ADB **AFD** AGENCE FRANÇAISE DE DÉVELOPPEMENT

2017-2027.

Labor Market Forecasting

Michele Bruni,

Delux Teng, Dane So

PRI Consulting

December, 2019

MINISTRY OF LABOUR AND VOCATIONAL TRAINING

Technical and Vocational Education and Training Sector Development Project (TVETSDP)

ADB Loan No. 3167– CAM (COL) & AFD Loan No. 8305 – CAM (AFD)

Labor Market Forecasting

Final Report

Forecasting labor supply and labor demand in terms of flow by educational level.

Michele Bruni, Delux Teng, Dane So

December, 2019

CONTENTS

FIGURES AND TABLES

FIGURES

vi

TABLES

ABBREVIATIONS

ADB	Asian Development Bank
AFD	Agence Francaise de Developpment
CBR	Crude birth rate
DLMI	Department of Labour Market Information
EMIS	Education Management Information System
GVA	Gross Value Added
IMR	Infant Mortality Rate
LEB	Life Expectancy at Birth
MEF	Ministry of Economy and Finance
MLVT	Ministry of Labour and Vocational Training
NEA	National Employment Agency
NIS	National Institute of Statistics
TFR	Total Fertility Rate
TL	Team Leader
TVET	Technical and Vocational Education and Training
UN DESA	United Nations Department of Economic and Social Affairs
WAP	Working Age Population

EXECUTIVE SUMMARY

Goal of the project

The main aim of the research is to identify forecasting models that allow to verify the coherence between exits from the education and vocational training system and the skill needs of the labor market.

The TOR did require a five-year forecast on skill demand and supply by region, industrial sector and occupations. Such a request, legitimate from the point of view of the client, could not be totally met for a series of reasons, the most important being the lack of the statistical information necessary to reach such results, results that could not be attained with a desk study even in countries with a much larger and richer statistical documentation. Skill demand and supply can be dealt with only with surveys and the results would be valid for no more than a couple of years.

Given this situation, the Team decided to use a new methodological approach that allows to create labor demand and labor supply scenarios by educational attainment. While the data available obliged to choose a ten-year horizon, whenever possible the study provides yearly values.

It should also be reminded that the financial availability of the project could not support primary data collection, a task that will be possible with the already envisaged Skills measurement project. The results of this research do however provide the overall analytical context in which the future research on skill could be embedded.

The structure of the report

The Report contains three parts:

- The first part presents the main findings of the research activities related to the background analysis of demographic trends, the evolution of the school system broadly defined, the evolution of the production level and of its structure in the period 2007-2017, the long run evolution of the labor market and a specific analysis of the labor market trends in the last decade;
- The second presents labor demand and labor supply scenarios by educational level for the period 2017-2027;
- The third presents a series of observations generated by the research activities, the main implications of the findings as well as some policy suggestions.

To better focus on the results of the background analysis and of the scenarios, the report devotes three annexes devoted to:

- the long run demographic trends;
- the evolution of the school system broadly defined;
- the long run evolution of the labor market structure.

Going into more details, the first part is divided in the following sections.

Section 1 – It outlines the analytical framework that supports the need to analyze both the labor demand and the labor supply in terms of flow in order to verify the coherence between the "production" of the Cambodian training system and the needs of the labor market in terms of educational attainment.

Section 2 – It sets the background to estimate the labour supply in terms of flow. The section starts discussing the methodology to estimate the exits from the education system by typology and educational level; it then analyses the evolution:
- Of enrolment, both in terms of absolute values and main indicators (Gross enrolment rate and Net enrolment rate)

- Of the exits by sex, typology and educational level also by analyzing the trends of repeaters and drop outs.

Section 3 - is devoted to the analysis of the Cambodia production system. It discusses the rates of growth of GDP and of the Gross value added by sector and branches over the period 2007-17, as well as the impact of the different rates of growth on the production structure and the contribution of each sector and each branch to the growth of production.

Section 4 – It analyses the evolution of WAP, labor force and employment. Focusing on employment it presents the evolution of employment by sector, employment status, occupation and educational level. A final paragraph discusses the quantitative and qualitative presence of women in the Cambodian labor market.

The second part of the Report is devoted to the presentations of the methodology adopted to build the scenarios of labor demand in terms of flows and of the labor supply in terms of flow and to discuss the empirical findings. It is therefore divided into three sections.

Section 5.1 – This section is devoted to estimate scenarios of labor demand in terms of flow for the period 2017-2027. After discussing the serious problem created by the lack of data and the way in which some missing information has been estimated, the first part of the section analyses the changes of the employment structure intervened between 2007 and 2017 in terms of age structure and educational attainment and present estimates of the labor demand in terms of flow for the same period. This allow to obtain a better understanding of this analytical tools and it usefulness in explaining the way in which the employment stock has changed over time. The second part of the section is devoted to present the methodology adopted to build the scenarios. It discusses the criteria adopted to choose the two scenario variables (the rates of growth of production and the employment income elasticity), present some alternative scenarios of additional demand, analyses their coherence with growth in working age population. It then discusses the possible evolution of the additional demand of the three main sectors and how this will impact on the employment structure in the next ten years. The last part t of the section proposes a simple scenario of the evolution of the labor demand in terms of flows by educational level.

Section 5.2 – This section is devoted to estimate scenarios of labor demand and labor supply in terms of flow and analyze the coherence between expected labor demand and expected labor supply. The estimates of the labor supply in terms of flow are based on the expected exits from the training phase of life. The estimates of such exits are based on two scenarios with different survival rates. The first assume that the survival rates will remain constant, the second that they will progressively improve. The final part of the section discusses the role of the exits from TVET Institutions and Universities.

Section 6 – This section focuses on the period 2017-2022 and provides quantitative estimates and qualitative indications of the skill needs (the labor demand in terms of flow by educational level) and of the implicit training needs, comparing them with the present "production of the TVET system.

The third part of then Reports provides some final considerations and policy suggestion based on the main findings of the previous analysis.

Main findings

Demography - Between 1950 and 2015, the Cambodia population has increased from 4.4 million to 15.5 million and is projected to reach a maximum of almost 25 million by 2080 and then slightly decline during the following 20 years.

The growth of total population has been paralleled by a notable change of the age structure. More specifically the share of working age population reached 64.3% making Cambodia capable of profiting of the demographic dividend, if sufficient investment will be made available.

The Rate of fertility is still above replacement level (2.7 children per woman), but the number of births is projected to decline from a present value of 366,000 to 318,000 by the middle of the century, to 240,000 at the end of the century. The implication is that:

- The population in training age (6 to 24 years) is projected to remain substantially stable at around 6.2 – 6.5 million till the middle of the century, with the population in compulsory education age fluctuating around 3 million, and that in non-compulsory education around 3.4 million;
- The population in working age will continue to increase but at a declining rate and around 2050 it will stabilize.

The education stream - Starting in 1979, the Cambodian government was faced with the challenge to completely rebuild the national education system. The first efforts were obviously directed to provide pre-schools, primary schools and non-formal education. In the following 30 years the education system of Cambodia underwent a notable development. While the total number of students almost doubled, the number of schools increased by 2 times and half, the number of classes by 165.1% and the staff by 225.1%.

During the '80s the number of students increased only in a marginal way, but major efforts were directed toward the construction of new schools and the hiring of additional staff: the former increased by 44.1%, the latter by 72.9%. In the '90s the number of students increased by around 76% due to the pronounced increase in the number of births registered in the 80s. This explosion of potential demand was faced mainly through an expansion of the number of classes (63%) and, in a lesser way, by an increase in the number of schools (24.9%); the staff increased by 31.9%. In the first decade of the new millennium, while the rate of increase of the number of students declined to 11.8%, the number of schools increased by more than 50%, that of classes by 21.3% and the number of staffs by 29.9%.

At present a little less of half of the population in training age is enrolled in some educational or training institution, but the percentage is inversely related to the educational level: from almost 99% in primary school, to 28% in upper secondary school, to 7 % in University; 2/3 of the enrolled are in Primary education, 19.2% in Lower secondary education, 9.3% in Upper secondary education (this includes boys and girls enrolled in C1, C2 and C3) and only around 5% in University and high TVET education.

In the last ten years the number of enrolled in the education stream (grade 1 to grade 12) has slightly declined. The main reason of this trend is the progressive reduction of the over-age students that in the last ten years has more than halved (from 1 million to less than half a million). The progressive "regularization'' of the enrolled with respect to age has determined a progressive convergence of the Gross enrolment rate and of the Net enrolment rate. It must also be underlined that by now the presence in the educational stream is higher for girls than that for boys. This is true for the total (where the Net enrolment rate for the girls is 61.6% versus 57.6% for the boys) and for all educational levels.

The structure of exits by educational level provides a first gross measure of the efficiency of the Education system. In the last ten years the number of exits from the education stream has progressively declined due both to the reduction of admission and the regularization of the education process. By now it is just below 300,000, as we could expect based on the number of births and the mortality rates of children.

Despite the progress made in the last years, the dropouts still represent 77% of total exits. However, on the positive side, and contrary to the past, the relative relevance of dropouts is minimum in primary education and maximum in upper education.

The evolution of the structure of exits by educational attainment, while making evident the progress achieved by the education stream, shows that Cambodia has still a long way to go to provide the labor market with a well-educated labor force. In the last ten years, the percentage of exits with Upper secondary education has increased from 8.6% to 15.6%, that with Lower secondary from 7.2% to 19.1%. Therefore, the percentage of young people exiting the education stream with at least compulsory education has increased from 15.8% to 34.7%. However, it must be pointed out that almost 30% of exits are represented by boys and girls that have not completed primary education, and almost 37% have not completed Lower secondary education.

Production - Over the past three decades, Cambodia has achieved remarkable economic growth and social development. Driven by the garment sector, tourism, construction, and agriculture, economic growth has been impressive and has significantly contributed to poverty reduction: GDP per capita is now a little more than 1,400 dollars and in real terms has more than doubled since 2000; this has allowed Cambodia to move from the group of low-income country to that of lower middle-income country.

From 2000 to 2017 GDP has increased at an average yearly rate of 7.7%. However, the process has been far from uniform. Between 2000 and 2009, GDP growth averaged 8.3%, peaking at 13.2%, in 2005. The Cambodia economy was then strongly affected by the global financial crisis and in 2009 GDP remained substantially constant, after sharply declining the year before. The Cambodian economy recovered quite rapidly growing at an average rate of 7% from 2009 to 2017, a period that appears also characterized by very low cyclical oscillations.

The decline of the rate of growth of total production registered after the crisis has to be imputed to Agriculture and Services whose average rate of growth declined respectively from 5.3% to 2.1% and from 9.2% to 6.8%. The average rate of growth of Industry did, on the contrary, increase from 10.1% to 11.2%.

The different rates of growth registered by the main economic sectors impacted on their production shares. In 2000 the tertiary sector was the most important and has kept this position till now; moreover, since its production has grown just slightly more than Value added, its share has increased from 39.1% to 42.2%. In 2000, Agriculture was the second most important sector with a share of 37.8%; by now it is down to 24.9%. The share of Industry has increased from 23.1 to 32.9%.

The average rates of growth and the average shares in production have allowed to compute the contribution of the three main sectors and 21 branches in two periods, 200-2009 and 2010-2017. For what concerns the three main sectors the contribution of Agriculture has declined from more than 20% to 7.3%; that of Industry has increased from around 33% to 52.1%, while the contribution of Services has always been slightly above 40%. The data on 21 branches show that at present Textile, Construction and Trade explain respectively 31.3%, 10.8% and 9.3% of total economic growth, which is more than 50%. Other 30% is explained by Other Services, Transportation, Real estate and Hotel and restaurant. All agricultural branches, including Crops, contribute for less than 5%.

The labour market - In spite of the 2009 crisis, from 2007 to 2017 total employment increased at an average yearly rate of 2.8%, (193,000 jobs per year). In the last 5 years the yearly increase in employment has been slightly higher and equal to 213,000.

In 2007 58% of the employed worked in Agriculture, Services accounted for 27% and Industry for 15%. Agricultural employment started to decline in 2012 at an average yearly rate of 193,000 jobs

per year, a decline that was however largely compensated by an increase in Services and Industry by respectively 161,000 and 178,000 jobs per year. As a consequence, in 2017 agricultural employment accounted for 37%, just a little more than Services at 36.8%, while Industry's share had increased to 26.2%.

In the last ten years the Cambodia labor market has also registered notable qualitative improvements.

In 2007 the most numerous categories were that of Own account workers that accounted for 38%, followed by Unpaid family worker (36%) and Paid employees that represented only 26%. In 2017 the percentage of Paid employees was up to 51%, that of Own account workers increased to 45% while the weight of family workers had become marginal (4%).

In 2007 more than half of the employed were classified as skilled agricultural workers; after 10 years their percentage was down to 31%. At the same time, the percentage of craftsmen that weighted less than 10%, has more than doubled and by now with 24% is the second largest occupational group. A second occupation to register a notable expansion has been that of Sale and service workers that has increased from 12% to 18%. Data on occupations do also underline the presence (even the growth) of unskilled workers and the still extremely low weigh of occupation requiring higher education. To be noted that the joint weight of managers, professionals and technicians has slightly declined and remains below 6%. However, in the last five years the growth of Craft and related occupations, Services and sales workers, Clerical support works explain respectively 54%, 18% and 13% of employment growth, while other relevant contributions came from Plant and machine operators, Professionals and Technicians.

The data on education confirm that Cambodia employment still suffers from a serious lack of schooling and technical training. In 2007 almost 82% of the members of the labor force had not completed compulsory education, only 4.6% had a high school diploma and 2.1% a University degree. Moreover 18% had no formal education. After 10 years the situation has certainly improved, but the educational level of the labor force remains very low: 70% have not completed compulsory education; those with high education are 8% and 7% have a post-secondary diploma. A positive element is however represented by the fact that in the last 5 years 34% of the additional jobs have been taken by people with post-secondary education; however, the same period registers also an increase in the number of employed with less than primary or primary education.

Finally, the Cambodian labor market is characterized by an extremely high Rate of employment that by now is above 84%. Moreover, in the last ten years the employed have been progressively more and more concentrated in the central age group.

The last section of the report concerns the position of women in the Cambodian labor market. Generally speaking the data suggest an improvement.

The rate of employment of women has been historically lower, but the differential has been declining, despite the fall of the employment in agriculture where they were majority. In 2007 59% of women worked in Agriculture, 14% in Industry, and 26% in Services. After ten years the situation has radically changed following the changes in the distribution of total employment by sector; 39% of women worked in agriculture, 25 in Industry, and 36% in Services.

If we consider the employment status, in 2007 only 41.5% of women were paid employees; in 2017 the percentage is up to 56.7%, while the percentage of women classified as own account workers had increased from 39.3% to 45%.

In 2017 women were concentrated in four occupations that accounted for 90.2%: Skilled agricultural workers (32.5%), Sale workers (23.5%), Craft and related workers (23.1%) and Elementary occupations (11.1 %). In 2007, women were majority only in two occupations (Service and sale workers, and Agricultural workers); rather interestingly in 2017 this was true also for professionals. In 2017, a presence of women above 40 per cent is registered also by Clerical workers while the presence of women in technical occupation has increased from 26.9% to 36.2%. However less than ¼ of managers are women.

The educational level of women in the labor force was and still is lower than that of men. In 2007 almost 96% of the Cambodia women in the labor force had as maximum compulsory education and after 10 years the percentage is still as high as 87.5%, the corresponding values for men being 90.2% and 83%.

The scenarios – In the following part*,* the report presents scenarios of labor demand in terms of flow and of labor supply in terms of flow.

The demand side – The labor demand in terms of flow identifies the number of people that enter employment for the first time, in a given time interval. It is the sum of two components, the Additional demand and the Replacement demand. The first identifies the number of additional jobs created by the economic system, the second the number of young people that can find a job as a result of the definitive exits of people previously employed.

A series of assumptions and the joint use of data from the CSES and the United nations have allowed to estimate the data necessary in order to produce the scenarios, that is the number of employed by age group and educational level in 2007, 2012 and 2017.

Background analysis - To better understand the concepts of labor demand in terms of flow and to create the background to estimate the scenarios, the Report presents an analysis of the Cambodian labor market in terms of flow for the period 2007-2017.

Starting from the stock value, the analysis shows that from 2007 and 2017 the employed have been affected by two notable structural changes: i) a progressive increase of the educational level; ii) a progressive increase of the average age. These trends are the result of the quantitative and qualitative differences between the employed that exited the employment area in the period 2007-2017 and those that entered employment in the same period.

Between 2007 and 2017 the Cambodian labor market absorbed 2.642 million young people; 71.9% (1.9 million) of entries were due to the creation of additional jobs and the remaining 28.1% (741,000) to the definitive exits of older workers.

The relative low contribution of Replacement demand has to be imputed to a low average age of the employed: as a matter of fact, 92% of entries took place in the first five-year age group (15-19) and the other in the second (20 and 24). At the same time two third of exits were concentrated in the 55-64 age group and 26% in the previous age bracket.

After adjusting the flow data to take care of a double counting problem due to the fact that entries of people in higher educational level is also due to the acquisition of higher educational degree by people already employed, the analysis shows that around two third of the people that found a job had compulsory education or less, 17.5% upper secondary education and only 16.6% a University degree while more than 70% of the people exiting employment had less than compulsory education. The difference between the educational attainment of generational entries and exits explains why and how the education level of the employees has increased

The 2017-2027 scenarios – The Report estimates the Replacement demand using the probability of different age group to exit the labor market between 2017 and 2027. In order to do so, it was assumed that all the people that were in the 55-64 age bracket in 2017 will leave the labor market in the following ten years, and that the exit of the other age groups would be equal to that of the previous period. This brought to estimate in 1.045 million the number of exits, a value much larger than that of the previous period, due to the ageing process that is affecting the employed.

The estimates of the Additional demand proved to be more challenging. The number of jobs that will be created by the Cambodian economy will depend on the rate of growth of production and on the rate of growth of productivity; the former will largely depend on the quantity and typology of internal and foreign direct investment and on the international landscape of international trade; the latter will result from better technology, more educated and better trained employed, improved labor organization and passages of the production structure to higher technological clusters.

The length of the period covered by the exercise suggests that the most interesting and correct approach is to build scenarios. Projections are generally limited to a set of values; forecasts are projections with an attached probability; scenarios are built taking into consideration a series of alternatives values of the relevant policy variables, in this case production and productivity. In so doing they allow to discuss the socioeconomic consequences of alternative development paths, to define the policy goals and to design and implement the policies most suited to reach them.

The choice of the values of the scenario variables (the rate of growth of production and the employment - income elasticity) were based on the analysis of their past values and trends and the indications coming from national institutes.

The analysis of past values allowed to appreciate that:

- Starting in 2012 the Cambodia economy has entered a phase of fast contraction of the number of people employed in agriculture;

- The industrial sector has been characterized by a stagnant labor productivity due to the dominant role of labor-intensive activities, such as textile and construction

It was then assumed that the decline in agricultural employment, for the moment the main determinant of productivity increase, will continue, sustained by a rapid modernization of the production system and that Garment and Construction will be backed by high tech sectors.

It was then observed that in the last years the rate of growth of GDP has been around 7% and that this is the rate of growth forecasted for the next five year by the Ministry of Finance.

On the basis of the previous considerations, it was decided to consider three alternative values of GDP growth (6%, 7% and 8%) and three alternative values of the employment-income elasticity (0.2%, 0.25% and 0.3%). The resulting 9 rates of employment growth are included between a minimum of 1.2% [low rate of GVA growth (6%) and low elasticity (0.2)] and a maximum of 2.4 [high rate of growth (8%) and high elasticity (0.3)]. In the intermediate or trend scenario (7% rate of GVA growth and 0.25 employment elasticity) the rate of employment growth is 1.75%. The corresponding initial increase in the employment level of these three scenarios (Min., Max. and Int.) are therefore equal to 105,000, and 210,000 with the intermediate scenario at 153,000.

As we could expect the data obtained with the intermediate scenario basically reflects the average rates of growth registered by Gross value added, employment and productivity in the previous ten-year period, while the other two scenarios register values respectively lower (Min.) and higher (Max). More specifically, total employment is expected to increase on the average by 166,000 per year in the intermediate scenario, by 111,000 in the Minimum scenario and by 235,000 in the Maximum scenario.

Considering the coherence of these employment growth with the evolution of working age population, the Report concludes that the growth of the labor demand in terms of stock could not exceed that of the intermediate scenario, which implies that rates of GPD growth above 7% would require an employment-income elasticity lower than 0.25 and therefore very high rates of technological change.

A projection of the additional demand by sector in the framework of the Intermediate scenario shows that the number of employed in agriculture would decline on the average by 178,000 jobs per year that of Industry increase by 183,000, and that of Services by 178,000. This would notably change the employment structure by sector, with agriculture declining to 14%, industry increasing to 39.6% and Services to 46.4%. The Report underlines that the negative value of the Additional demand of the agricultural sector does not imply that Agriculture will not absorb young people. In reality, the negative additional demand of the sector will be the balance between, on the one hand, a larger number of definitive exits of elderly people and passages of younger workers to Industry and Services, probably mainly toward Construction, Garment sector, and the Tourism sector (that will all continue to absorb workers with low educational level) and, on the other, the entries of some young people, the children of the present-day farmers. The implications is that the Agricultural sector will not only continue to need training, but even more and better training because the decline in the number of workers will be possible only if the young people that will start working in the sector will have the possibility to adopt better technologies and will be endowed with the knowledge to operate them.

To analyze the educational structure of the demand, the report considers the total entries into employment that is the labor demand in terms of flow which amounts on the average to 270,000 per year. Also, in this case what the report provides is a projection in the framework of the Intermediate scenario, based on past trends. The report assumes that the share of generational entries with less than compulsory education will progressively decline by 1.5 percentage points per year, that of people with maximum compulsory education by 0.5 percentage points, while the shares of those with Higher education and Vocational training certificates and of those with University degrees (including those from TVET Institutions) will both increase by 1 percentage point per year. Under these assumptions, 34% of generational entries are expected to have less than compulsory education, 23% maximum compulsory education, and 23% at least Upper secondary. Since the average educational level of generational exit will be notably lower, the educational level of the employed will increase over the scenario period, but the increase will not be dramatic. The share of people with less than compulsory education will still be as high as 59%, but the share of employed with at least Upper secondary education is expected to increase from 8.2% to 12.4%.

The supply side - In any given moment of time, the labor supply in terms of stock is given by the sum of employed and unemployed. WAP represent the upper limit of the labor supply in terms of stock. In 2017 Cambodia's WAP was estimated at 10.416 million and the labor supply at 8.779 million. Therefore, 84.3% of the population in working age was working or was willing to do so. Since the rate of unemployment was below 1 per cent, such a high rate of activity suggests a socioeconomic situation in which only a minority of young people can afford to go to High school and University and in which the majority of the population lives in rural areas where statistical surveys find very difficult (if not impossible) to distinguish between employed, hidden unemployed and unemployed.

The supply of labor in terms of flow is given by the number of people that enter the labor force in any given time interval. In this case the upper limit is represented by the number of young people that enter WAP. In analogy with what we just said for the labor supply in terms of stock, we can recall that between 2007 and 2017 entries into the labor force amounted to 2.642 million, and those into working age population to 3.233 million, which correspond to a Rate of activity in terms of flow of 82.3%.

Labor supply forecast – According to UN DESA Population Projection, between 2017 and 2027, entries into working age population will amount to 3.2 million. Assuming that the propensity to enter the labor market remains constant, we have estimates that entries into the Labor force will be equal to 2.634 million.

In order to obtain the structure of entries into the labor force by educational level, the Reports presents two projections of the exits from the Education and TVET system based on the following assumptions: i) the specific rates of survival remain constant at the level of the school year 2016-17; ii) more realistically the survival rates will progressively improve.

As to be expected, the educational level of exits improves more in the second than in the first scenario; while in 2017, 60% of the students exiting the school system had not reached compulsory education and 40% had at least compulsory education, the shares are projected to be 50% and 50% in Scenario 1, 40% and 60 % in Scenario 2. Interestingly, at the end of the period University graduates could reach a percentage of 20%.

A comparison between the exits from the training phase of life (scenario 2) and the needs of the labor market (Intermediate Scenario) by educational level for the period 2017-2027 shows that the exits from the school system are perfectly in line with the needs of the labor market, the only value in excess being those of the lowest educational level, which is generally characterized by a lower propensity to enter the labor market.

Skill needs and training requirement 2017-22 - In order to fully satisfy the requirements of the ToR, the following section is devoted to forecast the labor demand by occupations for the five-year period 2017-2022 and the training needs that will be generated and compare them with TVET training activities of the last years, for which statistical information were available.

The demand side - The estimated Total employment growth was estimated at 795,000 is the result, on the one hand, of a decline in agriculture of 808,000 and, on the other, of an increase in Industry and Services of respectively 850,000 and 753,000. Once the Replacement demand and the passages from agriculture to the other two main sectors are taken into consideration, entries into Agriculture are estimated equal to 40,000, those into Industry to 196,000 (113,000 first time entries and 83,000 passages from agriculture) and those into Services 188,000 (109,000 first time entries and 79,000 passages from agriculture).

The analysis of the labor demand by major occupational groups allows to bring into the picture the fundamental issue of skill requirements and training needs. The report estimates that of the 490,000 average yearly entries into the three main sectors around ¾ will be in three major occupational group, with Craft and related workers playing the major role (57%), followed by Services and sales workers (14%) and Clerical support workers (13%). A minor but qualitatively important role will be played by Plant and machine operators, Professional and Technicians.

The combined use of different sources including NEA Job Index allows to provide some tentative quantitative estimates of the demand in terms of flows for single occupations and indication of the

occupations characterized by a relative lack of supply. The research points out the main role that will be played by single occupations of the construction sector, of the garment sector, of the Accommodation and restaurant sector and by those of the retail trade sector but also of important occupations requiring Upper High school and University. These indications can be easily translated into educational and training needs by the relevant Ministries and especially by the Ministry of labor.

Coming to the supply side, the analysis of the TVET courses at certificate and university level and show that the share of the labor supply covered by vocational training courses is qualitative and quantitatively very limited so that it could (should) be immediately expanded in the direction indicated in the Report.

Part 1
The Background analysis

SECTION 1 The Analytical Framework
a stock-flow model of the labor market

1.1 Introduction

A structural quantitative and qualitative labor market equilibrium in terms of flow requires that the labor demand in terms of flows by educational level (that is the entries into employment by educational level) be coherent with the generational supply of labor by educational level (that is the exits from the Education and vocational training system by educational level).

The objectives of the analysis presented in this Report are the following:

- To build scenarios of labor demand in terms of low by educational level for the period 2017-2027;
- To build scenarios of labor demand in terms of flow for the same period;
- To analyze the coherence between entries into the labor force and desired entries into employment
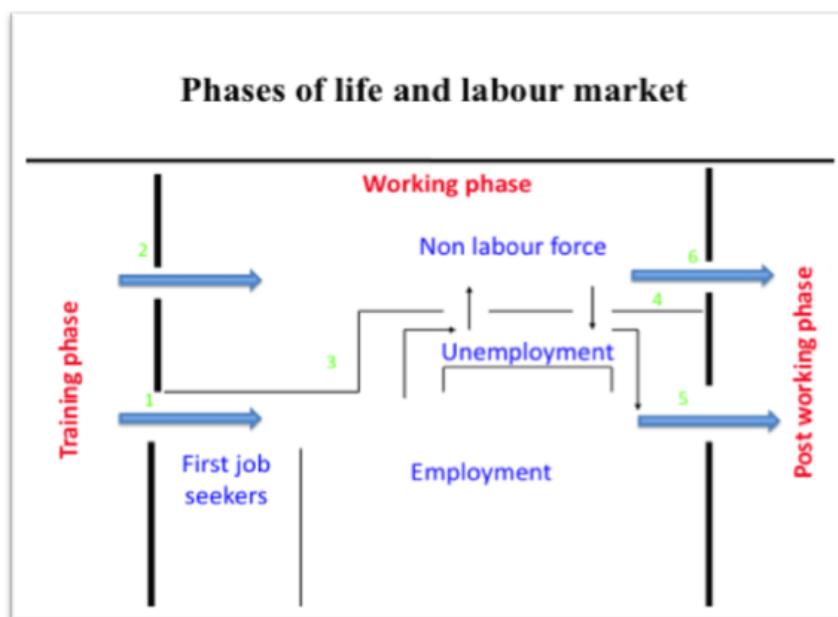
This section is devoted to the presentation of the analytical framework on which our scenarios will be based upon.

1.2 The Analytical Framework: A Stock-flow Model of The Labor Market

Figure 1 provides a simplified representation of human life and population and can be used to represent a stock-flow model of the labor market (Bruni, 1988, 1993).

From an economic perspective, human life can be divided into three phases that define three corresponding sub-populations: (a) the training phase and the population in the training phase; (b) the working phase and the Working age population (WAP); (c) the post-working phase and the post-working age population.

Figure 1. A stock flow representation of the labor market

From a labor market perspective, WAP includes some subpopulations relevant for labor market analysis: the labor force (that includes the employed, the unemployment and the first-job seekers) and the non-labor force. These populations are the main stock variables of the model.

If we consider an interval of time, the arrows in the figure are given life. They represent the flow variables that measure the number of people moving from one condition to another (from one population to another). In any given time interval, the flow variables determine the quantitative and qualitative changes registered by the related stock variables:

- Births and deaths determine the natural dynamic of the population;

- The number of people turning 15, the number of people turning 65, and the death of people in working age determine the natural dynamic of the population in working age;

- Entries and exit flows determine the level, structure and trends of employment and the labor force.

We identify:

1. The Generational entries into employment as the "labor demand in terms of flows" (LDF).

2. The Generational entries into the labor force as the "labor supply in terms of flows" (LSF); and

Generational entries into employment are determined by the sum of two components: (a) the increase in the employment level (Additional demand, AD); and (b) the definitive exits from employment due to retirements and to the deaths taking place in the 15–64 age bracket (Replacement demand, RD).

The level of AD is determined by the rate of growth of production (Y), by the real wage (W) and technological innovation (T):

$$[1] \; AD = AD\,(Y, W, T)$$

AD can be positive or negative, depending on the phase of the economic cycle. In developed countries characterized by a high average age of population[1], RD represents the major component of the LDF. As previously seen, RD measures entries into employment due to the need to replace people exiting definitively from employment as a result of retirement or death. It is influenced by the retirement laws and their modifications, as well as by the economic cycle that influences workers' expectations. However, its main determinant is the age structure of the employed (ASE). Therefore, its value tends to change slowly through time.

A simple specification of the supply function can be the following:

$$[2] \; RD = RD\,(ASE,\, t;\, INR)$$

where *t* represents time, and *INR* is a parameter that tries to capture the effect of institutional norms and rules.

Moving now to the supply side, entries into the labor force are the sum of two components: (a) the primary labor force constituted by all breadwinners, typically men but also a growing number of women who see work as the normal outcome of their training phase of life and

---

[1] This is not so in countries in the initial phase of the demographic transition and in which the labor force is still quite young. As we will see, Cambodia well represents this situation.

consider labor market participation both as a right and as a duty; and (b) the secondary labor force, represented mainly by students and homemakers, whose participation fluctuates with the economic cycle. Therefore, it can be assumed that the entries of primary workers are determined by entries into WAP (and therefore by the number of births that took place at time $(t - n)$, where n is the average duration of the training phase (inclusive of the preschool period). Entries of secondary workers will be determined by the perceived probability of finding a job, which can be measured by the LDF, given the norms and values that define the social role of women (INRW).

$$[3]\ \text{LSF} = \text{LFS (WAP, LDF; INRW)}$$

Therefore, the labor market is in a state of flow equilibrium if the LSF is equal to the LDF, that is, if generational entries into the labor force are equal to generational entries into employment:

$$[4]\ \text{LSF} = \text{LDF}$$

$$[5]\ \text{LSF (WAP, LDF; INRW)} = \text{AD (Y, W, T)} + \text{RD (ASE, t; INR)}$$

In other words, the labor market is in a state of flow equilibrium if the number of jobs created by the economic system, in a given time interval, is equal to the difference between generational entries into the labor force and generational exits from employment:

$$[6]\ \text{AD} = \text{LSF} - \text{RD}$$

It is evident that such an equilibrium solution is not normally achieved, with disequilibrium being the norm. When demographic trends are not highly relevant, cyclical oscillations determine fluctuations in unemployment.

1.3 Education and TVET Systems and The Entries into the Labor Force

1.3.1 The determinants of exits from the TVET system

The number of entries into the labor force in any given year are determined by the exits from the Education and TVET system (XETVET) and the propensity of the exiting cohorts to enter the labor market. In symbols:

$$[7]\ \text{SLF}_t = \text{XETVET}_t * \text{RoAF}_t$$

where SLF represents the Supply of labor in terms of flow (that is first time entries into the labor supply), XETVET the exits from the ETVET system in that year, and RoAF (Rate of activity in terms of flow) the percentage of people exiting ETVET that enter the labor market

The exits from the ETVET system depend on the interaction of demographic trends, the legislation regulating education and training, and the individual behavior that is however strongly affected by the socioeconomic situation.

More specifically, the evolution of the exits from the ETVET can be seen as the result of the evolution of:

- The number of births
- The demographic survival rates of the youngest cohorts
- The average duration of education and vocational training of contiguous cohorts (those that will exit, largely defined), and therefore the specific flow rates of the enrolled and,

more specifically, the dropout rates, the repetition rate, and the promotion rates in the final years of each education cycle.

