Costing Study on Early Childhood Education and Development (ECED) in Nepal: A Case for Investment in ECED
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ECD</td>
<td>Early Childhood Development</td>
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<tr>
<td>ECDI</td>
<td>Early Childhood Development Index</td>
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<td>ECE</td>
<td>Early Childhood Education</td>
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<td>ECED</td>
<td>Early Childhood Education and Development</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
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<tr>
<td>GER</td>
<td>Gross Enrollment Rate</td>
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<td>GON</td>
<td>Government of Nepal</td>
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<tr>
<td>LMICs</td>
<td>Low- and Middle-Income Countries</td>
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<td>MICS</td>
<td>Multiple Indicator Cluster Survey</td>
</tr>
<tr>
<td>MoEST</td>
<td>Ministry of Education, Science, and Technology</td>
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<td>PPE</td>
<td>Pre-Primary Education</td>
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<td>PPP</td>
<td>Public-Private Partnership</td>
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<td>SDGs</td>
<td>Sustainable Development Goals</td>
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<td>SSDP</td>
<td>School Sector Development Program</td>
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<td>STR</td>
<td>Student Teacher Ratio</td>
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<tr>
<td>UNICEF</td>
<td>United Nations Children's Fund</td>
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1. Why Invest in ECED?

Skill formation and human capital accumulation are a lifetime process, and quality early childhood education and development (ECED) is critical for ensuring that children get a head start in this process. Robust quality ECED helps children build a strong foundation to acquire key cognitive and socio-emotional skills (Camilli et al. 2010; Nores and Barnett 2010). It helps launch children on higher learning trajectories, making them more adaptable, resilient, and productive (World Bank 2018). Quality ECED is also indispensable to realize the goals of poverty reduction and shared prosperity. First, provision of high-quality ECED to disadvantaged children yields a high rate of return (Heckman 2006). This result holds even in a low- and middle-income context (Grantham-McGregor and Smith 2016). Second, this investment has the potential to reduce the socioeconomic gap in society. The positive impacts of expanding access to high-quality, public ECED on learning achievements are concentrated on low-income children, and ECED only substitutes high-quality, public preschool for expensive private care and do not bring significant impacts on children with a wealthier background (Cascio and Schanzenbach 2013). Third, such high-quality interventions have dynamic complementarity and increase the rate of return to interventions in subsequent education levels (Johnson and Jackson 2017).

Recognizing the importance of ECED, the Sustainable Development Goals (SDGs) include an early childhood development (ECD) target (Target 4.2) which aims to increase the percentage of children under five years of age who are developmentally on track in health, learning, and psychosocial well-being. Nepal has strived to achieve this target over the past decades, but significant disparities remain.

Long-term Impacts of ECED Investment

Economic Aspect

Various experiments in both high-income countries and low- and middle-income countries (LMICs) exemplify ECED for marginalized children as the most critical step for human capital accumulation in a country. In the case of high-income countries, three well-known studies, the Abecedarian Early Intervention Project, the Chicago Child-Parent Centers, and the Perry Preschool Program, are often referred to as excellent investment cases. These cases uncover long-term impacts of ECED investment, such as better health conditions, better family planning, less criminal activities, and better employment. Some projects estimate 16 percent to 17 percent return on investment (Belfield et al. 2006; Rolnick and Grunewald 2003), while others estimate 7 percent to 10 percent return (Heckman et al. 2010).

In the context of LMICs, the Jamaican program is one of the most cited experiment. This program intervened in different types of high-risk children, such as severely malnourished, stunted, and low birth weight infants born at term. The study followed targeted children at different stages until 22 years of age and found positive impacts of the different interventions on cognitive skills at every stage (Gertler et al. 2014; Walker, et al. 2011). They also found positive effects on wages, with children who received quality ECED earning about 25 percent more than their counterparts.

As such, both in high-income countries and LMICs, ECED investments yield a high return through various pathways, such as higher wage, stable employment, better health condition, less criminal activities, and better family planning.
ECED investment is indispensable because children’s brains swiftly develop during this period, which becomes a foundation for further development, as summarized in figure 1. Even before early childhood education (ECE), disparities in brain development appear, and these disparities are strongly associated with the economic and social status of the child. Thus, if societies expect children to achieve academic success and advance society economically and democratically as citizens in the future, holistic and high-quality ECED interventions are crucial.

**Social Aspect**

The impacts of ECED investment are not limited to labor market outcomes. Instead, they have social returns and externalities as follows:

- **Gender equality**: The expansion of ECED coverage promotes labor force participation among mothers, where the labor force participation rate of women is not high (Berlinksk and Galiani 2007; Nollenberger and Rodriguez-Planas 2015). Also, with some training, the expansion of ECED provides employment opportunities for women. However, in places where the female labor force participation rate and the availability of informal care are high, the expansion of ECED just replaces informal care, which results in no impact on female labor force participation rate (Fitzpartick 2010; Havnes and Mogstad 2011). In the case of Nepal, the female labor force participation rate is at 26.8 percent with most of them engaged in the agricultural sector. In the agricultural sector, people work differently from the industry or service sector and are not tied to time. Thus, the expansion of ECED could enable women to move to the tied-to-time working sector.

- **Social equity**: The impacts of high-quality ECED expansion on learning achievements are concentrated on low-income children, and ECED only substitute high-quality, public preschool for expensive private care and do not bring positive impacts on children with a
wealthier background (Cascio and Schanzenbach 2013). As such, the expansion of high-quality ECED shrinks the achievement gap based on household wealth.

- Inclusion: Children with disabilities are exposed to various risk factors which have severe negative impacts on their development and survival, such as poor caregiver interaction, abuse, and neglect. High-quality ECED has the potential to protect children with disabilities from these risk factors and catalyze their development (WHO and UNICEF 2012).

