilities is a one-time cost without permanent employment effects. We also assume that there would be some unused/additional capacity in public buildings, which can be allocated towards ECEC day care centres.

49 For comparison, only a few sectors, such as car repair and water supply/waste management, have labour intensities higher than that of the ECEC sector, according to the national labour force survey.

50 For a detailed elaboration of work-life policy options beyond ECEC provisioning, see Ilkkaracan (2018).

51 The WASH initiative led by UNICEF is an inspiring example. See <https://www.unicef.org/kyrgyzstan/water-sanitation-hygiene>.

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