

Տղաների նախընտրության և աղջիկների թերարժեքության կանխարգելմանը  
ուղղված գլոբալ ծրագիր

Global Program on Prevention of Son Preference and the Undervaluing of Girls

### Costing and Feasibility Analysis

of state policy reforms on extending early childhood care and development services for children to prevent gender-biased sex selection

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Ծրագիրը ֆինանսավորվում է  
Եվրոպական միության կողմից  
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## Costing and Feasibility Analysis of public policy reforms on extending early childhood care and development services for children as a policy tool for preventing gender-biased sex selection

### Introduction

1. This Analysis Report aims at providing expert advice to the RoA Government and civil society, communities and local self-government bodies, private institutions and other key stakeholders in the course of evidence-based policy-making within the “Combating gender-biased sex selection” project.
2. The overall Analysis and its findings should be discussed and considered in the context of a number of fundamental analytical documents and publications on extending early childhood care and development services for children to prevent gender-biased sex selection elaborated by the International Center for Human Development (ICHD) in 2015-2017.
3. Hence, the “Analysis of Public Policy on Extending Early Childhood Care and Development Services to Prevent Gender-Biased Sex Selection” published by ICHD in 2017<sup>1</sup> and data, facts, findings and recommendations it outlines lay a solid and reliable foundation for mapping out and implementing a public policy on setting up an early childhood care and development system, introducing service models and outlining further actions towards achieving enhanced women’s labor force participation and work-family reconciliation which is a primary objective of combating gender-biased sex-selection.
4. Two monitoring reports compiled by ICHD in 2017 on public policies and programs targeting the prevention of gender-biased sex selection and sex-selective abortions in Armenia highlight to Government policy-makers, civil society, academia and private sector stakeholders, members of Community of Practice of Local Participation and Non-Discrimination (CoP)<sup>2</sup> and international/donor community the key findings of monitoring of not only public policies and programs that prevent gender-biased sex selection and sex-selective abortions in Armenia, but also one of its most important directions: the public policy on setting up an early childhood care and development system, that supports the enhancement of women’s labor force participation and work-family reconciliation.<sup>3</sup>
5. Another noteworthy research source on gender-biased sex selection and on issues related to sex-selective abortion is the 2017 Report entitled “Prevalence of and reasons for sex-selective abortions in Armenia” published by ICHD. The Report summarizes the findings of a very important research involving a combination of qualitative and quantitative methods which aim to reveal the prevalence of sex-selective abortions in Armenia, their major reasons, including public perceptions of this problem. The research reveals causes to sex-ratio imbalance by studying the son or daughter preference range, the pregnancy history and its outcomes, the prenatal sex determination tests and their outcomes. In particular, the Report provides qualitative and quantitative data for elaboration of policies on the prevention of gender-biased sex selection, including policies on setting up an early childhood care and development system, introducing service models and outlining further actions to achieve enhanced women’s labor force participation and work-family reconciliation, a primary objective of combating gender-biased sex-selection.<sup>4</sup>
6. Earlier, in 2016, two Analysis Reports published by ICHD – “Analysis of healthcare public policies and existing practices on gender-biased sex selection” and “Analysis of social protection policies and existing practices on gender-biased sex selection” outlined the evaluation of the impact of social and healthcare policies of Armenia on the prevention of gender-biased sex selection, including the international practices on limiting sex selection without any medical indication and issues of professional ethics. The Reports

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<sup>1</sup> [https://ichd.org/download.php?f=889&fc=Child%20Care%20\(Arm\).pdf](https://ichd.org/download.php?f=889&fc=Child%20Care%20(Arm).pdf)

<sup>2</sup> Community of Practice of Local Participation and Non-Discrimination (CoP) were established by ICHD within the EU-funded project “Combating gender-biased sex selection in Armenia” (2015-2017)

<sup>3</sup> [https://ichd.org/download.php?f=886&fc=Monitoring%20Report%202%20\(Arm\).pdf](https://ichd.org/download.php?f=886&fc=Monitoring%20Report%202%20(Arm).pdf)

<sup>4</sup> [https://ichd.org/download.php?f=879&fc=Survey%20\(Arm\).pdf](https://ichd.org/download.php?f=879&fc=Survey%20(Arm).pdf)

laid out analysis of healthcare and social protection sector legal regulations, public policies and programs, international best practices on how to achieve enhanced women's labor force participation and childcare reconciliation, context and tendency analysis, findings and recommendations.

7. The “New policy tools to prevent gender-biased sex selection: Two in one” policy brief, published by ICHD in 2016 and elaborated based on the opinions and discussion of participants at the discussion entitled “Public policy initiatives to prevent causes to gender-biased sex selection” on 30 November, 2015 as part of the “Combating gender-biased sex selection” project, played a pivotal role in agreeing the priority directions of public policies on the prevention of gender-biased sex selection and in communication of those priority directions.<sup>5</sup>
8. Hence, this Analysis Report is based on the above-mentioned pivotal studies and policy papers, and targets the most important thematic direction from those – conducting a costing and feasibility analysis of public policy reforms on extending early childhood care and development services for children as a policy tool for preventing gender-biased sex selection.
9. This Analysis Report does not repeat the provisions and recommendations frequently outlined in the above-mentioned policy papers, which reveal the interconnection of public policies targeting the enhancement of early childhood care and development services to prevent gender-biased sex selection. The Report, instead, discusses the opportunities to implement those recommendations aiming to support decision-makers by doing so.

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<sup>5</sup> <https://ichd.org/download.php?f=806&fc=116-GBSS-Arm.pdf>

## Methodology

10. To perform the costing and feasibility analysis of public policy reforms on extending early childhood care and development services for children to prevent gender-biased sex selection, the ICHD expert team selected the cost-benefit method as a primary analysis method. It enables the expert team to compare public expenditures with expected outcomes. The chosen methodology and related economic terminology is briefly presented below before proceeding with the description of expenditures.
11. The cost-benefit analysis dates back to 1844, originally known as “economic accounting” method.<sup>6</sup> From the very beginning, it has been widely applied both in the private and public sectors. Private companies have a primary goal of ensuring a maximum profit for their owners by using their own and borrowed assets, and there exist various accounting and economic methods to evaluate the efficiency of profitability indicators. At the same time, it should be noted that while the monetary assessment of public policy costs is quite possible, the evaluation of policy benefits or the assessment of the monetary benefits of public policies is often a hard task to fulfill, if not absolutely impossible in certain cases. Although the cost-benefit analysis method was designed to assess the financial outcomes of investments companies make, it can be successfully applied when analyzing and evaluating both economic and social outcomes.
12. Within the application of this methodology an economic value is calculated, followed by a calculation of the return on investment (ROI). It is worth noting that any project denoting a flow of monetary or other resources, the costs and income of which are expected in the upcoming time periods, are deemed as investment. The received results can be presented through the benefit-cost ratio: for instance, if this ratio equals 1:4, that means that every 1 AMD invested in the project will redeem 0.25 AMD.

$$\text{Benefit-cost ratio} = \text{total benefits} / \text{total costs}$$

13. The net benefit within the project, with regard to public expenditures, is usually calculated as follows:

$$\text{Net benefit} = \text{total benefits} - \text{total costs}$$

14. The key difference of analysis performed in the private and public sectors is that in the latter case one needs to consider both monetary and non-monetary costs and benefits that relate to the entire society. Accordingly, each negative effect is assessed as a cost, and each positive effect as a benefit, as well as the external effects (on the third party) are considered, such as the air and environment pollution, noise, industrial waste and so on. Since the ICHD expert team selected the cost-benefit analysis as a primary task within the “Combating gender-biased sex selection” project, the framework of the analysis is presented below in a more detailed way with the below description of steps in logical succession.

- Defining the goal and the framework of the analysis,
- Deciding on the profile of beneficiaries,
- Selection and classification of costs and benefits,
- Project costs and benefits, where applicable,
- Monetization of costs (prescribing a monetary value),
- Quantification of benefits per efficiency units (cost efficiency) or monetization (costs – benefits),
- Discounting of costs and benefits to get their present values,
- Calculation of cost efficiency ratio or net present value (NPV),
- Analysis of project sensitivity,
- Presentation of findings and recommendations, where applicable.<sup>7</sup>

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<sup>6</sup> See early publications by Alfred Marshall, as well as Melese F., Richter A., Solomon B. “Military Cost-Benefit Analysis (CBA): Theory & Practice” (2015)

<sup>7</sup> Newcomer K. E., Hatry H. P., Wholey J. S., Cellini S. R., Kee J. E. “Handbook of Practical Program Evaluation, Fourth” (2015)

15. The assessment of results based on cost-benefit analysis can be drawn through the logical framework outlined in *Figure 1*, which is essentially an analytical tool, rather than a means to show steps and results.
16. It is noteworthy that the costs and benefits of social public policies do not coincide in terms of timing, especially when it comes to early childhood period. The time value of money is one of the fundamental principles in economics which means that the same amount with nominal monetary value does not have the same value in various random time periods. The assessment of present value of cash flows linked to future is called discounting

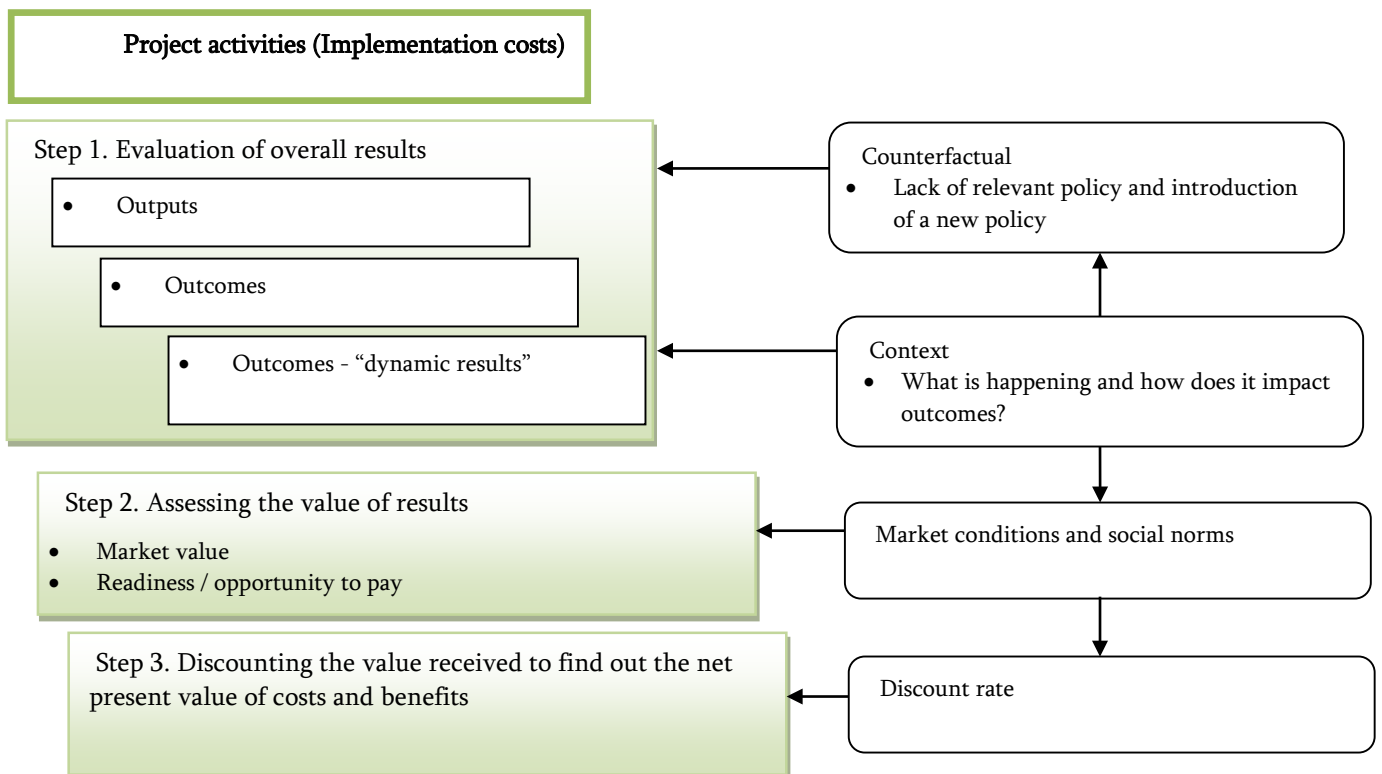
$$PV = \sum_{i=1}^n \frac{NCF_i}{(1+r)^i}$$

where  $NCF_i$  indicates net cash flow,

$r$  – discount rate,

$n$  – the number of given time periods (day, week, month, year).