Dynamic Complementarity of ECED Investment

Investment in ECED should bring positive impacts on subsequent education levels. Cunha and Heckman (2007) theorize the spillover effects of ECED investment from the point of skill development. According to them, the impact of educational investment today differs for each individual. The impact is larger among those who have acquired more skills than those who have acquired less because skill development is an interactive and multi-stage process, and “skills produced at one stage raise the productivity of investment at subsequent stages” (Cunha and Heckman 2007).

Johnson and Jackson (2017) refer this synergy between human capital investments at different education levels as dynamic complementarity and analyze whether such complementarity exists between ECED (Head Start Program) and basic education in the United States. They find that an increase in head start spending per 4-year-old by roughly 25 percent (US$1,000) leads to not only better education attainment (0.077 years) but also about 10 percent higher wages. An increase in basic education spending also has similar effects. Importantly, when ECED expenditure increases followed by a 10 percent increase in basic education expenditure, the incremental impact of ECED expenditure becomes more than twice as large as in a case that is followed by a 10 percent reduction in basic education expenditure. Also, the same applied to basic education expenditure increase. Compared to a case where basic education expenditure increases without ECED, the impact of the basic education expenditure increase with ECED is more than twofold. However, the effect of dynamic complementarity is mainly observed among poor children and not among children with a wealthier background.

Dynamic complementarity of ECED investment has three significant policy implications. First, the cost-benefit of increasing ECED investment tends to be underestimated due to a lack of consideration of dynamic complementarity. Second, the social aspect of ECED investment also tends to be undervalued for the same reason. Third, ECED investment should be followed by an improvement in the subsequent education level to further enhance and fully utilize the benefit of the investment.

Does the Impact of ECED Fade-out?

However, there is a counterargument on ECED investment. The argument is mainly based on fade-out of the impact of ECED investment in some studies. The critical concept to understand the results is a convergence of persistence effects (Yoshikawa et al. 2013), and this convergence takes place because of the following three factors. The first factor is catching up. Children who do not participate in ECED might have acquired knowledge and skills faster than those who do participate in ECED might have acquired knowledge and skills faster than those who do

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1 The Head Start Program is comprehensive early childhood education, health, nutrition, and parent involvement services to low-income children and their families. The program started in 1965 and The Head Start Act of 1981 significantly expanded the coverage.
participate. It can be possible when teachers in basic education are attentive and provide additional support to students who are lagging. The second plausible factor is fade-out. If the quality of ECED is not good enough to build a foundation for learning or the quality of basic education is not sound enough to let children learn, fade-out might occur. The last plausible factor is sleeper effects. Although literature points out the labor market outcomes of ECED investment, its short-term impacts show confounding results. In other words, the effect might remain dormant when children are in school but is activated once they enter the labor market. If the impact of ECED investment is concentrated on non-cognitive skills rather than cognitive skills, sleeper effects might happen.

An important takeaway from the convergence of persistence effects is the necessity to carefully interpret the results of a short-term impact evaluation of ECED investment. Education stakeholders should consider the quality of ECED and basic education and characteristics of the ECED program they evaluate, regardless of the result. Otherwise, the ECED sub-sector plan based on the short-term impact evaluation would misguide ECED policies.
2. Status of ECED in Nepal

The Government of Nepal (GON) has increasingly emphasized ECED in its education policies. Improving equitable access to ECED services was one of the main goals of the GON’s national school education programs of the previous decade. The 8th amendment to the Education Act passed in 2016 formally recognized one year of early childhood education as a part of the formal school education. In the current national program, the School Sector Development Program (SSDP, 2016–2023), greater emphasize is placed on improving the quality of ECED service while also carrying the access agenda forward. Further, the Free and Compulsory Education Act passed in 2018 defines ECED as a year-long childhood development and education focused on holistic development. It stipulates that at least one-year long ECED should be provided to children after four years of age and parents shall enroll their children in a convenient school (within 2km from residence). The Act also stipulates that an ECD Center shall be established within 3 years if no convenient school is there to provide ECED services.

Access to ECED

In Nepal ECED is provided by both public and private institutions through community schools and community-based centers, and private schools/facilities, respectively. Community schools provide a year of free ECED/pre-primary education (PPE) with the option of an additional year, if demanded by the local community, whereas most private schools provide two to three years of PPE classes for three to five year olds (playgroup, nursery, lower kindergarten, and upper kindergarten). Nepal has significantly expanded access to ECED in the last decade. Administrative data show that the gross enrollment rate (GER) in ECED has reached 84 percent in 2017, an increase from about 60 percent in 2008. Correspondingly, there has been a significant increase in the percentage of new enrollments in Grade 1 with at least one year of ECED/PPE experience (figure 2). Increase in access is facilitated by the increase in the supply of ECED/PPE centers. From 2008 to 2017, the number of ECED facilities has grown from about 20,000 to about 36,000. Furthermore, all regions in Nepal successfully expanded this supply in the last decade (figure 2).

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3 The 8th amendment to the Education Act defines ECED as one year of early education for four year olds. Also, it gives authority to communities to conduct an additional one year of ECED, if necessary.
According to MICS 2014, a sizable portion of children enrolled in ECED/PPE were overaged children. More than half of age five children were attending ECED as opposed to attending primary school. The Nepalese school calendar starts in April while the MICS data collection took place from January 2014 to June 2014. Thus, some portion of these children may follow the enrollment age rule. However, as the enrollment pattern of age six children suggests, the portion should not be so large. More than one-third of age six and one-sixth of age seven children, who should not be affected by the date of data collection, were attending ECED. There was also a small
portion of children from an older age group (8–12 years) attending ECED/PPE classes.\textsuperscript{4} Administrative data show that over- and underage enrollment still persists but has been declining.

**Inequality in Access to ECED**

Despite the increased enrollment and number of ECED centers, disparities remain. Girls and children from disadvantaged background have disproportionately low access to ECED. In addition, socioeconomic and spatial inequities remain in accessing ECED services.