We can synthetize the previous statement by saying that the number of exits in year t ($XETVET_t$) will be roughly equal the number of births (B) that took place n years before, where n is the average duration of the period spent in training plus the age of legal entry into school. Therefore:

$$[8] \; XETVET_t = B_{(t-n)}$$
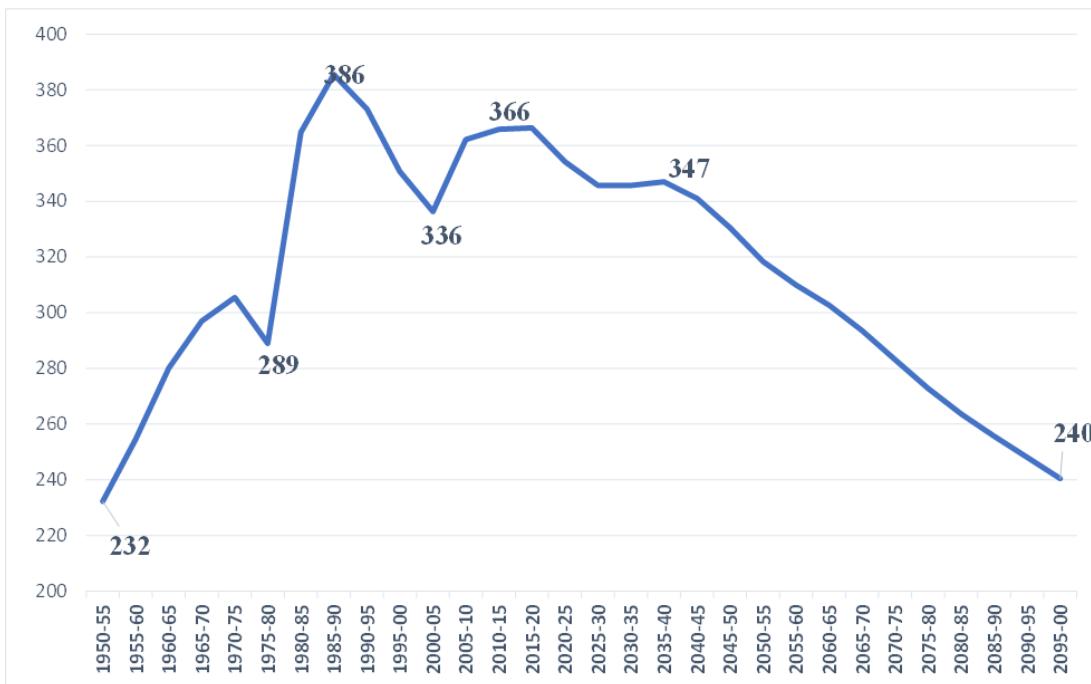
The exits from the education and vocational training system determine the upper limit of the generational supply of labor. However, in general the entries into the labor supply will be lower since not all the young people that leave the school system will enter the labor market. The percentage will depend on the propensity to work that, in its turn, will depend on numerous socioeconomic variables such as family income, the education level of the parents, sex, etc.

1.3.2 The number of births

As shown in Figure 2, in Cambodia the number of births progressively increased, a part a dip during the Khmer rouge regime, from a value of 232,000 in 1950-55 to a maximum of 386,000 in 1990-95. After that period the number of births plunged to 336,000 in the 2000-2005 period, to then increase to a present value of 366,000, due to the fact that the post Pol Pot children reached the reproductive age[2].

From now on, according to UN DESA, the number of births will decline to around 330,000 in 2050 and to 240,000, a value similar to that of 1950, at the end of the century.

Figure 2. Cambodia; number of births; 1950-2100 (thousand)

Source: Elaboration on UN DESA data, UN DESA 2019

---

[2] For a more detailed analysis of Cambodia demographic trends see Annex 1.

1.3.3 Population in Training Age

Table 1 reports the level of training age population (TAP), here defined between 6 and 24, and divided in 4 age-groups that correspond to the four educational levels of the Cambodia education system: Primary school (6-11); Lower-secondary school (12-14) (together these two age groups form the compulsory school age population); Upper-secondary school (15-17) and University (18-24), from 1980 to 2050.

Table 1. Cambodia; Training age population by age group; absolute values in thousand and percentage composition; 1980-205

	Primary 6-11	Lower Sec. 12-14	Upper Sec. 15-17	University 18-24	Trianing Age Population	Primary 6-11	Lower Sec. 12-14	Upper Sec. 15-17	University 18-24
	Absolute Value in thousand					Percentage composition			
1980	1,134	526	439	926	3,025	37.5	17.4	14.5	30.6
1985	1,046	560	501	1,026	3,133	33.4	17.9	16.0	32.8
1990	1,477	482	538	1,157	3,655	40.4	13.2	14.7	31.7
1995	1,965	876	494	1,240	4,576	42.9	19.1	10.8	27.1
2000	2,089	1,043	975	1,424	5,531	37.8	18.9	17.6	25.7
2005	1,992	1,078	959	2,232	6,260	31.8	17.2	15.3	35.6
2010	1,840	957	1,004	1,986	5,786	31.8	16.5	17.3	34.3
2015	1,918	891	941	2,257	6,007	31.9	14.8	15.7	37.6
2020	2,057	984	876	2,112	6,030	34.1	16.3	14.5	35.0
2025	2,112	1,045	979	2,105	6,241	33.8	16.7	15.7	33.7
2030	2,085	1,056	1,040	2,317	6,499	32.1	16.2	16.0	35.7
2035	2,041	1,031	1,052	2,427	6,552	31.2	15.7	16.1	37.1
2040	2,031	1,011	1,028	2,431	6,501	31.2	15.5	15.8	37.4
2045	2,042	1,014	1,008	2,378	6,442	31.7	15.7	15.6	36.9
2050	2,025	1,021	1,011	2,348	6,405	31.6	15.9	15.8	36.7

Source: Elaboration on UN DESA data, UN DESA, 2019

Due to the abrupt explosion in the number of births registered at the beginning of the '80s, Training age population steadily increased from 3 million in 1980 to 6 million in 2015. It shares on total population has however declined from 45.2% to 38.7%.

The dynamic of the four age groups has been quite different since they have been affected by the same demographic waves, but in different moments of time. The Primary school age-population was the first to be affected by the increase in the number of births registered at the beginning of the 1980s and grew from 1.1 million to 2.1 million in 2000, a value very close to the present one. The Lower-secondary school population reached a maximum of 1.08 million in 2005, to then decline below 900,000. The population in compulsory school age is by now 2.8 million, a value 69% higher than the 1980 value. Finally, the high school population and university population have registered the highest increase, respectively 89% and 120%. By now the population 15-24 amounts to 3,2 million.

Therefore, in the last 35 years the education system of Cambodia had to face a very notable increase in the potential demand for education, first for compulsory education and then for High school and university education.

Table 2. Cambodia; Training age population by age group; percentage change; 1980-2015 and 2015-2050
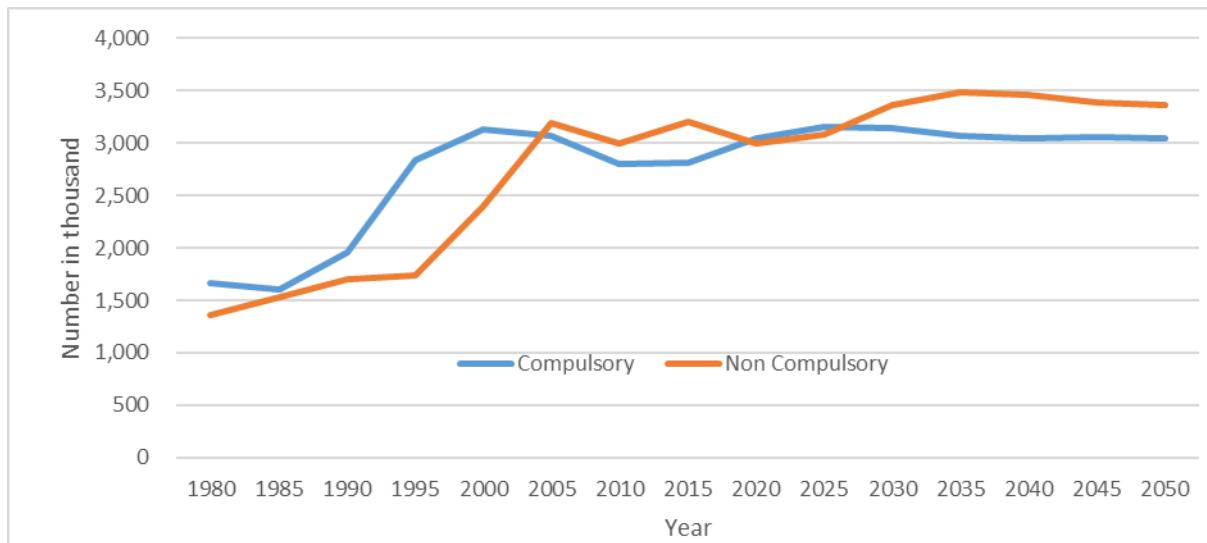
	"6-11	"12-14	Compulsory-school age	15-17	School age	18-24	Total
	Absolute change in thousand						
1980-2015	784	365	1,149	502	1,651	1,331	2,982
2015-2050	107	130	237	71	307	91	398
	Percentage change						
1980-2015	69.1	69.5	69.2	114.3	104.0	143.8	98.6
2015-2050	5.6	14.5	4.6	7.5	8.2	4.0	6.6

Source: Elaboration on UN DESA data, UN DESA 2019

Based on UN DESA assumptions on fertility, and in the zero-migration scenario, in the next 30 years the population in training age will register much smaller changes, climbing first to a little more than 6.5 million and then declining again to around 6.4 million. However, its share on total population is projected to further decline to 27.9% in 2050.

We can also underline that in the next 30 years the shares of young people in the age of both compulsory and non-compulsory education will not present dramatic changes (Figure 3) the first fluctuating around 3 million, the second around 3.4 million.

Figure 3. Cambodia; compulsory and post-compulsory school age population in thousand; 1980-2010

Source: Elaboration on UN DESA data, UN DESA, 2019

This will represent a clear advantage for the young education system of Cambodia, since it will reduce the necessity of investments in infrastructures and it will allow concentrating financial and organizational efforts in the amelioration of the existing funds of schools and staff, the latter representing the most important single factor to improve the quality of graduates, a necessary prerequisite to foster the catching-up process of the Cambodian economy[3].

---

[3] For an analysis of the Cambodia education system and its evolution see Annex 2.

1.3.4 An overview of the present enrollment in the education and TVET system

Before analyzing the single segments of the education system broadly defined, and therefore inclusive of the Education system, of the University, and of the TVET let's consider its size and structure by level according to the latest information available.
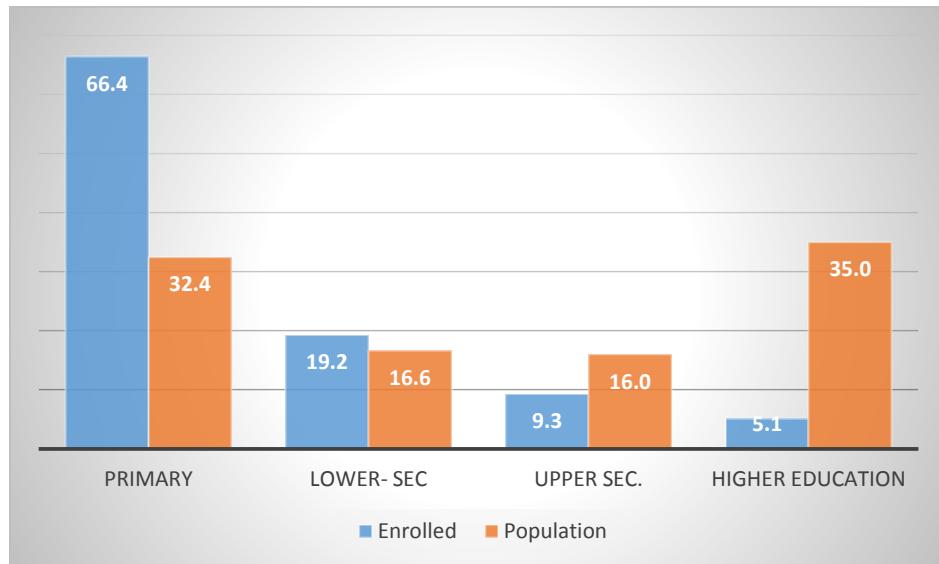
Table 3. Cambodia; enrolled, training population and ratio between enrolled and population of the corresponding age bracket; school year 2016-17 and 2017-18 (thousand)

	Enrolled in thousand	Population in thousand	% Enr/Pop
Primary	2,022	2,049	*98.7*
Lower Secondary	586	1,051	*55.8*
Upper Secondary	283	1,010	*28.0*
Higher education	155	2,211	*7.0*
Total	3,046	6,320	*48.2*

Source: elaboration on EMIS, The Education Statistics and Indicators and UN DESA, 2019

Data suggest that a little less of half of the population in training age is in fact enrolled, but the percentage of enrolled declines with age, from almost 99% in primary school, to 28% in upper secondary school to 7 % in University. We can also observe that 2/3 of the enrolled are in Primary education, 19.2% in Lower secondary education, 9.3 in Upper secondary education (this includes boys and girls enrolled in C1, C2 and C3) and only 5,1% in University and high TVET education.

Figure 4. Enrolled and training age population; percentage distribution by educational level and corresponding age groups; around 2016 and 2017

Source: elaboration on EMIS, The Education Statistics and Indicators and UN DESA, 2019

1.3.4 Enrollments in the school system

Total enrollment - Data on education are available from the school year 2005-2006. From that year to the present the number of students enrolled in the three level of the Cambodian education system has declined by 12.4%. However, in the last three years the total number of enrolled present a positive trend.

Table 4. Cambodia number of enrolled; total in legal age and overage; from the school year 2005-06 to the school year 2017-18

	Primary	Lower secondary	Upper secondary	Total	Primary	Lower secondary	Upper secondary	Total	Primary	Lower secondary	Upper secondary	Total
	Legal age in thousand				Overage in thousand				Total in thousand			
2005-06	1,884	333	120	2,337	674	256	85	1,015	2,558	588	205	3,352
2006-07	1,847	351	131	2,329	614	275	91	980	2,461	626	222	3,309
2007-08	1,768	348	150	2,266	543	289	111	944	2,311	638	261	3,210
2008-09	1,778	334	170	2,282	485	272	122	879	2,263	606	292	3,161
2009-10	1,694	328	194	2,217	546	257	129	932	2,241	585	324	3,149
2010-11	1,799	336	209	2,344	392	225	126	742	2,191	561	335	3,087
2011-12	1,676	346	204	2,225	467	195	115	777	2,142	541	318	3,002
2012-13	1,754	377	191	2,322	419	157	98	675	2,173	535	289	2,997
2013-14	1,707	389	183	2,279	367	150	84	600	2,074	539	266	2,879
2014-15	1,710	401	187	2,298	302	146	75	523	2,012	547	262	2,821
2015-16	1,722	404	205	2,331	288	155	62	505	2,011	558	267	2,836
2016-17	1,737	441	217	2,395	285	145	62	493	2,022	586	279	2,888
2017-18	1,743	469	238	2,451	286	136	66	487	2,029	605	304	2,938
2005-17												
Abs. chan	-141	137	118	114	-389	-120	-19	-527	-530	17	99	-414
% change	-7.5	41.1	98.0	4.9	-57.6	-46.9	-22.3	-52.0	-20.7	2.8	48.3	-12.4

Source: elaboration on EMIS, The Education Statistics and Indicators

Overage enrolled - The notable decline in the number of enrolled is however the result of a progressive process of reduction of the large number of overage students. More specifically the legal age students declined till the school year 2013-14 to then progressively increase so that in the school year 2017-18 their number exceeded that of 2006-06 by 4.9%. At the same time the number of overages declined progressively and, in the period, considered it more than halved.

In the school year 2005-06 overage students represented around 30% of the enrolled, 2/3 of them were in Primary education, 25.2% in Lower secondary and 8.3% in Upper secondary. However, they represented 43.5% of the students enrolled in Lower secondary, 41.3% of those enrolled in Upper secondary and only 26.4% in primary education.

Table 5. Cambodia; enrolled; percentage distribution of overage students by educational level and percentage incidence on total enrollment 2005-06 and 2017-18

	Overage enrolled			
	Primary	Lower secondary	Upper secondary	Total
	Percentage distribution			
2005-06	66.5	25.2	8.3	100.0
2017-18	58.6	27.9	13.5	100.0
	Percentage incidence on total enrollment			
2005-06	26.4	43.5	41.3	30.3
2017-18	14.1	22.4	21.7	16.6

Source: elaboration on EMIS, The Education Statistics and Indicators

After 12 years the percentage of overage had declined to 16.6% and the share in primary education had declined to 58.6%, while it had increased in Lower secondary to 27.9% and to 13.5% in Upper secondary. More interestingly the incidence on enrolled had almost halved in all three level; it remained higher in Lower secondary (22.4%), followed by Upper secondary (21.7%), while it was as low as 14.1% in Primary education.

Female presence - The data show that the gender differential of the enrolled is quite limited and has declined over time. By now the percentage of women enrolled is 49.3% vs. an initial value of 46.3% (Table 6). To be underlined that:

- The problem of overage enrollment is less pronounced for women than for men:

- In 2016-17 females are under-represented in Primary education and over-represented in Lower and Upper secondary education; this suggesting that some little girls are still kept out for Primary education, but boys are more affected by the dropout problem than girls.

Table 6. Cambodia; enrolled; percentage of women by school level, legal age and overage; 2005-06 and 2017-18

	Primary	Lower secondary	Upper secondary	Total
Legal Age				
2005-06	48.5	48.3	42.9	48.2
2017-18	48.7	53.7	54.4	50.2
Overage Age				
2005-06	43.7	40.5	33.1	42.0
2017-18	44.6	46.0	45.0	45.0
Total				
2005-06	47.3	44.9	38.8	46.3
2017-18	48.1	52.0	52.4	49.3

Source: elaboration on EMIS, The Education Statistics and Indicators

1.3.5 The rates of enrollment

A more correct perception of the enrolment situation is provided by the two main indicators of enrollment the Gross enrolment rate (GER) and the Net enrolment rate (NER) (Table 7) that measure respectively:

- the percentage of boys and girls enrolled in a given educational level and the total population in the corresponding age
- the percentage of boys and girls in the right age group enrolled in a given educational level and the total population in the corresponding age

The main elements emerging from Table 7 are the following:

- All GER have been decreasing over time signaling the progressive "regularization" of enrolment l with respect to age;
- In so doing the GER have converged toward the NER; considering the total, the difference between the two indicators has declined from 24.2 to 12.2 percentage points; the reduction has been especially relevant for the Primary level (from 32.7 to 15.3 percentage points), but notable also for the other two educational levels (from 24 to 13.8 percentage points for Lower secondary and from 8 to 5.6 percentage points for the Upper secondary);
- As a consequence of this regularization process (that signals the passage from a phase in which many children had not entered school at the right time) to a situation in which

entries in Primary school at the right age is almost universal, the percentage of children in school measured over the reference legal age has declined from 80% to 71.8%;
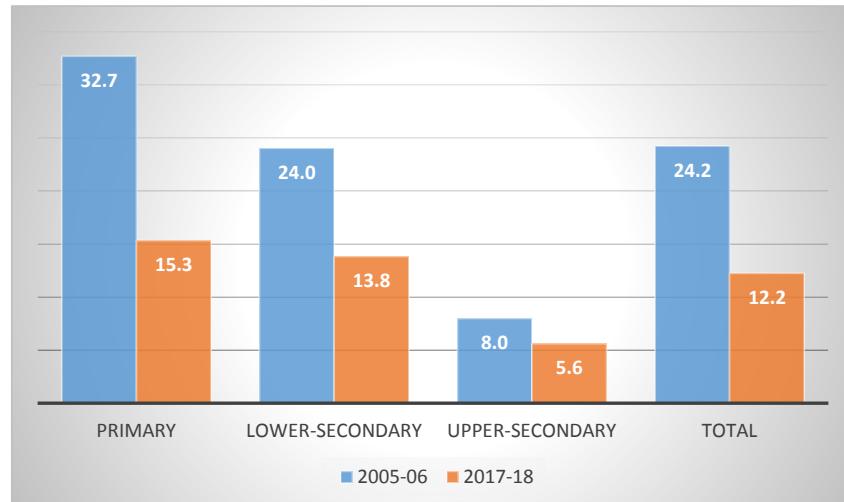
Table 7. Cambodia; Gross employment rates and net employment rates by sex; 2005-06 and 2017-18

	2005-06	2012-13	2017-18	2005-06	2012-13	2017-18
			males			
Primary	129.4	126.1	109.7	93.0	96.7	93.2
Lower-secondary	60.5	55.0	52.1	32.1	33.0	37.6
Upper-secondary	23.1	32.1	23.6	12.7	19.1	17.5
Total	84.8	81.3	70.7	57.1	58.5	57.6
			females			
Primary	118.6	120.3	108.0	89.7	96.1	93.9
Lower-secondary	50.0	55.0	59.6	30.4	37.4	46.4
Upper-secondary	15.3	28.9	26.7	9.9	20.1	21.6
Total	75.1	78.1	72.9	54.5	59.8	61.6
			total			
Primary	124.0	123.3	108.9	91.3	96.4	93.5
Lower-secondary	55.3	55.0	55.7	31.3	35.1	41.9
Upper-secondary	19.3	30.6	25.1	11.3	19.6	19.5
Total	80.0	79.8	71.8	55.8	59.1	59.5

Source: elaboration on EMIS, The Education Statistics and Indicators

- The NET show that the total percentage of boys and girl enrolled in the education system at the right age has increased from 2005 to 2012 (from 55.8% to 59.1%) but then remained substantially constant (59.5% in 2017);

Figure 5. Cambodia; difference between GER and NER by sex and educational level in the school years 2005 - 2006 and 2017 – 2018
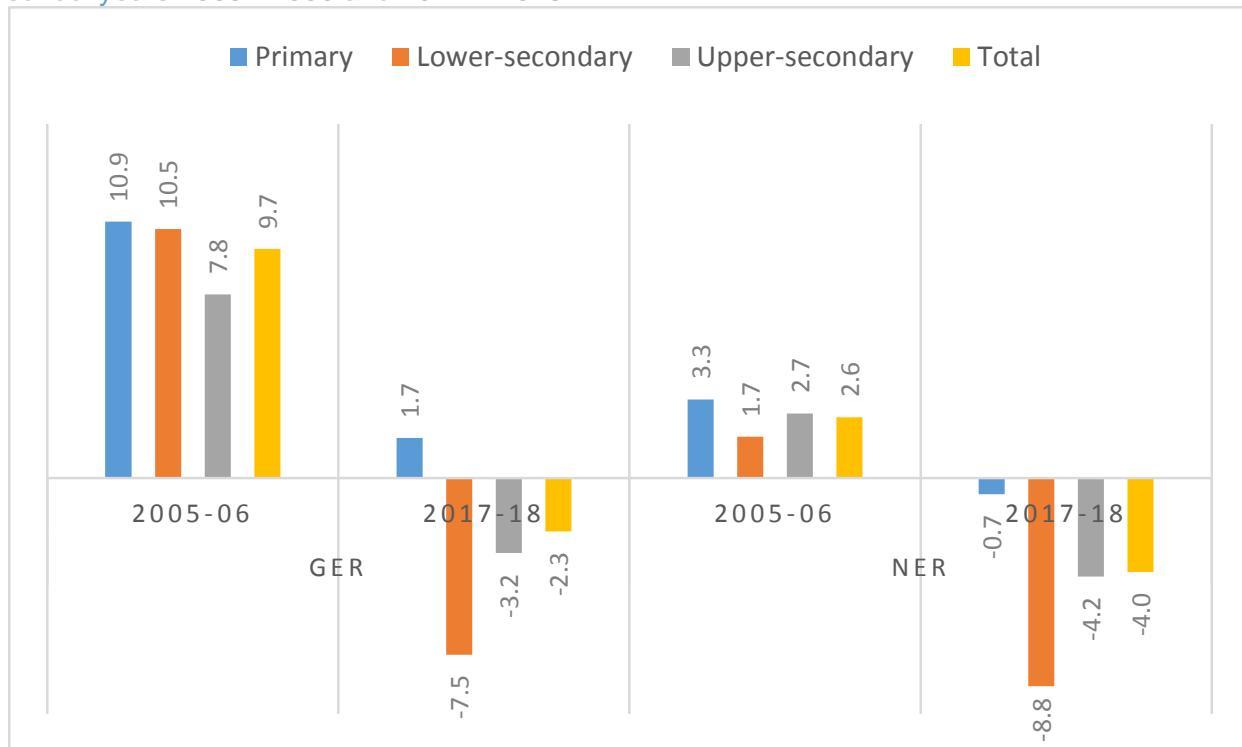
Source: elaboration on EMIS, The Education Statistics and Indicators and UN DESA, 2019

- Between 2005 and 2012 the NER of all their educational level marked very notable improvements: the Primary from 91.3% to 96.4%, the Lower secondary from 31.3% to 35.1% and the Upper secondary from 11.3% to 19.6%;

- From 2012 to 2017 the improvements registered by the Secondary level (from 35.1% to 41.9%) were almost completely offset by a small decline of the NER of Upper secondary (from19.6% to 19.5%) and by the more relevant decline of the NER of Primary education (from 96.4% to 93.5%);
- In 2005 the GER and NER of men were all larger than women's. In the case of GER the difference declined with the educational level, in the case of the NER the variance was much smaller and the smallest value was registered by Lower secondary. In 2017 the situation had totally changed. In 2005 the total GER of men exceeded that of women by almost 10 percentage points; in 2017 women rate exceeded that of men by 2.3 points. While the men GRE of Primary school remained slightly higher that of Lower secondary, that of Lower secondary was 7.5 percentage points lower and that of Upper education 3.2 percentage points lower. In the case of the NER the value for the total had changed from +2.6 to – 4 and also in this case the biggest improvement was registered by Lower secondary;
- In conclusion, in 2005 the relative presence in school was much higher for boys; in 2017 it was notably higher for girls, and this was true for all educational levels.

Figure 6. Cambodia; Males-Females differentials in GER and NER by educational level in the school years 2005 - 2006 and 2017 – 2018

Source: *elaboration on EMIS, The Education Statistics and Indicators and UN DESA, 2019*

13

SECTION 2 Estimate the Labor Supply in term of Flow

2.1 The Education System Flows: Entries and Exits

An education system can be seen as a production process whose aim is to increase knowledge and support the acquisition of operational skills. Its specificity lies in the fact that differently from other production processes its aim is not the transformation of inputs into substantially different outputs, but the introduction of qualitative changes in the inputs themselves: the output of the education system is in fact represented by the pupils that have entered the system in previous periods, endowed with a larger "quantity" of education and skills. Therefore, the total number of exits with a given average education level provides a first gross measure of the "production' level achieved by an Education system.

2.1.1 Total Exits

In general, the number of exits from the Education system are not provided by the Education information systems and EMIS is not an exception. However, estimates of total exits can be computed in different ways from the available information.

In the first place, if we think of the enrolled in the Education system as a population, we can apply the general demographic identity that states that a population at time (t+1) is equal to the population at time (t) plus entries minus exits. In this case the Enrolled at time t are identically equal to the enrolled in the previous period ($E_{t-1.}$) plus entries (the admitted, A), minus the exits (X)

$$[9] \; EN_t = EN_{t-1} + A_t - X_{t-1}$$

Therefore, the change in the stock of enrolled is equal to the balance between entries and exits, a balance that can be positive or negative

$$[10] \; EN_t - EN_{t-1} = A_t - X_{t-1}$$

Finally, the total exits from the education system can be computed as the difference between the admitted and the absolute change in the number of enrolled

$$[11] \; X_{t-1} = A_t - {}_{t-1}\Delta E$$

The previous formula allows computing exits if we consider the education system as a whole. In this case all the exits are definitive exits from the education system and bring or to enrollment in other education streams or to enter the labor market. However, when we consider the single education level, the exits include also the passages to the next educational level. More specifically they include

- Irregular exits (DO): the exits that take place during the level and are therefore identified with the Dropouts
- Exits toward the labor market or another educational stream
- Passages to the following educational level.

Let's for instance consider primary education. Then, the DO from Primary education for the school year t (DOP_t), will be equal to the difference between the Admitted in that school year in Primary education at time t (AP_t), the change in enrollment in Primary education between time t and (t+1) and those that will be admitted in Lower secondary at time (t+1)
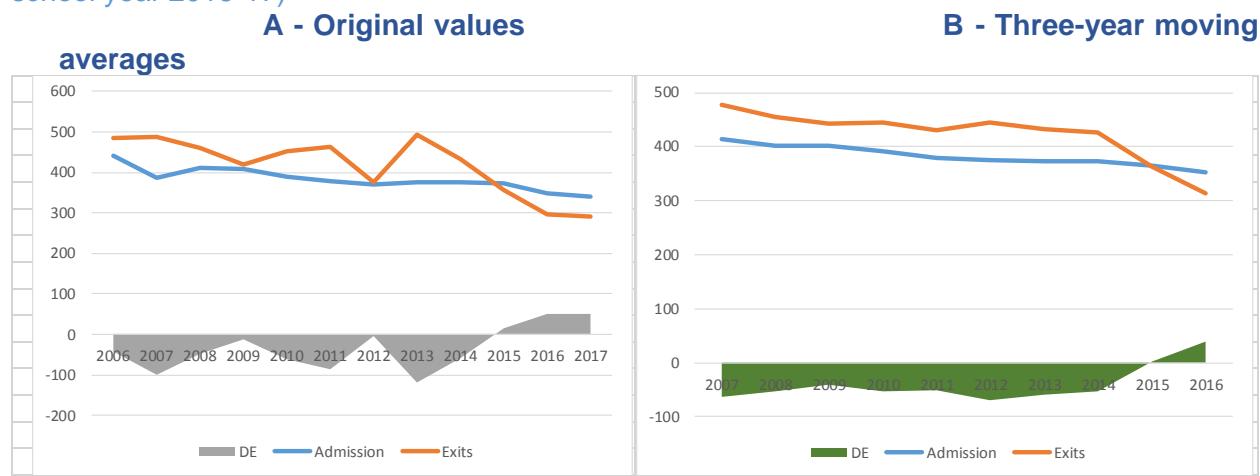
$$[12] \; DOP_t = AP_{(t+1)} - (ENP_t - ENP_{(t-1)}) - ALS_{(t-1)}$$

The same applies to the Lower secondary level.

2.1.2 Total Exits in the period 2006-2017

The following Figure shows the trends of total entries into and total exits from the Education system and the differences between the enrolled in two consecutive years. Figure 7A suggests that in two years, in proximity of the censuses, the estimates of enrollment have been subject to anomalous changes that, in their turn, determine anomalous oscillations of the exits. We have therefore computed 3 year moving averages for the three variables, reported in Figure 7B. Both admissions and exits present a negative trend. However, till 2015, exits have been greater than admission, after 2015 smaller. The abrupt decline of exits is to be imputed to the increase in total enrollment registered in all the school years after 2015.
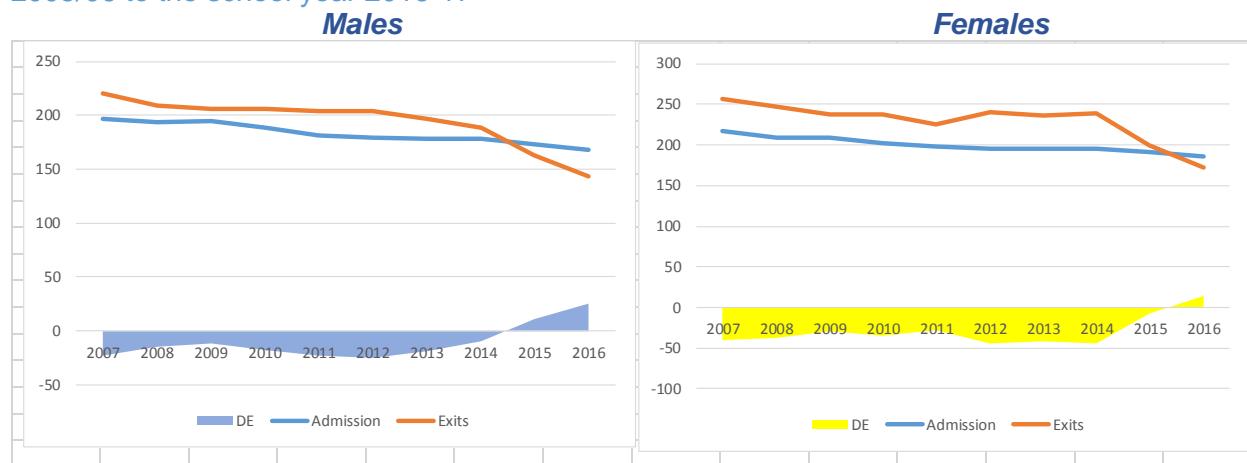
Figure 7. Admission, exits and enrollment balance (total from the school year 2005/06 to the school year 2016-17)

A - Original values

B - Three-year moving averages

Source: elaboration on EMIS, The Education Statistics and Indicators and UN DESA, 2019

Admission and exits for males and females present the same trends as the total. However, for males exits become smaller than admissions in 2014, for females in 2015.