**Figure 1.** Main steps of cost-benefit analysis



17. The discounting of cash flows is pivotal as the following factors are taken into account:

- The decrease in the purchasing power of invested amount due to the current inflation level in economy.
- Risk-free investments,
- The risks posed by specific investment project,
- The return (profitability) required by the invested capital.

18. Thus, if the discount rate equals 12%, the present value of one thousand AMD expected in a years' time will equal 893 AMD; in two years' time the present value of the same amount will be 797 AMD and so on. To assess the time value of money in social public policies, the “social” discount rate is applied. The value of social discount rate is directly

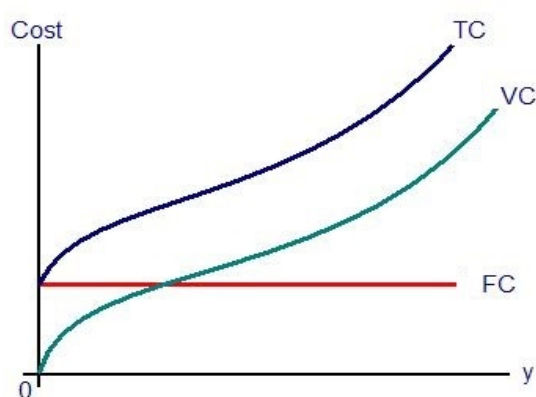
proportional to risks typical to the country, where within a given social public policy, subject to evaluation, the cost-benefit analysis is performed. According to some assessments, the social discount rate for developed countries was drawn as 3-7%, whereas for developing countries it was defined 8-15%.<sup>8</sup>

19. Although the consecutive performing of the above steps in the cost-benefit analysis may seem an easy task at first glance, in reality, it requires a more comprehensive approach. As a first step, let us introduce the following economic classification of program costs, as shown in Figure 2:

- Fixed costs, which remain unchanged in the frame of activities or various output volumes,
- Variable costs, which change in parallel with activities or output volumes,
- Semi-variable costs, which contain elements typical of the above two.<sup>9</sup>

20. Total costs equal the total sum of fixed and variable costs (as well as semi-variable costs, if applicable).

**Figure 2.** Variable, fixed and semi-variable costs



21. Rental costs are an example of fixed costs, operations costs are variable costs, and telephone costs are semi-variable costs (where the operator fee is a fixed cost, and minute fee is variable). Government Decree 815-N, adopted on 31 May 2007 defines the framework of legal provisions on providing subsidies to state non-commercial organizations providing daycare and around-the-clock care services for children. According to the Decree, variable costs for these organizations are those directed to purchase of household and food items per each beneficiary – food and beverages, which are fixed in unit. Fixed are other costs, particularly the following:

- Salaries and bonuses of staff,
- Electricity and energy consumption services,
- Telecommunication services,
- Insurance costs,
- Rental of goods and equipment,
- Professional services,
- Current renovation, exploitation and maintenance of buildings and facilities,
- Current repair, exploitation and maintenance of vehicles and equipment.
- Transportation costs,
- Other costs.

22. The analysis of costs of childcare and preschool education institutions (PEI), performed in accordance with the above description, will be presented based on their funding

<sup>8</sup> Harrison M. 2010, Valuing the future: the social discount rate in cost-benefit analysis, Visiting Researcher Paper, Productivity Commission, Canberra.

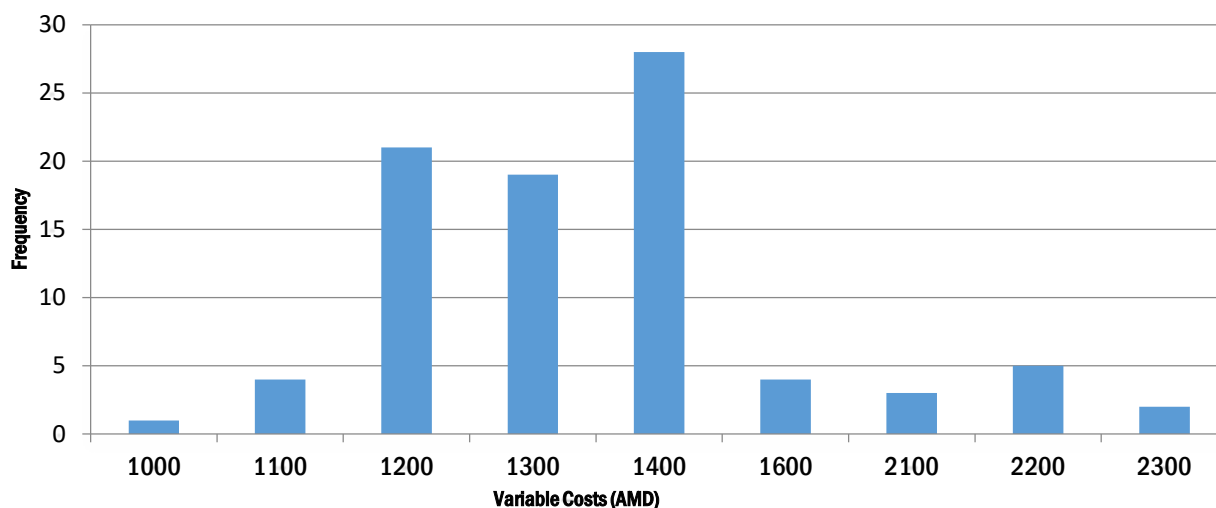
<sup>9</sup> Paul Kr. S. "Management Accounting", New Central Book Agency (P) Limited (2012)

peculiarities. In particular, we will observe the structure of costs and general cost tendencies first within state non-commercial organizations, and then that community-based non-commercial organizations. The ICHD expert team conducted visits, interviews and on-spot research in two institutions: “Children’s Home of Yerevan” SNCO as state funded organization, and Yerevan Kindergarten #2 which is one of the first kindergartens in Yerevan providing early childhood care services to children with development needs. The latter is funded from the community budget and is partially self-sustainable due to resources earned from extra educational and development services for children of pre-school age. These resources, however, constitute a tiny proportion in the organization’s income.

## The main findings of the analysis

23. To provide an overall description of costs in state non-commercial childcare organizations operating by the RoA Ministry of Labour and Social Affairs (MLSA), the data presented in subsidy agreements was used, that is available in the RA Government's online website. The histogram, i.e. the disbursement of variable costs for 2010-2015, which reflect the factual frequencies of incurred costs within specific sum ranges, is presented in *Figure 3*.

**Figure3. Frequency of variable costs** <sup>10</sup>



24. The modal range of variable costs is the 1,300 – 1,500 AMD range (the frequency of occurrence of analyzed data is within this range). However, just presenting the modal range is not sufficient to draw rigorous conclusions, so we will analyze other value characteristic features of variables typical for that specific timeframe such as the arithmetic mean which is the most frequently used indicator in descriptive statistics science. Thus, the average mean of variables (the unit cost per each beneficiary is fixed) for all organizations sampled in the mentioned timeframe constitutes 1,365 AMD. Table 4 outlines the dynamics of variable costs in the course of six years, combined with the average annual headcount of children in childcare institutions.
25. The existence of numerous outliers and volatility of variables is obvious, and it is well-known that the arithmetic mean is sensitive towards such outliers. Median may be alternative to the specific indicator. It is the most robust value characteristics to outliers describing the central tendency in the data set. <sup>11</sup> As a value characteristics of variables for all organizations sampled and analyzed for the timeframe of 2010 – 2015, the value of median is 1,300 AMD.
26. By definition, fixed costs remain unchanged for different timeframes of operation or output volumes. However, given the peculiarities of childcare institutions and understanding the need to reflect the holistic picture of costs incurred per beneficiary, we will outline in *Figure 5* the comparison of fixed costs with unit variable costs.

In all childcare institutions operating by the MLSA, the minimum value of fixed costs for the described timeframe was 532.41 thousand AMD, the maximum value constituted around 3,085 thousand AMD, and the median was around 1,180 thousand AMD. It should be reiterated that the economic interpretation of fixed and variable costs is not unequivocally mainstreamed in the annual subsidy agreements granted to SNCOs by the Government. Only household and food purchase costs are classified as variables, which are not such in accordance with economic cost classification. For instance, certain utilities services have a fixed fee and fixed