**Gender**

While Nepal has achieved gender parity in basic and secondary school enrollment, the ratio of girls to boys in ECED has averaged 0.90 in the last decade.\textsuperscript{5} In addition, the combination of gender and socioeconomic status compound the heterogeneous negative impact of being a girl. MICS 2014 shows that children from disadvantaged backgrounds are less likely to attend ECED programs. Compared to about 69 percent of children from the Brahmin/Chhetri caste only around 45 percent of children from dalit and non-Brahmin/Chhetri castes were attending ECED. In addition, gender disparity in access was also found to be higher among these latter groups (table 1).

### Table 1: ECED Attendance Rate by Gender and Caste

<table>
<thead>
<tr>
<th>Caste</th>
<th>Total</th>
<th>Boys</th>
<th>Girls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Dalit Non-Brahman/Chhetri</td>
<td>45.0%</td>
<td>48.9%</td>
<td>40.9%</td>
</tr>
<tr>
<td>Dalit</td>
<td>44.4%</td>
<td>45.9%</td>
<td>42.7%</td>
</tr>
<tr>
<td>Brahman/Chhetri</td>
<td>69.1%</td>
<td>65.1%</td>
<td>73.0%</td>
</tr>
</tbody>
</table>

*Source: Author’s calculation based on MICS 2014.*

**Wealth**

There is a stark difference in enrollment between the poorest and richest households. MICS 2014 shows that 83.5 percent of children ages 36–59 months from households of the wealthiest quintile attend ECED, while the rate is only about 41 percent for the poorest quintile. Moreover, the impact of wealth on access is not linear. While the gap in access between children from households in the middle quintile and those from the bottom two quintiles is relatively small. The gap between children from households in the middle quintile and children from wealthier households (top two quintiles) is enormous. Accordingly, in addition to focusing on improving access for the most marginalized group (socially and economically), there is also a need to pay special attention to the children from average-/middle-income households.

### Table 2: ECED Attendance Rate by Wealth Quintile

<table>
<thead>
<tr>
<th>Wealth Index Quintiles</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poorest</td>
<td>41.2%</td>
</tr>
<tr>
<td>Second</td>
<td>39.1%</td>
</tr>
<tr>
<td>Middle</td>
<td>38.8%</td>
</tr>
<tr>
<td>Fourth</td>
<td>62.7%</td>
</tr>
<tr>
<td>Richest</td>
<td>83.5%</td>
</tr>
</tbody>
</table>

*Source: MICS 2014.*

\textsuperscript{4} 3.4 percent of children from the 8–12 age group were attending ECED in 2014.

\textsuperscript{5} Based on Flash Report of different years.
**Geography**

Improvement in access to ECED has also been spatially uneven. ECED enrollment rates differ significantly by geography. Provinces 2 and 6 are disproportionately behind in access to ECED compared to others (figure 4). The urban-rural gap is also significant (ECED attendance rate was at 78.4 percent in urban areas compared to 47.2 percent in rural areas).  

*Figure 4: Provincial Gap in ECED Access*

![Percent of 4 years' children enrolled in ECED/PPEs](chart.png)


**Role of Private ECED Providers**

Private ECED service providers have played an important role in improving access to ECED. Ministry of Education, Science and Technology’s (MoEST) administrative data show that while private ECED centers constitute about 17 percent of the total ECED centers, they account for more than one-third of the total enrollment (36.6 percent). The increase in private enrollment is supported by a rapid increase in private ECED facilities (figure 5, left panel). From 2010 to 2017, the number of ECED facilities has increased by 42 percent, growing from about 4,300 to about 6,100 facilities. As various studies point out, private education might be accessible only for the relatively privileged (Cameron 2011; Chudgar and Quin 2012; Härmä 2016; Humble and Dixon 2017; Oketch et al. 2010) and privatization might exacerbate inequality in Nepal. Private ECED centers are mostly concentrated in urban areas and is characterized by considerable gender disparity in access. At the national level, about 33 percent of the girls enrolled in ECED are enrolled in private ECED centers while 40 percent of the boys are enrolled in private ECED centers. While there is gender parity in enrollment in public ECED centers, gender parity in private ECED centers stands at 0.7. Gender disparity in access to private ECED centers holds across regions.

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6 MICS 2014.
Figure 5: Private ECED Centers in Nepal

Increase in Private ECED Centers

Figures for Private ECED Centers, by Province


Non-registered private ECED providers

It should be noted that MOEST’s administrative data does not fully capture the presence of private ECED providers in the country. There are number of private ECED providers not registered in the Education Management Information System (EMIS) that generates MOEST’s administrative data. While the exact number of these non-EMIS registered private ECED providers is not known, it is non-negligible. For example, according to the 2014 Flash report, the number of ECED enrollment in 2014 was 1,014,339. However, the age-specific ECED attendance rates from MICS 2014 applied to the 2014 single age population estimates by UN population division show that the number of ECED enrollment should be about 1.3 million (Table 3), about 28 percent higher than the enrollment presented in administrative data. While part of the difference might be explained by the inaccuracy of the population estimation, part of the difference could be due to the present of non-registered private ECED providers.7

Table 3: Number of children in ECED facility by age

<table>
<thead>
<tr>
<th>Age</th>
<th>UN population projection for 2014</th>
<th>Percentage of children attending ECED (MICS 2014)</th>
<th>Projected number of children in ECED facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>560,153</td>
<td>38.6</td>
<td>216,219</td>
</tr>
<tr>
<td>4</td>
<td>570,683</td>
<td>65.0</td>
<td>370,944</td>
</tr>
<tr>
<td>5</td>
<td>578,244</td>
<td>53.3</td>
<td>308,204</td>
</tr>
<tr>
<td>6</td>
<td>588,306</td>
<td>36.4</td>
<td>214,143</td>
</tr>
<tr>
<td>7</td>
<td>600,179</td>
<td>16.9</td>
<td>101,430</td>
</tr>
<tr>
<td>8</td>
<td>613,173</td>
<td>9.5</td>
<td>58,251</td>
</tr>
<tr>
<td>9</td>
<td>626,347</td>
<td>4.0</td>
<td>25,054</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>1,294,246</td>
</tr>
</tbody>
</table>

Source: Projection based on MICS 2014 and UN population estimate for 2014

7 The last census was carried out in 2011.
Quality of ECED

Early Childhood Development Index

Compared to the improvement in access, quality is far from commensurate. The early childhood development index (ECDI) shows that only about 64 percent of children ages 36–59 months were developmentally on track. While 86 percent of children in the wealthiest quintile achieve the composite ECDI milestones, only about 60 percent of children in the poorest quintile do so. A similar disparity is found along the urban-rural and geographical divides.