Figure 8. - Males and females; admission, exits and enrollment balance; from the school year 2005/06 to the school year 2016-17

Males

Females

Source: elaboration on EMIS, The Education Statistics and Indicators and UN DESA, 2019

16

Table 8 summarizes the changes that have taken place in entries and exits to the present: admissions have declined from 442,000 to 340,000 and exits from 480,000 to 290,000; the percentage of women remaining substantially constant around 47%.

Table 8. Admissions, Exits, and difference in enrollment by sex; 2006 and 2017

	Admisssion	Exits	Diff	Admisssion	Exits	Diff	Admisssion	Exits
	2006 (thousand)			2017 (thousand)			2006-17 (thousand)	
male	232	258	-25	179	157	22	-53	-101
female	210	222	-12	162	134	28	-48	-89
total	442	480	-38	340	290	50	-102	-190
% females	47.5	46.3	32.5	47.5	46.0	56.0	47.5	46.8

Source: elaboration on EMIS, The Education Statistics and Indicators and UN DESA, 2019

2.1.3 Total Exits by sex, typology and year

In a well-functioning school system, we would expect students to exit the system at the legal exits points. In Cambodia the first legal exit point is represented by the end of compulsory education and the second by the end of Upper education.

Table 9 while confirming the general negative trend of exits toward the physiological level, it also shows that the system is still affected by a relevant problem of dropout that is of exits taking place during and not at the end of each educational level. In fact, the number of dropouts has declined from more than 400,000 to just more than 200,000. But still represent more than ¾ of total exits (table 9).

Table 9. Total exits by sex, typology and year; from 2006 to 2017

	Males			Females			Male and females		
	RE	DO	TE	RE	DO	TE	RE	DO	TE
	Total exits in thousand								
2005-06	37	221	258	34	192	227	71	413	484
2006-07	33	231	265	32	190	222	65	422	487
2007-08	42	207	249	40	171	211	81	378	460
2008-09	46	180	226	41	153	194	87	332	420
2009-10	55	184	239	47	165	212	102	349	451
2010-11	61	188	249	54	160	214	115	348	463
2011-12	62	127	189	57	130	187	119	257	376
2012-13	58	225	283	54	156	210	112	381	493
2013-14	34	204	238	33	161	194	67	365	432
2014-15	33	164	196	32	129	161	64	293	357
2015-16	29	133	163	30	104	134	60	237	296
2016-17	34	123	157	33	101	134	67	224	290
2005-2016	-3	-98	-101	-2	-92	-93	-5	-189	-194

Source: elaboration on EMIS, The Education Statistics and Indicators and UN DESA, 2019

Women have a share of regular exits above average and below average in dropouts.

Table 10. Dropouts by sex and percentage of women on exits; 2005-06 and 2016-17

	Percentage of DO on total exits			Percentage of female		
	Males	Females	Total	RE	DO	TE
2005-06	85.6	84.8	85.3	48.2	46.6	46.8
2016-17	78.4	75.5	77.1	49.1	45.1	46.0

Source: elaboration on EMIS, The Education Statistics and Indicators and UN DESA, 2019

2.1.4 Exits by educational level

Table 11 details the evolution of exits by educational level. In the school year 2005-06 57% of the exits came from Primary education, 28% from Lower secondary and 15% from Upper secondary. In the school year 2016-17 the percentage of Primary education was down to 34%, and those from Lower secondary and Upper secondary were up to 33%.
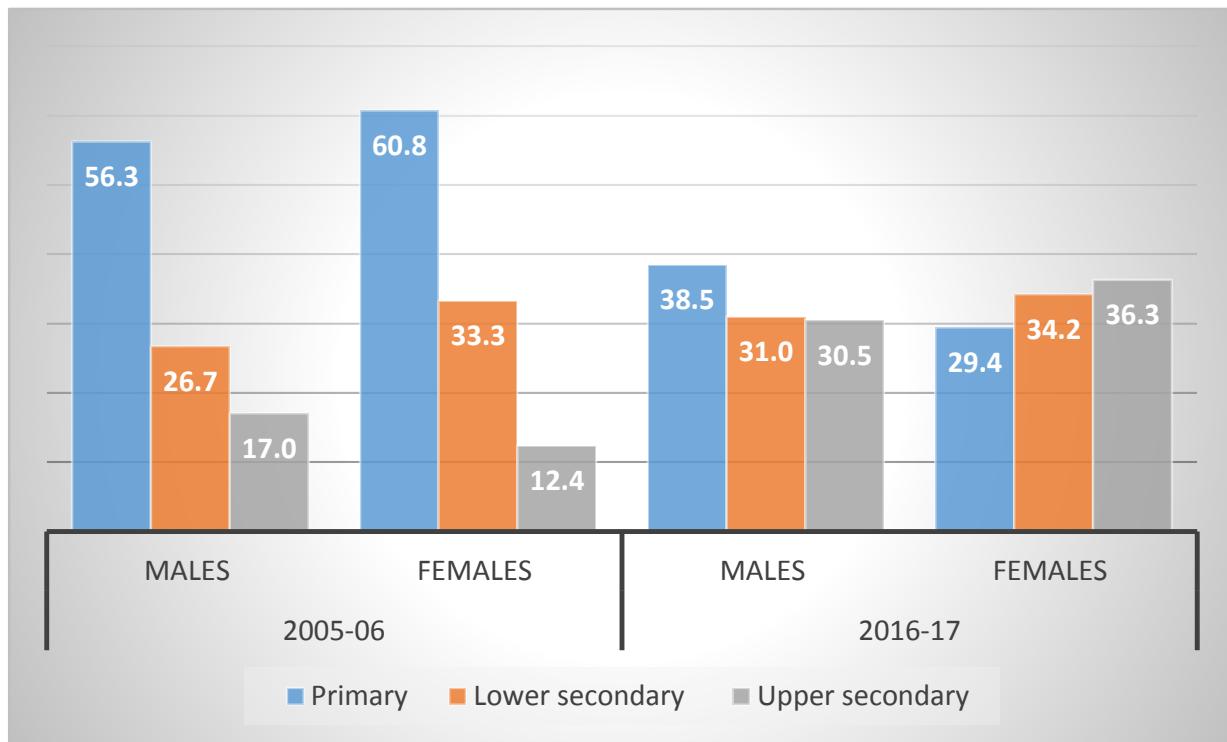
Table 11. Total exits by sex, typology and year; from 2006 to 2017

	Males			Females			Male and females		
	RE	DO	TE	RE	DO	TE	RE	DO	TE
Primary									
Absolute.Value in thousand									
2005-06	10	135	145	15	117	132	25	252	277
2016-17	11	49	60	6	33	39	17	82	100
% composition									
2005-06	26.2	61.3	56.3	43.7	60.8	58.2	34.6	61.1	57.2
2016-17	33.1	40.0	38.5	18.2	33.1	29.4	25.8	36.9	34.3
Lower secondary									
Absolute.Value in thousand									
2005-06	2	67	69	3	64	67	5	131	136
2016-17	2	47	49	3	43	46	4	90	94
% composition									
2005-06	5.7	30.2	26.7	7.8	33.3	29.4	6.8	31.6	28.0
2016-17	4.8	38.2	31.0	8.0	42.7	34.2	6.4	40.3	32.5
Upper secondary									
Absolute.Value in thousand									
2005-06	25	19	44	17	11	28	42	30	72
2016-17	21	27	48	24	24	49	45	51	96
% composition									
2005-06	68.1	8.5	17.0	48.5	5.9	12.4	58.6	7.3	14.9
2016-17	62.1	21.8	30.5	73.8	24.2	36.3	67.8	22.9	33.2
Total									
Total absolute.Value in thousand									
2005-06	37	221	258	34	192	227	71	413	484
2016-17	34	123	157	33	101	134	67	224	290
total % composition									
2005-06	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2016-17	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: elaboration on EMIS, The Education Statistics and Indicators and UN DESA, 2019

In the school year 2005-06 the share of exits from primary education was higher for girls than for boys (60.8% versus 56.3%); in the school year 2106-17 the situation has reversed and the share was much higher for boys than for girls (38.5% versus 29.4%). At the same time the share of exits from Upper secondary has become higher for girls than for boys (36.3% versus 30.5%).

Figure 9. Dropouts by Sex and Educational Level, School year 2005-06 and 2016-17

 Source: elaboration on EMIS, The Education Statistics and Indicators and UN DESA, 2019

The situation can be summarized by observing that while in 2005 for boys and girls the percentage of exits was declining with educational level (being maximum for Primary education and minimum for Upper secondary, after 11 years the situation has reversed for girls and seem to be heading in the same direction for boys.

2.1.5 Exits by educational attainment

An alternative way to capture the improvement undergone by the education system, while given the necessary consideration to the weight of dropouts is to estimate the exits by completed educational level; i.e. by educational attainment.

As shown by Table 12, the percentage of exits with Upper secondary education has increased from 8.6% to 15.6%, with Lower secondary from 7.2% to 19.1%. In conclusion the percentage of people that have at least completed compulsory education has increased from 15.8% to 34.7%. However, it must be pointed out that almost 30% of exits from the school system are boys and girls that have not completed primary education, and almost 37% have not completed Lower secondary education.

19

Table 12. Total Exit by Educational attainment, Absolute value and percentage composition from 2005 to 2017

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
	Absolute values in thousand											
Less than primary	252	261	203	185	196	181	87	226	178	126	90	82
At least primary	155	152	164	137	137	148	154	143	145	125	109	107
At least lower secondary	35	34	41	38	44	52	51	46	80	68	55	55
Upper secondary	42	40	52	59	75	81	85	78	29	38	42	45
Total	484	487	460	420	451	463	376	493	432	357	296	290
	Percentge composition											
Less than primary	52.1	53.7	44.1	44.1	43.4	39.1	23.1	45.8	41.3	35.2	30.5	28.4
At least primary	32.1	31.1	35.7	32.7	30.3	32.1	40.9	28.9	33.5	35.1	36.6	36.9
At least lower secondary	7.2	7.0	8.9	9.1	9.8	11.3	13.5	9.3	18.4	19.1	18.6	19.1
Upper secondary	8.6	8.2	11.2	14.1	16.5	17.5	22.5	15.9	6.8	10.6	14.3	15.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: elaboration on EMIS, The Education Statistics and Indicators and UN DESA, 2019

2.2 The Flow Indicators

Another way to verify the improvements of the Cambodian education system while pointing its weaknesses is to analyze the trends of the main flow indicators and of the corresponding indicators (the repeaters and the rate of repetition, the dropouts and the rate of dropout, the promotion and the rate of promotion) that determine the structure of exits from the education system[4].

2.2.1 Repeaters

From the school year 2005-06 to the school year 2017-18 the number of children repeating the grade in which they were enrolled has declined from 203,000 to 98,000, while the rate of repetition has halved (from 10.4% to 5.2%). The decline has been more pronounced for girls than for boys so that the percentage of the former over the total has decreased from 44.3% to 41.9%. This trend, however, concerns only Primary education where the percentage of girls repeaters is by now down to 36.3%.

---

[4] Any person enrolled in a given grade has three possible outcomes:
- to be promoted to the next grade,
- to repeat the same grade
- to drop out from the educational system.

The same reasoning applies to total enrollment in a given grade at time t (E_t^i). Therefore, enrollment at time t in grade i will be identically equal to the repeaters at time t+1 in grade i, plus the new enrolled in grade i+1 at time t+1, plus the drop out

$$E_t^i = R_{t+1}^i + E_{t+1}^{i+1} + DO_t^i$$

Therefore

$$DO_t^i = E_t^i - R_{t+1}^i - E_{t+1}^{i+1}$$

In conclusion the drop out of grade 1 can be computed as the difference between the enrolled in grade 1 at time t, the repeaters of grade 1 at time t+1 and the difference between the enrolled in grade 2 at time t+1and the repeaters of grade 2 at time t+1.

Finally, dividing both sides of the equation by E_t^i, we obtain the rate of repetition, the rate of promotion and the rate of drop out

$$(R_{t+1}^i / E_t^i) + (E_{t+1}^{i+1} / E_t^i) + (DO_t^i / E_t^i) = 1$$

Table 13. Repeaters by sex and education level; absolute values and rate of repetition

	2005-06	2017-18	Abs. change	% change	2005-06	2017-18	Abs. change
	Absolute values in thousand				Rate of repertition		
	males						
Primary	188	84	-104	-55.3	13.9	8.0	-5.9
Lower-secondary	10	10	0	1.1	3.2	3.6	0.4
Upper-secondary	5	4	-1	-17.0	3.8	2.7	-1.1
Total	203	98	-98	-48.5	11.3	6.6	-4.7
	females						
Primary	139	48	-91	-65.5	11.5	4.9	-6.6
Lower-secondary	4	5	0	8.0	1.6	1.5	-0.1
Upper-secondary	2	3	1	72.3	2.0	0.7	-1.3
Total	145	55	-73	-50.4	9.3	3.8	-5.5
	males and females						
Primary	326	132	-194	-59.6	12.8	6.5	-6.3
Lower-secondary	15	15	0	3.1	2.5	2.5	0.0
Upper-secondary	6	7	0	5.7	3.1	0.0	-3.1
Total	347	153	-171	-49.3	10.4	5.2	-5.1

Source: elaboration on EMIS, The Education Statistics and Indicators and UN DESA, 2019

The rate by grade provide more insight into the phenomenon. Figure 10A and 10B refer, respectively, to boys and girls.

Figure 10. Rate of repetition by grade and sex; 2005-2006 and 2017-2018

A. Males	B. Females

Source: elaboration on EMIS, The Education Statistics and Indicators and UN DESA, 2019

They show that for both boys and girls the phenomenon is concentrated in Primary education. They also show that in Primary education the rates of repetition are inversely related to the grade, they are generally higher for boys, but the gender differential has been declining.

21

2.2.2 Dropouts

The dropout problem has played a very important role in determining the structure of exits from the Cambodian education system. Data clearly show that while notable improvements have been obtained, the problem remains relevant. In the 2005-2006 school year, 12.5% of the enrolled dropped out; in the school year 2016-17 the percentage fell to 7.8%.

In the former period the percentage of dropouts was substantially the same for boys and girls (12.4% versus 12.4%), but the situation has improved much more for girls than for boys so that in the latter period the percentage of dropouts was 8.4% for boys and 7.1% for girls and the share of girls on total dropouts was down from 46.6% to 45.1%. We should, however underline that the percentage of female dropouts declined in Primary and Lower secondary education, but increased in Upper secondary.

Table 14. Dropouts by sex and education level; absolute values in thousand and rate of repetition

	2005-06	2016-17	Abs. change	% change	2005-06	2016-17	Abs. change
	Absolute values in thousand				Rate of repertition		
	males						
Primary	135	50	-86	-63.2	10.4	4.7	-5.7
Lower-secondary	67	47	-20	-29.5	19.6	16.6	-3.0
Upper-secondary	19	27	8	42.9	14.0	19.7	5.7
Total	221	124	-97	-44.0	12.4	8.4	-4.0
	females						
Primary	117	34	-83	-70.9	10.1	3.5	-6.6
Lower-secondary	64	43	-21	-32.7	22.4	14.2	-8.2
Upper-secondary	11	24	13	113.5	12.9	17.0	4.1
Total	192	102	-91	-47.2	12.5	7.1	-5.4
	males and females						
Primary	252	84	-168	-66.8	10.2	4.1	-6.1
Lower-secondary	131	90	-41	-31.1	20.9	15.4	-5.5
Upper-secondary	30	51	21	69.7	13.6	18.3	4.7
Total	413	225	-188	-45.5	12.5	7.8	-4.7

Source: elaboration on EMIS, The Education Statistics and Indicators and UN DESA, 2019
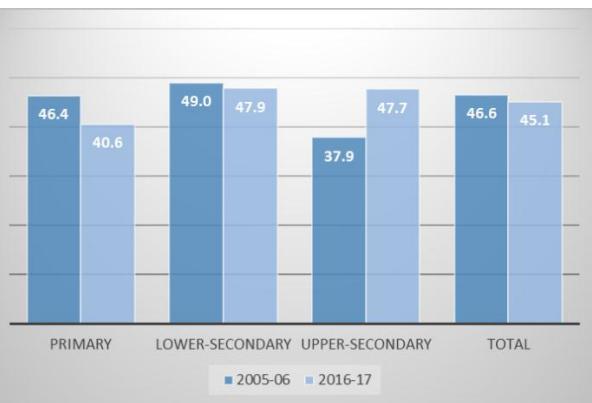
Moreover, the structure of dropouts by grade has notably changed. In 2005-06, 61.1% of dropouts were from Primary education, in 2017-17 the percentage was down to 31.6% and the main source of dropouts had become the Lower secondary, while the share of Upper secondary had increased from 7.3% to 22.7%.

Figure 11. Dropouts; percentage by level; 2005/06 and 2016/17; women percentage by level

a. Percentage share   b. Drop rate

Source: elaboration on EMIS, The Education Statistics and Indicators and UN DESA, 2019

Data by single grade improve our understanding of dropout trends.

Figure 12. Dropouts rate by grade and sex, school year 2005/06 and 2016/17, Male and Female

Source: elaboration on EMIS, The Education Statistics and Indicators and UN DESA, 2019

SECTION 3 Forecasting Labor Demand
in terms of flow by educational level

3.1 Cambodia Economic Evolution: Production, employment and productivity

Over the past three decades, Cambodia has achieved a remarkable economic growth and social development. Its economy, driven by garment manufacturing, tourism, construction, and agriculture, has been one of the best performing in the world. Economic growth has been impressive and has significantly contributed to poverty reduction: GDP per capita is now a little more than 1,400 dollars and in real terms has more than doubled since 2000; this has allowed Cambodia to move from the group of low-income country to that of lower middle-income country.

3.1.1 Total production

GDP has increased by 250% (table 15), the average yearly rate of growth being equal to 7.7% (Table 15). However, the process has been far from uniform. Between 2000 and 2009, GDP growth averaged 8.3%, peaking at 13.2%, in 2005.
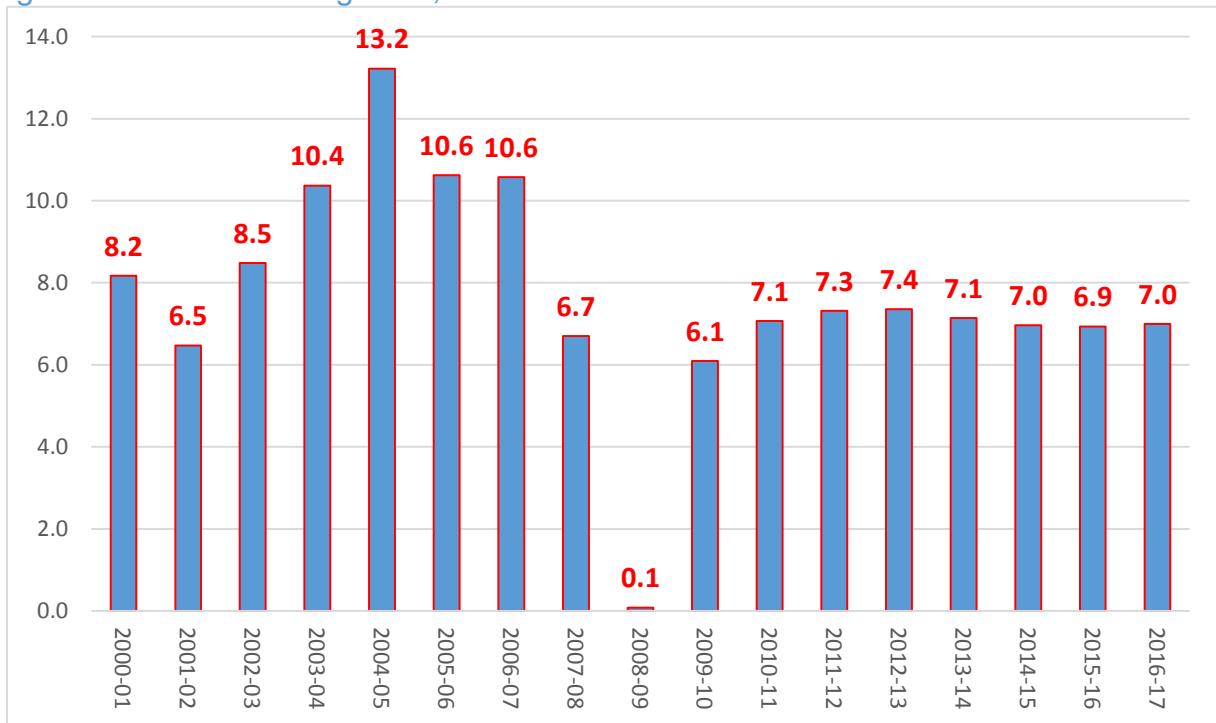
Table 15. Gross Value Added by sector and Gross Domestic Product; 2000-2017; constant 2000 prices; billion of Riels

	Agriculture	Industry	Services	GVA	Taxes	Subsidies	FISIM	GDP
2000	5,058	3,078	5,231	13,367	870	31	155	14,051
2001	5,238	3,423	5,812	14,473	892	31	135	15,199
2002	5,108	4,007	6,259	15,374	1,004	49	146	16,183
2003	5,645	4,490	6,627	16,762	1,010	57	159	17,556
2004	5,596	5,235	7,502	18,333	1,288	58	187	19,376
2005	6,476	5,900	8,484	20,859	1,367	72	216	21,937
2006	6,830	6,978	9,342	23,149	1,470	112	240	24,267
2007	7,174	7,564	10,289	25,027	2,143	36	300	26,834
2008	7,584	7,870	11,217	26,671	2,338	36	342	28,631
2009	7,995	7,123	11,478	26,595	2,480	37	383	28,656
2010	8,311	8,088	11,857	28,257	2,604	39	419	30,403
2011	8,567	9,259	12,449	30,275	2,779	44	457	32,553
2012	8,936	10,124	13,458	32,518	2,994	48	530	34,934
2013	9,076	11,210	14,626	34,912	3,242	51	599	37,503
2014	9,101	12,341	15,903	37,345	3,545	56	652	40,182
2015	9,120	13,760	17,027	39,906	3,845	60	710	42,981
2016	9,241	15,213	18,182	42,635	4,156	67	763	45,961
2017	9,401	16,696	19,457	45,554	4,523	72	829	49,177
2000-2017								
Abs. Change	4,343	13,618	14,226	32,187	3,653	40	674	35,126
Per. Change	85.9	442.4	272.0	240.8	419.7	129.5	435.2	250.0

Source: Authors' Calculation. National Institute of Statistics (2019), National Accounts of Cambodia 2000-2017

The Cambodia economy was then strongly affected by the global financial crisis and in 2009 GDP remained substantially constant, after sharply declining the year before. However, the Cambodian economy recovered quite rapidly growing at an average rate of 7% from 2009 to 2017, a period that appears also characterized by very low cyclical oscillations (Figure 13). In 2017 the rate of growth of GDP was equal to the average of the period and in 2018 it is expected to be a little higher 7.5%.

Figure 13. GDP rates of growth; from 2000/01 to 2016/17

Source: Authors' Calculation. National Institute of Statistics (2019), National Accounts of Cambodia 2000-2017

3.1.2 Gross value added by main economic sector

From 2000 to 2017 the average rate of growth of the Industrial sector has been equal to 10.6%, those of Services and Agriculture to 8.1% and 3.8% respectively. The decline of the rate of growth of total production registered after the crisis has to be imputed to Agriculture and Services whose average rate of growth declined respectively from 5.3% to 2.1% and from 9.2% to 6.8%. The average rate of growth of Industry did, on the contrary, increase from 10.1% to 11.2%.
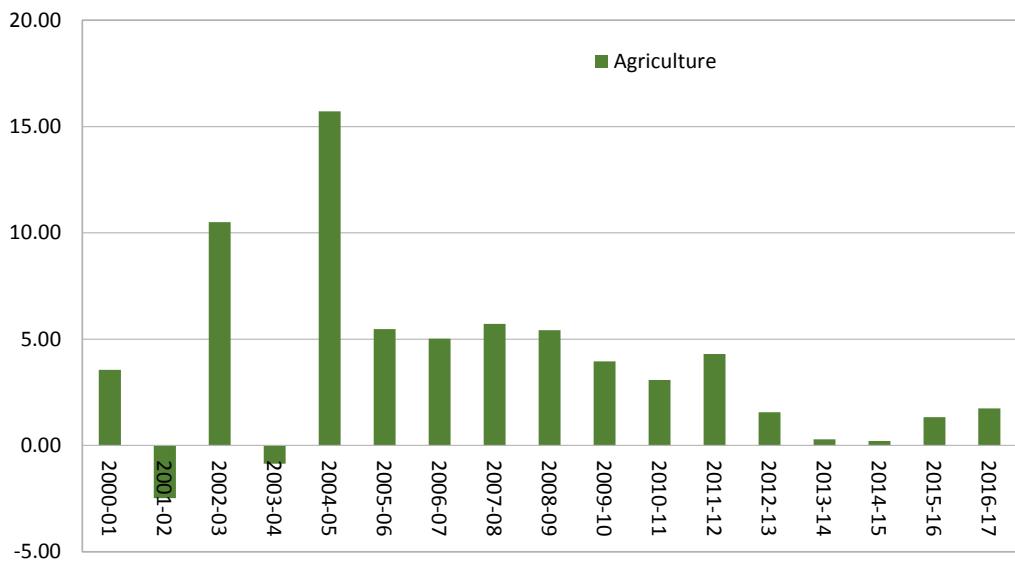
Table 16. Main economic sectors; average rates of growth; 2000-2017; 2000-2009 and 2009-2017

	Agriculture	Industry	Services	GVA	GDP
2000-09	5.3	10.1	9.2	8.9	8.3
2009-17	2.1	11.2	6.8	6.8	7.0
2000-17	3.8	10.6	8.1	7.9	7.7

Source: Authors' Calculation. National Institute of Statistics (2019), National Accounts of Cambodia 2000-2017

Agriculture - Agricultural production growth largely depends on weather conditions. As a consequence, the rates of growth of this sector present a much higher variance than those of Industry and Services: from the beginning of the century, they are included between a minimum of -2.5% in 2002 and a maximum of 15.7% in 2005 (Figure 14). We must also underline that in the last 5 years the performance of this sector has been very modest, its rates of growth being always below 2% and almost nil in 2014 and 2015. As a result, the total growth of Agriculture production in the last 17 years has been relatively modest (86%), which corresponds to an average rate of 3.8%.

26

Figure 14. Agriculture; gross value added; rates of growth from 2000/01 to 2016/17
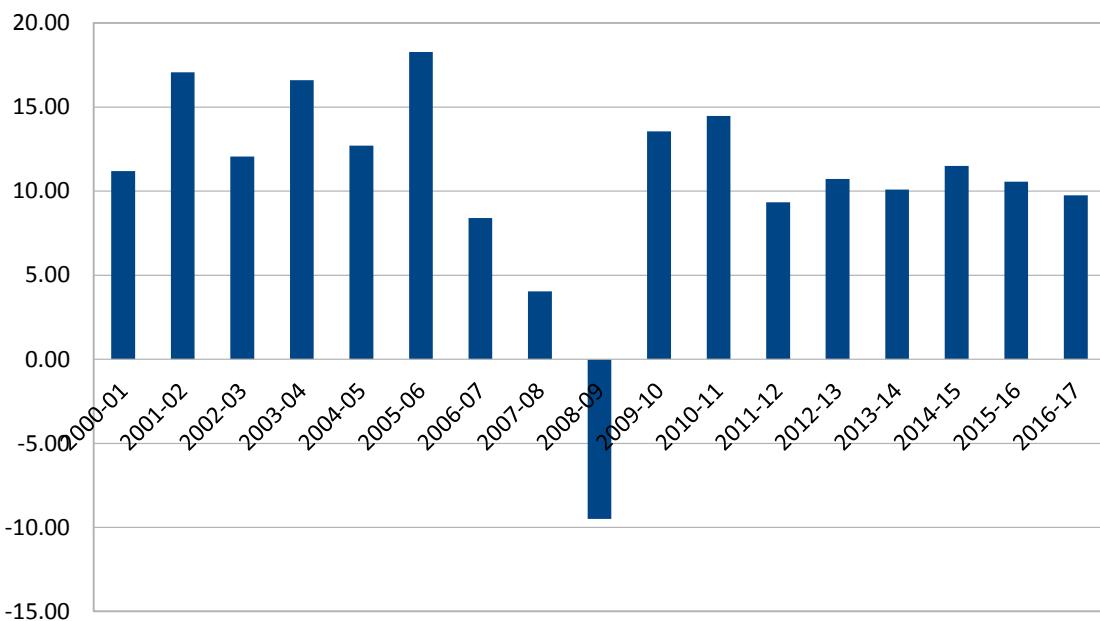
Source: Authors' Calculation. National Institute of Statistics (2019), National Accounts of Cambodia 2000-2017

Industry – Industry has been the sector registering the highest rate of growth in production between 2000 and 2017 (442%). Till 2006 the rates of growth, presented relevant yearly oscillations, but were always above 10%., with record values in 2002 and 2006, (respectively 17.1% and 18.3 percent) (figure 15).

Industry was the sector most heavily hit by the word financial crisis and its rate of growth sharply declined in 2007 and 2008 and became negative in 2009 (-9.5%). It did however rapidly recover and in the following years the rates of growth were always above or very close to 10%, with 2017 registering a 9.7% increase.
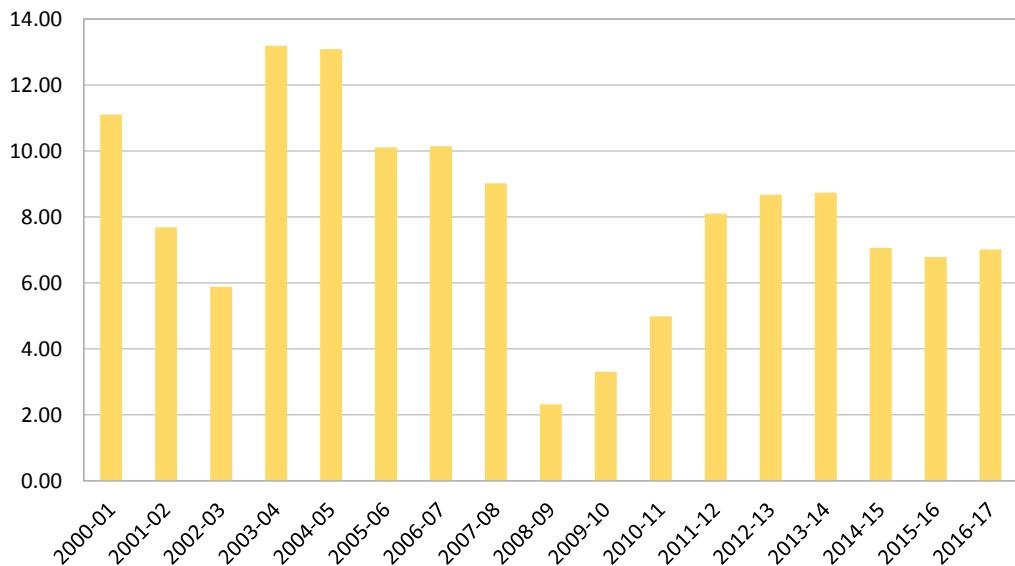
Figure 15. Industry; gross value added; rates of growth from 2000/01 to 2016/17

Source: Authors' Calculation. National Institute of Statistics (2019), National Accounts of Cambodia 2000-2017

Services – The total growth of the Service sector has been only slightly higher than that of GDP (272%). Until 2009 the time-line of the rates of growth of Services mirrors almost exactly that of Gross Value Added with two peaks in 2004 and 2005, a sharp decline starting in 2007 and a minimum of 2.3 percent in 2009 (figure 16). However, the Service sector was not able to rapidly recover as the industrial sector did and from 2009 to 2017 registered a rate of growth below average, with values around 7% in the last three years.

Figure 16. Services; gross value added; rates of growth from 2000/01 to 2016/17

Source: Authors' Calculation. National Institute of Statistics (2019), National Accounts of Cambodia 2000-2017
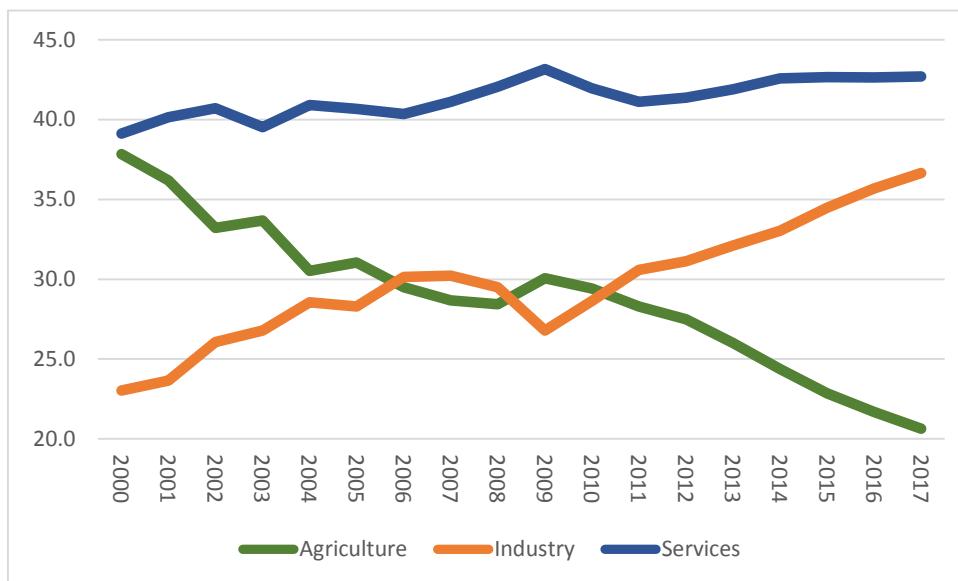
3.1.3 Production shares of the main sectors

The different rates of growth registered by the main economic sectors impacted on their production shares. In 2000 the tertiary sector was the most important and has kept this position till now; moreover, since its production has grown just slightly more than that of Value added, its share (in current Riel) has increased from 39.1% to 42.2%. In 2000, Agriculture was the second most important sector with a share of 37.8%. From 2000 to 2011 its production share first declined and then went back almost to the 2000 value. However, in the following years, the relative weight of agriculture sharply declined to a present value of 24.9%. The share of Industry presents a trend that mirrors that of agriculture; from 2000 to 2011 it did first increase to then go back to around the initial value; then it progressively increased up to a present value of 32.9%. Industry became the second most important sector in 2015.