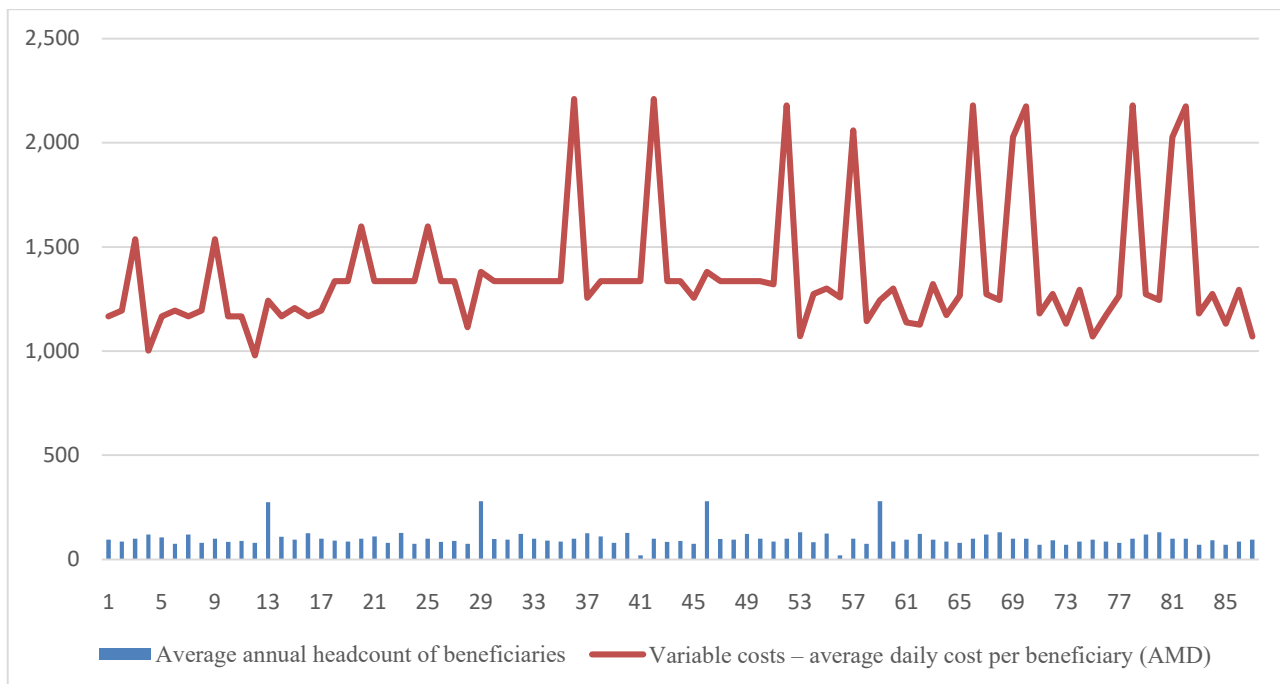
<sup>10</sup> Data was collected from the section on SNCO funding from the RoA Electronic Government website <https://www.e-gov.am/poak/>

<sup>11</sup> Median is calculated by sorting data in ascending or descending order, and if the number of observations is odd, median fits perfectly the central value, if the number of observations is even, median is the midpoint (arithmetic mean) between two values.

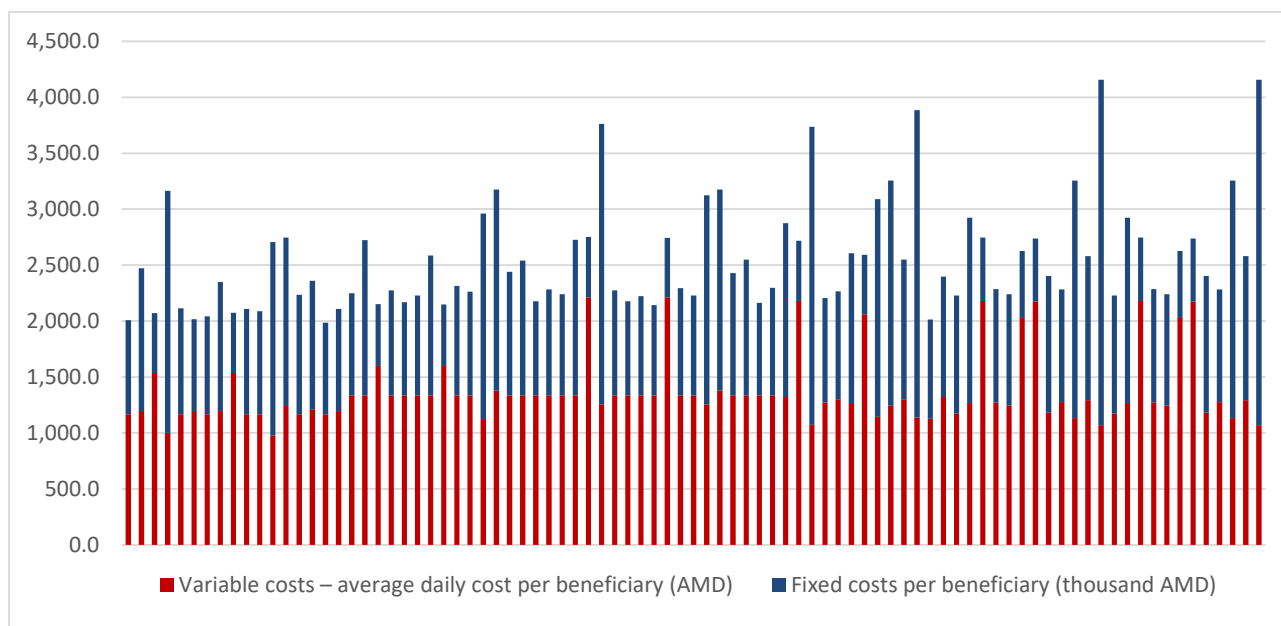


cost per unit, hence are variables costs, according to the cost classification we presented. The telecommunication services, and particularly the telephone service is a typical example of a semi-variable cost (a fixed fee and a monthly payment of consumed services), and so on.

**Figure 4.** Average annual headcount of beneficiaries and variable costs



**Figure 5.** Variable and fixed costs per unit



27. At the same time, presenting the key indicators of descriptive statistics summarized in *Table 1 of the Annex 1*, will be useful in the course of assessing the fixed and variable costs of RA MLSA childcare institutions.
28. To draw the framework of potential beneficiary mothers and children for early childhood development services, it is also important to study the statistical data on women's employment and earnings / salary and benefits provided for care of children aged 0-2. In 2017, the number of women and men of legally capable age in the RA population constituted respectively 1,106.9 thousand and 914.5 thousand, whereas only 584.6

thousand women (52.8%) and 646.2 thousand men (70.6%) are economically active.<sup>12</sup> The status of economic activity of men and women in 2016-2017 is presented in more detail in *Table 1*.

**Table 1.** Economic activity of population aged 15-75, 2016-2017, (thousand persons)

	Data distribution per sex			
	2016		2017	
	Woman	Man	Woman	man
Labour resources	1,106.2	905.2	1,106.9	914.5
<i>including Yerevan</i>	362.2 <sup>13</sup>	285.5		
Economically active population	581.2	645.1	584.6	646.2
<i>Including Yerevan</i>	177.5	205.8	-	-
<i>as well as</i>				
<i>Employed</i>	478.0	528.2	482.4	529.5
<i>Unemployed</i>	103.2	116.9	102.2	116.7
Population out of labour force	525.0	260.1	522.3	268.3
<i>Including Yerevan</i>	49.0	72.1	-	-

29. The main reasons for the unemployment of 525 thousand women out of labour force are family circumstances: pregnancy, childbirth, childcare and household economy burden. Thus, 37.9% of women out of labour force (199 thousand) noted that family circumstances are the reason for their unemployment. This figure constitutes 18% within the overall labour resources.<sup>14</sup>
30. On the whole, women are basically employed in sectors where their earnings are lower than the official average salary. In the wider group of industrial branches, women are predominantly engaged in manufacturing where the earning rate is again lower than the average. *Table 2* outlines data on women's employment and earnings.

<sup>12</sup> "The Socio-Economic Situation of RA in January-March, 2018", RA NSS, Yerevan 2018, p. 98.

<sup>13</sup> "Marzes of the Republic of Armenia and Yerevan city in figures, 2017", RA NSS, Yerevan 2017, pp. 105-108

<sup>14</sup> "Women and Men in Armenia – 2017", RA NSS, Yerevan 2017, p. 60

**Table 2.** Women’s employment and earnings<sup>15</sup>

Employment sector	Proportion in the sector, % (person) 2016 <sup>16</sup>	Proportion to total of women’s employment, %, 2016	Average monthly nominal wages of women in the sector, 2016
<b>Industry</b>			
Mining and quarrying	30 (37,000)	7.7	227,606
Manufacturing			120,846
Electricity, gas, steam and air conditioning supply			266,694
Water supply; sewerage, waste management and remediation activities			162,353
Trade, accommodation and food services	40 (69,000)	14.4	104,022
Information and communication	32 (6,000)	1.3	263,169
Financial and insurance activities	54 (7,000)	1.5	292,001
Professional, scientific and technical activities	58 (11,000)	2.3	152,732
Administrative and support service activities			113,760
Public administration	61 (148,000)	31.0	188,204
Education			113,695
Healthcare and social work services for the population			126,288
Arts, entertainment and recreation	48 (22,000)	4.6	107,129
Other service activities			95,639
Average monthly nominal wages of women			138,901
<b>Average nominal wages</b>			<b>174,445<sup>17</sup></b>

31. Taking into account the above data, it is appropriate to study three groups of women, in accordance with classification of women’s earnings:

- Group earning up to 100,000 AMD, which involves predominantly women employed in the sectors of services, mainstream education, pre-school education, arts, recreation and trade;
- Group earning average monthly nominal wages from 100,000–138,901 AMD, which represents mostly women engaged in the sectors of healthcare, education, administration and manufacturing;
- Group earning higher than the average monthly nominal wages – involving women that are employed in public administration, financial and insurance activities, information and communication.

32. According to summary data provided by the social security service of the RA Ministry of Labour and Social Affairs, as of the end of 2017, 38,271 families received one-off childbirth subsidy (the number of planned subsidies totaled to 38,598). 11,244 subsidies were received in Yerevan. In 2016, 40,887 families received the subsidy (the number of planned subsidies was 41,663), 12,627 of which were paid in Yerevan. The number of

<sup>15</sup> Considering that Yerevan city is the target of this study, persons employed in agriculture, were not observed. The choice of Yerevan as a target was conditioned by the comparatively higher level of average monthly nominal wages and a bigger number of pre-school institutions, which is not the case in other provinces, except for Syunik province.

<sup>16</sup> Data for 2017 is not published yet.

<sup>17</sup> “Armenia in figures – 2017”, RA NSS, Yerevan, 2017, p. 32

children aged 0-2, planned to get the subsidy, was 11,669 at the end of 2017, however 11,343 de facto received them. 5,381 of them were in Yerevan (5,231 for one child, 142 for 2 children and 8 for 3 and more children)<sup>18</sup>. The monthly subsidy constitutes 18,000 AMD. Below the statistical data on the newly established subsidies for families receiving one-off childcare subsidy in 2014-2017 and families receiving childcare subsidies in Yerevan for children aged 0-2 in 2016-2017 is presented.

**Table 3.** Number of families that receive one-off childcare subsidy, 2014-2017, unit

	2014		2015		2016		2017	
	Number of families	Number of planned subsidies	Number of families	Number of planned subsidies	Number of families	Number of planned subsidies	Number of families	Number of planned subsidies
Yerevan	11,096	11,224	13,657	13,772	12,627	12,930	11,244	11,365
Total in RA	35,697	36,094	44,957	45,261	40,887	41,663	35,8271	38,598

33. The amounts of planned subsidies and the actually paid ones decreased in the recent years, which is probably conditioned by the reduction in the overall birth rate in the past decades. This is demonstrated in *Table 4*. Thus, the total number of children born in 2014 constituted 43,031<sup>19</sup>, and only 37,669 in 2017<sup>20</sup>.

**Table 4.** The number of children aged 0-2, for whom subsidies were planned, 2014-2017

	2014	2015	2016	2017
Number of planned subsidies, persons	12,814	12,611	12,374	11,669
Amount paid during the year, mln AMD	3,071.8	2,267.0	2,227.3	2,100.4

34. As seen from data outlined in *Tables 5 and 6*, in 2017, compared to 2016, the number of recipients for subsidies for children aged 0-2 grew, whereas the total number of newly established subsidies in Armenia goes down. The picture for Yerevan is different – the number of newly established subsidies has grown.