Table 4: ECDI Score and Literacy and Numeracy Domain by Wealth and by Gender

<table>
<thead>
<tr>
<th>Wealth Index Quintiles</th>
<th>ECDI Score</th>
<th>Literacy and Numeracy Domain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boys</td>
<td>Girls</td>
</tr>
<tr>
<td>Poorest</td>
<td>57.8%</td>
<td>64.3%</td>
</tr>
<tr>
<td>Second</td>
<td>54.1%</td>
<td>59.0%</td>
</tr>
<tr>
<td>Middle</td>
<td>53.2%</td>
<td>62.0%</td>
</tr>
<tr>
<td>Fourth</td>
<td>68.1%</td>
<td>72.2%</td>
</tr>
<tr>
<td>Richest</td>
<td>88.8%</td>
<td>86.9%</td>
</tr>
</tbody>
</table>

Source: Author’s calculation based on MICS 2014.

Overall, girls show better ECDI scores than boys across the wealth quintiles. Children from the most deprived quintile are not significantly behind children from the second and middle wealth quintiles. However, children from the fourth and the wealthiest quintile are substantially more advanced than the rest of children.

Disaggregation of the ECDI shows that children are severely lacking in the literacy and numeracy domains. On average, only about 28.8 percent of the children are developmentally on track on literacy and numeracy skills. Even for children attending ECED/PPE, the number stands at 53.1 percent. Overall, girls perform better than boys, and children from the bottom 60 percent of households show significant delay compared to children from the top 40 percent of households, indicating both overall low levels of learning and inequities in the children’s learning and development outcomes.

Enabling Environment - Minimum Standards

National Minimum Standards for ECD center was developed by the GON in 2010 to ensure uniformity in management and operation of the different types of ECED centers operating in the country. It includes standards under eight dimensions: physical infrastructure; health nutrition, and safety; minimum required materials; outdoor environment; ECD management committee and governance; human resource quality; parents, children and community; and drinking water and sanitation. While the standards have been developed, it has not been followed by either adequate funding or monitoring to ensure that the standards are met and maintained. Further, data on minimum standards is not collected regularly to allow for appropriate planning and

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8 ECDI assesses children ages 36–59 months in four domains: language/literacy and numeracy, physical, socio-emotional, and cognitive development. These four domains are measured through instruments based on observation. The MICS calculates an overall index score as the percentage of children who are on track in at least three of the four domains.
monitoring. A 2011 study by Save the Children international found that most of the ECED centers did not have satisfactory physical infrastructure. In fact, only 12% of the centers met more than half of the national minimum standards. A 2017 study carried out by Education Review Office (ERO) found that more than 40 percent of the ECED centers do not satisfy the infrastructure standards. In addition, less than 15% of ECED centers met the management standards related to health check up, management of compound area and management of learning and play materials. While these studies show improvement over time, much needs to be done to bring all ECED centers up to the national standards.

Class Size

An appropriate student teacher ratio (STR) is an important factor for ensuring the delivery of quality ECED. In Nepal, while data is collected on the number of ECED centers and number of children enrolled, data on number of ECED classes offered in each of the ECED centers is not captured to allow for calculation of the STR. While there has been a decrease in ratio of students per ECED center in community ECED centers, the trend is increasing in private ECED centers (figure 6, left panel). In 2018, 59 percent of community ECED centers had fewer than 20 students, 29 percent had 21 to 40 students, and about 12 percent had more than 40 students. The trend is opposite for the private institutions with more than 80 percent of ECED centers have more than 40 students (figure 6, right panel). In private ECED centers, although the enrollment numbers are high, the centers also often run different levels of ECED classes (playgroup, nursery, lower kindergarten, and upper kindergarten). For the community ECED centers, the government provides support for one ECED facilitator per ECED center which implies that about 40 percent of the community ECED centers with more than 20 students either have a higher than recommended STR or have to hire ECED facilitators on their own, which in turn might translate to parents sharing some of the cost.

Figure 6: Enrollment in ECED Centers

<table>
<thead>
<tr>
<th>Ratio of enrolled children to ECED Centers</th>
<th>Percentage of ECED centers by number of enrolled children</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014 2018</td>
<td>0.59 0.29 0.12 0.12</td>
</tr>
<tr>
<td>community ECED centers</td>
<td>0.07 0.12 0.12</td>
</tr>
<tr>
<td>Private ECED centers</td>
<td>0.79 0.81</td>
</tr>
<tr>
<td>&lt;20</td>
<td>0.81</td>
</tr>
<tr>
<td>21-40</td>
<td></td>
</tr>
<tr>
<td>&gt;40</td>
<td></td>
</tr>
</tbody>
</table>


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10 The global standard for ECED/pre-primary STR recommended by the UNICEF is up to 20 pupils for 1 teacher.
ECED Facilitators

Qualification and Training

As per the new requirement introduced under the SSDP (2016–2021), new ECED facilitators must have at a minimum grade 10 qualification. According to the 2016–2017 Flash Report, about 40 percent of the ECED/PPE facilitators have above the minimum required qualification and only about 6 percent of the ECED/PPE facilitators with less than grade 10 qualification remain. In addition to increasing the qualification threshold, the facilitators must be properly trained to ensure teaching quality. Accordingly, one of the key quality interventions introduced under the SSDP is to provide one-month intensive training and refresher training to ECED/PPE facilitators.\(^{11}\) While 88 percent of the ECED/PPE facilitators have received the 15-day basic training, only 10.4 percent of facilitators have received the full one-month training.\(^{12}\) Delay in implementation of the training program has left a large number of ECED facilitators, particularly the new recruits, without training on the ECED curriculum. Without proper and adequate training, facilitators will not be equipped with appropriate pedagogy to deliver on the curriculum and the established Early Learning and Development Standards.