In conclusion, in the 17 years covered by the data:
- Service have always remained the most important economic sector and its share at current prices has slightly increased.

- Agriculture that had been the dominant sector till the end of the previous century is by now the less important, its production share being less than a quart of o the total.

- Industry that historically had been the least important sector, but starting in 2009 has been constantly improving surpassing agriculture in 2015 and then progressively approaching services.

28

Figure 17. Gross value added at current price; percentage distribution by main economic sector; 2000-2017

Source: Authors' Calculation. National Institute of Statistics (2019), National Accounts of Cambodia 2000-2017

3.2 The Branches

3.2.1 Agriculture

The main branches of the Cambodian agricultural sector are, in order of relevance, crops, fisheries, livestock and poultry, forestry and logging (Table 17). Over the period considered, crops has registered the highest average rate of growth (5.4%), followed by Livestock and poultry (3%), and Fisheries (2.9%). The level of production of Forestry and logging has declined by 0.12%. As we have already indicated, the average rate of growth of production of the sector declined from 5.3% to 2.5% after the 2009 crisis. This tendency was shared by all branches: Crops (from 7.9% to 2.6), Livestock and poultry (from 5.1% to 0.7%), Fisheries (from 3.2% to 2.6) and Forestry and logging (from 0.8% to –1,3%).
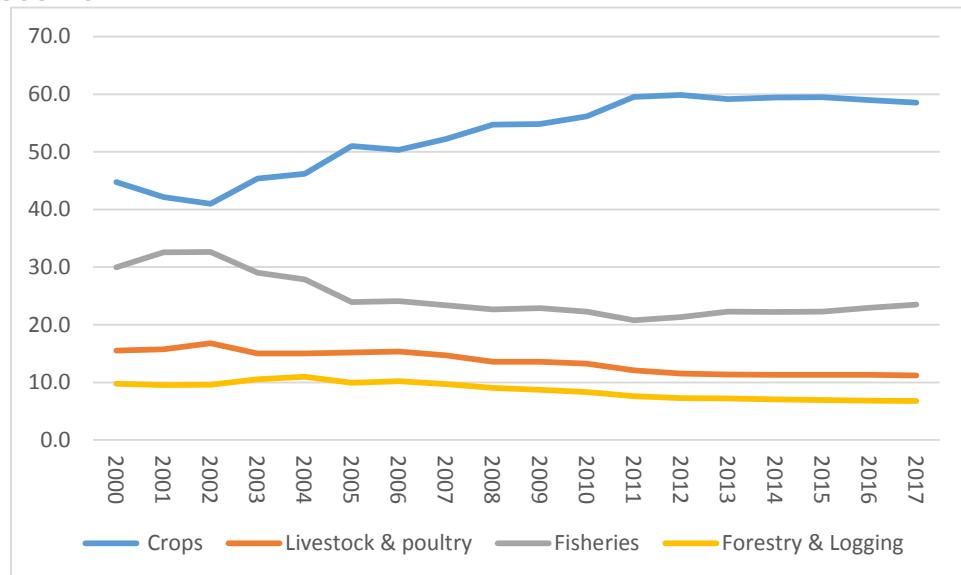
Table 17. Agriculture; value added; average yearly rate of growth of the main branches; 2000-2009, 2009-2017 and 2000-2017

	Crops	Livestock & poultry	Fisheries	Forestry & Logging	Total
2000-09	7.9	5.1	3.2	0.8	5.3
2009-17	2.6	0.7	2.6	-1.3	2.1
2000-17	5.4	3.0	2.9	-0.2	3.8

Source: Authors' Calculation. National Institute of Statistics (2019), National Accounts of Cambodia 2000-2017

Comparing the production structure in 2000 and 2017 at current prices, we can observe that the only branch to expand its share has been Crops (from 44.8 to 58.5%): at the same time Fisheries that was the second most important sector share declined from 30% to 23.5%; Livestock and poultry from 15.5% to 11.2% and Forestry and logging from 9.8 to 6.8%.

Figure 18. Agriculture sector; percentage composition of production by branches (current prices), 2000-2017

Source: Authors' Calculation. National Institute of Statistics (2019), National Accounts of Cambodia 2000-2017

3.2.2 Industry

Manufacturing is by far the most important industrial subsector; however, its rate of growth (10.3%) has been well below the industrial average and much lower than that of Mining (19.9%), the fastest growing industrial subsector, and those of Construction (11.9%) and Electricity, gas and water (10.9%) (Table 18).

Moreover, there are notable differences between the 2000-2009 period and the 2009-2017 period. Mining is not only the fastest growing sector, but its rate of growth was higher in the second than in the first period (21.6% vs. 18.4%) Also the rate of growth of Manufacturing was higher in the second period (11.5% versus 9.2%), while those of Construction and especially of Electricity, while remaining above the GDP average, were notably lower.
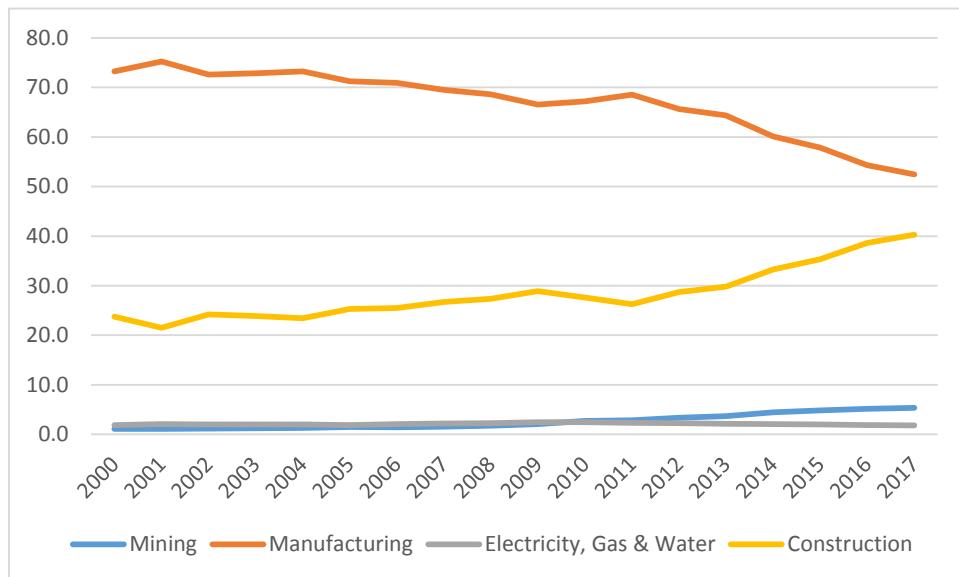
Table 18. Industry; value added; average yearly rate of growth of main subsector and total sector; 2000-2009, 2009-2017 and 2000-2017

	Mining	Manufacturing	Electricity, Gas & Water	Construction	Total
2000-09	18.4	9.2	13.5	12.1	10.1
2009-17	21.6	11.5	8.0	11.5	11.2
2000-17	**19.9**	**10.3**	**10.9**	**11.9**	**10.6**

Source: Authors' Calculation. National Institute of Statistics (2019), National Accounts of Cambodia 2000-2017

As a consequence of these complex sets of trends, the percentage share of Manufacturing over the Industrial value added has lost more than 20 percentage points, declining from 73.2% to 52.5%, while the share of Construction has climbed from 23.8% to 40.3% and that of mining from 1.1% to 5.4%. (Figure 19).

Figure 19. Industrial value added; percentage composition by main subsector (current prices), 2000-2017

Source: Authors' Calculation. National Institute of Statistics (2019), National Accounts of Cambodia 2000-2017

3.2.3 Manufacturing

Manufacturing includes very different branches that have registered a very different dynamics before and after the financial crisis (Table 19).

Table 19. Manufacturing; value added; average yearly rate of growth of main branches and total sector; 2000-2009, 2009-2017 and 2000-2017
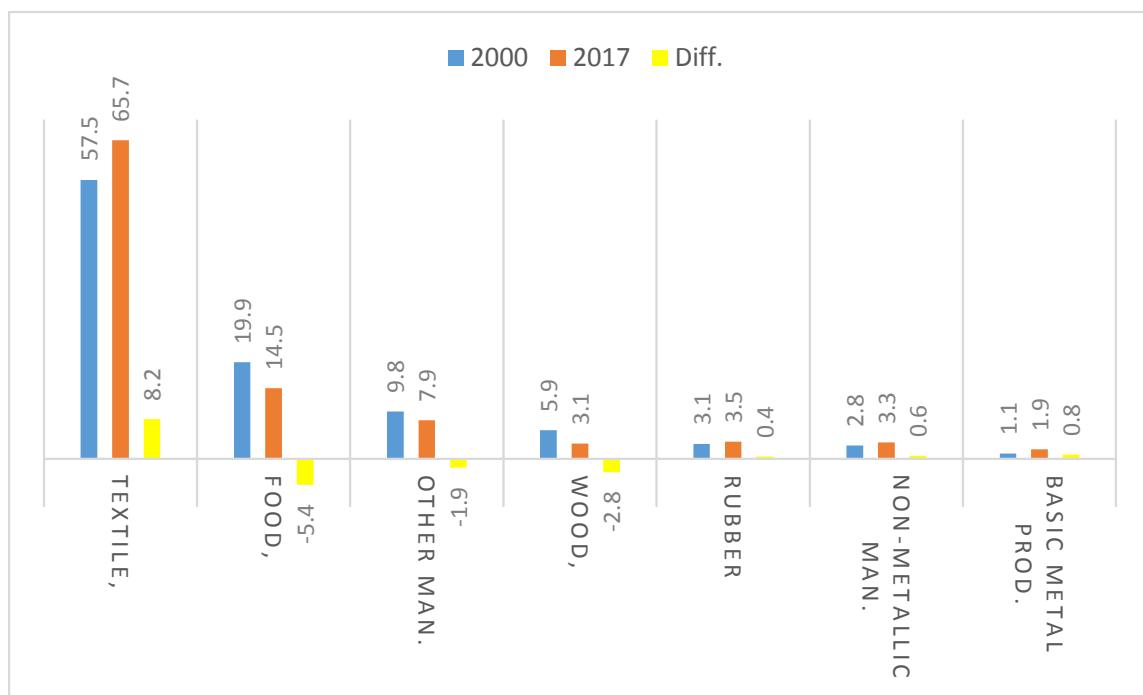
	Food, Beverages & Tobacco	Textile, Wearing Apparel & Footwear	Wood, Paper & Publishing	Rubber Manufac-turing	Non-Metallic Manufac-turing	Basic Metal and Metal Products	Other manufac-turing	Total
2000-09	3.0	13.8	-0.6	0.5	13.6	13.0	6.6	10.4
2009-17	6.6	10.6	4.6	9.7	7.6	8.9	7.9	9.7
2000-17	4.7	12.3	1.8	4.8	10.8	11.1	7.2	10.1

Source: Authors' Calculation. National Institute of Statistics (2019), National Accounts of Cambodia 2000-2017

In the first period three branches stand out for a performance largely above the average of sector: Textile (13.8%), Non-metallic manufacturing (13.6%), and Basic metal and metal products (13%). At the other end we have Wood (-0.6%), Rubber (0.5%), and Food (3%). In the following 8 years.

In the following period, the rate of growth of manufacturing slightly declined and this was true for the three branches that had registered the best performance in the previous period. Textile continued, however, to grow at a rate above average (10.6%) while the rates of growth of Non-metallic manufacturing and Basic metal declined respectively below the average to 7.6% and 8.9%. At the same time big improvements were registered by Wood, and Food, and especially Rubber. As a consequence, the textile sector which was already the dominant branch in 2000 has increased its share from 57.5% to 65.7% while the other important sector, Food has registered a decline of from almost 20% to less than15%., while all the other sectors have registered only minor changes.

Figure 20. Manufacturing; relative share of the main branches in 2000 and 2017

Source: Authors' Calculation. National Institute of Statistics (2019), National Accounts of Cambodia 2000-2017

3.2.4 Services

The Service sector is the more differentiated sector, covering public and private activities, with the private activities ranging from tourism, to trade, from transportation to finance, to real estate (Table 20).

Table 20. Services; value added; average yearly rate of growth of main branches and total sector; 2000-2009, 2009-2017 and 2000-2017
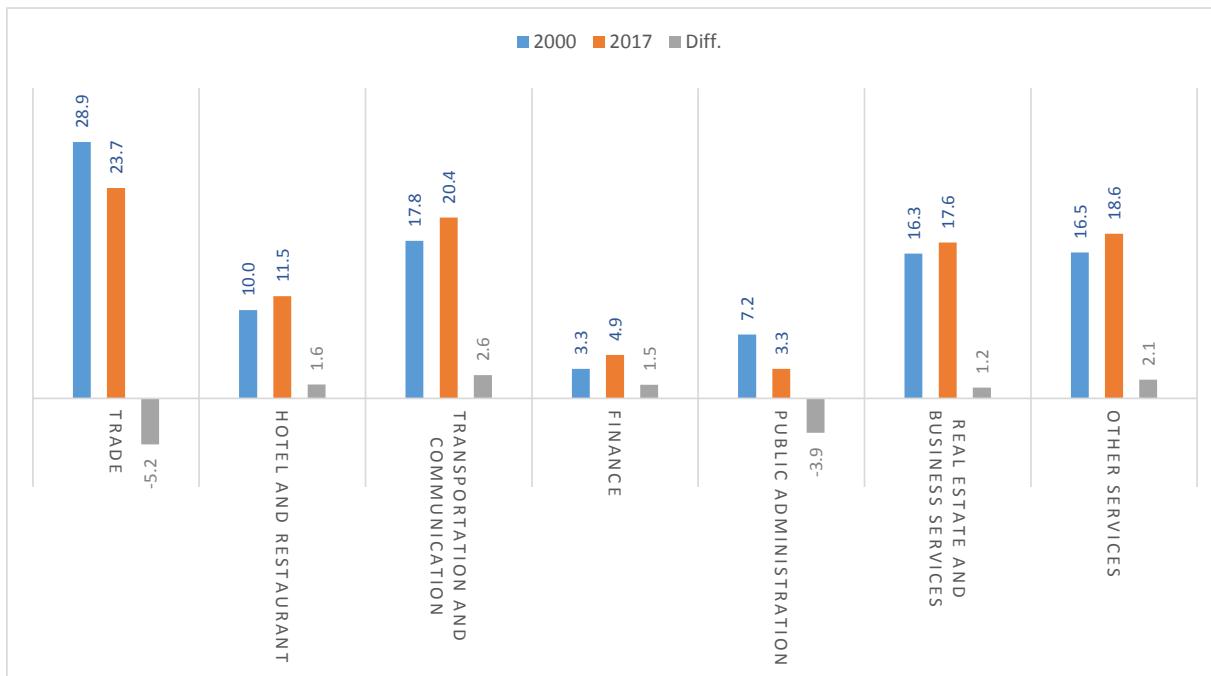
	Trade	Hotel and Restaurant	Transportation and communication	Finance	Public Administration	Real Estate and Business services	Other services	Total
2000-09	6.0	11.8	7.8	12.8	-0.7	10.8	14.2	9.2
2009-17	6.9	7.6	7.5	11.1	5.1	6.6	5.7	6.8
2000-17	6.5	9.8	7.7	12.0	2.1	8.8	10.2	8.1

Source: Authors' Calculation. National Institute of Statistics (2019), National Accounts of Cambodia 2000-2017

Finance is the branch that registered the highest growth (12%), followed by Other services (10.2%), Hotel and Restaurant (9.8%), Real Estate (8.8%); rates of growth below average have been registered by Transport (7.7) and Trade (6.5%). Comparing the period before the crisis and the period after, we register a dramatic increase in the growth rate of the Public administration (from -0.7% to 5.1, which obviously signals an increase in the wages paid by the PA); also, trade registered a small increase, from 6% to 6.9%. The rate of growth of all other branches declined and the phenomenon was especially relevant for Other Services and Real estate (from 14.2% to 5.7% and from 10.8% to 6.6%), but the negative trend was registered also by Hotel and Restaurants (from 11.8% to 7.6%), Transportation (from 7.8% to 7.5%) and Finance (from 12.8% to 11.1%).

Over the period considered the production share of two branches has declined, that of Trade that with 28.9% was the most relevant branch in 2000 and has lost more than 5 percentage points and the Public administration down from 7.2% to 3.3%. The production share of all other branches has increased and more specifically Transport from 17.8% to 20.4%. Real estate from 16.3% to 17.6%, Hotel from 10% to 11.5% and Finance from 3.3% to 4.9%.

Figure 21. Services; value added; percentage composition by main branches (current prices); 2000 and 2017

Source: Authors' Calculation. National Institute of Statistics (2019), National Accounts of Cambodia 2000-2017
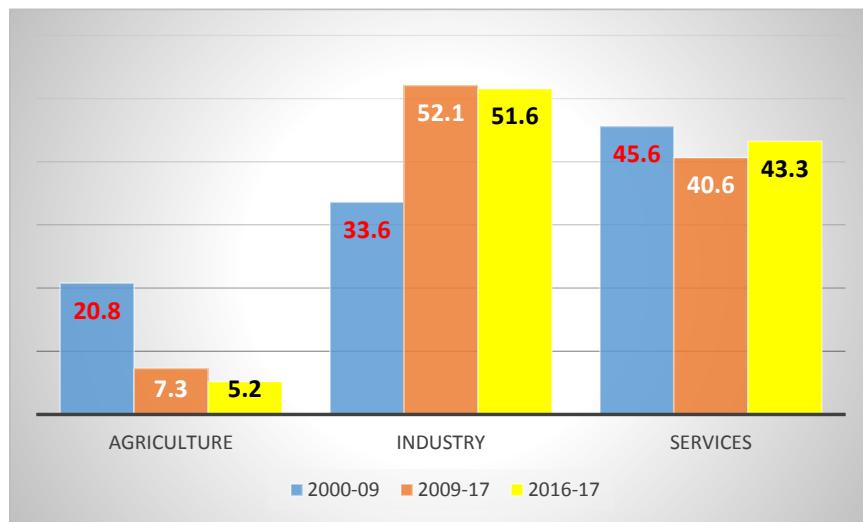
3.3 The contributions of the main sectors to the growth of value added

Figure 22 shows the contribution of the three main economic sectors to the growth of value added in the pre-crisis period, in the post-crisis period, and in 2016-17, the last year for which estimates are possible.

The most relevant elements which emerge are:

- The progressive reduction of the contribution brought by the Agricultural sector that in the first 9 years of the century accounted for more than 20% of the growth of VA, in the successive eight by 7.3% and in the last by 5.2%;

- The growing role of Industry whose contribution was around 33% in the first 9 years and has increase to 52.1%;

- The stationary role played by services whose contribution has always remained slightly above 40%.

Source: Authors' Calculation. National Institute of Statistics (2019), National Accounts of Cambodia 2000-2017

3.4 The contribution of the branches

Moving now down to the level of the 21 branches, we have computed their contribution to the growth of value added for the usual two periods, 2000-2009 and 2009-2017; similarities but also notable differences emerge (Table 21).

Table 21. Contributions of the economic branches to economic growth in two periods 2000-2009 and 2009-2017

		2000-09			2009-17	
		% comp.	Cum. Values		% comp.	Cum. Values
1	Textile, Wearing Apparel & Footwear	19.6	19.6	Textile, Wearing Apparel & Footwear	31.3	31.3
2	Other services	15.0	34.7	Construction	10.8	42.1
3	Crops	14.2	48.9	Trade	9.3	51.4
4	Construction	9.5	58.4	Other services	7.6	59.0
5	Real Estate and Business services	8.8	67.2	Transportation and communication	7.4	66.4
6	Hotel and Restaurant	6.6	73.8	Real Estate and Business services	6.9	73.3
7	Trade	6.5	80.3	Hotel and Restaurant	5.4	78.8
8	Transportation and communication	6.1	86.5	Crops	4.9	83.7
9	Fisheries	3.3	89.8	Mining	3.2	86.8
10	Livestock & poultry	3.0	92.8	Finance	2.9	89.7
11	Finance	2.6	95.4	Fisheries	2.3	92.0
12	Other manufacturing	1.0	96.4	Food, Beverages & Tobacco	2.2	94.3
13	Electricity, Gas & Water	0.9	97.2	Other manufacturing	1.8	96.1
14	Mining	0.9	98.1	Public Administration	1.0	97.1
15	Food, Beverages & Tobacco	0.8	98.9	Non-Metallic Manufacturing	0.9	98.0
16	Non-Metallic Manufacturing	0.8	99.6	Electricity, Gas & Water	0.7	98.8
17	Basic Metal and Metal Products	0.3	99.9	Rubber Manufacturing	0.5	99.2
18	Forestry & Logging	0.2	100.1	Basic Metal and Metal Products	0.4	99.6
19	Rubber Manufacturing	0.0	100.1	Livestock & poultry	0.3	100.0
20	Wood, Paper & Publishing	0.0	100.1	Wood, Paper & Publishing	0.3	100.3
21	Public Administration	-0.1	100.0	Forestry & Logging	-0.3	100.0
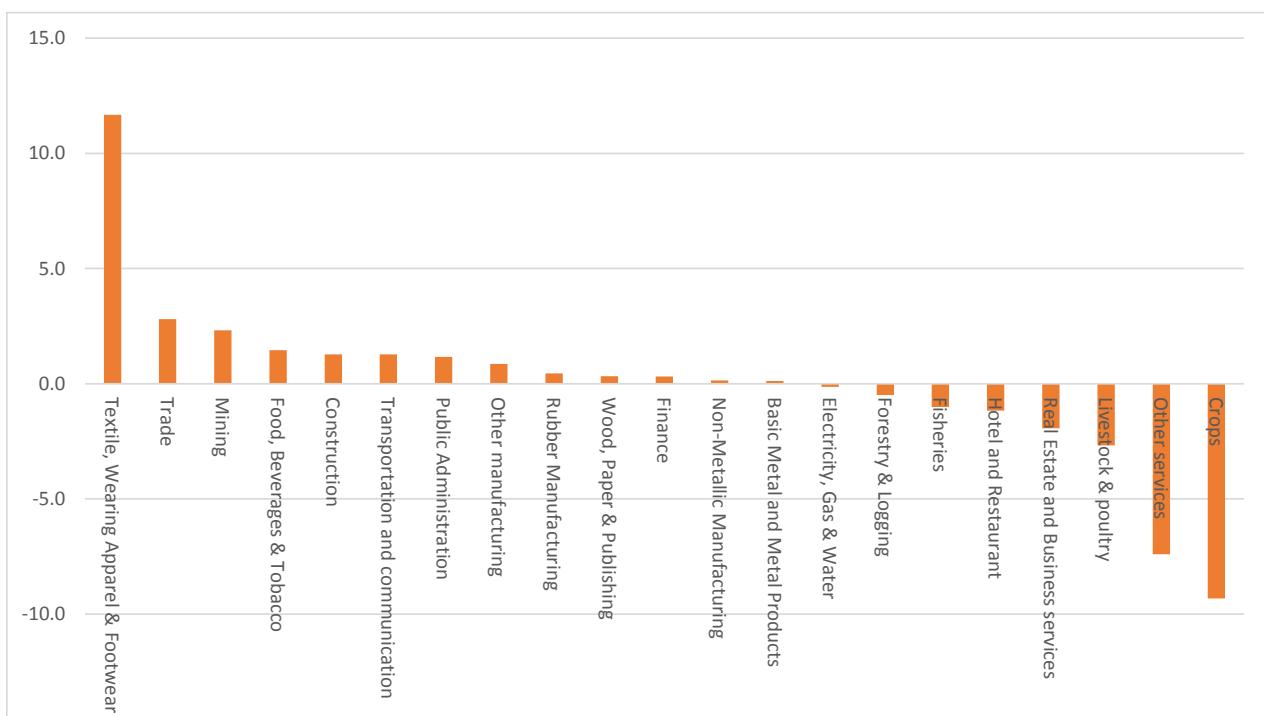
Source: Authors' Calculation. National Institute of Statistics, National Accounts of Cambodia 2000-2017

In both periods the 5 most important sector explain ¾ of the economic growth. However, the five sectors are not the same: in both periods we find Textile, Construction, Other services, and Real estate, but in second period Trade substitutes Crops.

The most relevant change is the increase in the relevance of the textile sector that in the first period explain 19.6% of economic growth and in the second 31.3%.

More generally, a comparison between the contributions of the 21 branches in the two periods shows that relevant increases have been registered also by Trade, Mining, Food, Construction and Transportation, while all agricultural branches have registered a negative performance especially pronounced for Crops, as well as quite surprisingly Real Estate and Hotels.

Figure 23. Changes in the contributions of 21 economic branches between the periods 2000-2009 and 2009-2017

Source: Authors' Calculation. National Institute of Statistics (2019), National Accounts of Cambodia 2000-2017

35

SECTION 4 The Evolution of WAP, Labor Force and Employment

4.1 WAP, Labor Force and Employment

Table 22. Working age population, labor force, employment; values in thousand; 2007-2017

	Tot. Pop in thousand	WAP in thousand	LF in thousand	Empl in thousand
2007	13,230	8,232	6,888	6,837
2008	13,389	8,379	6,854	6,829
2009	13,967	8,865	7,480	7,470
2010	13,958	8,853	7,702	7,689
2011	14,155	9,038	7,907	7,891
2012	14,376	9,167	7,718	7,706
2013	14,678	9,604	7,974	7,950
2014	15,184	10,001	8,259	8,241
2015	15,405	10,113	8,359	8,353
2016	15,626	10,265	8,624	8,612
2017	15,848	10,416	8,779	8,770

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

In spite of the 2009 crisis, total employment has increased at an average yearly rate of 2.8%, (a value slightly in excess of that of labor supply) and which corresponds to a yearly increase of 193,000 jobs (Table 23). The values for the last 5 years on which we will concentrate our analysis are slightly higher; more specifically the yearly increase in employment has been equal to 213,000.

Table 23. Working age population, labor force, and employment; absolute and percentage changes; 2007-2017 and 2012 -2017

	Tot. Pop	WAP	LF	Empl
	2007-2017			
Total change in thousand	2,618	2,184	1,891	1,934
Aver. early change in thousand	262	218	189	193
Total % change	19.8	26.5	27.5	28.3
Average yearly % change	2.0	2.7	2.7	2.8
	2012-17			
Total change in thousand	1,472	1,249	1,061	1,064
Aver. early change in thousand	294	250	212	213
Total % change	10.2	13.6	13.7	13.8
Average yearly % change	2.0	2.7	2.7	2.8

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

In the last ten years the employment structure by main economic sector has undergone notable changes (Table 24).

Table 24. Total employment (15-64) by main economic sector; absolute values and percentage composition; 2007-2017

	Agriculture	Industry	Services	Agriculture	Industry	Services
	Absolute vales in thousand			% composition		
2007	3,946	1,019	1,871	57.7	14.9	27.4
2008	3,797	1,080	1,952	55.6	15.8	28.6
2009	4,304	1,184	1,981	57.6	15.9	26.5
2010	4,165	1,249	2,274	54.2	16.2	29.6
2011	4,402	1,332	2,157	55.8	16.9	27.3
2012	3,931	1,433	2,343	51.0	18.6	30.4
2013	3,870	1,579	2,501	48.7	19.9	31.5
2014	3,733	2,003	2,505	45.3	24.3	30.4
2015	3,470	2,132	2,751	41.5	25.5	32.9
2016	3,135	2,291	3,187	36.4	26.6	37.0
2017	3,245	2,298	3,227	37.0	26.2	36.8

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

In 2007 still 58% of the employed worked in Agriculture, Services accounted for 27% and Industry for 15%. In the following 5 years, employment increased by almost 900,000, but the growth was concentrated in Services (472,000) and Industry (413,000) while the employment level in Agriculture remained substantially stable. The share of agriculture remained therefore above 50% with Services and Industry at 30% and 19% respectively. The decline in agricultural employment became more and more relevant starting in 2011 so that in the following years the number of jobs in agriculture declined on the average by 193,000, a loss that was, however, largely compensated by an in increase in Services and Industry by respectively 178,000 and 161,000 jobs per year (Table 25).
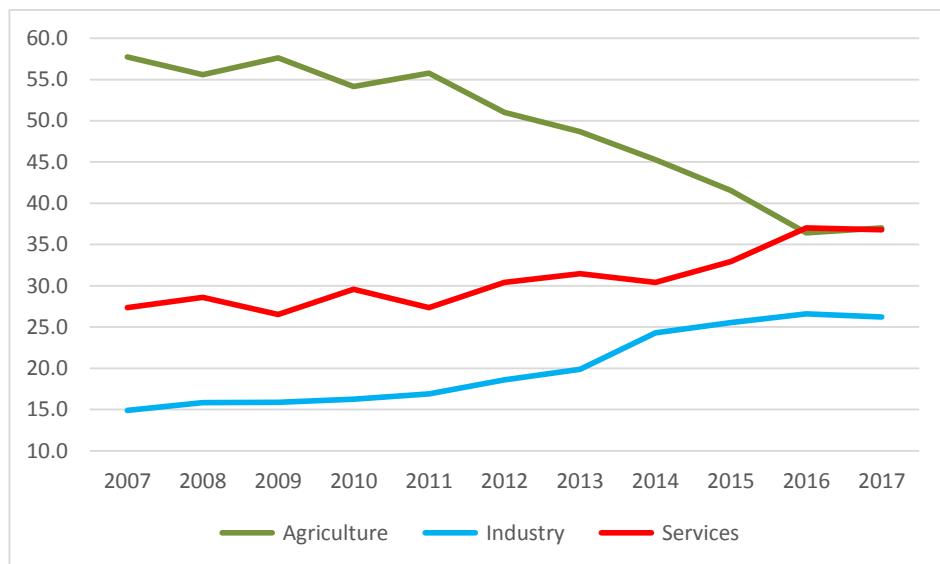
Table 25. Total employment (15-64) by main economic sector; absolute change and percentage change over the period 2007-2017

	Agriculture	Industry	Services	Total
	2007-17			
Total change in thousand	-701	1,279	1,356	1,934
Yearly change in thousand	-70	128	136	193
Percentage change	-17.8	125.4	72.5	28.3
Yearly % change	-1.8	12.5	7.3	2.8
	2011-17			
Total change in thousand	-1,157	966	1,070	-19
Yearly change in thousand	-193	161	178	-3
Percentage change	-29.4	67.4	45.7	13.8
Yearly % change	-5.9	13.5	9.1	2.8

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

As a consequence, in 2017 Agricultural employment accounted for 37% as that in Services with Industry at 26%.

Figure 24. Percentage employment shares of main economic sectors; 2007-2017

38
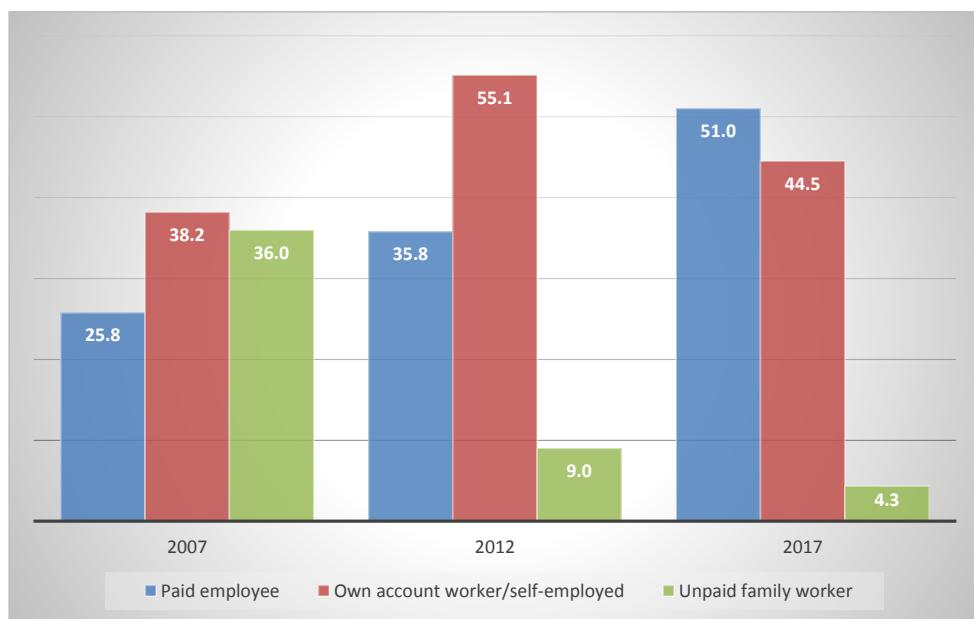
Equally big changes have taken place in relation to the structure of employment by status (Table 26). In 2007 the most numerous categories were that of the own account workers that accounted for 38%, followed by unpaid family worker (36%) and paid employees that represented only 26%. After 5 years the percentage of own account workers peaked at 55%, the family workers had already declined to 9% and paid employees had increased to 36%. Finally, in the following 5 years the percentage of paid employees increased to 51%, that of the own account workers declined to 45% while the family workers became marginal (4%).