**Table 5.** Recipients of subsidies for care of children aged 0-2, 2016-2017, persons

	Number of subsidy recipients, 2016				Number of subsidy recipients, 2017			
	Total	including			Total	including		
		For 1 child	For 2 children	For 3 and more children		For 1 child	For 2 children	For 3 and more children
Yerevan	4,536	4,430	94	12	5,381	5,231	142	8
Total, RA	11,992	11,646	310	36	11,343	11,031	299	13

**Table 6.** The newly assigned subsidies for care of children aged 0-2, 2016-2017, persons

	Number of newly established subsidy recipients, 2016				Number of subsidy recipients, 2017			
	Total	Including			Total	including		
		For 1 child	For 2 children	For 3 and more children		For 1 child	For 2 children	For 3 and more children

<sup>18</sup> "The Socio-Economic Situation of RA in January, 2018", RA NSS, Yerevan, p. 112

<sup>19</sup> "Armenia in figures – 2017", RA NSS, Yerevan, 2017, p. 22

<sup>20</sup> "The Socio-Economic Situation of RA in January-December 2017", RA NSS, Yerevan, p. 139

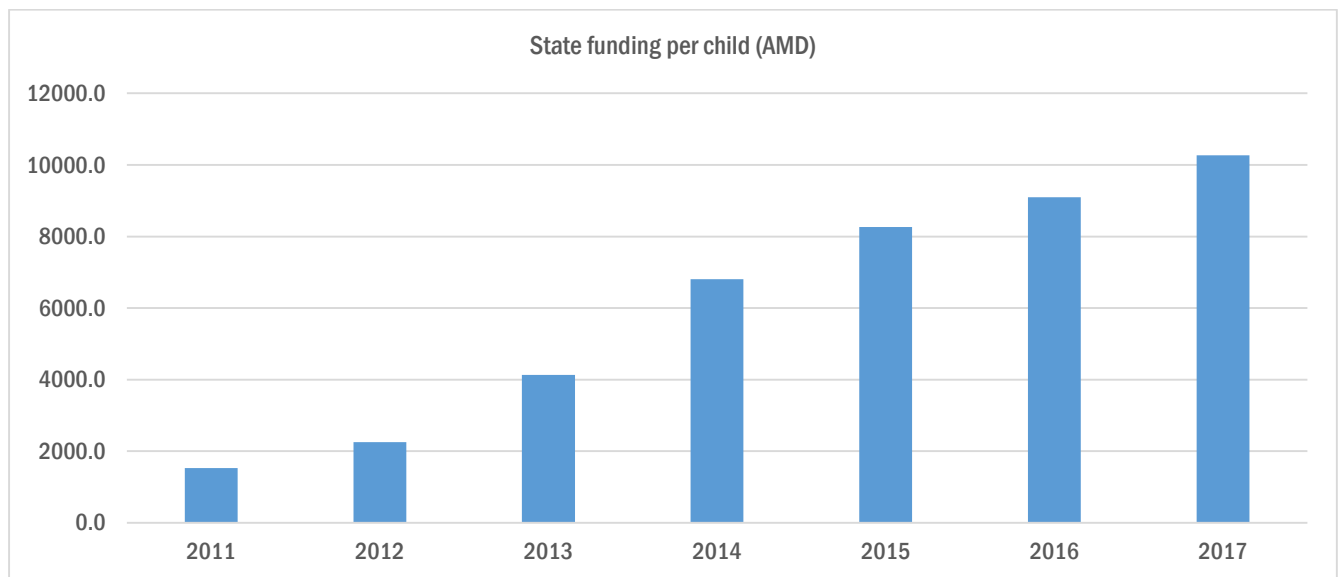
Yerevan	3,286	3,214	66	6	3,680	3,605	70	5
Total, RA	8,541	8,302	218	21	7,606	7,447	150	9

35. To support persons that are in maternity leave for care of children aged 0-3, towards resuming their employment before the child is two years old, the draft package of amendments to the RA Law on Employment was elaborated and presented in 2017. The draft package anticipates to ensure the right to receive support for childcare in parallel to employment, in full accordance with RA Government procedures.
36. The number of currently operational pre-school education institutions in Armenia has constantly grown within the last seven years. Hence, if only 660 pre-school education institutions operated in 2011, in 2017 their number reached 733, out of which 666 are kindergartens and 67 are nurseries (135 school-based kindergartens also have operated). 692 out of the total pre-school institutions were either community-based or institutional, and 41 were private. The increase in the total number of pre-school education institutions constituted 11.1%.<sup>21</sup> The number of enrolled children was 63.5 thousand in 2011, and around 72.7 thousand in 2017, thus totaling to 14.5% of overall increase in the number of enrolled children within the last seven years. The average number of children per group was 26, and the actual attendance rate was 87.2%. On average, 88 children attended each pre-school institution, and each teacher worked with 12 children.<sup>22</sup>
37. In parallel with constant growth of demand towards pre-school education institutions, funding from the state budget also increased. Figure 6 summarizes the state budget funding dynamics per child enrolled pre-school education institutions within the last seven years. Relevant indicators of the RA National Statistical Service served as the basis for calculating the number of children enrolled pre-school education institutions. The calculation basis for state expenditures were the cost indicators of “Pre-school education” in Category 01, group 01 of “Education” section 09 of the RA state budget for 2011-2017. According to those cost indicators, expenditures anticipated by the State Budget Law, have progressively grown each year during the past seven years. Thus, if in 2011 state funds allocated for pre-school education constituted around 1,527.5 AMD per child, then in 2017, the same figure was 10,271.9 AMD, showing that costs grew six times in the mentioned timeframe. It must be also noted that the large majority of these costs are fixed, particularly capital costs, which proves the increase in the number of pre-school education institutions (PEIs) with 73, including the private ones, as well as the increase in the number of children enrolled in those institutions.

<sup>21</sup> Source – RA National Statistical Service, 2011-2017 yearbooks.

<sup>22</sup> “The Socio-Economic Situation of RA in January-March, 2018”, RA NSS, Yerevan 2018, p. 198

**Figure 6.** State budget funding for pre-school education institutions<sup>23</sup>



38. The expert group of the RA Ministry of Territorial Administration and Development carried out analysis on food costs, the number of personnel positions, number of enrolled children and budgets of pre-school education institutions (PEIs). The expert group considered as basis for the analysis the approved budgets and financial reports of PEI in 184 communities (except Yerevan city), which have annual budgets of 50 million and higher. In total, 508 kindergartens operate in these communities, with around 8,480 staff members, 40,500 enrolled children and budgets totaling to 8.9 bln AMD. As a result, within this sampling, the average daily variable cost per child was drawn as 233.21 AMD, with a standard deviation of 84.56 AMD, which means that the average variable cost value is within the [148.65, 317.77] range.
39. It is noteworthy that certain assessments claim that in case of making a number of changes in the normative standards of food and personnel, there will be an opportunity to address the ten times bigger differences recorded in food costs. In particular, the 184 communities will be able to save approximately 1 bln AMD by merging into one community-based non-commercial organization, as well as by closing down of some of the kindergartens.<sup>24</sup>
40. 160 pre-school education institutions currently operate under the auspices of Yerevan Municipality. Approximately 30,000 children attend kindergartens, including around 3000 children aged 0-3. *Tables 7 and 8* outline in more detail the 2017 operation figures of community-based, institutional and private PEIs in Yerevan city. As shown in the Tables, the proportion of children under 1.5 in the total number of children attending the above PEIs in Yerevan (32,826 children) is insignificant – only 0,5% (or 157 children), and 8.5% (or 2,793 children) for children aged 1.5 – 3.

<sup>23</sup> Source: 2011-2017 RA Laws on the State Budget of the Republic of Armenia and RA National Statistical Service at [www.armstat.am](http://www.armstat.am)

<sup>24</sup> Source: «Analysis of food costs, the number of personnel and enrolled children, and budgets of RA pre-school education institutions», RA Ministry of Territorial Administration and Development, Expert Team, 04.10.2017; <http://www.mtad.am/files/docs/1626.pdf>

**Table 7.** 2017 operation figures of community-based, institutional and private PEIs in Yerevan city, unit

Number of PEIs	Total			Number of children per PEI type, person			Number of groups, unit		Number of slots in groups
	Nurseries	Kindergartens	School-based kindergartens	Nurseries	Kindergartens	School-based kindergartens	Total	Children under 3	
220	8	195	17	778	31,032	1,016	1,165	113	35,199

2016

Number of PEIs	Number of groups, unit		Number of slots, unit
	Total	of which children under 3	
219	1,157	122	35,940

2015

Number of PEIs	Number of groups, unit		Number of slots, unit
	Total	of which children under 3	
219	1,152	111	34,112

**Table 8.** Number of children enrolled in community-based, institutional and private PEIs in Yerevan city, disaggregated by age<sup>25</sup>, 2017, persons

Under 1.5 years	From 1.5 to 3 years old	From 3 to 5 years old	6 years old	7 years old
157	2,793	20,357	9,505	14

2016

Number of children	Under 1.5 years	From 1.5 to 3 years old	3 and older
32,587	20	3,451	29,116

2015թ.

Number of children	Under 1.5 years	From 1.5 to 3 years old	3 and older
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<sup>25</sup> "The Socio-Economic Situation of RA in January-March, 2018", RA NSS, Yerevan 2018, pp. 198-199

32,289	15	3,169	29,10526
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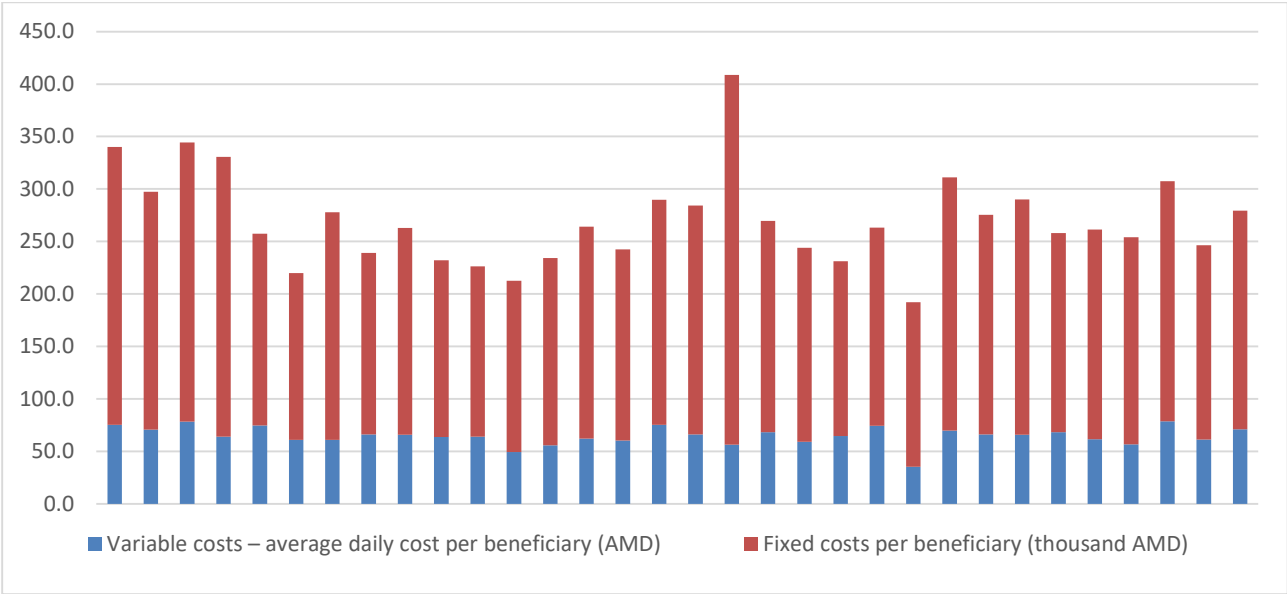
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<sup>26</sup> “RA Marzes and Yerevan city in figures, 2017”, RA NSS, Yerevan 2017, pp. 139-141