Renumeration and Retention

The current level of renumeration of ECED facilitators is low.\(^{13}\) Cognizant of the need to increase their pay to both attract and retain more qualified facilitators, the SSDP has envisioned increasing ECED facilitators’ renumeration to align with grade 10 level government employees as one of its goals. However, the result is yet to be seen. While some local governments are reported to have supplemented official salaries of facilitators with their own resources, not all of them have done so, and the increase is not uniform across the local governments. Furthermore, there is no provision in place to ensure the continuity of the provision from the local governments. Linked to the low renumeration and lack of career development opportunities, retention is a problem, as facilitators tend to look for better opportunities. While data on the ECED retention rate is not available, anecdotal evidence suggest an average annual turnover rate of about 20 percent. More qualified facilitators also tend to teach higher grades at the same school with an aspiration of being promoted to teach at a higher grade.

ECED Financing

Public Financing in ECED

In Nepal, investment in ECED represents a small portion of the national education budget. In the last five years, the share of the ECED budget in the national education budget was on average about 1.9 percent. This roughly translates to about 0.08 percent of the gross domestic product (GDP). Consequently, per-child financing for ECED has also been low. At NPR 5,500 (US$48), per-child spending in ECED is less than half of that of spending on primary schooling at NPR 13,100 (US$115).\(^{14}\)

Table 5: Percentage of Education budget allocation to ECED sub-sector, 2014/15-2017-18

\(^{11}\) Refresher trainings are for the existing ECED/PPE facilitators who have already received 15 days of related training.

\(^{12}\) Data for basic training is from Flash Report 2016–2017 and for the one-month training is from Flash Report 2018–2019.

\(^{13}\) ECED facilitators salary is NPR 6,000 per month (equivalent to US$52.6 at the exchange rate of US$1 = NPR 114).

\(^{14}\) UNESCO/IIEP-UIS 2016.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ECED</td>
<td>1.78%</td>
<td>1.47%</td>
<td>2.33%</td>
<td>2.03%</td>
<td>1.67%</td>
</tr>
</tbody>
</table>


The majority of the government's budget on ECED is allocated for ECED facilitators salary accounting for about 87 percent of the total ECED budget. The remaining budgets are allocated for per-child funding for teaching learning materials (TLMs), facilitators’ training and other activities. The current level of allocation is grossly inadequate and poses significant challenges to improving the quality of ECED services.
3. How Much Additional Cost is Required to Improve the Quality of ECED Service?

Enrollment Projection

Administrative data show that 973,900 children were enrolled in ECED in academic year 2018/19. As discussed in the earlier section, a substantial percentage of children enrolled in ECED are overage enrollment. At the same time, more than one-third of age three children are also attending ECED. Thus, the future ECED/PPE enrollment trend will depend on the improvement in intake of age four children, the reduction in overage enrollment, and the trend in age three enrollment over time. In this analysis, cost estimates for the next 10 years (up to 2030) are presented under two scenarios. The first scenario considers the recent trends in ECED enrollment and assumes improvement in age four enrollment and reduction in overage enrollment over time while keeping the age three enrollment constant at 40 percent. This projection aligns with the GON’s current commitment which stipulates that children should be provided with at least one year of free-of-cost ECED after four years of age before they enter Grade 1. The second scenario considers the cost of expanding the service to include both age three and age four children over time. Both scenarios assume that there is no repetition in ECED and there is a linear improvement in the enrollment trend.¹⁵ Single-age population projection by the United Nations Population Division is used to estimate the enrollment projection.¹⁶

![Figure 7: ECED Enrollment Prediction](https://example.com/image)

Source: Calculation based on United Nations Population Division population estimation.

Under the first scenario, the enrollment will decrease over time reaching around 0.83 million children by 2030, lower than the current enrollment by around 11 percent. Under the second scenario, the enrollment will increase by 5 percentage points annually reaching 95 percent by 2030 (for the first scenario); age four enrollment improves by 2 percentage points annually reaching 99 percent in 2026; overage enrollment (ages 5–7) decreased by 1 percentage point annually reaching 6 percent by 2030 (applicable to both first and second scenarios).

¹⁵ Age three enrollment increases by 5 percentage points annually reaching 95 percent by 2030 (for the first scenario); age four enrollment improves by 2 percentage points annually reaching 99 percent in 2026; overage enrollment (ages 5–7) decreased by 1 percentage point annually reaching 6 percent by 2030 (applicable to both first and second scenarios).

scenario, the ECED enrollment will increase over time and will peak at 1.12 million, which is higher than the current enrollment by around 15 percent.

**Base Model**

The base model presents the cost estimates for maintaining the current input level, which mainly includes provision for facilitators salary, TLMs, and training. The unit cost for each of the inputs are taken from the existing government norms. The following additional assumptions underpin the base model:

(a) Pupil to facilitator ratio remains the same (20:1)
(b) Facilitators’ salary remains the same (US$52.8 per month or NPR 6,000 per month) and their turnover rate is 20 percent.
(c) Share of private enrollment remains at 40 percent.
(d) Cost of the one-month standard training for ECED facilitators is NPR 30,000 per facilitator.
(e) Per-child funding of NPR 500 is provided to each community ECED center for TLMs.
(f) A new classroom with furniture is necessary per additional 20 new students. Its cost is NPR 400,000 per classroom.