Table 26. Total employment (15-64) by status; absolute values thousand in 2007, 2012 and 2017; absolute changes between 2007-2012 and 2012-17

	Employer	Paid employee	Own account worker/self-employed	Unpaid family worker	Total
2007	4	1,885	2,791	2,628	7,308
2012	3	2,759	4,249	694	7,705
2017	11	4472	3903	380	8,766
	2007-17				
Total change	7	2,587	1,112	-2,248	-2,248
Aver. early change	1	259	111	-225	-225
Total % change	174	137	40	-86	-86
Average yearly % change	17	14	4	-9	-9
	2012-17				
Total change	8	1,713	-346	-314	-314
Aver. early change	2	343	-69	-63	-63
Total % change	289	62	-8	-45	-45
Average yearly % change	58	12	-2	-9	-9

Figure 25. Total employment by status; percentage composition in 2007, 2012 and 2017

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

Occupations - Other interesting indications on how the employment structure of Cambodia has evolved come from the structure by occupation (Table 27).

Table 27. Total employment (15-64) by occupation; absolute values in thousand and percentage composition; 2007, 2012 and 2017

	2007	2012	2017	2007	2012	2017
	Absolute values			Percenatge composition		
Armed forces occupations	31	57	78	*0.5*	*0.7*	*0.9*
Manager	58	68	65	*0.9*	*0.9*	*0.7*
Professionals	206	227	303	*3.0*	*2.9*	*3.5*
Technicians and associate professionals	136	69	127	*2.0*	*0.9*	*1.4*
Clerical support workers	133	231	424	*1.9*	*3.0*	*4.8*
Service and sales workers	822	1,300	1573	*12.0*	*16.9*	*17.9*
Skilled agricultural, forestry and fishery workers	3,506	3,064	2670	*51.3*	*39.8*	*30.5*
Craft and related worker	641	1,273	2101	*9.4*	*16.5*	*24.0*
Plant and machine operators and assemblers	575	279	361	*8.4*	*3.6*	*4.1*
Elementary occupations	718	1,137	1063	*10.5*	*14.8*	*12.1*
Total	6,828	7,705	8766	*100.0*	*100.0*	*100.0*

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

In 2007 more than half of the employed were classified as skilled agricultural workers; after 10 years their percentage was down to 31%. At the same time, the percentage of craftsmen that weighted less than 10%, has more than doubled and by now with 24% is the second largest occupational group. A second occupation to register a notable expansion has been that of Sale and service workers that has increased from 12% to 18%. These data confirm the progressive decline of agriculture and the expansion of Industry and Services. However, the data on occupation do also underline the presence (even the growth) of unskilled workers and the still

40

extremely low weigh of occupation requiring higher education. To be noted that the joint weight of managers, professionals and technicians has slightly declined and remains below 6%.

If we consider the quantitative evolution of the occupations, three have a negative trend: Managers, Elementary occupations and especially Skilled agricultural workers. The most relevant positive changes have been registered in the order by Craft and related occupations, Services and sales workers, Clerical support works. In the last five years they explain respectively 54%, 18% and 13%. Others interesting contributions come from Plant and machine operators, Professionals and Technicians (Table 28).

Table 28. Total employment by occupations in thousand; total and average yearly change in 2007-2017 and 2012-2017

| | 2007-17 | | 2012-17 | |
	Total change	Yearly change	Total change	Yearly change
Armed forces occupations	47	5	21	4
Manager	7	1	-3	-1
Professionals	97	10	76	15
Technicians and associate professionals	-9	-1	58	12
Clerical support workers	291	29	193	39
Service and sales workers	751	75	273	55
Skilled agricultural, forestry and fishery workers	-836	-84	-394	-79
Craft and related worker	1,460	146	828	166
Plant and machine operators and assemblers	-214	-21	82	16
Elementary occupations	345	34	-74	-15
Balance	1,938	194	1,061	212
Positive values	2,997	300	1,531	306
Negative values	-1,059	-106	-471	-94

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

Education – The data on education confirm that Cambodia employment still suffers from a serious lack of schooling and probably technical training. In 2005 almost 82% of the members of the labor force had not completed compulsory education, only 4.6% had a high school diploma and 2.1% a University degree. Moreover 18% had no formal education (Table 29).

After 10 years the situation has certainly improved, but the educational level of the labor force remains very low: 70% have not completed compulsory education; those with high education are 8% and 7% have a post-secondary diploma.

These data largely confirm the data on the production of the School system, TVET and University systems we have previously analyzed and we will further investigate in the following chapters.

Table 29. Total employment (15-64) by educational attainment; absolute values in thousand and percentage composition; 2007, 2012 and 2017

	2007	2012	2017	2007	2012	2017
	Absolute values			Percenatge composition		
None or only some education	1,266	1,080	1,050	18.4	14.0	12.0
Primary school not completed	2,644	2,674	2,779	38.4	34.6	31.7
Primary school completed	1,722	2,160	2,281	25.0	28.0	26.0
Lower secondary completed	771	1,107	1,361	11.2	14.3	15.5
Upper secondary completed	319	478	722	4.6	6.2	8.2
Post secondary education	143	217	575	2.1	2.8	6.6
Total	6,888	7,718	8,766	100.0	100.0	100.0

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*
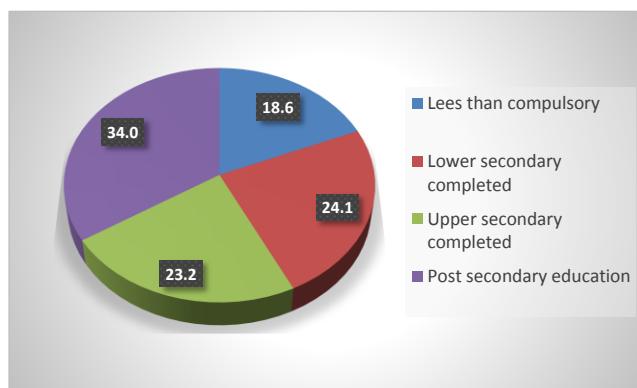
A positive element is however represented by the fact that in the last 5 years 34% of the additional jobs have been taken by people with post-secondary education; the same period registers also an increase in the number of employed with less than primary or only primary education.

Table 30. Total employment by educational attainment in thousand; total and yearly change in 2007-2017 and 2012-2017

	2007-17		2012-17	
	Total change	Yearly change	Total change	Yearly change
None or only some education	-216	-22	-30	-6
Primary school not completed	135	14	105	21
Primary school completed	559	56	121	24
Lower secondary completed	590	59	254	51
Upper secondary completed	403	40	244	49
Post secondary education	432	43	358	72
Total	1,878	188	1,048	210

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*
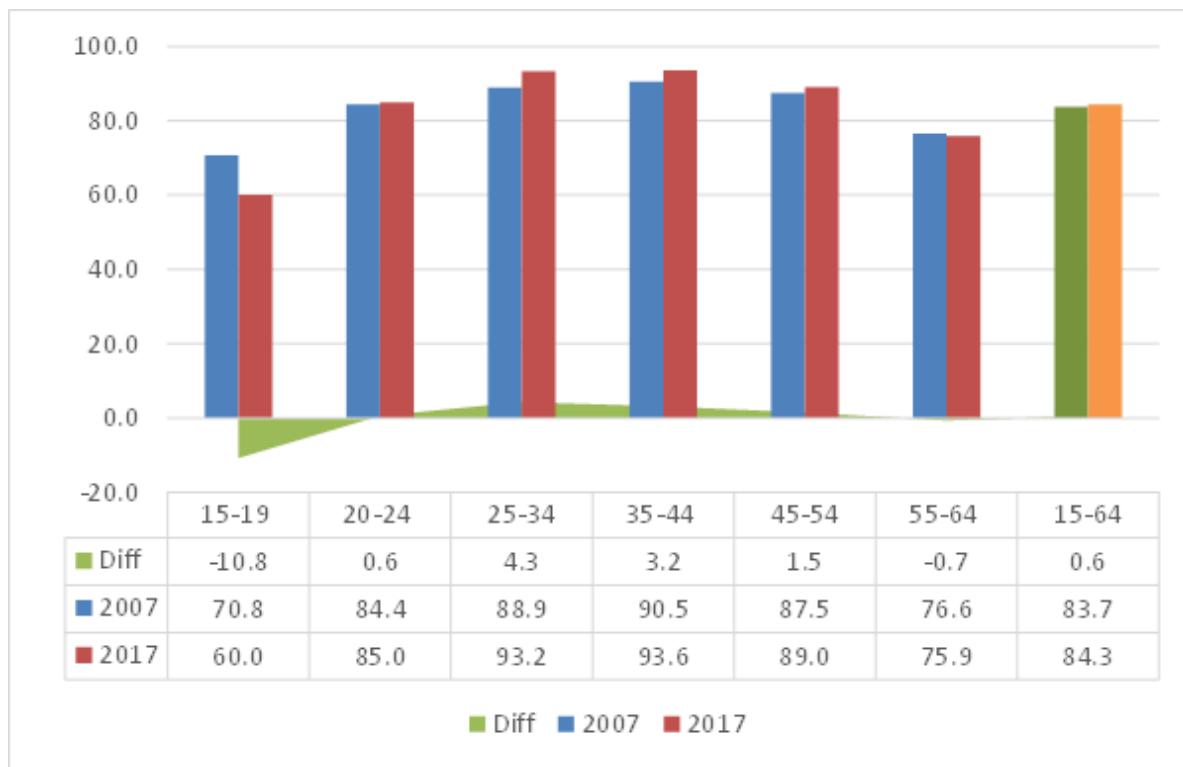
Figure 26. Employed; percentage growth of employed groups with different educational attainment; 2012-17

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

Rates of employment total and by age group – The percentage of people working not only has remained extremely high, despite the decline of the agricultural sector, but has even slightly increased (from 83.7% to 84.3%) (Figure 27).

Figure 27. Rates of employment, 15-64 and by main age group; 2007 and 2017

	15-19	20-24	25-34	35-44	45-54	55-64	15-64
■ Diff	-10.8	0.6	4.3	3.2	1.5	-0.7	0.6
■ 2007	70.8	84.4	88.9	90.5	87.5	76.6	83.7
■ 2017	60.0	85.0	93.2	93.6	89.0	75.9	84.3

■ Diff   ■ 2007   ■ 2017
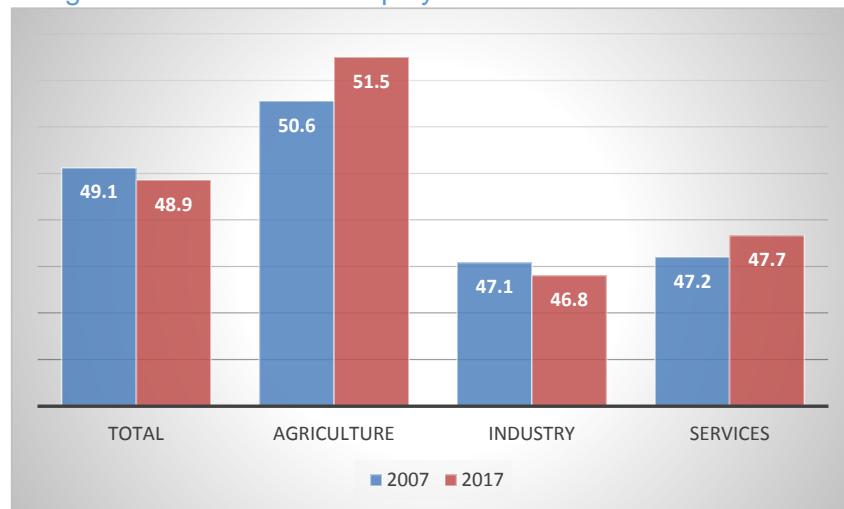
Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

The employed are however more and more concentrated in the central age group; as a result, we observe a decline of the rate of activity of the first and last age group, a decline that has been more than counterbalanced by the increase of the rates of the central age groups.

4.2 Female Role in the Labor Market

Total employment and employment by sector - In the 2007-17 period the percentage of women employed has slightly declined due to the decline of employment in agriculture where they remain, however, the majority. The percentage of women in Services has slightly increased while in Industry has slightly declined. In 2007 59% of women worked in Agriculture, 14% in Industry and 26% in Services. After ten years the situation has radically changed following the sector distribution of total employment: in 2007 39% of women worked in agriculture, 25% in Industry and 36% in Services (Figure 28)
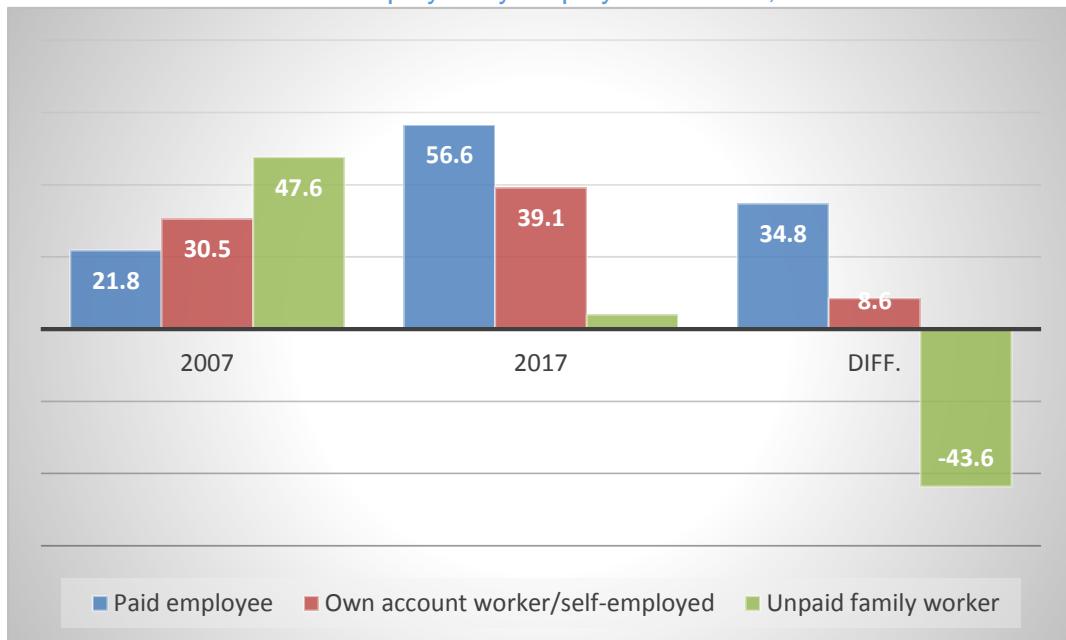
Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

Employment status – The dramatic change in the structure of employment status we have already commented for the total is shared, in an even more pronounced way by the women component. In 2007 the dominant status of women was unpaid family workers which accounted for 47.6% followed by own account workers with 39.1% and lastly by paid employees with 21.8%. In 2017 the ranking is reversed with paid employees at 56.6%, own account workers at 39.1%, an unpaid family worker down to 4%. Moreover, while in 2007 only 41.5% of paid employees, as in 2017 the percentage increased to 56.7% and also the percentage of women classified as own account workers had increased from 39.3% to 45% (Figure 29).

Figure 29. Distribution of women employed by employment status; 2007 and 2107and difference

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

Occupations – Occupation reflect both the changes in the structure by sector, status and as we will see by educational attainment. In 2007 only 3 occupations had a two-digit share: Skilled agricultural workers, (52.7%), Service and sales workers (17%) and Elementary occupations (Table 31). Taken together they accounted for 80% of total employment. After 10 years Skilled agricultural workers are still the dominant occupation, but their share is down to 32.5% while the share of Sale workers is up to 23.5% and more importantly that of Craft and related works is up to 23.1% while also elementary educations are still in the two-digit category. These four-occupation account now by 90.2%.
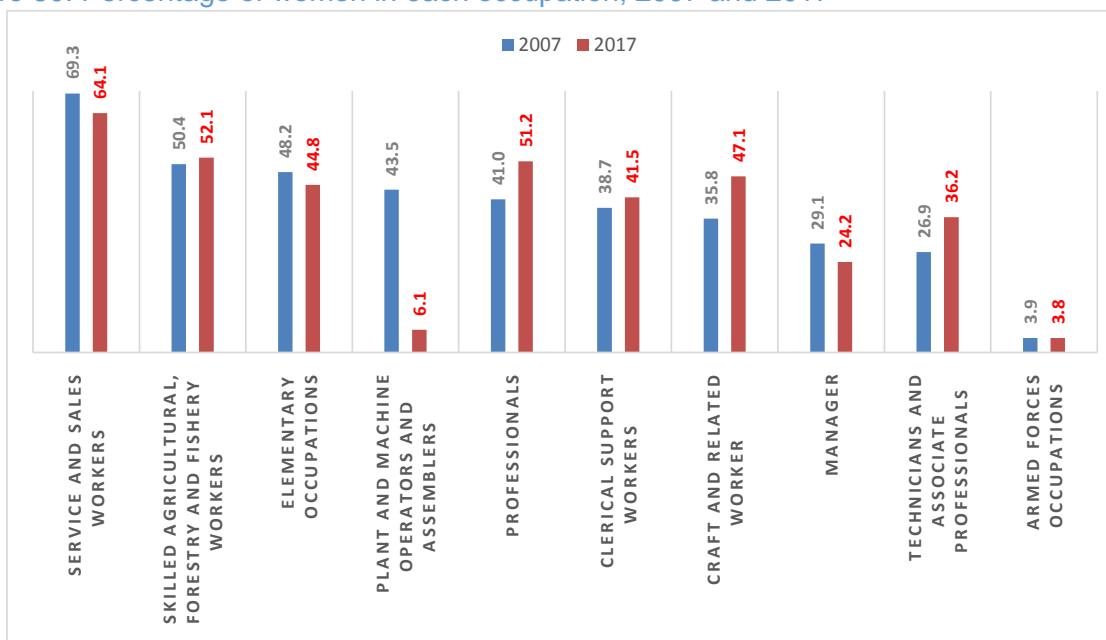
Table 31. Females; total employment by occupation; absolute values in thousand and percentage composition; 2007, 2017 and difference

	2007	2017	Diff.	2007	2017	Diff.
	Absolute values			% composition		
Armed forces occupations	1	3	2	0.0	0.1	0.0
Manager	17	16	-1	0.5	0.4	-0.1
Professionals	84	155	71	2.5	3.6	1.1
Technicians and associate professionals	37	46	9	1.1	1.1	-0.0
Clerical support workers	52	176	124	1.5	4.1	2.6
Service and sales workers	570	1008	438	17.0	23.5	6.5
Skilled agricultural, forestry and fishery workers	1,766	1391	-375	52.7	32.5	-20.2
Craft and related worker	230	989	759	6.9	23.1	16.2
Plant and machine operators and assemblers	251	22	-229	7.5	0.5	-7.0
Elementary occupations	346	477	131	10.3	11.1	0.8
	3,353	4,283	930	100.0	100.0	0.0

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

To be underlined also the increase in the share of Clerical and support workers (from 1.5% to 4.1%) and professionals from 2.5 to 3.6%. On the negative side, the still high percentage of unskilled workers.

Figure 30. Percentage of women in each occupation; 2007 and 2017

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

In 2007, women were majority only in two occupations (Service and sale workers, and Agricultural workers); rather interestingly in 2017 this was true also for professionals. In 2017, a presence of women above 40 per cent is registered also by Clerical workers while the presence of women in technical occupation has increased from 26.9% to 36.2%. However less than ¼ of managers are women (Figure 30).

Education – In the context of an extremely low level of educational attainment, the educational level of women in the labor force was and still is lower than that of men. Suffice to observe that in 2007 almost 96% of the Cambodia women in the labor force had as maximum compulsory education and after 10 years the percentage is still as high 87.5%; the corresponding values for men were 90.2% and 83% (Table 32)
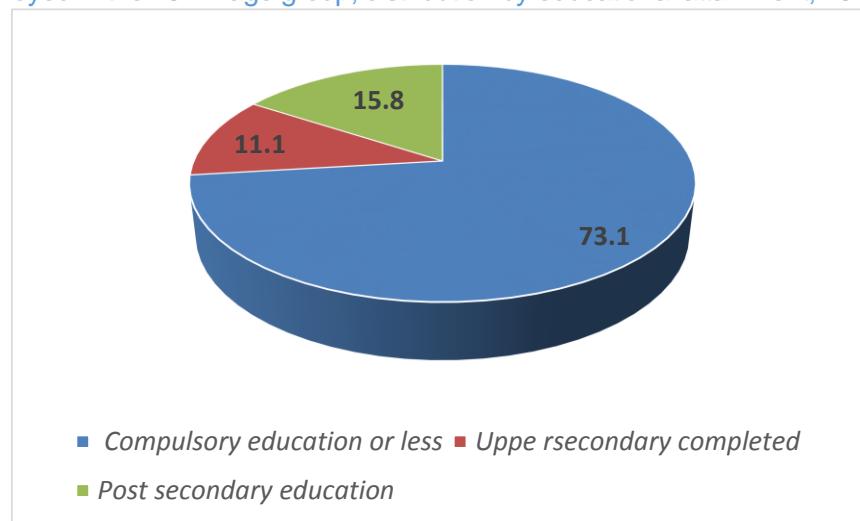
Table 32. Employment by sex and educational attainment; 2007 and 2017 and difference

	Women	Men	**Diff**	Women	Men	**Diff**
None or only some education	25.2	11.8	**13.5**	14.7	9.4	**5.3**
Primary school not completed	40.7	36.1	**4.6**	34.9	28.6	**6.3**
Primary school completed	21.4	28.5	**-7.1**	24.5	27.4	**-2.9**
Lower secondary completed	8.4	13.9	**-5.5**	13.4	17.6	**-4.2**
Uppe rsecondary completed	2.7	6.5	**-3.8**	7	9.5	**-2.5**
Post secondary education	1.3	2.8	**-1.4**	5.5	7.6	**-2.1**
Compulsory education or less	96.0	90.7	**5.3**	87.5	82.9	**4.6**

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

Some positive indication can be derived by comparing the percentage distribution of the young members of the labor force 15-24 with the average. The data, not available for women and men separately, show that the young people are reaching higher educational level than their parents, but they also show that those attainments remain low (Figure 31). Still 73.1% of the young people have as maximum compulsory education versus an average of 85.2% for the total labor force in spite of the fact that given the bracket considered the value can be improved in the following years.

Figure 31. Employed in the 15-24 age group; distribution by educational attainment; 2017

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

Labor market participation - The percentage of women employed is historically lower than that of men (table 33). However, in the ten year under consideration the rate of employment of men has declined (from 89.6% to88.8%) and that of women has increased (from 78.3% to 80.1%) so that the differential is by now down to 8.7 percentage points (from 11.2).
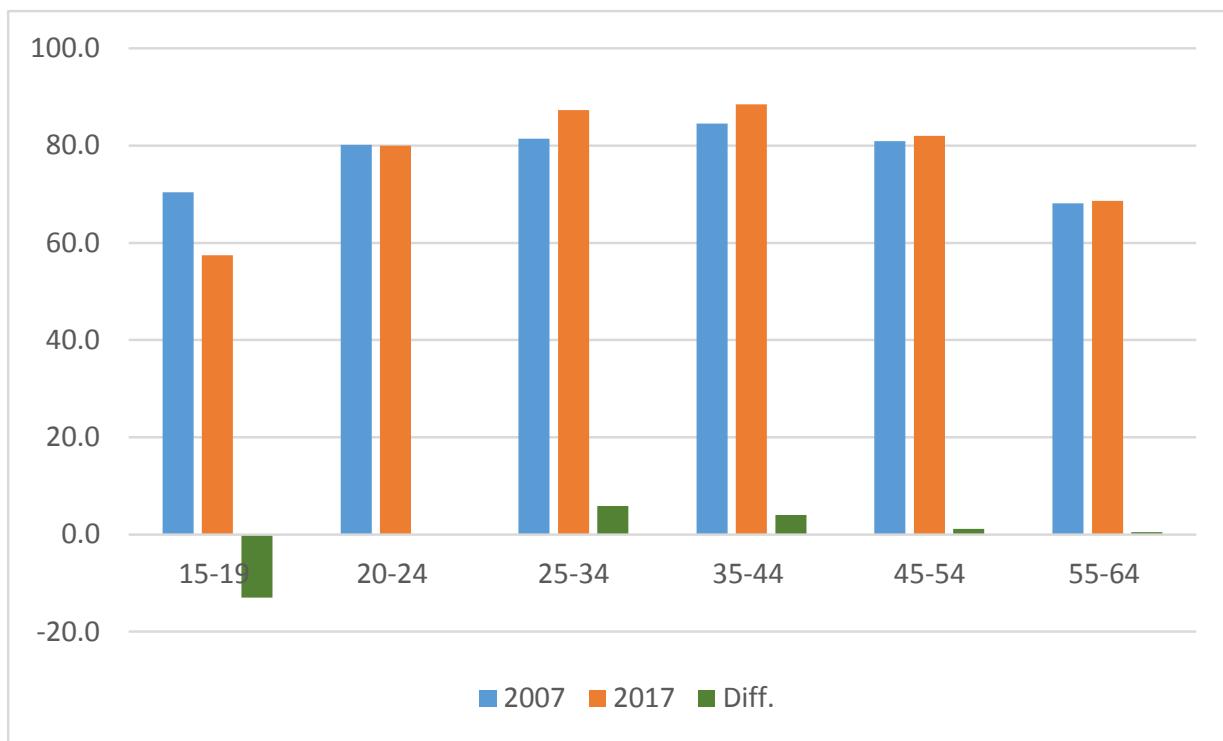
Table 33. Total rate of employment; male, female ad gender differential; 2007 and 2017

	Men	Women	*Diff.*
2007	89.6	78.3	*-11.2*
2017	88.8	80.1	*-8.7*

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

As for the age specific rate of employment, all rates have increased but that of the 15-19 age group, while that of the 20-24 has remained substantially stable (-0.1%) (Figure 32).
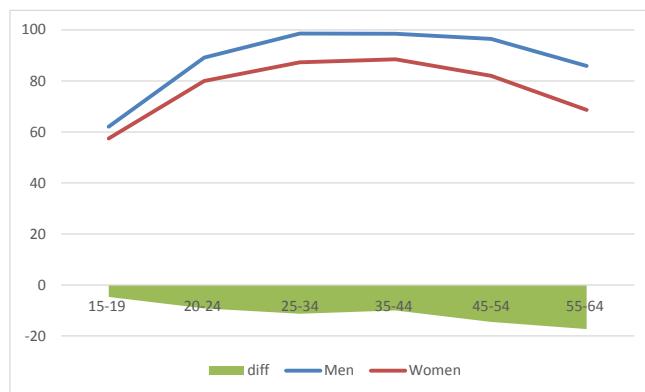
Figure 32. Women rates of employment by age group in 2007 and 2017 and difference

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

Finally, the gender differential increases with age showing that young women have a higher propensity to be in the labor market also outside the agricultural sector (Figure 33).

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

Part 2
Labor market scenarios
2017-2027 and 2017-2022

SECTION 5 Labor Market Scenarios 2017-2027

Section 5.1

Scenarios of labor demand in terms of flow 2017-2027

5.1 The Labor Demand in Terms of Flow 2017-2027

As we have already discussed, the labor demand in terms of flow identifies the number of people that enter employment for the first time, in a given time interval. The labor demand in terms of flow is the sum of two components, Additional demand and Replacement demand. The first identifies the number of additional jobs created by the economic system[5], the second the number of young people that can find a job as a result of the definitive exits of people previously employed[6].

Our goal is to provide scenarios of labor demand in terms of flows, by educational level for the period 2017-2027. Before doing so and in order to better understand the goal of the exercise we will present estimates of the labor demand in terms of flow for the period: 2007-20127.

The exercise requires data on employment by five-year age group and educational level. This information was not directly available. For the years 2007-2017 the CSES publishes the following statistics

- The total labor force by educational level;
- The activity rates for the following age groups: 15-19, 20-24, 25-34, 35-44, 45-54, 55-64;
- The percentage composition of the labor force of each previous age group by educational level.

The analysis of the data published by CSES showed the presence of some typos as well of inconsistencies. In order to estimate the necessary statistics a series of assumptions were made, while UN DESA data on working age population by age groups were used to fill the gaps present in CSES data demographic data.

Main assumptions used to estimate the data necessary for the scenarios

- According to CSES, Cambodia is affected by a very marginal number of unemployed; moreover, no information is provided on their educational level; we have assumed, for simplicity and certainly without loss of generality, to assume that all the unemployed were people with no education. This has allowed to transform the data of labor force on data of unemployment.
- Up to 2016 the CSES does not provide, as we have already mentioned, the size of the labor force by age group, but only the rates of activity by age group and the percentage composition of each age group by educational level. In order to estimate the number of employed in each age group by educational level we have used the structure of WAP by 5-year age group provided by UNDESA for 2005, 2010, 2015 and 2020

These hypotheses have allowed to estimate the data reported on Table 34, that is the employment level by age group and educational level in 2007, 2012 and 2017.

---

[5] The additional jobs are in fact the difference between jobs created and jobs destroyed in a given time interval.
[6] The main reason of definitive exits from employment are: death, retirement, migration to another country.

Table 34. Employed by educational attainment and age group; 2007, 2012 and 2012

	None or only some education	Primary school not completed	Primary school completed	Lower secondary completed	Upper secondary completed	Post secondary education	Total
	2007 (in thousand)						
15-19	211	442	288	129	53	24	1,147
20-24	67	470	523	171	13	1	1,245
25-34	211	530	479	245	103	63	1,631
35-44	274	526	325	156	93	43	1,417
45-54	206	379	193	96	57	18	949
55-64	135	221	83	40	12	7	498
Total	1,100	2,559	1,885	835	330	156	6,887
	2012 (in thousand)						
15-19	146	363	293	150	65	29	1,046
20-24	61	295	504	272	43	1	1,175
25-34	171	586	802	426	263	42	2,290
35-44	183	466	409	212	109	85	1,462
45-54	185	427	292	136	79	28	1,147
55-64	136	283	101	56	13	10	600
	881	2,419	2,400	1,251	573	196	7,720
	2017 (in thousand)						
15-19	28	241	390	234	53	7	953
20-24	70	319	429	309	218	140	1,485
25-34	245	698	685	409	254	299	2,590
35-44	262	567	380	192	105	82	1,588
45-54	278	585	278	152	72	34	1,399
55-64	167	369	120	63	19	13	751
	1,050	2,779	2,281	1,361	722	575	8,768

Source: Authors' Calculation. CSES, UNDESA

5.1.1 Employment structure

Some structural changes in the employment structure between 2007 and 2017
The data immediately suggest that educational level of the employed has progressively increased. Comparing the situation in 2007 and 2017 (Table 35 and Figure 34) we can see that the weight of the first three educational groups has declined and that of the last 3 has increased.
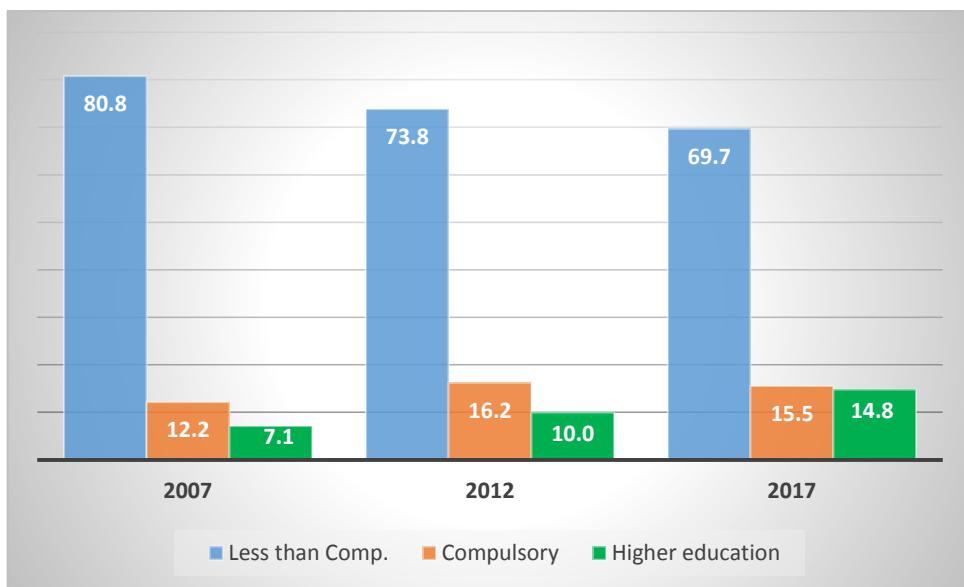
Table 35. Employed by educational attainment in thousand and percentage composition; 2007, 2012 and 2017

	2007	2012	2017	2007	2012	2017
	Absolute values in thousand			% composition		
None or only some education	1,100	881	1,050	16.0	11.4	12.0
Primary school not completed	2,559	2,419	2,779	37.3	31.3	31.7
Primary school completed	1,885	2,400	2,281	27.5	31.1	26.0
Lower secondary completed	835	1,251	1,361	12.2	16.2	15.5
Upper secondary completed	330	573	722	4.8	7.4	8.2
Post secondary education	156	196	575	2.3	2.5	6.6
Labour force	6,865	7,720	8,766	100.0	100.0	100.0

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

As a result, the percentage of employed with less than compulsory education has declined from 81.8% to 69.7% while the percentages of those with Compulsory education and Higher education have increased respectively from 11.2% to 15.5% and from 7.1 to 14.8%.