41. While conducting costing and benefit analysis of public policy reforms on extending early childhood care and development services for children, in addition to studying the expenditures of state non-commercial childcare institutions operating within the structure of RA Ministry of Labour and Social Affairs, the financial reports of Yerevan-based institutions providing pre-school education and development services were studied.
42. Within this analysis, Yerevan city was selected as a target for policy pilot first, due to several factors, including the practical opportunities to enhance the framework of currently proposed services in PEIs of Yerevan that are provided to children under 3.
43. There are PEIs (kindergartens) and other childcare institutions in Yerevan that have a comparatively better infrastructure. Enhancement of their services is essentially less costly in terms of capital costs, which for instance, can refer to buildings, adjacent infrastructure, or construction or capital renovation of other buildings intended for childcare. We note that the review of capital costs is not a task within the scope of this study, taking into account that it will require further expert assessment and, that there is lack of financial resources for such scenarios' implementation both at the community level, within the state budget resources and within the overall context of corporate initiatives.
44. The expert assessment, proven also by interviews and visits, shows that such criteria can be met only by Kindergarten #92 (CBNCO) and the "Children's Home of Yerevan" SNCO, which already has long experience in providing services to children under 3. Kindergarten #92 also implements inclusive education, and represents an excellent model of public-private partnership in the social sector proving the livelihood and feasibility of such initiatives. It is however, worth mentioning that the need for renovation works was raised during the interviews of representatives of both institutions. As a pilot stage, it is possible to suggest that such institutions offer childcare services for children up to three years by ensuring relevant conditions such as extra positions in personnel, separation and adaptation of spaces, review of food menu for the youngest groups of children and so on.
45. Within the scope of this study, the financial reports and data of all community-based PEIs in Yerevan were reviewed, except for Avan administrative district, where a unified administration of PEIs is implemented. In particular, the cost estimates, reports on financial inflows and personnel lists for 2017-2018 were studied. The actual expenditure reports of PEIs for 2017 financial year are particularly important in terms of providing a quantitative assessment in this study.
46. Thus, the total amount of all final cost estimates for all kindergartens, including Avan administrative district, constituted 8,263,936.1 thousand AMD, where the highest maximum cost was 122,171.6 thousand AMD, the minimum (lowest) cost was 19,854.5 thousand AMD. According to final cost estimates, the average amount of the total costs of all community-based PEIs in Yerevan is 51,638.5 thousand AMD, the median is 47,241.3.
47. The average amount of food costs for the same period was 11,481.6, and 304.6 thousand AMD for the procurement of household goods. The detailed statistical data on food, household good items and total costs is presented in *Table 2* of Annex 1 of this Analysis Report.
48. While analyzing respective costs of state non-commercial organizations operating under the auspices of the RA Ministry of Labour and Social Affairs, in compliance with the methodology of this study, those costs were classified as variable and fixed costs, therefore this approach is applicable to costs of community-based PEIs. However, given the limited availability of data, the analysis was performed by designing a sampling. The sampling was designed according to communities, by employing a random sampling method. 32 kindergartens were selected, including nurseries. Just in the case of RA MLSA SNCOs, here, both, food and household goods costs were seen as variable costs, which, in accordance with economic definition, have to be classified as fixed per unit, and the remaining costs were classified as fixed.
49. The dynamics of fixed and variable costs per child within the designed sampling is outlined in *Figure 7*.

**Figure 7.** Fixed and variable costs per child (thousand AMD)<sup>27</sup>



- 50. It is noteworthy that variable costs demonstrate a relatively stable dynamics, which is quite expected, since variables are the total of per capita food and household good costs, and the food cost per child in the community budget is a fixed amount – 22,500AMD, so the fluctuation is conditioned by the consumption of household goods required for various age groups.
- 51. The arithmetic average of annual variable costs is 64,736 AMD, and the median is 65,155 AMD. The deviations of fixed costs from their arithmetic average are mainly due to peculiarities related to scale, community specifics and so on. Those deviations are also conditioned by the existence of institutions implementing inclusive education in the sampling, which at least assumes costs related to paying for additional positions of specialists. The average annual value for this cost constitutes 205,508AMD, and the median is 198,590AMD.
- 52. It was deemed more convenient to reflect all cost assessments using ‘month’ as a time sample, since the ‘month’ is a universally accepted unit in the Republic of Armenia to measure timeframe for operational calculations both in terms of salary payment, payroll taxes, a number of other mandatory fees, and generally for business operations. Hence, in particular, the average monthly amounts of variable and fixed costs per child constituted respectively 5,395 and 17,126AMD. The standard deviation in variable costs is 725, that is, these costs are predominantly in the range of [4,670; 6,120]. The fixed costs are within the [13,747; 20,505] range, with standard quadratic deviation of 3,379AMD. Based on this data, the fee for early childhood care services per child aged 6-24 months was estimated at minimum 44,000AMD, and at maximum - 51,000AMD.<sup>28</sup>
- 53. Direct costs of wages are another important element of general costs. Based on the analysis of private PEIs operations that provide early childhood care to children aged 1-3, the size of the group as composed of 9-12 children was chosen for calculations, and three as the number of personnel (a pre-school teacher, an assistant pre-school teacher and a nanny). As seen from the data, currently the fees for the care of children aged 1-2.5 in private, non-state PEIs are quite high, which makes them less accessible and reduces the number of families that could potentially use their services. For instance, the fee for a six-day care of children aged 1-2.5 is around 90,000AMD in the “Bees” nursery; in the “Malu Baby” kindergarten the fee is 80-90,000AMD. In “Bembi” nursery and kindergarten the childcare services for children aged 1.5 – 3 cost around 100,000 AMD monthly. The number of

<sup>27</sup> Sampling from community-based PEIs in Yerevan (32 PEIs)  
<sup>28</sup> Group composed of 9 or 12 children. The fee per child in each group will be:  
 (5395+17126) + (96 000 +80 000 + 80 000)/9 = 51 000 for 9 children  
 (5395+17126) + (96 000 +80 000 + 80 000)/12 = 44 000 for 12 children

children in groups is 6 to 12, and the number of personnel for each group is 2-3 people (a pre-school teacher, an assistant pre-school teacher and a nanny).

54. Both the minimum and the maximum amount of fees estimated in this Analysis Report are significantly lower than the fees currently set for similar services in the private sector. This means that if state PEIs offer paid services with a comparatively low fee, the number of women and families using those services will notably increase.
55. A woman should earn at least 140,000AMD per month, to be financially capable to use the services of private PEI as a financially justifiable cost for her. Whereas, if those services are offered by state PEIs, women with less earnings – starting from 90-100,000AMD, will be able to use them. This is proven also by estimations outlined in the below Table.

**Table 9.** Potentially acceptable levels of wages, AMD

	<b>Benefit</b>	<b>Cost</b>	<b>Benefit</b>	<b>Cost</b>
Nominal wages (before payment of taxes)	100,000		138,901	
Wages (after payment of taxes)	71,000		99,000	
Subsidy for children aged 0-2		18,000		18,000
CCDS fee – the maximum scenario		51,000		51,000
Net benefit / cost		2,000		30,000
CCDS fee – the minimum scenario		44,000		44,000
Net benefit / cost		9,000		37,000

56. As proven by data in *Table 9*, the minimum threshold of the monthly nominal wages, that can provide a full cost coverage, is 100,000AMD, although this figure will decrease to 90,000AMD in the minimum fee scenario. A more significant benefit can be received by those mothers whose wages either equals or exceeds the average monthly nominal wages, constituting around 139,000AMD.
57. In order to assess the potential impact of using care and development services for children under the age of 2 in terms of costs/losses for mothers/families and the state, we based estimations on the above two levels of wages, the first of which is the minimum threshold of cost coverage. It is however worth noting that the net cost coverage does not in any way assume that families will use the offered services and the mothers engaged in childcare, will return to work. The possibility of these mothers to return to work will grow, in case they have higher earnings than the above-mentioned minimum level of wages.
58. Within the cost-benefit analysis aiming to assess the impact of childcare and development services, the post-birth period of 24 months was studied, during which the state pays the family a childcare subsidy in the amount of 18,000AMD. Those figures were discounted and brought to one unified entry point in terms of time in order to receive comparable results. As a unified entry point, the time of childbirth and time for subsidy entitlement was selected. The discount rate used for estimations in this analysis was the accounting rate of bank interest as established at 12% by the RA Central Bank.<sup>29</sup>
59. In case of limited accessibility to or non-use of CCDS, the income of a mother or a family is the total amount of childcare subsidy received during the 24 months, At the same time, this is a cost incurred by the state since it is paid from the state budget. The calculations of net benefit and costs of families and the state in case of non-use of CCDS, is presented in *Table 10*.

<sup>29</sup> According to Article 411 of the RA Civil Code, the RA Central Bank establishes the accounting rate of bank interest. In cases of the use of another's monetary assets as the result of their unlawful retention, refusing to return them, or delay in their payment, or unjustified receipt or saving at the expense of another person, or in other cases as defined by the RA legislation, the interest is subject to payment on the amount of these funds.

**Table 10. Calculation of net benefit and costs for parents and state in case of not using CCDS-s**

	Benefits	costs
The amount of child subsidy, received by the mother/the family for 24 months (for the child aged 0-2) - 18,000 AMD monthly	432,000	
The amount of child subsidy, paid by the state for 24 months (for the child aged 0-2) - 18,000 AMD monthly		432,000
<b>Net cost-benefit, discounted value</b>	<b>382,381,0</b>	<b>382,381,0</b>

60. The costs and benefits for working mothers and their families as well as for the state undergo significant changes if childhood care and development services for children 6-24 months old are secured and made use of. The benefit for the mother or the family within the time sample of 24 months should be calculated by adding the child care subsidy (provided until the child becomes 6 months old) to the earnings, received for the rest of 18 months. In case of returning to work, the amount of non-delivered subsidies and the funds, paid for the CCDS are accordingly regarded as losses (unearned possible income) and costs for the mothers/families. At the same time the ceasing of childhood subsidy payments for the 18 months is a benefit for the state, in terms of savings of state budget expenditures. Besides that, the state benefits if the mother returns to work by collecting payroll taxes and other fees as well as receives additional benefits by creating new jobs through formalizing the childhood care services and gaining tax revenues.

61. The tables below represent the possible cost-benefit impact on the mother/family in case of obtaining childhood care and development services for children under 2.