Maintaining the current level of input and allowing for the changes in enrollment under the two scenarios, the cost of providing ECED services (a) decreases from US$24 million (NPR 2.7 billion) in 2019 to US$20.4 million (NPR 23.2 billion) in 2030 under scenario 1 and (b) increases from US$24 million (NPR 2.7 billion) in 2019 to US$27.6 million (NPR 3.1 billion) in 2030, peaking at US$29.9 million (NPR 3.4 billion) in 2027, under enrollment projection scenario 2 (figure 8).

*Figure 8: ECED Cost Estimates under the Base Model (2019–2030) (NPR, millions)*

<table>
<thead>
<tr>
<th>Year</th>
<th>Facilitator salary</th>
<th>New facilitators training</th>
<th>TLM</th>
<th>Classroom construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>3,000</td>
<td>500</td>
<td>1,000</td>
<td>1,500</td>
</tr>
<tr>
<td>2021</td>
<td>2,500</td>
<td>500</td>
<td>1,000</td>
<td>1,500</td>
</tr>
<tr>
<td>2023</td>
<td>2,000</td>
<td>500</td>
<td>1,500</td>
<td>2,000</td>
</tr>
<tr>
<td>2025</td>
<td>2,000</td>
<td>500</td>
<td>1,500</td>
<td>2,000</td>
</tr>
<tr>
<td>2027</td>
<td>1,500</td>
<td>500</td>
<td>1,500</td>
<td>2,000</td>
</tr>
<tr>
<td>2029</td>
<td>1,000</td>
<td>500</td>
<td>1,500</td>
<td>2,000</td>
</tr>
</tbody>
</table>

The share of different inputs in the ECED budget mirrors the current level. Facilitators’ salary will account for the majority of the ECED budget (83 percent). Salary will continue to account for the majority of the ECED cost. However, under enrollment projection scenario 2, the ratio of salary will decrease to 77 percent by 2022, owing to increase in age three and age four population and
their enrollment. Thus, new classrooms construction will be needed, and it will account for 3–7 percent of ECED cost between 2020 and 2028. However, post 2028, the share of salary will bounce back to 83 percent. The main reason is the reduction in new classroom construction. Improvement in age three enrollment will be offset by reduction in overage enrollment.

New facilitators training will account for 6 percent of the ECED cost throughout the next ten years. The decline in ECED age population will offset the high turnover rate, and the number of new facilitators needed to be trained will stay around 5,000 to 6,500 per year under the two scenarios. Further, the training cost (NPR 30,000) is less than half of the annual salary of a facilitator (NPR 78,000). Thus, the training cost will remain a small portion of the total ECED cost.

**Cost of Improving the Quality of ECED Service**

Improving the quality of ECED services from its current level will require raising the level of inputs or introducing new inputs, which will have cost implications. The improvements considered for the costing exercise are those envisioned in the existing policies but are not currently provisioned for or implemented.  

- Increasing facilitator salary
- Ensuring minimum quality standards are met
- Providing a supervisor for monitoring and mentoring of ECED facilitators

**Option 1: Higher Facilitator Salary**

The SSDP envisioned increasing ECED facilitators’ remuneration to align with grade 10 level government employees as one of its goals. And the recently approved Education Policy (2019) stipulates that provisions will be made to align ECED facilitators’ salary with the prevailing minimum wage defined by the government.  

Cost estimates are presented for both cases, that is, increasing facilitator salary to the level of primary school teachers with grade 10 qualification and to the level of minimum wage. With the increase in salary, it is assumed that the facilitators’ turnover rate will be lower. The turnover rate is set at 5 percent for a salary increase to primary teacher level and at 10 percent for the minimum wage.

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18 Education Policy (2019) was approved by the Cabinet in November 2019.
19 Primary teacher salary with grade 10 qualification is NPR 26,604 per month and the prevailing minimum wage is NPR 13,450.
Under both enrollment projection scenarios, the cost of ECED will increase almost fourfold compared to the base model if the salary is increased to match the primary teacher’s salary. The cost will be two times higher in the case of minimum wage. While there will be some savings through low turnover rate and consequently the need for fewer new facilitator’s training, the savings is negligible compared to the increase in the overall cost (less than 2 percent of the total cost).

The strategy for increasing facilitator retention rate with a higher teacher salary is an expensive policy option. Even though this option is costlier, benefits of it, such as attracting more qualified facilitators, higher retention rate, better learning outcomes, and reduction in repetition in the subsequent education levels, might be substantial and the cost-benefit of this policy might be better than that of other policy options.\textsuperscript{20} Notably, a higher salary might nurture professionalism among facilitators, which can result in quality ECED. Also, since more than 90 percent of the facilitators are female, the salary issue should also be considered from the perspective of gender wage equality, women empowerment, and rights of the woman (ensuring the minimum wage).

\textit{Option 2: Providing Principal Elements of Minimum Standards}

The second estimation is with the provision of principal elements of the minimum standards. For the purpose of the cost estimation exercise five prioritized minimum standards are selected: child-friendly seating arrangement, qualified and trained teacher, six learning areas, easy access to clean water, and accessible toilet with soap and water.\textsuperscript{21} Among the five elements, the qualified

\footnotesize{\textsuperscript{20} The impact of teacher salary increase on student learning outcomes has not been extensively researched. Hanushek (2007) finds that a simple increase in K-12 teacher salary in the United States is ineffective and the increase in salary needs to be accompanied with a set of incentives and accountability. In the context of LMICs, Pugatch and Schroeder (2018) analyze the impact in the case of Gambia and find that the salary increase through a hardship allowance does not have a positive causal impact on average learning achievement. Accordingly, a simple salary increase without incentive or accountability may increase the retention rate but not learning outcomes.}

\footnotesize{\textsuperscript{21} These prioritized minimum enabling conditions are chosen based on recommendation from the SSDP ECED thematic working group.}
and trained teacher is covered under the base model. The unit cost for the remaining four elements is provided by UNICEF.\(^\text{22}\)

\[\text{Figure 10: Expected ECED Cost for the Minimum Standard (NPR, millions)}\]

Note: Left: scenario 1; right: scenario 2.