Figure 34. Employed by educational attainment; percentage composition; 2007, 2012 and 2017

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*
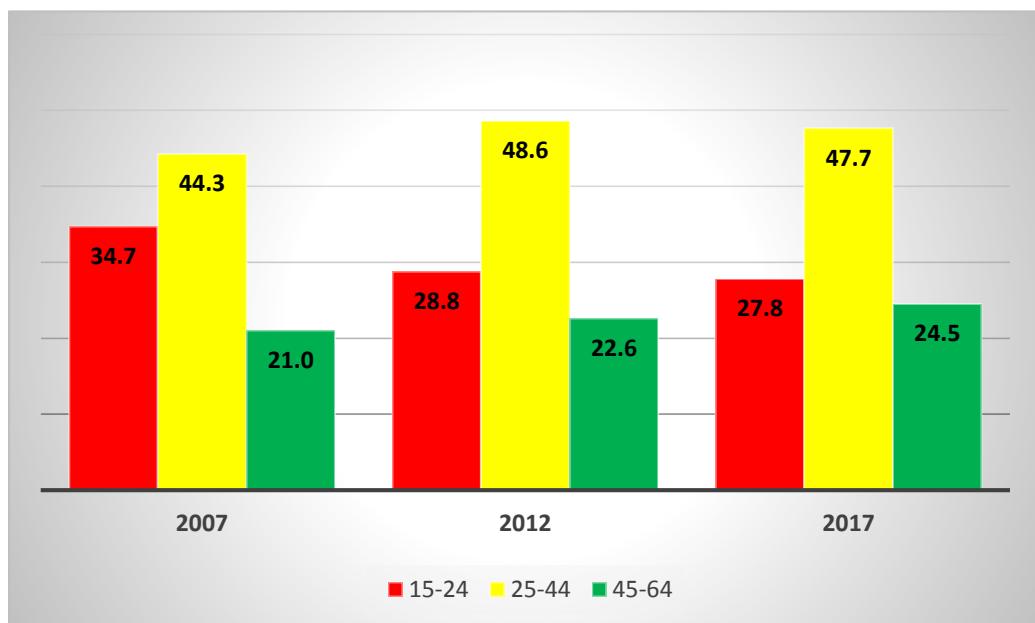
Another relevant structural change that took place in the period considered is the progressive increase of the average age of the employed from 32.7 years to 34.1 years. The phenomenon becomes very evident when we consider the relative weight of the three age groups: the share of the young declined from 34.7% to 27.8%, that of the employed in the central age group (25-44) increased from 44.3% to 48.6% and that of the most senior group (45-64) from 21% to 24.5% (Table 36 and Figure 35)

Table 36. Employed by age group; absolute values and percentage composition; average age and percentage of the 15-24 age group; 2007, 2012, and 2017;

	2007	2012	2017	2007	2012	2017
	Absolute values in thousand			% composition		
15-19	1,147	1,046	953	16.7	13.6	10.9
20-24	1,245	1,175	1,485	18.1	15.2	16.9
25-34	1,631	2,290	2,590	23.7	29.7	29.5
35-44	1,417	1,462	1,588	20.6	18.9	18.1
45-54	949	1,147	1,399	13.8	14.9	16.0
55-64	498	600	751	7.2	7.8	8.6
Total	6,887	7,720	8,766	100.0	100.0	100.0
	Aver. Age			% 15-24		
	32.7	33.5	34.1	34.7	28.8	27.8

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

Additional demand, Replacement demand and labor demand in terms of flow 2007-2017

The changes we have just observed are the result of the quantitative and qualitative differences between the employed that exited the employment area in the period 2007-2017 and those that entered employment in the same period.

Let's start observing that between 2007 and 2017 the Cambodian labor market absorbed 2.659 million young people, and that 71.9% (1.9 million) of entries were due to the creation of additional jobs and the remaining 28.5 to the definitive exits of older workers (Table 37). The relative low contribution of Replacement demand has to be imputed to a low average age of the employed
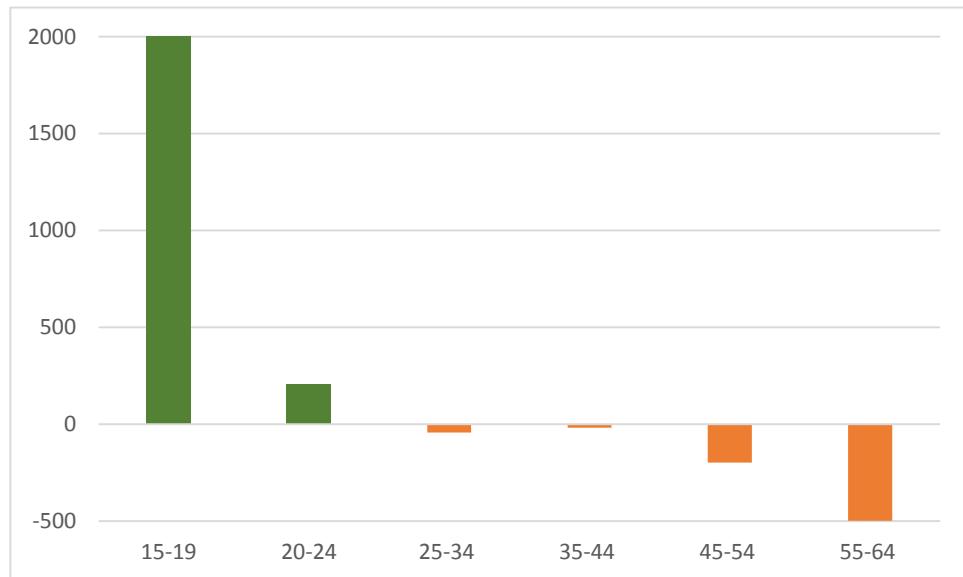
Table 37. Employment; Generational entries by determinants (thousand); 2007-2017

	2007-17		
	Total value in thousand	Yearly average in thousand	% composition
Additional demand	**1,901**	190	*71.9*
Replacement demand	**741**	74	*28.1*
Labour demand in terms of flow	**2,642**	264	*100.0*

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

Entries have taken place at a young age, the large majority in 15-19 age group (92.3%) and the other between 20 and 24; two third of exits are concentrated in the 55-64 age group and 26% in the previous age bracket (Figure 36).
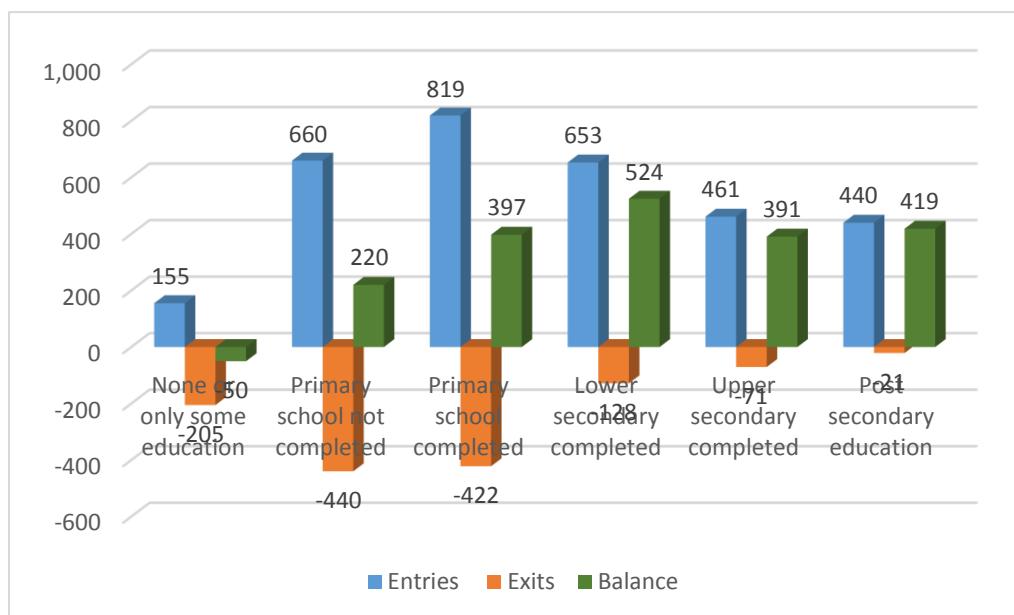
Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

The flows by educational level are more complex to estimate since they are subject to double counting (some of the "entries" in higher degree and not due to entries into employment but to the acquisition of higher degree by people already employed. Figure 37 shows gross entries and exits (that is entries and exits containing double counting due to getting a degree by people already employed) by level and Table 38 the percentage composition.

Figure 37. Employment; Gross entries, exits and balance in thousand by educational level; 2007-2017

Table 38. Employment; Gross entries, exits and balance in the period 2007-2017; percentage composition by educational level

	None or only some education	Primary school not completed	Primary school completed	Lower secondary completed	Upper secondary completed	Post secondary education	Total
	Percentage composition						
Entries	4.9	20.7	25.7	20.5	14.5	13.8	**100.0**
Exits	15.9	34.2	32.8	10.0	5.5	1.6	**100.0**
Balance	-2.6	11.6	20.9	27.6	20.5	22.0	**100.0**

A comparison between these data and those by age group shows that double counting amounts to around 545,000 people. Assuming, for simplicity but probably optimistically, that they correspond to people that had less than compulsory education we obtain the estimates of entries and exits by educational level reported on table 39.

Table 39. Employment; net entries, exits and balance by educational level; 2007-2017

	Less than compulsory	Lower secondary completed	Upper secondary completed	Post secondary education	Total
	Absolute values in thousand				
Entries	1,089	653	461	440	**2,642**
Exits	-521	-128	-71	-21	**-741**
Balance	567	524	391	419	**1,901**
	Percentge composition				
Entries	41.2	24.7	17.5	16.6	**100.0**
Exits	70.3	17.3	9.5	2.9	**100.0**
Balance	29.8	27.6	20.5	22.0	**100.0**

These data show that around two third of the people that found a job had compulsory education or less, 17.5% upper secondary education and only 16.6% a University degree. They also explain why and how the education level of the employees has increased. It suffices to observe that more than 70% of the people exiting employment had less than compulsory education, while this was true for only 41% of those entering employment; at the same time the percentages of entries with higher educational level is always greater than the corresponding percentages of those exiting.

5.1.2 Scenarios of labor demand

Scenarios of labor demand in terms of flow for the period 2017-2027

In to build labor demand scenarios for the ten years after 2017, the last year for which information on labor market are available, we need to project Replacement demand and build scenario of additional demand.

Replacement demand

Replacement demand can be estimated using the probability that different age group will have to exit the labor market between 2017 and 2027. We can safely assume that all the people in the 55-64 age group will leave the labor market. We can then assume that the exit rates for the other age group estimated for the previous period will hold. Table 42 shows for each relevant age group the probability to leave the labor market during the ten-year period 2017-2027, the number of employed in the starting year and the estimated number of exits.

We can immediately observe that the estimated number of exits (1.045 million) is much larger than that of the previous period. This is due to the ageing process that is affecting the Cambodia population and more specifically the working age population and the employed (table 40).

Table 40. Employed by age group, probability to exit the labor market for each group in 2017 and estimated exits for the period 2017-27; values in thousand

	Prob. to exit the LM	Employed 25-64 in 2017	Exits 2017-27
25-34	-1.8	2,590	-46
35-44	-0.7	1,588	-12
45-54	-16.9	1,399	-237
55-64	-100.0	751	-751
Total	-16.5	6,328	-1,045

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

Additional demand.

The number of jobs that will be created by the Cambodian economy will depend on the rate of growth of production and on the rate of growth of productivity; the former will largely depend on the quantity and typology of internal and foreign direct investment and on international trade; the latter will result from better technology, more educated and better trained employed, improved labor organization and passages of the production structure to higher technological clusters.

The length of the period we are going to consider suggests that the most interesting and correct approach is to build scenarios. While projections are generally limited to only a set of values and forecasts are projections with an attached probability, scenarios are built taking into consideration a series of alternatives values of the relevant policy variable, in this case production and productivity. In so doing they allow to discuss the socioeconomic consequences of alternative development paths.

In order to choose these values two orders of consideration are important: the first their evolution in the previous period, the second the indications provided by national and international institutes.

Table 41 reports the data on gross value added, employment and productivity by sector over the period 2007-2017. The main elements that emerge are that the production of Cambodia increased

in real terms by 82%, employment by 28.3%. This implies an employment income elasticity of 0.34% which suggests that at present 1 percentage point increase in production would create around 30,000 additional jobs.
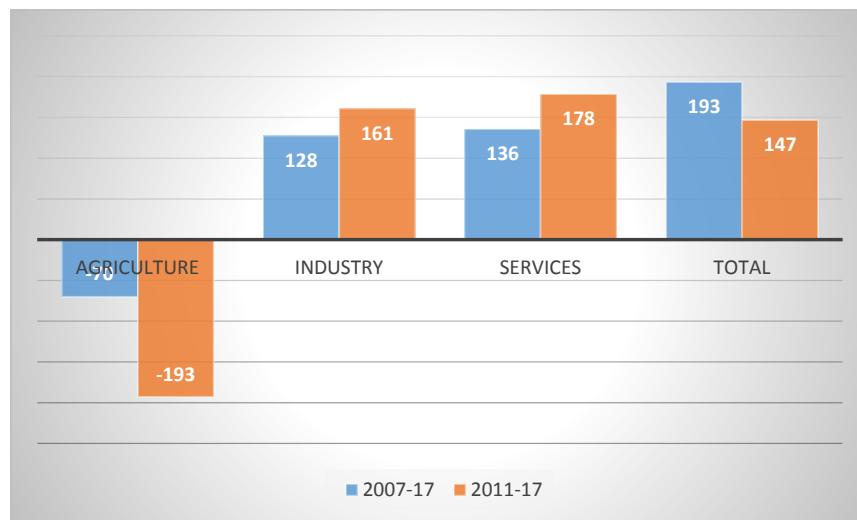
Table 41. Production (billions of riels, employment (in thousand), and productivity (dollars) by sector; yearly values (2007-2017); absolute change and percentage change

	Gross value added				Employment				Productivity			
	Agriculture	Industry	Services	Total	Agriculture	Industry	Services	Total	Agriculture	Industry	Services	Total
2007	7,174	7,564	10,289	25,027	3,946	1,019	1,871	6,837	454	1,855	1,375	915
2008	7,584	7,870	11,217	26,671	3,797	1,080	1,952	6,829	499	1,821	1,437	976
2009	7,995	7,123	11,478	26,595	4,304	1,184	1,981	7,470	464	1,503	1,448	890
2010	8,311	8,088	11,857	28,257	4,165	1,249	2,274	7,689	499	1,618	1,303	919
2011	8,567	9,259	12,449	30,275	4,402	1,332	2,157	7,891	486	1,738	1,443	959
2012	8,936	10,124	13,458	32,518	3,931	1,433	2,343	7,706	568	1,767	1,436	1,055
2013	9,076	11,210	14,626	34,912	3,870	1,579	2,501	7,950	586	1,775	1,462	1,098
2014	9,101	12,341	15,903	37,345	3,733	2,003	2,505	8,241	610	1,541	1,587	1,133
2015	9,120	13,760	17,027	39,906	3,470	2,132	2,751	8,353	657	1,613	1,547	1,194
2016	9,241	15,213	18,182	42,635	3,135	2,291	3,187	8,612	737	1,660	1,426	1,238
2017	9,401	16,696	19,457	45,554	3,245	2,298	3,227	8,770	724	1,817	1,507	1,299
2007-2017												
Absolute chnge	2,227	9,132	9,168	20,528	-701	1,279	1,356	1,934	270	-39	132	383
% change	31.0	120.7	89.1	82.0	-17.8	125.4	72.5	28.3	59.4	-2.1	9.6	41.9

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

A more detailed analysis of the data reported on the table suggests some further considerations. Over the entire period the average yearly growth of employment has been equal to 193,000, as a balance between, on the one hand, a growth in Industry of 128,000 and in Services of 136,000 and, on the other, a decline in Agriculture of 70,000. However, the employment level in Agriculture has declined only after 2011 when it peaked at more than 4.4 million. Moreover, it would seem safe to argue that employment in agriculture will continue to decline for a series of reasons, the most obvious being that many people classified as employed in Agriculture are in fact hidden unemployed and young people will move to other sectors in presence of a relevant demand. This implies that in choosing the income elasticity to be used for the scenarios, what happened in the last six years of the period considered is probably more representative than what happened in the entire period.

Figure 38. Average yearly increase of total employment and employment in the three main sectors (agriculture, industry and services) between 2007 and 2017, and between 2011 and 2017; values in thousand.

As shown by Figure 38, if we consider the 2011-17-time interval employment increased by only 147,000 per year as a balance between an increase in Industry by 161,000, in Services by 178,000 and a decline in Agriculture by 193,000. As a consequence, the employment income elasticity was only 0.22% which implies that an increase of 1 percentage point in Gross value added would create around 20,000 additional jobs.

A second reason that suggests that the elasticity estimates we have just discussed could be relatively high, is the fact that in 2017 the productivity of the industrial sector was lower than in 2007, despite some improvements were evident in the last years. The low dynamic of the productivity of the industrial sector is probably due to the dominant role of labor-intensive activities such as textile and construction'. It is to be hoped that in the next ten years the Cambodian economy will develop more technologically advanced sectors, while making its agricultural sector more modern.

Coming to the rate of growth of gross value added, from 2011 and 2017 the average rate of growth has been 7%, and 7 % is the rate of growth that has also been forecasted for the period 2019-2024 by the just published Cambodia National Strategic Development Plan (CNSDP).

On the basis of the previous considerations we have therefore decided to consider three alternative values of GDP growth (6%, 7% and 8%) and three alternative values of employment-income elasticity (0.2%, 0.25% and 0.3%) (table 42). The resulting 9 rates of employment growth are included between a minimum of 1.2% [low rate of GVA growth (6%) and low elasticity (0.2)] and a maximum of 2.4 [high rate of growth (8%) and high elasticity (0.3)]. In the intermediate or trend scenario (7% rate of GVA growth and 0.25 employment elasticity) the rate of employment growth is 1.75%. The corresponding initial increase in the employment level of these three scenarios (Min., Max. and Int.) are therefore equal to 105,000, and 210,000 with the intermediate scenario at 153,000.

Table 42. Yearly rates of growth of employment in 9 alternative scenarios of GDP growth and employment-income elasticity; initial yearly increase in employment in the 9 scenarios

	6	7	8		8,766	6	7	8
0.30	1.8	2.1	2.4		0.30	158	184	210
0.25	1.5	1.75	2		0.25	131	153	175
0.20	1.2	1.4	1.6		0.20	105	123	140

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

To better capture the implications of these three scenarios the data reported on table 43 show the values of GVA, Employment and productivity implicit in the three scenarios (Min. Max. and Int.) in 2024 the ending year for the 5-year CNSDP and in 2027 the end year of our exercise.

As we could expect the intermediate scenario basically reflects the average rates of growth registered by GVA, employment and productivity in the previous ten-year period, while the other two scenarios register values respectively lower (Min.) and higher (Max).

The first question to be considered is the coherence between the growth in employment and the growth WAP that will be registered between 2017 and 2027.

Table 43. Gross Value Added (billions of 2000 Riel), employment (in thousand) and productivity (in dollars); absolute values in 2017, 2024, and 2027; absolute change and percentage change (2017-27)

	Gross value added (2000 Riel)			Employment (thousand)			Productivity (US $)		
	Min.	Int.	Max.	Min.	Int.	Max.	Min.	Int.	Max.
2017	45,554	45,554	45,554	8,770	8,770	8,770	1,299	1,299	1,299
2024	68,497	73,150	78,072	9,534	9,902	10,354	1,796	1,847	1,885
2027	81,581	89,612	98,348	9,881	10,431	11,117	2,064	2,148	2,212
2017-27									
Abs. change	1,111	1,661	2,347	1,111	1,661	2,347	765	849	913
% change	79.1	96.7	115.9	12.7	18.9	26.8	58.9	65.4	70.3

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

Table 44 (that reports the expected growth in WAP and the growth in employment in the three scenarios) show that in the intermediate scenario the rate of employment would have just to slightly increase, but in the Max scenario the Rate of employment would increase above 90 per cent. This basically exclude the possibility of this scenario and suggests that in order to reach rates of growth above 7 per cent would require elasticity close to or lower than 2.
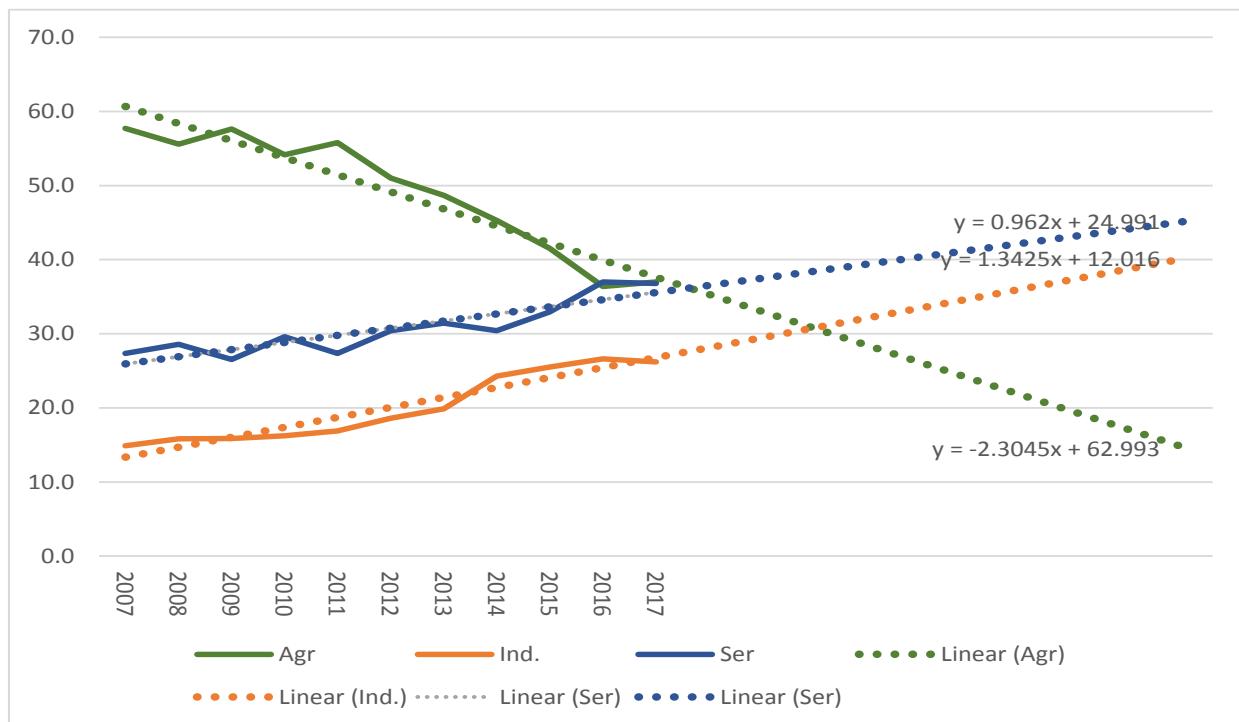
Table 44. Working age population; employment and total rate of employment in three alternative scenarios of employment growth and elasticity; 2017 and 2017

	WAP	Employment		
		Min.	Int.	Max.
2017	10,416	8,770	8,770	8,770
2027	12,266	9,881	10,431	11,117
Average yearly change	185	111	166	235
RoE 2017		84.2	84.2	84.2
RoE 2027		80.6	85.0	90.6

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

Sectors – Another relevant question is how the additional jobs will be distributed between the three main sectors. We have tried to understand the implication of employment growth on each sector assuming that the trend in the respective shares will continue. Figure 39 reports the evolution of the three main sectors shares over the period 2007-2017 and the projected values for the period 2017-2027 assuming a linear trend.

Figure 39. Employment by main economic sector; actual values for the period 2007-2017 and projected values for the period 2017-2027

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

Using the equation reported on the Figure we have computed the expected values of the three shares in 2017. The share of Agriculture is expected to drop to 14%, those of Industry and Services to increase to 39.6% and 46.4% respectively. These shares and the projected value of total employment have then allowed to compute the employment level of each sector as well as their additional demand (table 45). Not very differently from what happened in the last six years, total employment is projected to increase, on the average, by 166,000 jobs per year as a balance between a decline by 178,000 jobs in Agriculture, on the one hand, an increase by 183,000 jobs in Industry and by 178,000 jobs in Services, on the other.

Table 45. Total Employment level and employment level of the three main sectors in 2017 and 2017; percentage composition by sector; additional demand for the total and for each sector.

	2017		2027		2017-2027	
	Abs, value	% comp.	Abs, value	% comp.	Abs, value	% comp.
Agriculture	3,245	37.0	1,460	14.0	-1,785	23.0
Industry	2,298	26.2	4,131	39.6	1,833	-13.4
Services	3,227	36.8	4,842	46.4	1,615	-9.6
Total	8,770	100.0	10,431	100.0	1,663	0.0

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

In order to fully understand the previous data it is important to remember that the fact that the Additional demand of the agricultural sector is negative does not imply that Agriculture will not absorb young people; in reality the additional demand will be the balance between, on the one hand, of a larger number of definitive exits of elderly people and passages of younger workers to Industry and Services, probably mainly toward Construction, Garment sector, and the Tourism sector (that will all continue to absorb workers with low educational level) and, on the other, the entries of some young people, the children of the present day farmers. The implications are that the Agricultural sector will continue to need training not only because it will continue to absorb young people, but also because the decline in the number of workers will be possible only if the entrants will have the possibility to adopt better technologies and will be endowed with the knowledge to operate them.

Education – Another important question is which kind of educational level and skills will be requested by the market. In order to properly discuss this issue, we have to consider not the Additional demand, but the labor demand in terms of flows. In this case let's consider for simplicity the Intermediate scenario.

According to our elaborations, between 2017 and 2027 Replacement demand should amount to 1.045 million. Since the Additional demand in the Intermediate scenario is estimated at 1.663 million, we can assume that, on the average, entries into employment will be 270,000 per year.

Available data do not allow to forecast which educational levels and skills will be demanded by the market since it is not possible to define how single branches will develop and which technology they will adopt. What we know is the structure of the labor demand in terms of flows for the period 2007-17 as well as the structure of generational exits for the same period. These data clearly show that the younger generations have a higher educational profile than the older generations.

Based on these data and trend, we propose a simple scenario of the evolution of the labor demand in terms of flows by educational level. The basic assumption is that the share of generational entries with less than compulsory education will progressively decline by 1.5 percentage points per year, that of people with maximum compulsory education by 0.5 percentage points while the shares of those with Higher education and Vocational training certificates and of those with University degrees (including those from TVET Institutions) will both increase by 1 percentage point per year. The result of this exercise is reported on Table 46.

Table 46. Entries into employment by educational level in 2018 and in 2017; absolute values and percentage composition

	Less than compulsory	Maximum Compulsory	Upper secondary	University	Total
	Generational entries				
2018	111	68	49	43	270
2017	75	56	73	68	270
Diff.	36	12	-25	-25	0
	Percentage composition				
2018	41.0	25.0	18.0	16.0	100.0
2027	27.6	20.6	27.1	25.1	100.0
Diff.	13.4	4.4	-9.1	-9.1	0

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

The table shows the distribution of entries into employment in 2018 and 2027 by educational level both in absolute and percentage terms. To be underlined that the shares of people with the lowest share are projected to decline from 41% to 27.6% and that with maximum compulsory education from 25% to 20.6%. This implies that the percentage of people entering the labor market with maximum compulsory education would fall below the 50% mark. At the same entries with University degree would reach the 25% mark.

Table 47 proposes an estimate of how the educational structure of the employed in the Cambodia Economy could change in the next ten years. In order to do so, the table reports the entries by educational level estimated as previously indicated and the exits by the same educational levels. The exits by educational level have been estimated on the basis of the employment structure by education level and age group and the percentage of people expected to exit for each group.

Table 47. Employed by educational level in 2017 and 2027; generational entries into employment, generational exits from employment and additional demand by educational level in the period (2017-2027); values in thousand

	Less than compulsory	Maximum Compulsory	Upper secondary	University	Total	Less than compulsory	Maximum Compulsory	Upper secondary	University
2017	6,110	1,361	722	575	8,768	69.7	15.5	8.2	6.6
Entries	925	614	608	554	2,701	34.2	22.7	22.5	20.5
Exits	-887	-97	-36	-25	-1,045	84.8	9.3	3.5	2.4
Balance	38	517	571	529	1,656	2.3	31.2	34.5	32.0
2027	6,148	1,878	1,293	1,104	10,424	59.0	18.0	12.4	10.6

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

Rather interestingly, our computations show that, despite people entering employment are expected to have a much higher educational level than those exiting, the educational level of the employed will improve only in a moderate way. The group of those that have not completed compulsory education is expected to decrease from 69.7% to 59%. The other three educational groups will all increase so that in 2027 the employed with maximum compulsory education are projected to be 18% (vs a share of 15.5% in 2018), those with Upper secondary 12.4% and those with University degree 10.6%.

Section 5.2

Scenarios of labor supply in terms of flow: 2017-2027

5.2 Labor Supply in Terms of Stock and Flows

In any given moment of time, the labor supply in terms of stock is given by the sum of the employed and unemployed. WAP represent the upper limit of the labor supply in terms of stock.

In 2017 Cambodia's WAP was estimated at 10.416 million and the labor supply at 8.779 million. Therefore, 84.3% of the population in working age was working or was willing to do so. This extremely high rate of activity, which was also accompanied by a rate of unemployment below 1 per cent, indicates that very few young people above 15 were in school and that also the number of housekeepers and other people in the non-labor force was very low. It also suggests a socioeconomic situation in which only a minority of young people can afford to go to high school and to University and a situation in which the majority of the population lives in rural areas where statistical surveys find very difficult (if not impossible) to distinguish between employed, unemployed and hidden unemployed.

The supply of labor in terms of flow is given by the number of people that enter the labor force in any given time interval. In this case the upper limit is represented by the number of young people that enter WAP. To be underlined that
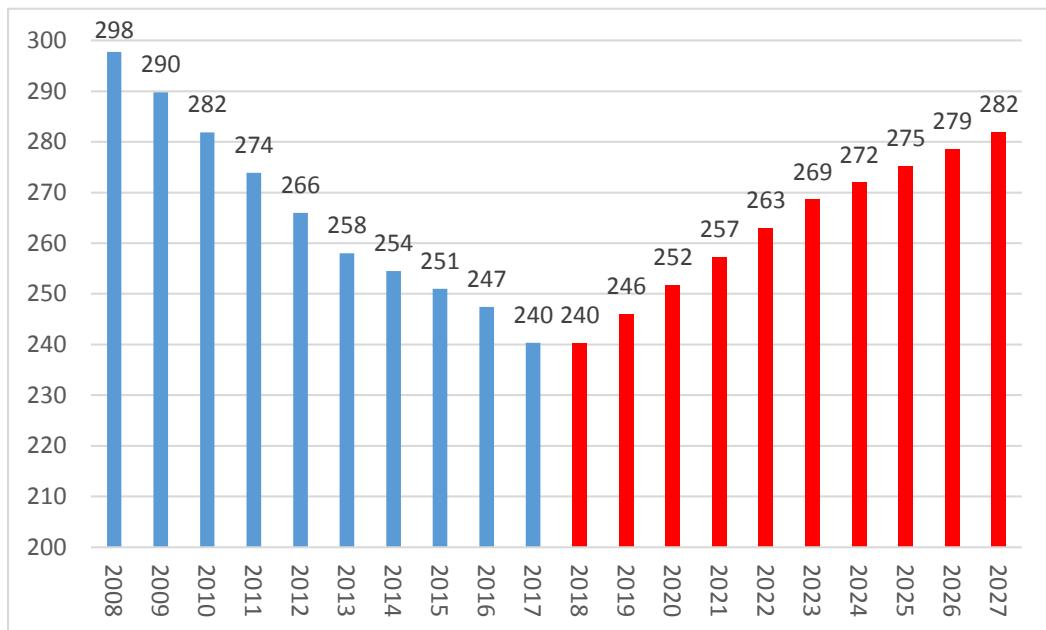
- The number of people that enter WAP is equal to the number of people that were born 15 year before, minus those who died before becoming 15;
- The change in the level of WAP is given by the difference between generational entries into and generational exits from WAP;
- Generational exits are equal to the number of people born 65 years before minus the people who died in before reaching that age.

In analogy with what we have said for the labor supply in terms of stock, we can recall that our computations have shown that between 2007 and 2017 entries into the labor force amounted to 2.642 million. We can estimate that during the same period entries into WAP have been equal to 3.233 million which correspond to rate of activity in terms of flow of 82.3%.