**Table 11. Cost-benefit analysis, per child**

The maximum fee scenario for the parent, obtaining CCDS				
	Monthly nominal wages of 100,000 AMD		Monthly nominal wages of 138,901 AMD (Women's average wages)	
	Benefit	Cost	Benefit	Cost
Salary income for 18 months	1,096,801.7		1,529,343.2	
The amount of subsidies received for six months for the child, aged 0-2	104,318.6		104,318.6	
The amount of subsidies not received for 18 months for the child, aged 0-2		278,062.4		278,062.4
An amount of 51,000 AMD, paid per month for CCDS for 18 months		787,843.5		787,843.5
In total	1,201,120.3	1,065,905.9	1,633,661.8	1,065,905.9
<b>Net cost-benefit, discounted value</b>	<b>135,214.4</b>		<b>567,755.9</b>	
<b>Cost-benefit ratio</b>	<b>1.13</b>		<b>1.53</b>	

The minimum fee scenario for the parent, obtaining CCDS-s				
	Monthly nominal wages of 100,000 AMD		Monthly nominal wages of 138,901 AMD (Women's average wages)	
	Benefit	Cost	Benefit	Cost
Wages income of 18 months	1,096,801.7		1,529,343.2	

The amount of subsidies received for six months for the child aged 0-2	104,318.6		104,318.6	
The amount of subsidies not received for 18 months for the child aged 0-2		278,062.4		278,062.4
An amount of 43,000 AMD, paid per month for CCDS for 18 months		679,708.1		679,708.1
In total	1,201,120.3	957,770.5	1,633,661.8	957,770.5
<b>Net cost-benefit, discounted value</b>	<b>243,349.8</b>		<b>675,891.3</b>	
<b>Cost-benefit ratio</b>	<b>1.25</b>		<b>1.71</b>	

62. As data in *Table 11* demonstrates, the discounted values are positive for the mother/family in both scenarios of maximum and minimum payments for the 24-month time sample. But as it has already been mentioned, that positive figure is higher in case of the average wages. The calculations demonstrate that the net discounted income of the mother/family with average wages will amount to 675.9 thousand AMD for a 24-month period, while in case of maximum payment it will reach 567.8 thousand AMD, respectively 28.1 and 23.7 thousand AMD per month.
63. The employers can contribute to the increase of income or decrease of costs by participating in the program of service organization through co-funding of the early childhood care service fee. In particular, they can make a partial reimbursement of CCDS fees, in the scope of their corporate social responsibility program. The employer's interest in co-funding the CCDS fees may be conditioned by employee's early return to work from maternity leave and the efficient and business-oriented use of the investments, made in the human capital, taking into account the cost and time-consuming character of recruiting and training new employees.
64. The cost-benefit ratio per one child for the mother/family is positive and depending on the fees and level of income it totals 1.13 in case of maximum fee and minimum coverage of expenditures, and to 1.71, in case of minimum fee and women's average wages. In other words, the spending of 1 AMD is not only compensated but also results in additional net benefit of minimum 0.13 AMD. The ratio will rise if the fees are decreased by means of partial reimbursement by either the state or the employer. Moreover, the higher are a mother's wages, the greater would be the efficiency of costs, spent on early childhood care services for her or her family.
65. The Tables below represent the possible cost-benefit impact on the mother/family in case of obtaining childhood care and development services for children aged 0-2. It should be noted, that if calculations include state capital expenditures, the cost benefit ratio may have a negative value within the considered period.

**Table 12.** Impact on state, if parents use CCDS and return to work

	Monthly nominal wages of 100,000 AMD		Monthly nominal wage of 138,901 AMD ( <i>Women's average wage</i> )	
	Benefit	Cost	Benefit	Cost
Income tax, deducted from wages for 18 months, discounted value	355,301.9	-	493,514.4	
Levy of social payments for 18 months (mandatory social contributions), discounted value	77,239.6		107,285.7	
Levy of stamp duties for 18 months, discounted value	15,447.9		15,447.9	

Savings, due to ceasing of childcare subsidy payments during the 18 months (for the child, aged 0-2), discounted value	278,062.4		278,062.4	
Payment of childcare subsidies for 6 months for the child aged 0-2, discounted value		104,318.6		104,318.6
<b>24 months, in total</b>	<b>726,051.8</b>	<b>104,318.6</b>	<b>894,310.5</b>	<b>104,318.6</b>
<b>Net cost-benefit, discounted value</b>	<b>621,733.2</b>		<b>789,991.8</b>	
<b>Cost-benefit ratio</b>	<b>6.96</b>		<b>8.57</b>	

66. At the macro level, the state benefit from obtaining early childhood care services for the period of 24 months is formed due to the payroll taxes and other mandatory payments as well as based on the savings, generated due to termination of childcare subsidy payment from the 7th month to the second year of an infant's life. For the period of 18 months the discounted value of savings, due to termination of childcare subsidy for the child aged 0-2, reaches 278.1 thousand AMD, while the discounted tax revenues, received from minimum acceptable and average wages, equal to 447.9 thousand AMD and 616.2 thousand AMD respectively. For the period of 24 months the state expenditures reach only 104.3 thousand AMD, the discounted amount of subsidies, paid for the six-month period. As a result, the state net benefit will reach 621.7 thousand and 790.0 thousand AMD respectively.
67. Based on the findings of "Prevalence of and reasons for sex-selective abortions in Armenia" Report<sup>30</sup>, in which 29.5% of interviewed women expressed their readiness to return to work after the child becomes 6 months old as well as report data on women employment and earnings, the information on those receiving childcare subsidies for their children aged 0-2 and the calculations presented, the number of those obtaining early childhood care services in Yerevan, may reach 660<sup>31</sup>, which can contribute to at least 410.3 million AMD of state income, formed by the savings from subsidies and tax revenues.
68. The cost-benefit ratio is substantially high for the state and depending on the mother's earnings/income is at least 6.96, in case of 100,000 AMD salary, which is the minimum income threshold for covering the spendings, while the ratio equals to 8.57 in case of average salary. At the same time, it is noteworthy that the calculation of the mentioned ratio refers to the case, when the employer leaves the position of the parent in maternity-leave vacant and doesn't recruit a temporary substitute.
69. Besides the above-mentioned advantages, the state can expect additional social and financial benefits in terms of newly created jobs and tax revenues due to the formalization of childcare services. The calculations are presented in Table 13.

**Table 13.** The additional state benefit formed by the newly created jobs at PEIs for each group (one group composed of 9-12 children).

<i>Position, for 18 months, discounted value</i>	Monthly rate	Income tax	Social payment	Stamp duty	In total
Preschool teacher	96,000	341,089.9	74,150.0	15,4447.9	430,687.8
Assistant preschool teacher	80,000	282,241.6	61,791.6	15,4447.9	361,481.1
Nanny	80,000	282,241.6	61,791.6	15,4447.9	361,481.1
<b>In total</b>		<b>909,573.0</b>	<b>197,733.3</b>	<b>46,343.7</b>	<b>1,153,650.0</b>

70. In order to calculate the fee for the early childhood care services the minimum number of children in the group was set as 9 and the maximum number - 12, while the number of caretaking staff was fixed as 3. It enables to conduct cost-benefit analysis for two

<sup>30</sup>"Prevalence of and reasons for sex-selective abortions in Armenia" report, Yerevan 2017, p14

<sup>31</sup> 5,381 (number of subsidiaries) \* 29.9% \* 41.5 % (the acceptable level of possible wages)

scenarios: with minimum and maximum fees. Besides creating new jobs, the formalization of early childhood care services for each group can also contribute to an additional state benefit of around 1,153,650 AMD for the period of 18 months.

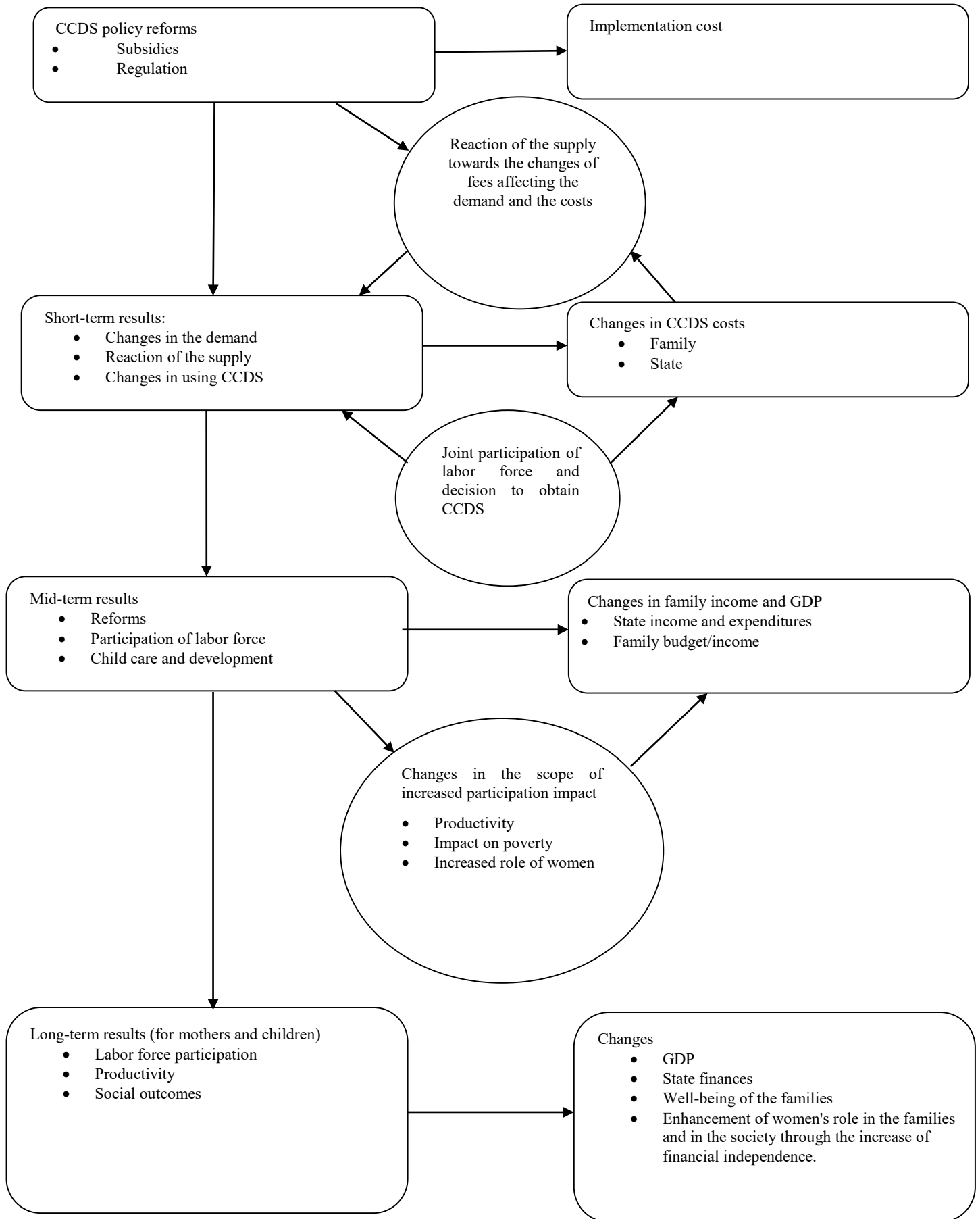
71. Taking into account that within the scope of the analyses the number of beneficiary children may reach 660, the state may assumingly receive additional income, with a maximum of 84,601,000 AMD and a minimum of 63,453,750 AMD, as well as 213 or 165 additional jobs, based on the number of children in the group, 9 or 12.
72. The state additional benefit per child would reach 7,1221,3 AMD a month in case of 9 children in the group, and it would become 5,341,0 AMD if the group contained 12 children. But at the same time the increase in children's number would lead to decrease of fees, broader availability of services and increase in beneficiary mothers' benefits. Therefore, it would also increase the number of potential beneficiaries or those obtaining the services.
73. As the cost analysis of this research has been conducted on biaxial basis, addressing childcare institutions within the MLSA system funded by both the state and the community budgets, the possible consequences of state policy reforms can be represented from two perspectives: impacts on the whole economy and on individual beneficiaries. The time aspect is key in describing those situational changes, therefore we will consider three time intervals - short-term (policy changes bring immediate impacts on the mentioned indicators; mid-term (changes come into force after a certain interval of time, usually 5-7 years) and long-term (the final impact of changes on the macro-economic indicators are observed in the perspective of 20-30 years).
74. Any impact of social policy changes is apparently conditioned by the beneficiaries' behavior, their personal gains and motivations. The demand for childcare institutions will increase, and simultaneously so will the provision of care by a non-working family member, including grandmothers and grandfathers, as well as the practice of hiring nannies. In the short-term period the family income is the main factor contributing to the increase of demand in early childhood care services. The need of changes in those services is reasoned by the level that their supply and demand will react to the funding from state and community budgets and other policy reforms, which will make an overall impact on family budget and the availability and quality of care services.
  - The change in families' demand of services depends on the parents' income, the possibility of mother's return to work or finding a new job and also derives from the subjective perceptions regarding the worthiness and expediency of obtaining care services.
  - The supply will react to the changes, occurring in the demand, resulting in enhancement or reduction of the present list of services.
  - It will take time from public service providers to equilibrate the service costs and their number with the decisions, made by the families, but after all the cost-quality ratio, preferred by the families will become more dominant due to the impact of market mechanisms, otherwise the same logic will lead to the enhancement of the private sector.
  - In terms of mid-term results, the biggest impact of policy changes will be observed on the indicators of children's enrollment in preschool education institutions as well as on the figures of parents' participation in the labor force.
  - The labor force participation, the return of the caring parent to work and his/her working hours, directly derive from the possibility of obtaining early childhood care services and their duration and provision hours during the day.
  - Both those factors and the caregivers' professional competency and overall quality of the services should be highlighted in terms of child's care and development.
  - The rising supply of labor makes an immediate and direct impact on GDP, the sum of the gross values produced in the scale of the whole economy.
  - The economic growth will contribute to the increase of income among organizations and households, leading to the growth of state revenues in terms of corporate and individual income taxes.
75. In a long-term period, the developments, described in the context of the above-mentioned scenario, are ultimately investments in the human capital, which create pre-conditions for