Compared to the base model the initial cost of ensuring the minimum standard is relatively high. It is assumed that each year 20 percent of the ECED centers will get funding to fulfill the minimum standards, and thereafter budget is provided for new ECED centers. The overall cost required to ensure the minimum standard is higher than the base model by about 28 percent on average, requiring US$6–7 million (NPR 717 million to NPR 846 million) annually in additional cost. However, this is an upper bound estimate, as it assumes that none of the existing ECED centers have fulfilled any element of the minimum standards, which is not necessarily the case.

\[\text{Option 3: Provision of Supervisors}\]

Strengthening the role of local governments to supervise and monitor ECED/PPE is one of the strategies envisioned under SSDP to improve the quality and efficiency of the sub-sector. Building on this strategy, as a third option, this report provides a cost estimate for hiring a supervisor in every local government. The cost for a supervisor is assumed to be the lowest salary level of secondary school teachers. Supervisors will be responsible for the monitoring and evaluation of ECED facilities to ensure rules and regulations, and standards are complied. At the same time, they should assist and provide pedagogical support to facilitators. Effective supervisors should be able to supervise, mentor and coach ECED facilitators providing advice, pedagogical support and customized feedback to each facilitator. In other words, they must be experienced, skilled, and academically oriented personnel.

\[\text{22 Child-friendly seating arrangement - NPR 125,000 per center; six learning areas - 75,000 NPR per center; and water and toilet - NPR 100,000 per center.}\]
Provision of supervisors will annually cost an additional US$3.3 million (NPR 378 million) compared to the base model.

**Feasibility of the Different Options**

The current ECED expenditure level is realized with 10.23 percent of the national education budget in the total government budget and 1.9 percent of the ECED budget in the overall national education budget. The analysis in this section presents the required level of investment in ECED by the government/MoEST needed to realize the different policy options discussed above, under the assumption that the national education budget remains at the current level.

**Figure 12: Percentage of ECED Budget in the Total National Education Budget to realize the Different Options**

*Note: Left: scenario 1; right: scenario 2. Combination 1: Minimum wage + supervisor + minimum standard; Combination 2: primary teacher salary + supervisor + minimum standard.*
As evident, increasing the salary of the facilitators to the level of primary teacher is the most expensive option and will require on average about 6.9 percent and 8 percent of the current education budget under the two enrollment scenarios. Combining all three options will require on average about 4.4 percent to 7.7 percent of the education budget under scenario 1 and about 5.1 percent to 8.9 percent under scenario 2.

**Increasing the Share of ECED Budget by the MoEST**

While the increase in cost compared to the base model is high, the increment relative to the overall education budget is modest. If the MoEST slightly increases the share of the ECED budget from its current level, most options are fiscally viable. Particularly, the options related to provision of supervisor and principal components of the minimum standard, which will require an increase of less than 1 percent of the current education budget. The combined option of increasing the facilitator salary to minimum wage, hiring supervisors, and providing principal components of a minimum standards (combination 1) is also feasible as it will require a modest increase in the ECED budget by 2.5 percent (under scenario 1) and by 3.2 percent (under scenario 2) from the base model, which translates to an average increase in annual cost by US$29.4 million to US$37.7 million (tables 6 and 7).

**Table 6: ECED Budget Requirement under Scenario 1**

<table>
<thead>
<tr>
<th>Policy Options</th>
<th>% of ECED Budget in Education Budget (Average)</th>
<th>Increment Required from Base Model (%)</th>
<th>Increment (NPR, millions)</th>
<th>Increment (US$, millions)</th>
<th>Required Education Budget as % of National Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary teacher salary</td>
<td>6.9</td>
<td>5.0</td>
<td>6728.41</td>
<td>59.20</td>
<td>10.74</td>
</tr>
<tr>
<td>Minimum wage</td>
<td>3.6</td>
<td>1.7</td>
<td>2319.20</td>
<td>20.41</td>
<td>10.40</td>
</tr>
<tr>
<td>Supervisor</td>
<td>2.1</td>
<td>0.2</td>
<td>233.65</td>
<td>2.06</td>
<td>10.25</td>
</tr>
<tr>
<td>Minimum standards</td>
<td>2.3</td>
<td>0.4</td>
<td>551.78</td>
<td>4.86</td>
<td>10.27</td>
</tr>
<tr>
<td>Combination 1a</td>
<td>4.4</td>
<td>2.5</td>
<td>3341.87</td>
<td>29.40</td>
<td>10.48</td>
</tr>
<tr>
<td>Combination 2b</td>
<td>7.7</td>
<td>5.8</td>
<td>7751.08</td>
<td>68.20</td>
<td>10.82</td>
</tr>
</tbody>
</table>

Note: aMinimum wage + supervisor + minimum standard; bprimary teacher salary + supervisor + minimum standard

**Table 7: ECED Budget Requirement under Scenario 2**

<table>
<thead>
<tr>
<th>Policy options</th>
<th>% of ECED Budget in Education Budget (Average)</th>
<th>Increment Required from Base Model (%)</th>
<th>Increment (NPR, millions)</th>
<th>Increment (US$, millions)</th>
<th>Required Education Budget as % of National Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary teacher salary</td>
<td>8.0</td>
<td>6.1</td>
<td>8233.3</td>
<td>72.4</td>
<td>10.85</td>
</tr>
<tr>
<td>Minimum wage</td>
<td>4.2</td>
<td>2.3</td>
<td>3118.3</td>
<td>27.4</td>
<td>10.46</td>
</tr>
<tr>
<td>Supervisor</td>
<td>2.5</td>
<td>0.6</td>
<td>749.6</td>
<td>6.6</td>
<td>10.28</td>
</tr>
<tr>
<td>Minimum standards</td>
<td>2.8</td>
<td>0.9</td>
<td>1205.8</td>
<td>10.6</td>
<td>10.32</td>
</tr>
<tr>
<td>Combination 1a</td>
<td>5.1</td>
<td>3.2</td>
<td>4284.1</td>
<td>37.7</td>
<td>10.55</td>
</tr>
<tr>
<td>Combination 2b</td>
<td>8.9</td>
<td>7.0</td>
<td>9399.1</td>
<td>82.7</td>
<td>10.94</td>
</tr>
</tbody>
</table>

Note: aMinimum wage + supervisor + minimum standard; bprimary teacher salary + supervisor + minimum standard
The education budget on average has increased by 12 percent in the last five years, which translates to an average nominal increase in budget by NPR 14,408 million annually. If it is assumed that the same trend will continue, allocating 25 percent to 30 percent of the annual increase in the education budget to ECED will be adequate to implement the combined policy of increasing the facilitator salary to minimum wage, hiring supervisors, and providing principal components of a minimum standard.