5.2.1 Forecasting labor supply in terms of flow

We can use the previous approach to estimate a simple scenario of the supply in terms of flow for the period 2017-2017. On the basis of UN DESA forecast, we can estimate 3.201 million entries in WAP. Assuming that the Rate of activity in terms of flow will remain constant, the labor supply in terms of flow will be equal to 2.634 million. While the total number of entries into the labor force is substantially the same, the time evolution is quite different (Figure 40). While in the previous period the labor supply in terms of flows has declined from almost 300,000 to 240,000, from 2018 to 2027 period it is expected to progressively increase to 282,000.

Figure 40. Labor supply in terms of flow (in thousand); 2008-2027

Source: Elaboration on UN DESA data; UN DESA, 2019

5.2.2 Labor supply scenarios by education level

To obtain a breakdown of the labor supply in terms of flow by educational level it is necessary to estimate the exits from the education and vocational training system by educational level, over the period considered.

In order to do so we have, first of all, estimated the number of enrollments in grade 1 starting from the school years 2017-18. Enrollments have two components: the new admitted and the repeaters. The number of admitted has been set equal to the number of births that took place six years before minus the estimated number of deaths in the following years. The number of repeaters has been computed assuming that the rate of repetition will continue to decline from a starting value of 6% to a minimum value of 3% in 2021 to then remain at that level.

We have then computed the exits from grade 1 up to grade 12 for the period 2018-2027 in two scenarios:

- in the first, we have assumed that the specific rates of survival (and therefore the rates of dropout) remain constant at the level of the school year 2016-17;
- in the second we have assumed that all rates of dropout will progressively improve

The results of the exercise are reported on Table 48; they show that even at the present rates of dropout the educational level of exits is expected to improve and that obviously a reduction in the dropout rate would bring further improvement.

Table 48. Exits from the school system by educational level in two scenarios of survival rates; 2018-2017

Scenario 1										
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
	Absolute values in thousand									
Less than primary	108	107	105	102	101	100	99	99	99	99
At least primary	97	99	102	106	106	104	100	98	96	95
At least secondary	54	57	58	58	60	62	64	62	60	58
Atleast upper secondary	89	91	103	110	114	115	115	121	125	127
university degree	*44*	*46*	*52*	*55*	*57*	*57*	*58*	*60*	*63*	*63*
Total	348	354	368	376	380	381	378	380	380	379
	Percentage composition									
Less than primary	31.0	30.2	28.4	27.2	26.5	26.2	26.3	26.1	26.0	26.0
At least primary	27.9	28.0	27.8	28.1	27.8	27.2	26.5	25.7	25.2	25.1
At least secondary	15.6	16.0	15.7	15.4	15.8	16.4	16.8	16.4	15.9	15.4
Atleast upper secondary	25.5	25.8	28.1	29.2	29.9	30.2	30.4	31.8	32.9	33.5
university degree	*12.7*	*12.9*	*14.0*	*14.6*	*15.0*	*15.1*	*15.2*	*15.9*	*16.4*	*16.7*
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Scenario 2										
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
	Absolute values in thousand									
Less than primary	108	82	79	76	74	72	71	70	69	67
At least primary	97	87	87	86	82	76	72	68	65	62
At least secondary	54	58	59	62	65	67	67	66	64	63
Atleast upper secondary	91	105	113	118	121	122	129	135	139	135
university degree	*46*	*53*	*56*	*59*	*60*	*61*	*65*	*68*	*69*	*67*
Total	351	333	338	342	341	338	340	339	336	327
	Percentage composition									
Less than primary	30.8	24.7	23.3	22.3	21.6	21.4	21.0	20.6	20.4	20.6
At least primary	27.7	26.1	25.8	25.1	24.0	22.6	21.2	20.0	19.2	18.9
At least secondary	15.4	17.6	17.6	18.0	19.0	19.9	19.8	19.4	19.1	19.4
Atleast upper secondary	26.0	31.7	33.3	34.7	35.3	36.1	38.1	39.9	41.2	41.1
university degree	*13.0*	*15.8*	*16.7*	*17.3*	*17.7*	*18.0*	*19.0*	*20.0*	*20.6*	*20.6*
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Authors' Calculation. Elaboration on EMIS

In order to better appreciate the improvement and the relevance of dropout reduction for the improvement of the educational level of the labor supply in terms of flow, Figure 41 compares the 2027 percentage structure of exits in in the two scenarios.

We can summarize the result observing that

- in 2017 60% of the students exiting the school system had not reached compulsory education and 40% had at least compulsory education
- in 2027 in Scenario 1, the percentages would be 50% and 50%, and in Scenario 2, 40% and 60 %.

Let's also observe that the biggest gain will be obtained by the share of those exiting with at least Upper secondary education.

Figure 41. Structure of the exits from the school system by educational level in 2027 in two alternative scenarios of survival rates and difference
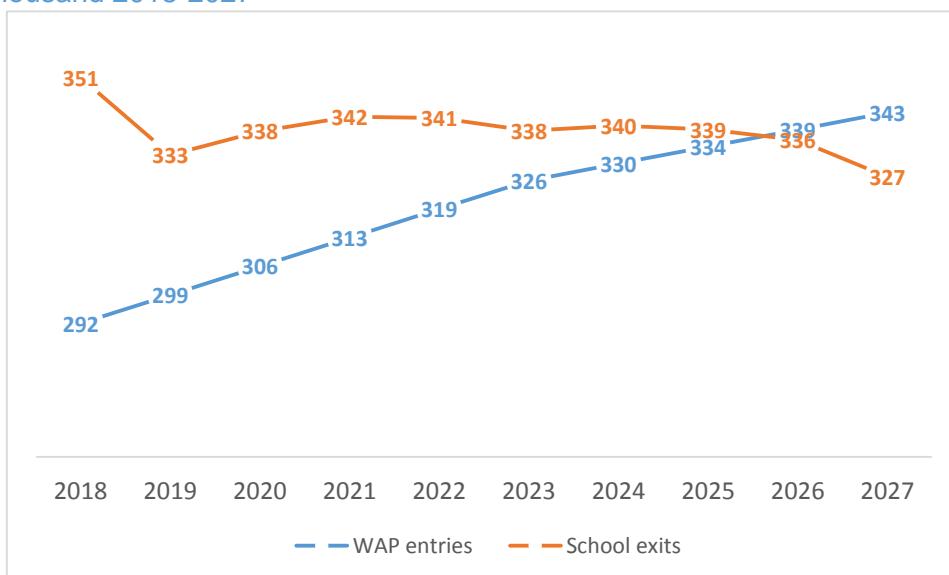
Source: Authors' Calculation. Elaboration on EMIS

A few more observations are in order.

In the first place the number of exits from the school system present a negative trend while entries in working age population show a positive trend (Figure 42). The difference in values and trends are due on one side to the different age groups they include reflect; in the second place, the fact that the exits from the school system reflect the progressive regularization of the system and more specifically of the dropout so that exits reflect more and more demographic trends

Figure 42. Entries in working age population and exits from the education system (Scenario 2); values in thousand 2018-2027

Source: Authors' Calculation. UN DESA data and EMIS

70

The second is whether there is an overall coherence between the expected exits from the education system and the expected needs of the labor market. Table 49 compares the labor demand in terms of flow by education level for the period 2017-2027 of the Intermediate Scenario with exits by broad educational level of Scenario 2.

Data clearly show that the exits from the school system are aligned with the need of the labor market, the only value in excess being that of the lowest educational level which is generally characterized by a larger presence in the non –labor force.

Table 49. Labor demand in terms of flows, potential supply by educational level, and ratio between labor demand in terms of flow and potential supply; 2017-2027

	Labour demand in terms of flow (a)	Exits from the school system Scen. 2 (b)	a/b
< Compulsory	925	1550	**59.7**
Compulsory	614	626	**98.1**
At least compulsory	1162	1208	**96.1**
Total	2701	3384	**79.8**

Source: Authors' Calculation. UN DESA data and EMIS

Section 6

The five-year scenario: 2017-2022

SECTION 6 The Five-Year Scenario 2017-2022

6.1 Introduction

The lack of employment data by 5-year age group suggested to start building our scenario over a 10-year horizon. To respond to the request of the ToR, we will now present 5-year scenarios. In order to do so some additional hypotheses will be necessary.

Replacement demand 2018-2022.
The size of the cohorts increases with age. We have therefore estimated the replacement demand interpolating the values of the 2007-2017 and 2017-2027 periods. The results, reported on Table 50 show that the yearly value of the replacement demand will progressively increase from 98.000 to 113,000 in 2022.

Additional demand 2018-2022
The additional demand has been computed only for the intermediate scenario and therefore, on the assumptions that GVA will increase every year by 7% and the employment income elasticity will be equal to 0.25. Under these assumptions the Additional demand will progressively increase from 153,000 in 2017 to 165,000 in 2022.

The labor demand in terms of Flows
The previous estimates generate a labor demand in terms of flow that also progressively increases, from 252,000 in 2018 to 278,000 in 2022. To be noted that due to the ageing process the weight of the Replacement demand that on the average is projected to be equal to 39.9%, progressively increases from 39% to 40.8%, a value still much lower than the one observed in older and more developed countries.

Table 50. Replacement demand, additional demand and labor demand in terms of flow (2018-2022)

	Replacement demand	Additional demand	Labour demand in terms of flow	% Replacement demand
2018	98	153	252	39.0
2019	102	156	258	39.5
2020	106	159	265	40.0
2021	109	162	271	40.4
2022	113	165	278	40.8
2018-22	529	795	1323	39.9

Source: Authors' Calculation. National Institute of Statistics (2019), *CSES*

Gross value added, employment and productivity

Table 51 reports the 2017 and 2022 data for Gross value added, employment and productivity in the intermediate scenario. GVA is projected to increase by 40.3%, employment by 9.1% and productivity by 28.6%. The growth of WAP will be lower than that of employment and therefore the RoE will slightly increase reaching a value above 85%, which makes this scenario possible.

	GVA	Employment	Labour productivity	WAP	RoE
2017	45,554	8,770	1,299	10,357	84.7
2022	63,892	9,565	1,670	11,235	85.1
Abs. change	18,338	795	371	878	0.5
% chan ge	**40.3**	**9.1**	**28.6**	**8.5**	**0.5**

Source - Authors' Calculation. National Institute of Statistics (2019), CSES

6.2 The Labor Demand by Sector

Adopting the same procedure used for the 10-year scenarios we have estimated the employment level of Agriculture, Industry and Services, from 2017-2022 and then the Additional demand for each year and sector (table 52).

In line with our previous findings the increase of the employment level by 795,000 is the balance between a decline by 808,000 jobs in agriculture and an increase by 850,000 in Industry and 753,000 in Services, the corresponding yearly values being -162,000, 170,000 and 151,000.

Table 52. Employment level (thousand), employment shares, additional demand (thousand) by sector; 2017-2022

	Employment level				Employment shares				Additional demand			
	Agriculture	Industry	Services	Total	Agriculture	Industry	Services	Total	Agriculture	Industry	Services	Total
2017	3,245	2,298	3,227	8,770	37.0	26.2	36.8	100.0				
2018	3,096	2,458	3,370	8,923	34.7	27.5	37.8	100.0	-149	160	142	153
2019	2,941	2,623	3,516	9,080	32.4	28.9	38.7	100.0	-155	165	146	156
2020	2,780	2,793	3,666	9,239	30.1	30.2	39.7	100.0	-161	170	150	159
2021	2,612	2,968	3,821	9,400	27.8	31.6	40.6	100.0	-168	175	155	162
2022	2,437	3,148	3,980	9,565	25.5	32.9	41.6	100.0	-175	180	159	165
2017-22	-808	850	753	795	-11.5	6.7	4.8	0.0	-25.9	20.3	16.6	11.0

Source - Authors' Calculation. National Institute of Statistics (2019), CSES

However these data are far from sufficient to answer the real question: how many people will be enter each sector and for which occupations? In order to answer this question we have to consider together with the Additional demand also the Replacement demand.

As we have already suggested, the fact that a sector (or an occupation) is characterized by a negative additional demand does not mean that young people will not enter the sector. It only means that the people exiting the sector because of age or because they have decided to move to another sector are more than those that enter. Unfortunately, there are no information on the employed by sector and by 5 year age group, necessary to estimate generational flows at sector level.

Census data show that Agriculture is the oldest sector, followed by Services whose average age is in line with that of total employment and finally Industry. We have therefore decided to estimate

the Replacement demand of each sector assuming that 40% of generational exits comes from Agriculture, 35% from Services and 25% from Industry. On the basis of these assumptions the Replacement demand for the 2017- 2022 period is equal to 211,000 for Agriculture, 132,000 for Industry and 185,000 for Services (Table 53).

This allow estimating in 982,000 the entries in Industry, and in 938,000 the entries in Services; moreover, assuming that entries in the Agriculture sector will just be equal to generational exits, entries in Agriculture will amount to 211,000. We also reach the conclusion that in the 2017-2022 period 808,000 workers will move from Agriculture to the other two sectors and more specifically 413,000 to Industry and 395,000 to Services.

Table 53. Additional demand, Replacement demand, Labor demand in terms of flow, labor market entries; inter sectors movements; values in thousand; 2017-2022

	Additional demand	Replacement demand	Labour demand in terms of flow	Entries
Agriculture	-808	211	-597	211
Industry	850	132	982	982
Services	753	185	938	938
Total	795	529	1,323	2,131
From Agric to Industry				413
From Agric to Services				395
Total				808

Source - Authors' Calculation. National Institute of Statistics (2019), CSES

In conclusion, in the 5 year period we are considering, yearly average entries into agriculture will amount to 42,000, those into services to 196,000 and those into Services to 188,000 (table 54). However:

- Of the 196,000 entries into Industry, 114,000 will be generational entries from the school and education system and 83,000 passages from Agriculture,
- Of the 188,000 entries into the Service sector 109,000 will come from the School and TVET systems and 79,000 from Agriculture

To be underlined that in this period Agriculture will provide 42.1% of the workforce needed by the other two sectors.

Table 54. Entries by sector and origin; values in thousand; 2017-22

	Entries from School sytem	Entries from agriculture	Total entries
Agriculture	42		42
Industry	114	83	196
Services	109	79	188
Total	265	162	426

Source - Authors' Calculation. National Institute of Statistics (2019), CSES

6.2.1 Occupations and skills

In line with the evolution of the weight of the main sectors and branches, also the employment structure by occupation has been undergoing notable changes. If we consider the 2012-17 period

we observe a notable decline of the number of people classified as Agriculture skilled workers (-12.9%) and Unskilled workers (-6.5%) (Table 56). A negative sign is associate also to the occupation of Manager, a possible explanation being the reduction in the fragmentation of the production system. All other main occupation groups registered an expansion that in percentage terms was particularly high for Clerical support workers (83.9%), Technicians (82.8%), Craft and related workers (65%).

Adopting the same procedure used for the main sectors, we have projected the share of each occupation and used the 2022 values to compute the employment level for the 10 major occupation groups and then the absolute and percentage changes for the 2017-2022 period.

Table 55. Employed by occupation; 2012. 2017 and 2002 (in thousand)

	2012	2017	2022	2012	2017	2022
Armed forces occupations	57	78	99	0.7	0.9	1.0
Manager	68	65	57	0.9	0.7	0.6
Professionals	227	303	380	2.9	3.5	4.0
Technicians and associate professionals	69	127	191	0.9	1.4	2.0
Clerical support workers	231	424	639	3.0	4.8	6.7
Service and sales workers	1300	1573	1820	16.9	17.9	19.0
Skilled agricultural, forestry and fishery workers	3064	2670	2024	39.8	30.5	21.2
Craft and related worker	1273	2101	3005	16.5	24.0	31.4
Plant and machine operators and assemblers	279	361	442	3.6	4.1	4.6
Elementary occupations	1137	1063	908	14.8	12.1	9.5
	7705	8765	9565	100.0	100.0	100.0

Source - Authors' Calculation. National Institute of Statistics (2019), CSES

The trends for the new period reflect mainly those of the previous period, but some modifications must be underlined. More specifically, while the ranking remains the same, all positive percentage changes are less pronounced and all negative changes are more pronounced; this is due to the fact that the employment level of the former has increased while that of the latter has declined. However, for the same reason the absolute changes are generally more pronounced in the 2017-22 than in the 2012-17 period, especially for the occupation with a negative sign.

Table 56. Employed by occupations; additional demand 2012-17 and 2017-22 (in thousand)

	2012-17	2017-22
Craft and related worker	828	904
Service and sales workers	273	247
Clerical support workers	193	215
Plant and machine operators and assemblers	82	81
Professionals	76	77
Technicians and associate professionals	58	64
Armed forces occupations	21	21
Manager	-3	-8
Elementary occupations	-74	-155
Skilled agricultural, forestry and fishery workers	-394	-646
Total	1060	800
Positive values	1531	1609
Negative values	-471	-809

Source - Authors' Calculation. National Institute of Statistics (2019), CSES

6.2.2 Skill needs and training needs

The projected data of the major occupations groups provide relevant information for assessing the training needs for the next 5 years and therefore to start analyzing the role that TVET can play to support the socioeconomic development of the country.

We can begin by observing that the joint projected decline of agricultural workers is in line with that of the employed in the agricultural sector. We must however recall once more that the occupations of this major group will certainly continue to absorb young people and we believe that our estimate of around 40,000 per year is a reasonable guess. Moreover, the need to increase the productivity of the sector, the relevance that a well-functioning food chain could have for the Cambodia economy, and the fact that in this sector we cannot expect training on the job to be provided by companies strongly suggest that vocational training in agricultural occupations should be a priority of the TVET system, a need that cannot be satisfied only by informal courses, but requires training at the technical and university level.

Coming to the major occupation groups with a positive additional demand, we have assumed a replacement demand equal to 15% of the initial stock. This has allowed to estimate a yearly labor demand in terms of flow of around 430,000 people per year, a value in line with our previous estimate. Almost 57% of entries pertain to the major group Craft and related occupations, 14% to Service and sale workers, and 13% to clerical workers. Therefore, these three occupational groups are projected to absorb 3/4 of total entries, the remaining 15% will be in Plant and machine operators (6.3%), Professionals (5.7%) and Technicians (3.9).

Table 57. Generational entries by major occupation group; absolute values (in thousand) and percentage composition; 2017-2022

	Yearly labor in terms of flowdemand	
	Absolute value	% comp.
Craft and related worker	244	56.7
Service and sales workers	62	14.4
Clerical support workers	56	13.0
Plant and machine operators and assemblers	27	6.3
Professionals	24	5.7
Technicians and associate professionals	17	3.9
Total civil sector	430	100.0

Source - Authors' Calculation. National Institute of Statistics (2019), CSES

Present statistical information is not sufficient to produce a quantitative forecast of the demand for elementary occupations over a five year period. However, putting together data on the past trend of single economic branches, the estimated future trends of employment in the three main sectors and of the macro-occupations, as well as a critical assessment of the estimates produced by NEA[7] and World Bank (World Bank, 2019) we can reach a series of relevant conclusions.

---

[7] NEA has been producing two types of analysis. In the first place a medium-term labor demand forecast extremely detailed at in the second place the Job Outlook Index. However, our analysis has pointed out that the Labor demand

In the next five years, as we have just seen, around 57% of the labor demand in terms of flow will be directed toward the occupations classified in the major group "Crafts and related occupations"[8]. On the basis of other information, we can also posit that the occupations of this group that will play the most important roles will be: i) the occupations of the construction sector; ii) the occupations of the garment sector. We can estimate that the former will generate a yearly demand in terms of flow of around 100,000 people at different level of educational attainment, the latter of around 80,000. In both cases the size of the demand will require first job seekers and workers coming from the Agricultural sector. This implies the need of both training and retraining courses.

In order to pinpoint the occupations for which Vocational training is certainly needed, we can recall that the 2018 Job Outlook Index (JOI) of NEA estimates that Construction supervisors, Plumbers and Pipe fitters, Glaziers, Welders, Painters, Building construction laborers will be between the jobs for which there will a relative lack of supply[9]. Moreover, the positive trend of the Construction sector will positively affect the labor demand for other skilled trade workers such as woodworkers, concrete workers, building and related electricians, and plasterers. Finally, the NEA index suggest that civil engineers, building architects, civil engineering technicians, bricklayers, and roofers are also expected to have medium opportunities to work.

Coming to the Garment sector (that according to World Bank employs 1 million people) we can suggest that the demand will be more pronounced that presently suggested once the Replacement demand is taken into consideration and that occupations such as Textile, fur, laundry and leather products machine operator and Garment, footwear, textile and related trades workers, Garment designer, but also Manufacturing supervisors, Production clerk Packing, and labelling machine operators, Hand packers, Manufacturing laborers will be highly requested. All of them will require vocational training.

A much lower role will be played by occupations connected to wood[10] and food whose employment level could even decline; however, it is to be hoped that major investments will be directed to create a food supply chain certainly needed by the country.

Our forecast is that the labor demand in terms of flow for Sale and service workers[11] will amount to a little more than 60,000 people per year. Considering the Cambodian labor market, the most relevant occupational areas are those connected to Tourism (broadly defined) and Retail trade.

---

forecast presents a relevant shortcoming (which is present also in recent World Bank paper, WB, 2019) of considering only the Additional demand (i.e. the creation of Additional Jobs) and omitting the entries due to generational Replacement. This does not allow to fully justify e and estimate first time entries in the Agricultural sector and the passages from Agriculture to Industry and Services. The second is a Job Outlook Index (based on the Swedish Occupational Barometer Model. The Index provides a measure of the relative strong of labor demand and supply for 131 occupations and can therefore play an extremely relevant role in pointing out where vocational training is needed.
[8] The major group Craft and related workers of the ISCO 2008 classification includes a vast array of occupations related to the construction sector, the metal and machine sector, handicraft and printing, food processing, wood processing and especially garment. Therefore, it includes occupations such as bricklayers, joiners and carpenters, plumbers, sheet and structural metal workers, molders and welders, as well as toolmakers, blacksmiths, printers, electrical equipment installers and repairers; electronics mechanics and servicers, food processing and related trades workers, wood treaters, cabinet-makers and related trades workers, and all the occupations connected to garment.
[9] This does not provide any indication of how many people of ach occupations will be demanded, but provides evidence that at the moment of the survey companies found difficult to recruit people with the skills required by these occupations
[10] According to the same source, "Around 40% of the employers in this sector reported that they have difficulties to fill vacancies in 2017, and about 20% of hard to fill vacancies are caused by lack of skills, lack of qualifications or experiences of job seekers".
[11]The most relevant services provided by people classified in the major occupation group Sale and service workers are those related to wholesale or retail shops, but also to travel, housekeeping, catering, personal care, etc. Tasks

In Tourism, the most important role in term of demand size will be played by the occupations related to Accommodation and Restaurant and more specifically by Cleaners and helpers, Kitchen helpers, Waiters, Fast food preparers, Cooks, Receptionists. The NEA JOI does then suggest that, despite the fact that the demand in terms of size will be modest, the best employment opportunities will be for Chefs, Bartenders, and Hotel and restaurant managers.

In the area of Trade, the largest demand will most probably be directed toward occupations that require a low level of specialization such as salespersons for shops, stalls, and street-food shops, while less numerous but interesting job opportunities will come for Shop supervisors, Cashiers, Sales and marketing managers, Sale demonstrators and ICT sale persons.

The third group of occupations in terms of the relevance of demand in terms of flow is represented by the major group Clerical support workers[12].The occupations of this group cannot be traced back to a single sector, but are present in the offices of Industrial companies (as we have already discussed), and especially of private and public activities of the Service sector, such as banks and other financial institutions, real estate, hospitals and medical laboratory, hotels, schools and universities, vocational training centres, etc. Our forecast of more than 55,000 generational entries per year seems coherent with the present phase of the Cambodian economy that is characterized by an expansion of manufacturing companies, but especially of an increasing role of the Service sector. Many occupations of this group require upper secondary school and additional vocational training. Administrative and executive secretaries (that responds to this requirement) are listed by NEA JOI between the occupations that offer very good employment possibilities. At a lower educational level, the most interesting occupations in terms of lack of supply are General office clerks, Bank tellers and bank clerks, Contact centre information clerks, Personnel clerks, production clerks.

The fourth occupational groups, Plant and machine operators and assemblers[13], is expected to absorb around a little less than 30,000 young people per year. Numerous occupations of this group are listed by NEA between those characterized by a shortage of supply. More specifically, the list includes at the top end Industrial and production engineers, Mechanical engineers; at a lower level Steam engine and boiler operators, Mechanical machinery assemblers, Machinery mechanics and repairers, Heavy truck and lorry drivers.

Professionals and Technicians have been projected to absorb respectively 24,000 and 17,000 young people per year. Also, these occupations - that require the former a university education and the latter at least an upper secondary diploma, but in many cases also specialized vocational training at the associate level- cannot be traced back to a single economic sector. Just to make some more examples in addition to those already discussed, the health sector will need Radiographers, Medical and pathology laboratory technician, Dental assistant, Midwifes; the Tourism, sector but not only, will need

---

performed by service workers and shop and market sales workers usually include: organization and provision of services during travel; housekeeping; preparation and serving of food and beverages; child care; rudimentary nursing and related care at homes or in institutions; personal care, such as hairdressing or beauty treatment; companionship; embalming; funeral arrangements; protection of individuals and property against fire and unlawful acts and enforcement of law and order; posing as models for advertising, artistic creation and display of goods; selling goods in wholesale or retail establishments, as well as at stalls and on markets; demonstrating goods to potential customers. Supervision of other workers may be included.

[12] Clerical support workers record, organize, store and retrieve information related to the work in question, compute financial, statistical and other numerical data, and perform a number of client-oriented clerical duties especially in connection with money-handling operations, travel arrangements and business information and appointments. Most occupations in this major group require skills at the second skill level.

[13] Plant and machine operators and assemblers operate and monitor industrial and agricultural machinery and equipment on the spot or by remote control, drive and operate trains, motor vehicles and mobile machinery and equipment, or assemble products from component parts according to strict specifications and procedures.

Translators and interpreters; the IT sector will need many professional and technicians such as ICT user support technicians, System analysts and IT architects, Software and system developers, ICT operations technicians, Database and network professionals, Information technology trainers, Computer network and systems technicians; enterprises in all sector will need Accountants and marketing professionals. It is to be underlined that according to NEA JOI, all these occupations are in short supply and are therefore in need of training.

The following table summarizes our estimates of the demand in terms of flow for macro-occupations and for each macro-occupation i) the list of occupations for which training is highly recommended due to the lack of qualified labor supply and ii) other occupations for which training would play an important role in favouring employability.

Summary table. Yearly average labor demand in terms of flow for macro-occupations; 2018-22; list of occupations for which training is needed to face a lack of a qualified supply; list of occupations for which vocational training is highly recommended.

	Average yearly Labour demand in terms of flow	Occupations for which labour supply is insufficient and training necessary	Occupations for which the supply is in line with demand but training would provide an important plus
Craft and related workers	**244,000**		
Cccupations of the construction sector	*100,000*	Construction supervisors, Plumbers and Pipe fitters, Glaziers, Welders, Painters, Building construction laborers	Civil engineers, Architects, Civil engineering technicians, Bricklayers, Roofers, Concrete workers, building and related electricians, plasterers.
Occupations of the garment sector	*80,000*	Manufacturing supervisors, Garment designer, Production clerk; Fur and leather products machine operator; Footwear, textile and related trades workers; Packing and labelling machine operators, Hand packers, Manufacturing laborers	
Other Occupations	*64,000*	Wood workers; food workers	
Service and sales workers	**62,000**		
Tourism	*32,000*	Chefs, Bartenders, and Hotel and restaurant managers.	Receptionists, Cooks, Kitchen helpers, Waiters, Fast food preparers, Cleaners and helpers
Retail trade	*30,000*	Shop supervisors, Cashiers, Sales and marketing managers, Sale demonstrators and ICT sale persons	salespersons for shops, stalls, and street-food shops
Clerical support workers	**56,000**	Administrative and executive secretaries; Office clerks; Bank tellers, Bank clerks, Contact centre information clerks,	
Agriculture, forestry and fishery	**40,000**	Agricultre engineer, Soil and plant specialist, Agriculture food scientist, Agronomist, Horticulture technician, Hydraiulics technician, Wildlife and forestry management and conservation, Fisheries bilogist, Fisheries manager,	
Plant and machine operators and assemblers	**27,000**	Industrial and production engineers, Mechanical engineers; Steam engine and boiler operators, Mechanical machinery assemblers, Machinery mechanics and repairers, Heavy truck and lorry drivers.	
Technicians and professionals	**41,000**		
Health sector		Radiographers, Medical and pathology laboratory technician, Dental assistant, Midwifes	
Tourism		Translators and interpreters; Accountants and marketing professionals.	
IT sector		ICT user support technicians, System analysts and IT architects, Software and system developers, ICT operations technicians, Database and network professionals, Information technology trainers, Computer network and systems technicians	

Source - Authors' estimates based on data from National Institute of Statistics (2019), *CSES and NEA, Cambodia Job Outlook, 2018*

6.3 The supply side: the TVET System

Having provided some tentative estimates of the skills that will be requested by the market, let's now analyze the production of the TVET system and its trends in order to evaluate its coherence with the labor demand and the direction in which it should evolve, starting with the Certificate courses and then moving to Higher education.

6.3.1 Enrollment and courses (C1, C2 and C3)

Enrollment in Long Term Training courses has progressively increased from 400 pupils in the school year 2012-13 to 3,630 in the school year 2018-19.

Table 58. Enrollment in certificate courses by sex, from 2012-13 to 2018-19

	Enrolment											
	C1			C2			C3			Total		
	Males	Females	Total	Males	Females	Total	Males	Females	Total	Males	Females	Total
2018-19	1,727	607	2,334	675	149	824	395	77	472	2,797	833	3,630
2017-18	1,703	623	2,326	484	85	569	262	58	320	2,449	766	3,215
2016-17	1,416	531	1,947	387	66	453	232	42	274	2,035	639	2,674
2015-16	1,120	358	1,478	268	41	309	180	23	203	1,568	422	1,990
2014-15	580	171	751	116	22	138	143	20	163	839	213	1,052
2013-14	270	94	364	100	20	120	82	21	103	452	135	587
2012-13	123	23	146	152	27	179	64	20	84	339	70	409

Source: TVETMIS, MLVT

Enrollment in C1 has always represented the large majority of total enrollment in Certificate courses with a maximum of almost 75% in the school year 2015-16. Since then it has progressively declined and in the school year 2018-19, enrollment in C1 represented 64.3% of total enrollment, that in C2 22.7% and that in C3 13%,

Table 59. Enrollment by sex; percentage composition by level; from 2012-13 to 2018-19

	C1			C2			C3		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
2018-19	61.7	72.9	64.3	24.1	17.9	22.7	14.1	9.2	13.0
2017-18	69.5	81.3	72.3	19.8	11.1	17.7	10.7	7.6	10.0
2016-17	69.6	83.1	72.8	19.0	10.3	16.9	11.4	6.6	10.2
2015-16	71.4	84.8	74.3	17.1	9.7	15.5	11.5	5.5	10.2
2014-15	69.1	80.3	71.4	13.8	10.3	13.1	17.0	9.4	15.5
2013-14	59.7	69.6	62.0	22.1	14.8	20.4	18.1	15.6	17.5
2012-13	36.3	32.9	35.7	44.8	38.6	43.8	18.9	28.6	20.5

Source: TVETMIS, MLVT

The presence of women has always fall short of ¼ and in the last years has oscillated around 23%; moreover, and it declines from C1, to C2 to C3. In the last school year, it was 26% in C1, 18.1% in C2 and 16.3% in C3.

Table 60. Enrollment in Certificate courses; percentage of women; from 2012-13 to 2018-19

	C1	C2	C3	Total
2018-19	26.0	18.1	16.3	22.9
2017-18	26.8	14.9	18.1	23.8
2016-17	27.3	14.6	15.3	23.9
2015-16	24.2	13.3	11.3	21.2
2014-15	22.8	15.9	12.3	20.2
2013-14	25.8	16.7	20.4	23.0
2012-13	15.8	15.1	23.8	17.1

Source: TVETMIS, MLVT

In the 2017-18 school year the TVET system offered 173 courses in 13 subjects. The courses were concentrated at C1 level and in few areas. In fact 107 (61.8%) were held at C1 level, 38 (22%) at C2 level, and 28 (16.2%) at C3 level; moreover more than ¾ were related to four subjects: 31.8% to Electricity, 20.2% to Information technology, 15% to Automobile, and 11.6%. to Engineering. Around 53% were related to the Construction sector, 23% to Informatics and a little more than 20% to Metal and automotive. Only 1 course was devoted to Tourism and only 1 to Agriculture (table 61).

Table 61. TVET courses by field and level; school year 2017-18

		Courses				
		C1	C2	C3	Total	
1	Electricity	29	15	11	55	31.8
2	Information Technology	22	8	5	35	20.2
3	Automobile	16	7	3	26	15.0
4	Civil Engineering	12	4	4	20	11.6
5	Air Conditioning	12			12	6.9
6	Welding	5			5	2.9
7	Mechanical	4	3	2	9	5.2
8	Graphic Design	3		1	4	2.3
9	Electronic	3			3	1.7
10	Tourism And Hospitality	1			1	0.6
11	Metal Engineering		1		1	0.6
12	Business Information Technology			1	1	0.6
13	Veterinary Science			1	1	0.6
	Total	107	38	28	173	100.0
		61.8	22.0	16.2	100.0	

Source: TVETMIS, MLVT

Data on enrollment by courses present in an even more pronounced way the same characteristics (concentration in C1 level and in 4 subjects) emerged analyzing the number of courses (table 62). Total enrollment amounted to almost 3,800 students; 78.5% of them attended C1 courses, 14% C2 courses, and only 7.5% C3 courses. More than 90% of enrolled were concentrated in 4 areas: 29.5% electricity, 24.8% Information technology, 14.9% Civil engineering, and 14.1% Automobile.