sustainable economic growth and development, as well as for the poverty reduction and enhancement of the public well-being.

76. The possible impacts of the introduction of early childhood care and development services and the reforms of social policy in that sphere are generalized and summarized in Figure 8.



**Figure 8.** The conventional structure of cost-benefit assessment of the impact of possible changes in the policy of providing early childhood care services



## Conclusions

77. The analysis of the cost aspect of the state policy implemented in the field of early childhood care and development services was conducted in two conditional directions. Firstly, it aims at the extension of services of the non-profit organizations, specialized in providing both night care and day care services to children and functioning within the scope of the RA MLSA. The second target of the research is the extension of pre-school education and development services, provided by community-funded non-profit institutions. Though the age composition in the above-mentioned institutions is broader, compared with the 3-year-old age group, they are subject to assessment, with their peculiarities to be taken into account.
78. The analysis of costs is based on their classification into economical categories - variable and fixed, and the total costs, as their overall amount. The analysis of variable costs of the state non-profit organizations in MLSA RA leads to the following conclusion: According to state subsidy agreements since 2010 the modal range of variable costs has reached around 1,365 AMD with a standard deviation of 302.85 AMD. The N 815-N Decree of the Government of RA, issued on May 31st, 2007 has confirmed the minimum child care standards for orphanages, day care and night care institutions (regardless of their organizational-legal type) as well as special boarding schools, that have remained unchanged so far. For instance, if the assortment and quantity of the soft furniture, beneficiary's clothes or shoes at the childcare institution can be regarded as relatively sustainable indicators, the same principle is not applicable to the nutrient budget in terms of costs, reasoned at least by inflation pressure.
79. The dynamics of the costs, classified as fixed ones in the above-mentioned decree N 815 N, has demonstrated the following key tendencies since 2010: the average mean of fixed costs for all the observed childcare institutions equals to 125,845 thousand AMD per annum. The average mean of fixed costs per beneficiary reaches 1,183 AMD.
80. In terms of continuous programmatic reforms in the sector of education and the cost estimates of capital projects it is noteworthy that the state funding of the education sector and particularly for the pre-school education has increased for years. If we take into account the increase of average figure of attendance to preschool institutions, 13-14%, the expenditures have grown from 1,530 AMD to 10,270 AMD per child per annum, which is a remarkably high figure.
81. Total costs, as the sum of variable and fixed costs, can be defined in the simplest way as:  
$$\text{total costs} = (\text{variable costs} \times \text{number of beneficiaries}) \times \text{number of days} + \text{fixed costs}.$$
82. The mentioned approach doesn't express the expediency or necessity of conducting reforms in the given sector, which has already been stated in several above-mentioned research reports by ICHD, but rather generalizes the overall picture of preserving childcare institutions in terms of limited resources. The necessity of capital investments in the state-sponsored childcare institutions throughout the whole country is quite evident, at least regarding the renovation of the residential buildings, also confirmed by our interviews.
83. In case of available capital investments, the results of extending early childhood care and development services have been considered within three time intervals: short-term, mid-term and long-term. The short-term scenario will enhance the demand of care services among the families. This is also indicated, for example, by the nationwide increase of non-private kindergartens by 11.1%. In parallel with the increasing demand, prerequisites for extending the services should also form and if it is not realized in the public sector, the newly established or extended institutions of the private sector will substitute them, but the process will be incomparably slow and segmented. The main factor of stimulating the demand is the family income, particularly, parent's return to work (with full or part-time employment) after obtaining care service, but this may happen only if the care services are less costly than the job income. The latter can be regarded as a super complicated challenge in the scale of the whole country and the extension of pre-school education services should focus upon solving this issue. From the supply perspective the decisions on the service costs and quality may consume some time but ultimately a balance of the most preferable options will be established.

84. The results of the mid-term perspective are reflected in the scenario developments: the parents, returning to work, enhance the labor force supply, and according to the economic theory, it has a direct and immediate impact on GDP, the sum of gross goods and services produced. The latter is confirmed by survey findings: 83% of nurturing mothers, whose children are under 3 and who could enhance the labor force in the scale of the whole economy, do not return to work, reasoning it by the lack of alternative childcare sources. The economic growth forms additional sources of income due to both the employer organizations and the mothers, working for the households. As a result, state income will also increase by means of corporate and personal taxes.
85. The results, gained in the long-term perspective are the logical continuation of the previous short-term and mid-term scenario developments and will be expressed in the improvement of macroeconomic indicators, such as poverty reduction and increase of public well-being, economic sustainable growth and development.
86. The organization of care system for children, aged 0-2 in the preschool education institutions and supporting the person with a child, aged 0-3 to return to work may have a significant impact on individual (for the mother and her child), on micro as well as on macro levels and on social or public perceptions.
87. **Individual level: impact on child.** Children, aged 6-36 months have access to high quality and licensed services of non-parental care, provided by the professionals from relevant institutions. This may require additional resources to support high quality childcare.
88. Due to lack of income and relevant childcare services or incomplete information regarding them, many parents do not use early childhood care services.
89. **Individual level: impact on parent.** The access to early childhood care services and the possibility of obtaining them encourages mothers to sustain their working activities by continuing full-time work and maintaining their promotion opportunities. The reduction of employment gap due to childcare and return to the former work or applying for a new job has a positive impact on their human capital.
90. Mothers are provided with new opportunities and are encouraged to make job-related decisions in the close time horizon, which contributes to their financial independence, broader participation in the family and in the decision-making process of public life.
91. The impact on the micro level is tangible both for the household (in terms of increase in the family budget) and for the employers (with regard to their employees' return to work and participation in economic processes). In many cases the substitution of a relevant professional with a new employee is both a time-consuming and a costly process, reasoned by professional and working peculiarities. The long-term leave of the employee may affect his/her job finding opportunities and professional efficiency, conditioned by the professional quality decline in the course of time.
92. The person's return to work from maternity leave may have a major positive impact also on the macro level. In particular, the state budget costs will go down based on savings, occurred by the termination of paying subsidies for children aged 0-2, as well as on payroll taxes and promotion of economic activities.
93. **Impact on public or social level.** Young girls change their attitude/vision towards the future employment opportunities and perspectives. Gender equality is promoted in the society. The decisions on the development of education and human resources are frequently made based on the mothers' experience in the families. The availability and accessibility of early childhood care services motivates the young girls to make long-term investments in human capital, based on skills, rather than gender-based stereotypes and limitations, caused by them. The support of equal conditions also leads to the change in public consciousness, granting equal value to male and female children and making the elimination of gender-based discrimination in reproductive decisions possible.
94. The impact of early childhood care services was evaluated through the cost-benefit method, based on the analysis of financial reports of preschool education institutions in Yerevan. The early childhood care services for children aged 6-36 months were estimated 44,000 AMD to the minimum and 51,000 AMD to the maximum per child.