Table 8: Trend in Education Budget, 2014/15–2019/20

<table>
<thead>
<tr>
<th>Year</th>
<th>National Education Budget (NPR, millions)</th>
<th>Increase in Education Budget (NPR, millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014/15</td>
<td>91,714</td>
<td></td>
</tr>
<tr>
<td>2015/16</td>
<td>98,643</td>
<td>6,929</td>
</tr>
<tr>
<td>2016/17</td>
<td>116,361</td>
<td>17,718</td>
</tr>
<tr>
<td>2017/18</td>
<td>126,642</td>
<td>10,281</td>
</tr>
<tr>
<td>2018/19</td>
<td>134,509</td>
<td>7,867</td>
</tr>
<tr>
<td>2019/20</td>
<td>163,756</td>
<td>29,247</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>121,937</strong></td>
<td><strong>14,408</strong></td>
</tr>
</tbody>
</table>

Source: MoEST’s Annual Work Plan and Budget of various years.

Cost Recovery

While estimating the cost recovery of these policy options are beyond the scope of the analysis, it should be noted that ECED policies that address the quality issue and enhance school readiness among children will recover some of the cost through improvement in the internal efficiency and better learning outcomes in the subsequent education levels. If these policies do improve the quality of ECED, the fiscal burden derived from these policies will be much smaller than the estimates generated by the simple costing exercise presented here.

Demographic Change

It is estimated that the basic education age children’s population (ages 5-12) in Nepal will shrink by 5 percent by 2030. Some portion of the fiscal space created by this population decrease can be used to increase financing for the ECED sub-sector.

Cost Sharing Between Local and Federal Government

Nepal’s transition to a federal system provides a unique opportunity to increase funding for the school sector, including the ECED subsector. Ensuring provision of basic services, including ECED, is the main mandate of the local governments. While currently the local governments mostly rely on the budget allocated by the federal government for basic services, some LGs have allocated portion of their discretionary funds towards school education and ECED. However, the contribution varies significantly across local governments with not all local governments supplementing the federal school education budget. Most federated countries have cost sharing provision in place between its different tiers of government. For Nepal as well, cost sharing

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23 Based on UN population estimates.
24 The Constitution promulgated in 2015 introduced a three-tier federal system comprised of federal, provincial and local governments with funds, functions, and functionaries hitherto managed by the central, district and village authorities are moving to the seven new provinces and 753 Local governments (LGs).
25 The Local Government Operations Act 2017, which provides further details on the functions of the local government, specifies that the local government shall be responsible for formulation, implementation, monitoring, evaluation and regulation of policies, laws, standards and plans for early childhood development and education.
provisions can be included in the Federal Education Act or similar legal provision can be put in place to ensure minimum contribution from the local governments towards school education, including ECED.26

26 Federal Education Act is in the making and is expected to be tabled to the Parliament for approval in the winter parliament session (December 2019 – February 2020)
3. Conclusion

While Nepal has improved access to ECED, quality of ECED remain a concern. The study provides cost estimates of improving existing and introducing new inputs to improve the quality of ECED in Nepal. The analysis shows that the cost of implementing different policy options while can be considered substantial compared to the current allocation, the increase required compared to the overall education budget is modest. Some of the policy options, particularly, related to provision of supervisor and principle components of the minimum standards can be achieved with increase of less than 1 percent of the current education budget. The combined option of increasing the facilitator salary to minimum wage, hiring supervisors, and providing principal components of the minimum standards can also be feasible as it will require a modest increase in the ECED budget by 2.5 percent (under scenario 1) and by 3.2 percent (under scenario 2) from the base model.

While additional investments are necessary, mobilizing additional resources alone, without due consideration to the quality of inputs, is no guarantee that ECED outcomes will improve. Increasing evidence suggests that low quality early childhood education programs are not just ineffective, they can in fact lead to worse learning and behavioral outcomes –hence constituting a waste of resources. Hence, quality, effectiveness and efficiency of the investment will need to be enhanced if ECED goals, both national and SDG, are to be achieved. For this to happen proper implementation of the policies needs to be ensured. Furthermore, a strong M&E system with required data and information on the sub-sector, including data on child development outcomes, needs to be collected on a regular basis to track performance and inform future policies and reforms.
Reference


## Annex 1: Population Projection

<table>
<thead>
<tr>
<th>Year</th>
<th>Age 3</th>
<th>Age 4</th>
<th>Age 5</th>
<th>Age 6</th>
<th>Age 7</th>
</tr>
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<tr>
<td>2018</td>
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<td>546,778</td>
<td>547,876</td>
<td>551,285</td>
<td>556,720</td>
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<tr>
<td>2019</td>
<td>538,621</td>
<td>545,378</td>
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<td>553,316</td>
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<tr>
<td>2020</td>
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<td>540,533</td>
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<td>550,237</td>
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<td>539,056</td>
<td>540,360</td>
<td>542,803</td>
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<td>2022</td>
<td>538,774</td>
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<td>538,715</td>
<td>540,418</td>
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<td>2028</td>
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<td>2030</td>
<td>519,480</td>
<td>529,209</td>
<td>535,896</td>
<td>539,991</td>
<td>541,941</td>
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</table>

*Source: United Nations Population Division (accessed December 11, 2019).*