95. Capital costs were not considered and included in the calculation of costs.
96. The calculations were conducted for two income groups: 100,000 AMD monthly nominal wages, which is also the threshold for covering the spendings and 139,000 AMD, which is equivalent to the women's monthly average nominal wages.
97. The positive economic impact is particularly tangible for women from middle and high income groups, as it provides an opportunity to pay for childcare services and significantly increase the family budget. So if we take into account, that according to the calculations, the maximum fee for childcare services for children aged 0-2 does not exceed 51,000 AMD, the family budget will benefit from women's average nominal wages by 50,000 AMD which can essentially enhance women's opportunity to return to work.
98. On a national scale, the net discounted value of family/mother's income (calculation based on women's average monthly wages) would be estimated by 675.5 thousand AMD in case of minimum fees and 567.8 thousand AMD in the event of maximum fees, that is 28.1 thousand AMD and 23.7 thousand AMD per month respectively.
99. The cost-benefit ratio, estimating the cost efficiency for a parent or a family per one child equals to 1.13, in case of a maximum fee and minimal coverage of spendings and reaches 1.71 in case of minimal fee and women's average wage. In other words, every 1 AMD spent can not only be restored on a national scale, but also create additional benefit at the rate of 0.13 AMD, reaching a maximum rate of 0.71 AMD. Therefore, greater income will contribute to a higher efficiency ratio.
100. For the period of 24 months the state net benefit reaches 621.7 thousand and 790.0 thousand AMD per child, and the cost-benefit ratio equals to 6.96 and 8.57 respectively, in terms of the given scenarios. At the first stage some 660 children will benefit from the extension of services of the PEIs, studied in the framework of this research, which would contribute to the increase of state budget income by 410-521 million AMD.
101. For the period of 18 months the state will gain additional income of 84,601,000 AMD at maximum and 63,450,750 AMD at minimum due to new jobs, created by the formalization of early childhood care services and payroll taxes, as well as 213 and 165 additional jobs respectively.
102. The changes in the policy of early childhood care can impact both the child's development and women's participation in the labor force.
103. The functioning of early childhood care services can solve the following issues:
- Working women with children of that age will attain an alternative to child care services, provided by family members or nannies in the guise of institutionalized care.
  - The high quality services, provided by the paid and taxpaying nurseries and kindergartens will serve as alternative to the paid services, often evading taxes.
  - Women, eager, but unable to work because of limited high quality childcare services, may seize an opportunity to work or to maintain their time in favor of their income and development of professional skills.
104. The enhancement of women's participation in the labor force will foster:
- the increase of financial sustainability, income and well-being of the family;
  - the rise of women's appreciation and self-esteem, which is also important in terms of upbringing children, especially with regard to female children's socialization and formation of exemplary images for them;
  - the transformation of gender stereotypes and the establishment of a healthy society by means of male and female joint and harmonious participation in different aspects of public life.
105. The implementation of the above-mentioned policy will greatly contribute to the balancing of male and female reproductive and productive roles in the society and family, as well as to the enhancement of women's opportunity in combining their employment with their reproductive goals, by replacing the "either...or" version with the "both...and" one.
106. The increase of female participation in the labor force and the enhancement of opportunities in combining the work with the childcare will prevent the undesirable birth

reduction in the future and will form vital preconditions for the irreversible eradication of the sex-selective births.

107. There is no a single best model, method or mechanism for funding early childhood care services. The expediency of their selection is conditioned by the goals, set in the state social and economic policies, the concept of relationship between the state and the family, as well as by the estimations of feasibility addressing the different policies of early childhood care development. The introduction of different models of early childhood care services should be subject to promotion in Armenia. Thus, the character of early childhood care services in the capital may differ from the models offered in small communities. At the same time, all the recommended models are united by one indicator - the opportunity to make quality services available and accessible for discrete target groups.

## Recommendations

108. Certain policy recommendations can be made, based on the findings and conclusions of this analysis.

109. Firstly, an immediate introduction of early childhood care services should be conducted in the short-term perspective, by extending the PEI services in Yerevan. During the first two years of the program implementation the state budget income will annually increase by 250-300 million AMD in average due to the organization of early childhood services for about 660 children. An ongoing monitoring of the above-mentioned program should also be conducted as well as a concluding assessment after it has ended.

110. Secondly, certain financial guaranties and mechanisms, supporting the extension of early childhood care services and the functioning of childcare centers should be developed and introduced in the mid-term perspective, including:

- a co-funding mechanism for the early childhood care services, established by the employers for the working mothers in the scope of corporate social responsibility and public-private partnership;
- establishment of co-funding mechanisms for early childhood care services for women with low income, based on state budget assets;
- subsidizing of early childhood care services for young and/or low-income families;
- reduction of tax liabilities for the working mothers in accordance with their spendings on early childhood care services;
- establishment of subsidies on early childhood care services for working mothers, as an element of social support;
- provision of grants to the institutions, providing early childhood care services at the expense of state and/or community budget assets.

111. Thirdly, in the long-term perspective the coverage (availability) of care services for children aged 0-3 in Yerevan should reach 10% by 2025 by means of extending the PEI services, and the enrollment of children aged 0-3 in the early childhood services should reach 15% by 2030. In this regard, much importance is attached to the increase of awareness regarding early childhood care services, their possible benefits and mechanisms among the target groups and beneficiaries, by using social advertisements, involving local non-profit organizations, major employers and social workers in the awareness campaign and organizing public discussions among the stakeholders.

## Annex 1. General description of variable and fixed costs of a number of MLSA SNCOs

Table 1: General description of variable and fixed costs (MLSA SNCOs)

	<i>Variable costs (AMD)</i>	<i>Fixed costs (thousand AMD)</i>
Arithmetic mean	1,365.73 AMD	1,183.12 AMD
Standard deviation	32.47 AMD	61.80 AMD
Median	1,300.00 AMD	993.69 AMD
Mode	1,335.00 AMD	1,055.70 AMD
Standard quadratic deviation	302.85 AMD	576.43 AMD
Kurtosis – "tailedness" ratio	2.70	2.17
Skewness – asymmetry ratio	1.91	1.50
Domain	1,231.45 AMD	2,553.61 AMD
Maximum value	979.20 AMD	532.41 AMD
Minimum value	2,210.65 AMD	3,086.02 AMD
Sum	118,818.50 AMD	102,931.34 AMD
Number of observations	87	87

**Table 2:** General description of variable and fixed costs (MNPOs in Yerevan)

	<i>Food Costs</i>	<i>Household goods costs</i>	<i>Total Cost Estimate</i>
Arithmetic mean	11481.6	304.6	51638.5
Standard deviation	457.1	20.9	1669.3
Median	10223.9	250	47241.3
Mode	#N/A	0	#N/A
Standard quadratic deviation	5654.0	259.0	20648.5
Kurtosis – "tailedness" ratio	0.63	0.01	0.44
Skewness – asymmetry ratio	0.99	0.86	0.87
Domain	26815.7	999.3	102317.1
Maximum value	3103.9	0	19854.5
Minimum value	29919.6	999.3	122171.6
Sum	1756681.9	46607.2	7900690
Number of observations	153	153	153



**Annex 2.**

**"Children's Home of Yerevan" State Non-Commercial Organization**

1. The organization was founded during the Soviet Union era, in 1937 at has remained a state-funded, non-commercial organization so far. From the Soviet Union collapse till 1998 it functioned under the control and sponsorship of Ministry of Healthcare of RA, and was moved under the auspices of Ministry of Labor and Social Affairs afterwards. Due to the N 1730 -N Decree, issued on October 31st, 2002 the former "Children's Home of Yerevan" state institution was restructured into "Children's home of Yerevan" state non-commercial organization.
2. “The main goals pursued by an orphanage are ensuring round-the-clock full care for children under 6 left without parental care, providing them with accommodation on long-term or with specific duration basis. Its operations are based on the principles and philosophy of providing legal protection of rights and interests of children in care, providing them with food, clothing, linen, shoes, hygiene accessories, as well as socio-psychological and medical services. The orphanage also aims to ensure children in care receive prostheses and orthopedic accessories, undergo medical-social investigation, hospital services, as well as receive relevant medical tickets to use medical services of relevant medical institutions. The orphanage also holds the responsibility to organize the educational, leisure and inclusion activities, alongside with other activities, as defined by the RA legislation.” During the Soviet times only children aged 0-3 were taken care of, brought up and cured, while in the post-soviet era the institution already covered children aged 0-6.
3. The director of the state non-commercial organization has got around 17 years of professional experience and manages the "Children's House of Yerevan". According to the director, during the past 30 years the number of beneficiaries seemed to have a declining tendency, which was not conditioned by the reduction of state funding. If in 1981 the number of beneficiaries at the orphanage reached 110, in 2017 it equaled to 71. In 2000-2017 the average number of the beneficiaries of the orphanage declined by 22%, compared with the 1980-2000 figures, from 90 to 70. High level of mobility is also intrinsic to "Children's Home of Yerevan": some 20% return to their biological families, 20-30% are adopted, and if the parentless child has severely limited abilities, he/she is transferred to special care institutions, such as "Children's Home of Gyumri" and "Marie Izmirlyan Children's Home" SNCOs. All the other children, not included in the mentioned groups, are taken care of in other institutions from 6 years old till becoming an adult.
4. Thereby, the average figure of the beneficiaries has relatively been stable recently - 70 children in average, which is taken into account while planning and allocating costs. The major part of the ambiguity, related to the state organization's activities, is the variability of utility payments, based on seasonal changes.

(thousand AMD)

Title	Year		
	2014	2015	2016
Power supply and other utility costs, paid from budget assets	14,443.70	15,046.00	14,266.70
paid from other assets (charity)	208.50	51.70	181.20
<i>% in regard to budget expenditures</i>	<i>1.44%</i>	<i>0.34%</i>	<i>1.27%</i>
Communication service fees, paid from budget assets	259.10	259.10	259.10
paid from other assets (charity)	403.70	479.30	514.20
<i>% in regard to budget expenditures</i>	<i>155.81%</i>	<i>184.99%</i>	<i>198.46%</i>

5. The relative stability of the areas of spending within the budget planning process is quite remarkable (for example, the constant costs of communication services), although the

SNFO's actual expenditures hitherto significantly exceed the state-provided funding and are paid from charitable contributions. This figure is reasoned by the peculiarities of the institution's activities, the constant relationship with philanthropists and charitable foundations, as well as by the necessity of keeping the supply chain intact.

6. The administration rates the efficiency of organization's activities quite highly, taking into account the dynamics in the number of the beneficiaries and the high level of mobility.
7. According to the administration, every 2 caregivers are responsible for 15 children, which reveals the high level of overload present. The average number of staff members is around 110, and the majority of them are enrolled in non-administrative activities. The N 815-N Decree of the Government of RA, issued on May 31st, 2007 has confirmed the minimum child care standards for orphanages, day care and night care institutions (regardless of their organizational-legal type) as well as special boarding schools, that have remained unchanged so far. For instance, if the assortment and quantity of the soft furniture, beneficiary's clothes or shoes at the childcare institution can be regarded as relatively sustainable indicators, the same principle is not applicable to the nutrient budget in terms of costs, reasoned at least by inflation pressure.
8. The procurement process is regulated by the clauses of the subsidy provision contract, signed each year in the scope of "Child Daycare Services" Program of RA State Budget. Besides the low wages of caregivers and the high level over their overload, the issues detected also include the necessity of revising the minimum childcare standards.
9. Before the end of the first semester of each year the "Children's home of Yerevan" SNCO calculates, assesses and represents the necessary expenditures for the coming reporting year, based on the relevant figures of the previous year and with necessary corrections, again based on the N 815 -N Decree, issued by the Government. The budgeting process, as well as the procurement and the control of daily supply is conducted by the organization's accounting department.
10. According to the reports, provided by the state non-commercial organization, as well as based on the administration's assurances, no over-expenditure of state budget funding has ever registered, On the contrary, during 2014-2017 some 9,035 million AMD were returned to state budget (286 thousand AMD in 2014, 783 thousand AMD in 2015 and 7,966 thousand in 2016).
11. The organization's accounting is maintained in accordance with Public Sector Accounting Standard of the Republic of Armenia (PSAS). As a result of recently conducted revaluation of fixed assets, the ones with less than 25 thousand AMD of carrying value have been considered as depreciable assets.