Finally around 52% of student were enrolled in areas related to the Construction sector, 29% to Informatics, and almost 20% to Metal and automotive. The course devoted to Tourism was attended by 9 students and that to veterinary by 6.

Table 62. Enrolled in Certificate courses in the school year 2017-2018

		Enrolled				
		C1	C2	C3	Total	
1	Electricity	803	183	125	1111	29.5
2	Information Technology	793	101	39	933	24.8
3	Automobile	430	77	24	531	14.1
4	Civil Engineering	381	125	56	562	14.9
5	Air Conditioning	179			179	4.8
6	Welding	87			87	2.3
7	Mechanical	116	31	15	162	4.3
8	Graphic Design	108		9	117	3.1
9	Electronic	24			24	0.6
10	Tourism And Hospitality	9			9	0.2
11	Metal Engineering	9	9		18	0.5
12	Business Information Technology	11		11	22	0.6
13	Veterinary Science	3		3	6	0.2
	Total	2953	526	282	3761	100.0
		78.5	14.0	7.5	100.0	

Source: TVETMIS, MLVT

The presence of women is marginal. They represent only 8.2% of total enrollment. Moreover their presence is concentrated in 2 courses: electricity and Information technology. The first accounts for 50.2% of total women enrollment the second for 24.4%. The remaining 25% is explained mainly by Automobile, Civil engineering Air conditioning and Welding.

Table 63. Women by course; absolute values, percentage incidence and percentage composition; school year 2017-2018

	Enrolled		
	Abs. value	% Inc.	% comp.
Electricity	154	16.5	50.2
Information Technology	75	6.8	24.4
Automobile	22	3.9	7.2
Civil Engineering	18	3.4	5.9
Air Conditioning	13	11.1	4.2
Welding	12	6.7	3.9
Mechanical	5	5.7	1.6
Graphic Design	4	2.5	1.3
Electronic	3	12.5	1.0
Tourism And Hospitality	1	11.1	0.3
Total	307	8.2	100.0

Source: TVETMIS, MLVT

6.3.2 Graduates (C1, C2 and C3)

In the school year 2017-18 graduates from formal courses amounted to 2.168, representing around 2/3 of the enrolled. The success rate is slightly higher for women than for men and is abnormally low for C2.

Table 64. Graduated by sex and level; absolute values and incidence over enrollment; school year 2017-18

	Males	Females	Total	Males	Females	Total
C1	1,220	440	1,660	*71.6*	*70.6*	*71.4*
C2	212	58	270	*43.8*	*68.2*	*47.5*
C3	186	52	238	*71.0*	*89.7*	*74.4*
Total	1,618	550	2,168	*66.1*	*71.8*	*67.4*

Source: TVETMIS, MLVT

6.4 Higher education

6.4.1 Enrollment

Total enrollment in TVET higher education amounts to almost 28,000. Data show that 2/3 of students are enrolled in a bachelor program and 1/3 on an associate program and that enrollment is strongly skewed in favor of boys, girls representing also in this case less than ¼ of total enrollment. Moreover they represent only 14% of enrolled in master degree courses.

In interpreting these data it should be recalled that according to Cambodia legislation, students graduating from High school can enroll in an Associate degree program or in a Bachelor degree program, but Associate programs will also accept students that have not passed the final secondary school exam. Students completing an Associate program can then enroll in the second or third year of a bachelor program. Moreover enrollment data refer to administrative acts and not to students, and therefore enrollment data overestimate the number of students enrolled.

Table 65. Enrollment in TVET Higher education Institutions by sex and level; school year 2017-18

	Enrollment			
	Males	Females	Total	Fem
Diploma	6,731	2,128	8,859	**24.0**
Bachelor	13,610	4,435	18,045	**24.6**
Master	153	25	178	**14.0**
Total	20,494	6,588	27,082	**24.3**
Diploma	*32.8*	*32.3*	*32.7*	
Bachelor	*66.4*	*67.3*	*66.6*	
Master	*0.7*	*0.4*	*0.7*	
Total	*100.0*	*100.0*	*100.0*	

Source: TVETMIS, MLVT

6.4.2 Graduates

According to available information, the number of graduates from TVET High Education Institution for the school year 2017-2018 was equal to 10,481 (Table 66). The Public sector accounted for 84.5%, the Private sector for 9.6%, and NGO for 6% (Figure 40). In the case of Associate and Bachelor degrees, the share of the Public sector is similar to that of the total. The weight of the private sector is positively related to the educational level (4.4% for Associates, 13.8% for Bachelors and 47.1% for Master). The weight of NGO shows the opposite trend, declining with the educational level (11.4% for Associate, 1.2% for Bachelor). If we consider the type of degree, 46.8% of the Graduates obtained an Associate degree, 52.7% a Bachelor degree and only 0.5% a Master or a Ph.D.

Figure 43. Number of graduates by level and typology of Institutions; 2017-18

	Associate	Bachelor	Master	Total
Public	84.2	85.0	52.9	84.5
Private	4.4	13.8	47.1	9.6
NGO	11.4	1.2		6.0

	Public	Private	NGO	Total
Associate	46.7	21.7	89.4	46.8
Bachelor	53.0	75.9	10.6	52.7
Master	0.3	2.4	0.0	0.5

Source: TVETMIS, MLVT

This proportion holds almost exactly for the Public sector, while in the case of the private sector 21.7% of graduates obtained an Associate degree, 75.9% a Bachelor degree and 2,4% a higher degree. Finally, in the case of NGO, 89.4 of the graduates obtained as Associate degree and 10.6% a Bachelor degree.

Table 66. Graduates by sex, educational level and typology of institutions; from 2012-13 to 2017-18

	Males				Females				Total				Female/Total			
	Associate	Bachelor	Master Phd	Total	Associate	Bachelor	Master Phd	Total	Associate	Bachelor	Master Phd	Total	Associate	Bachelor	Master Phd	Total
Public																
2017-18	3,113	2,866	25	6,004	1,020	1,830	2	2,852	4,133	4,696	27	8,856	24.7	39.0	7.4	32.2
2016-17	2,619	4,567	17	7,203	906	1,860	1	2,767	3,525	6,427	18	9,970	25.7	28.9	5.6	27.8
2015-16	1,444	2,102		3,546	244	709		953	1,688	2,811		4,499	14.5	25.2		21.2
2014-15	1,400	1,966	6	3,372	250	622		872	1,650	2,588	6	4,244	15.2	24.0	0.0	20.5
2013-14	1,417	3,025	35	4,477	413	1,119	13	1,545	1,830	4,144	48	6,022	22.6	27.0	27.1	25.7
2012-13	2,349	2,169	86	4,604	381	526	11	918	2,730	2,695	97	5,522	14.0	19.5	11.3	16.6
Public																
2017-18	149	403	19	571	68	357	5	430	217	760	24	1,001	31.3	47.0	20.8	43.0
2016-17	178	721	26	925	128	645	3	776	306	1,366	29	1,701	41.8	47.2	10.3	45.6
2015-16	283	1,034		1,318	192	934		1,126	475	1,968	1	2,444	40.4	47.5		46.1
2014-15	206	724	20	950	92	556	5	653	298	1,280	25	1,603	30.9	43.4	20.0	40.7
2013-14	260	766		1,026	106	431		537	366	1,197		1,563	29.0	36.0		34.4
2012-13	303	84		387	140	37		177	443	121		564	31.6	30.6		31.4
NGO																
2017-18	311	22		333	247	44		291	558	66		624	44.3	66.7	#DIV/0!	46.6
2016-17	212	43		255	136	48		184	348	91		439	39.1	52.7	#DIV/0!	41.9
2015-16	401	19		420	204	27		231	605	46		651	33.7	58.7		35.5
2014-15	488	22		510	129	20		149	617	42		659	20.9	47.6	#DIV/0!	22.6
2013-14	345	15		360	199	30		229	544	45		589	36.6	66.7		38.9
2012-13	318	7		325	128	13		141	446	20		466	28.7	65.0		30.3
Total																
2017-18	3,573	3,291	44	6,908	1,335	2,231	7	3,573	4,908	5,522	51	10,481	27.2	40.4	13.7	34.1
2016-17	3,009	5,331	43	8,383	1,170	2,553	4	3,727	4,179	7,884	47	12,110	28.0	32.4	8.5	30.8
2015-16	2,128	3,155		5,284	640	1,670		2,310	2,768	4,825	1	7,594	23.1	34.6		30.4
2014-15	2,094	2,712	26	4,832	471	1,198	5	1,674	2,565	3,910	31	6,506	18.4	30.6	16.1	25.7
2013-14	2,022	3,806	35	5,863	718	1,580	13	2,311	2,740	5,386	48	8,174	26.2	29.3		28.3
2012-13	2,970	2,260	86	5,316	649	576	11	1,236	3,619	2,836	97	6,552	17.9	20.3		18.9

Source: TVETMIS, MLVT

The number of Graduates, seems to present a positive trends but yearly fluctuations have been quite relevant and appear difficult to explain, especially those for the Public sector, problems of correct estimation being a possibility.

It must be strongly underlined that the lack of data on enrollment and graduates by faculty makes impossible to provide a comparison between skill demand and skill supply fro universittyn graduates.

6.5 Exits from TVET system and labor market entries

The number of Graduates from Certificate courses is an acceptable approximation of regular exits from TVET, while the difference with the number of enrolled represent irregular exits or dropouts.

In the case of High education, the number of graduates does not correspond to exits from the TVET system since a (large) percentage of young people that obtain an Associate degree will remain inside the TVET system to obtain a Bachelor Degree and some of those that obtain a Bachelor degree will continue for a Master degree. Assuming that half of those that obtain an Associate degree will continue and that all graduates will exits TVET we can estimate the exits from TVET High Education in around 8,000.

If we add regular the exits from Certificate courses to those from Higher education we reach a total of 10,000 which represent approximately 4% of the exits from the education system and therefore of the potential labor supply.

Conclusion

Available information clearly points to the unavoidable conclusion that Cambodia is still very far from having a Vocational training system capable of providing the skills required to promote social development and economic growth. Short term informal training is not sufficient and Cambodia needs is the establishment of long-term high-quality vocational training courses aimed to produce those intermediate technicians that represent the key element not only to improve productivity, but also to enlarge the typology of products in the existing clusters and to allow jumping to better technologies. New generations of young technicians are also necessary in order to fuel entrepreneurship and the creation of a relevant substratum of technologically advanced small and medium sized national companies. At the same time the definition of educational and vocational training policies must be coherent and coordinated with the design of industrial policies necessary to avoid graduates the frustration of unemployment.

Part 3
Summary and
Policy Suggestions

SECTION 7 Summary and Policy Suggestions

The background analysis

Economic growth - Over the past three decades, Cambodia has achieved a remarkable socioeconomic development. Economic growth, driven by textile, tourism, construction, and initially agriculture has been impressive. Despite a slowdown registered after the financial crisis, from 2000 to 2017 GDP in real terms has increased by 250% and GDP per capita (that by now stands at almost 1,500 dollars) has more than doubled in real terms.

Economic sectors and branches - The main economic sectors and their branches have registered quite different rates of growth that have impacted on their weight in total production and role in economic growth. After the 2009 crisis, GDP grew at an average rate of 7%; in the same period the rate of growth of agriculture dropped to 2.1%, that of Services to 5.3%, while the rate of growth of the Industrial sector increased to 11.2% As a result, at present the share of Services in Gross value added is 42.2%, that of Industry 32.9%, while the share of Agriculture is down to 24.9%.

To better appreciate the recent situation, we recall that from 2009 to 2017 three branches accounted for half of the increase in Value added: Textile (31%), Construction (11%), and Trade (9%). On the negative side, the contribution of agriculture was only 7.3% (it was 21% in the previous decade) and that of Hotel and restaurants had declined from 6.4% to 5.4%.

Demographic trends - Total population that numbered 4.4 million in 1950 stands now at 15.5 million. However, its rate of growth has notably decreased. The Total fertility rate is still well above the replacement level (2.7 children), but the number of births is projected to decline from a present peak of 366,000 to 318,000 for the middle of the century. The share of working age population has reached 64.3% so that in the next years Cambodia could profit from the demographic dividend.

The education system - After 1980 Cambodia has made big steps in rebuilding the national education system. The large increase in the number of students has been paralleled by an even more relevant increase of physical infrastructure and staff. Data show that in the last years the education system has started to successfully face the relevant problems with which it was confronted and that affected the regularity of the education process: the presence of a large number of overage students, an extremely high number of dropouts (the majority of which were concentrated in the Primary level), a high rate of repetition.

Despite the improvement registered in the last 10 years, in the school year 2016-17 one student out of seven was still overage, the repetition rate in Primary school was 6.5% and more than ¾ of the exits from the education system were due to dropouts. However, contrary to the past the percentage of dropouts increased with the educational level.

A rough estimate puts the present exits from the training phase at around 315,000 that generate a labor supply just in excess of 280,000, around 60% of which with less than compulsory education, 17% with maximum Lower secondary education, 6% with Upper secondary education and 17% with a university degree.

The labor market - Taken at face value, labor market data, and more specifically the absence of unemployment, suggest an almost perfect coherence between labor supply

and labor demand. Such conclusion, however, is not warranted in a situation in which ¾ of the labor force reside in rural areas where statistical surveys find it difficult, if not impossible, to measure unemployment or to distinguish between employment and hidden unemployment and urban areas are certainly characterized by a large under-employment.

Labor market data do, however, suggest also substantial changes and qualitative improvements of the employment situation. In the last ten years the employment level increased at an average yearly rate of 193,000; agricultural employment started to decline in 2012 so that by now its share is down to 37%. In the same period the increase in industrial and service employment has accelerated respectively to 161,000 and 178.000, and the shares of the two sectors have increased to 26.2% and 36.8%.

The same period has also registered notable qualitative improvements. More specifically:

- The percentage of paid employees has increased from 26% to 51% while the weight of Non-paid family workers has declined from 36% to 4%;
- The percentage of skilled agricultural workers has declined to 31%, while that of Craftsmen has increased from 10% to 24% and that of Sale and services workers from 12% to 18%. Moreover, in the last 5 years the growth of Craft and related occupations, Services and sales workers, Clerical support works explain respectively 54%, 18% and 13% of employment growth, while other relevant contributions came from Plant and machine operators, Professionals and Technicians. However, the joint weight of managers, professionals and technicians has slightly declined and remains below 6%, while unskilled workers still weight more than 10%;
- The educational level of the labor force has improved, but remains very low: 70% have not completed compulsory education; those with high education are 8% and 7% have a post-secondary diploma. A positive element is, however, represented by the fact that in the last 5 years 34% of the additional jobs have been taken by people with post-secondary education; however, the same period registers also an increase in the number of employed with less than primary or primary education.

The scenarios

The scenarios have been estimated via a stock-flow model of the labor market that allows assessing how many people will be requested by the market and how many will be entering the labor force and to analyze the quantitative and qualitative coherence of the two flows.

A stock-flow analysis of the Cambodian labor market for the period 2007-2017 - The analysis shows that between 2007 and 2017:

- On the average, every year 261,000 young Cambodian found their first job;
- The creation of additional jobs contributed for 79%, generational substitutions for 21%;
- 92% of entrants were in the 15-19 age group and the other 8% in the 20-24 age group
- Two-third of exits were concentrated in the 55-64 age group and 26% in the previous age bracket.
- The improvement in the educational level we have already observed was determined by the difference between the educational level of those that entered employment for the first time and those that exited definitely.

The 2017-2027 scenarios

The demand side - The higher average age of the employed brings to estimate that from 2017 to 2027 definitive exits will be more numerous than in the previous period and amount to 1.045 million.

The number of jobs that will be created by the Cambodian economy (the Additional demand) will be determined by the rate of growth of production and by the rate of growth of productivity; the former will largely depend on the quantity and typology of internal and foreign direct investment and on international trade; the latter will result from better technology, more educated and better trained employed, improved labor organization and passages of the production structure to higher technological clusters.

Past trends and recent indications of the Cambodian public institutions did suggest the adoption of three average rates of GDP growth (6%, 7% and 8%), and three employment-income elasticity (0.2%, 0.25% and 0.3%). The latter, all below past values, reflect the hypothesis that ageing and the attraction generated by construction and manufacturing could accelerate the exodus from rural areas and agricultural occupations, while technological innovation need to be introduced in all sectors to boost the competitiveness of the Cambodian production system.

The resulting 9 rates of employment growth are included between a minimum of 1.2% and a maximum of 2.4%, and of 1.75% in the intermediate scenario that corresponds to average increases of employment equal to 111,000, 235,000 and 166,000 respectively. A comparison with the expected growth of working age population provides the first important result: rates of GDP growth above 7% would require an employment-income elasticity lower than 0.25 and therefore very high rates of technological change.

Concentrating the analysis on the intermediate scenario, the Report finds that agricultural employment is expected to decline at an average yearly rate of 178,000, while industrial employment will increase by 183,000, and services by 178,000. This would notably change the employment structure by sector, with agriculture declining to 14%, industry increasing to 39.6% and Services to 46.4%. The negative Additional demand of Agriculture does not imply that Agriculture will not register generational entries. As a matter of fact, the definitive exits of elderly people and the passages of younger workers to Industry and Services, probably mainly toward Construction, the Garment sector, and the Tourism sector (that will all continue to absorb workers with low educational level) will be partially counterbalanced by the entries of the children of the present-day farmers.

The sum of the Additional demand in the Intermediate scenario and of the Replacement demand brings to an estimate of the Labor demand in terms of flows of around 270, 000 young people per year. Based on past trends, the Report estimates that still 34% of entries will have less than compulsory education, 23% compulsory education, and 23% at least Upper secondary. The average educational level of generational exits will be notably lower; therefore, the educational level of the employed will increase, but the increase will not be dramatic. In 2027, the share of people with less than compulsory education will still be as high as 59%, but the share of employed with at least Upper secondary education is expected to increase from 8.2% to 12.4%.

The supply side - The supply of labor in terms of flow is given by the number of people that enter the labor force in any given time interval. According to UN DESA Population Projection (UN DESA 2019), between 2017 and 2027, entries into working age population

will amount to 3.2 million. Assuming that the propensity to enter the labor market remain constant, the Report estimates entries into the Labor force at 2.634 million.

To break down generational entries by educational level, the Reports presents two projections of the exits from the Education and TVET system based the first on the assumption that the specific rates of survival remain constant at the level of the school year 2016-17, the second, more realistically, that they will progressively improve. As to be expected, the educational level of exits improves more in the second than in the first scenario: while in 2017, 60% of the students exiting the school system had not reached compulsory education and 40% had at least compulsory education, the shares are projected to be 50% and 50% in Scenario 1, 40% and 60 % in Scenario 2. Even more interestingly, University graduates could reach in 2027 a percentage of 20%.

Finally, the Report examines whether the exits from the training phase of life (scenario 2) and the needs of the labor market (Intermediate Scenario) by educational level for the period 2017-2027 are qualitatively coherent. The estimates show that the exits from the school system are perfectly in line with the needs of the labor market, the only value in excess being that of the lowest educational level, which is however characterized by a lower propensity to enter the labor force.

Skill needs and training needs: 2017-2022

The five-year scenarios are aimed to analyze skill needs and training needs in the medium term and analyze their coherence with the present production of graduates of the TVET system. Using the same approach of the ten-year scenarios and considering only the intermediate scenarios the analysis shows that:

- The growth in total employment by 795,000 will be the result, on the one hand, of a decline in agriculture of 808,000 and, on the other, of an increase in Industry and Services of respectively 850,000 and 753,000.
- Once the Replacement demand and the passages from agriculture to the other two main sectors are taken into consideration, yearly average entries into Agriculture are estimated equal to 40,000, those into Industry to 196,000 (113,000 first time entries and 83,000 passages from agriculture) and those into Services to 188,000 (109,000 first time entries and 79,000 passages from agriculture) for a total amount of 490,000 gross entries.
- Three fourth of entries will be in three major occupational group, with Craft and related workers playing the major role (57%), followed by Services and sales workers (14%) and Clerical support workers (13%). A minor but qualitatively important role will be played by Plant and machine operators, Professional and Technicians.
- The combined use of different sources including NEA Job Index allows to sustain that the main shares of labor demand will be made up by a series of occupations of the construction sector (that together will account for around 100,000 entries), of the garment sector (around 80,000), of the Accommodation and restaurant sector, of the retail trade sector, but also by occupations in Health Education, IT requiring Upper High school diploma and University degree.

Coming to the supply side, the analysis of the TVET courses at certificate and university level and show that the share of the labor supply covered by vocational training courses is qualitative and quantitatively very limited so that it could (should) be immediately expanded in the direction indicated in the Report.

Policy suggestions

Increase the educational attainment - A central finding of the Report is that the Cambodia labor market suffers from a still very low educational level of the workforce. It is a structural problem that can be solved only in the medium long run by increasing the educational attainment of the student exiting the training phase of life.

A higher educational level of the workforce is extremely important in this historical phase not only because a more educated workforce is requested by numerous branches of the service sector, but also because it represents a prerequisite to acquire the skills and competences requested by the new technology that will be adopted in all sectors agriculture included. It must be underlined that many of the limits that employers find in TVET graduates such as the lack of basic skills in such areas as reading, writing, and mathematics (ADB, 2015, NEA, 2018) are to be imputed not to vocational training, but to lack of basic education.

An improved efficiency of the labor force is also requested because due to the demographic transition the rate of increase of the labor force will necessarily decline and migration flows to neighbor countries could further deplete the availability of local skilled labor, already very close to the limit, even considering inter sector passages.

A realistic approach to economic growth and social development must also take into consideration that Agriculture and Tourism can and must continue to play a fundamental role in the economic growth of Cambodia, but in order to do so they must be modernized and brought to international standards. An indispensable step in this direction is the availability of skilled workers.

The large amount of short courses in agriculture must be rationalized and courses in food production and animal husbandry need to be taught at certificate level.

The natural, cultural and archeological heritage of Cambodia can compete with that of any other country in the world, but in order to do so hotels and restaurant must also be able to provide services at international standards. Specialized vocational training schools producing graduates in the vast array of occupations typical of the tourist sector are therefore badly needed in order to provide the necessary valorization of the natural beauty and extraordinary cultural heritage of the country.

Reduce the dropout rate - The majority of exits from the education system take place not at the end but during the educational cycles and those during primary education are especially relevant and have the highest impact. Our analysis has shown that a reduction of the dropout rate would immediately impact on the average duration of the education process.

Many of the causes of early dropouts can be easily understood. A previous ADB Report stated that "Poverty drives many children into the labor force before they acquire much

schooling and malnutrition affects what they can learn when they are in school" (ADB, 2015). Given the relevance of the issue, it would seem relevant to organize a survey aimed to investigate in an organic way the root causes of the phenomenon and to design efficient measure to tackle the problem

Improve the efficiency of the education process – The analysis has shown that in the near future the number of students enrolled in the school system will not increase substantially; in this phase it would seem therefore possible and appropriate to invest in the quality of education. According to the same ADB study: "Another challenge is the quality and relevance of the education that is currently provided. One reason for quality problems in education is that teachers themselves are often underqualified." Improvement in the quality of the teachers and of the students-teacher ratio would not only increase the quality of the graduates, but would reduce the repetition rate, which is another of the structural problems that affect the regularity and efficiency of the training process.

Define the role of TVET - This report has devoted little space to TVET, the main reasons being the extremely low number of students and graduates form vocational schools (around 1% of the total) and the lack of statistical information. However, it is to be hoped that the role and relevance of TVET will increase. Three directions seem to be open for a larger role of TVET.

In the first place TVET could act as a safety net for the boys and girls that drop out from school during compulsory education. Acting in this direction TVET could at least partially help these children to comply with the education requirement, while providing them some tools for the labor market and for pursue vocational training.

In the second place, TVET could enlarge its activity by attracting boys and girls that have completed compulsory education or a higher educational level and providing them with the skills and competencies requested by the market. It is common knowledge that vocational training in Cambodia is faced, as in many countries in the world, by a negative perception and is seen as a second level solution. This vision is often due also to the lack of recognition of the status and relevance of jobs for which the TVET prepares its student. In order to enlarge the scope of TVET is therefore crucial not only to show its relevance and advertise its presence and promote its activities, but also to improve the social status and economic return of the wages of the TVET occupations.

In the third place it is widely recognized that the next years will be characterized by an unprecedented technological innovation that will affect all economic sectors. This will require a large amount of retraining that TVET Institutions could provide in cooperation with the private sector.

Finally, a series of factors will make employment in agriculture crucial for the development of the country. The huge reduction of workers the sector will witness, the centrality that this sector should recover in the Cambodian economy, the necessity to increase its productivity adopting the most modern technology suggest that TVET institution should give special attention to agriculture.

The reports contain a list of non-agricultural occupations that will be in demand in the next five years and of the occupation where then supply is insufficient often for lack of vocational training.

The present production of vocational training graduates cover only 4% of the generational labor demand. There is therefore an extremely wide space to increase the number of courses directed to young people as well as the range of topics covered. Moreover, special consideration should be given to the need of retraining adult workers moving from the agricultural sector, where they are not needed, to occupations in the construction sector, but also in manufacturing and tourist occupations that do not need a high level of education.

Education, Vocational training and Industrial policies – Thinking that in order to plan and organize education and vocational training what we need is a forecast of the labor demand is simplistic. In the first place, economists are not fortune tellers and what they can do and should do is to provide alternative visions of the future based on different values of the basic variables of the problems. These scenarios will tell politicians what will happen if certain events will take place and or certain policies will be adopted. The scenarios are therefore tools that help politician to take evidence-based decisions. In the second place the future is also our own creation. This implies that the training that will be needed will largely depend on the amount and typology of investments that will be made, the agricultural and industrial policies that will be enacted, on how good we will be in expanding the service sector.

In conclusion, while labor market and economic intelligence should provide scenarios, a strong and continuous coordination should be established between the design and implementation of industrial policies (broadly defined) and the design and implementation of training policies, broadly defined.

Increase labor market intelligence - As any other country, also Cambodia should adopt evidence based polices in all sectors, but especially in the area of labor market policies broadly defined and inclusive of education policies and vocational training policies.

Labor market Intelligence depends on the availability of statistical information and the capacity to interpret this information, adopting the correct tools (models) and analytical procedures.

At present labor market intelligence is provided mainly (totally) by analysis like the present and previous analysis carried by NEA, namely those on labor demand forecasting (NEA, 2017) and on skills shortages and skills gaps (NEA, 2015, 2016, 2018) and by International Organization such as ILO, World Bank and ADB.

The efforts to forecast labor demand and more generally to build labor market scenarios is made extremely difficult by the lack of detailed, reliable statistical information. This is especially true for the labor demand related to the TVET priority occupations; as a matter of fact, given their small size their employment level is not measured by the Social economic survey and therefore no information is available.

For what relates to the scenarios or any type of projections and forecasts, Cambodia is missing the basic information that is normally provided by the labor force survey that represents an indispensable source for any medium-long term labor market analysis. The lack of these data imposes the adoption of cumbersome procedures to estimate the missing data that will then necessarily have a limited reliability. It must also be underlined that the publication of the Census data will not solve the problem due to the delay with

which they will be published, the fact that they will probably conflict with available information and will be available only every ten years.

It must also be underlined that the High education system suffers from the problem that statistical information refers to administrative acts and not to students, which makes necessary to proceed by assumptions when trying to provide answers to simple questions like how many students are enrolled or have graduated. Finally, at present TVET high education statistics do not provide information on the number of enrolled and graduates by faculty and departments.

In conclusion in order to carry on medium and long-term labor market analysis it is essential that the Cambodian National Institute of Statistics will carry on regular Labor force surveys and adopt standard classification of Occupations to be then followed by all Ministries and Institutions. At the same time the Statistical Office of the Ministry of labor should implement a more thorough and complete collection of information on enrollment and graduation from all level of vocational training courses.

Skill shortages and skill gaps surveys are extremely important but present the limit that are expensive, and are already old when they are completed. A valid alternative to understand short term fluctuation of the demand for specific occupations and the trend of supply is provided by the administrative data that could be collected by NEA and by DLMI as a result of their activities. NEA could provide data mainly, but not only, on the demand side, the DLMI on the supply side. It is my understanding that both NEA and DLMI are working to the construction of their information systems, but I am not aware of any effort to coordinate the collection of information toward a common goal.

Moreover, it would seem appropriate to move to periodic (quarterly, yearly) survey of the demand of labor by occupations by administering questionnaires using Computer Aided Telephone Interview (CATI) or Computer Aided Web Interview (CAWI) (see for instance the Excelsior project https://excelsior.unioncamere.net/images/metodologia_/Nota_ Metodologica.pdf)

Finally, it must be underlined that analyses of skill shortages and efforts to forecast labor demand and to build scenarios have been carried out with the support of foreign experts to whom it is also normally demanded to train local officials and provide them the competencies necessary to carry on future analyses.

My personal opinion, based on direct experience, is that such efforts are doomed to failure despite the commitment, determination and willingness of the trainees to learn. The first and foremost reason is that very few, if any, of the officials of the Ministry of labor have studied economics (not to speak of applied economics and labor economics) and statistics. The second is that due to their previous studies and bureaucratic activities they lack a research "mentality" a problem that is compounded by the fact that they continue to carry on daily bureaucratic activities not connected, or only very marginally connected, to scientific research. Finally, they belong to a complex bureaucratic structure inside which they hope to move to higher and better positions, not necessarily in line with the activities to which they are trained.

To put it very simply it is not possible to train in few weeks, or even in a few months, people that do not have the necessary background in complex research activities that require

years of study and practice. Moreover, even if the training would be successful no mechanism ensure that the people trained will continue to use the competencies acquired to analyze the labor market inside the Ministry for a relevant time period.

In conclusion, in order to obtain the labor market intelligence necessary to design evidence-based policies, the Ministry of Labor needs a Labor Market Observatory, possibly an independent institution, made up of a limited number of professionals with the necessary academic background and devoted to their occupation.

The action Plan

The implementation of the previous policy suggestions would require the following operational steps.

A. To improve the performance of the education system and raise the average educational level of the exits from the training phase of life it is necessary:

- to reduce the dropout rates
- to raise the quality of the teachers and of the teaching
- to provide a safety net for the dropouts.

In order to reach these crucial goals, necessary to sustain future socioeconomic development and prepare the students exiting the school system to acquire professional skills, the Ministry of Education and the Ministry of Labor should create an ad hoc working group that will:

- organize a research on the root causes of dropouts and identify the geographical areas most affected by the problem;
- provide a check-up of the professional competencies of the teaching staff;
- identify the best way to organize vocational training activities directed to the very young students that have dropped out from the school's system before completing compulsory education and aimed to complete their basic education and provide them with the skills necessary to pursue an occupation; the measures should probably include financial support for the families of the children and for the children themselves since one of the main causes of dropouts is poverty;
- identify training and retraining activities for the teachers with insufficient competencies using the most competent staffs and modern technologies such as distance learning.

B. Define and enlarge the role and activities of TVET. This is a complex goal that should be pursued by the top management of the Ministry, supported by a working group that could collect case studies and inspiration from what is done in other ASEAN, but especially EU countries where these issues have been discussed and confronted for more than 40 years. The objective should be that of comparing the different relative roles that education and vocational training play in various countries at different stages of development. The result should be a more complete and complex vision of the role that vocational training can and should play for different age groups (children in compulsory age education, students in post compulsory age, people in the central age group but also older workers), people employed in a larger number of sectors including

agriculture, and different situations (first job seekers, unemployed, employed that want to pursue a different profession, workers with obsolete competencies).

C. Coordinate Industrial and vocational training policies. The training needs are not determined only by economic trends, but are also (mainly) the result of development and industrial policies. The implication is that the Industrial Plan and the Vocational training plan should be developed together since the typology of industrial development will need a certain type of training, while the result of a given training stream can be a valid motivation to prefer a certain development path.

D. Improve employment data collection. The Ministry of Labor should play an active role in promoting the implementation by the National Institute of Statistics of a continuous Labor Force Survey.

E. The creation of an independent Labor Market Observatory – The creation of an independent Labor Market Observatory (or of an Economic Observatory) -in my opinion the only reasonable and also less expensive solution to the problem of data collection and labor market intelligence- should be seriously considered. The Labor Market Observatory should be in charge of the Labor Market information system, collect and organize data from the Statistical Office and the various Ministries, support NEA and the Ministry of labor in collecting information on labor market flows and TVET activities, support the definition of more advanced methodologies to collect information on the labor demand by occupations and skill gaps.

REFERENCES

ADB. 2015. Cambodia: Addressing the skills gap. Mandaluyong City, Philippines.

Bruni Michele. 1988. A stock flow model to analyse and forecast labor market variables. Labour, n.1.

Bruni Michele. 1993. Per una economia delle fasi della vita. in Italian Statistical Association, Popolazione, tendenze demografiche e mercato del lavoro, Rome.

Bruni Michele. 2017. Egypt Labour market report. Demographic trends, labour market evolution and scenarios for the period 2015-30. International Organization for Migration, Cairo.

Bruni Michele. Likanan Ljuch and Somena Kuoch. 2013. Skill shortages and skills gaps in the Cambodian labour market: Evidence from employer skills needs survey. ILO Asia-Pacific Working Paper Serie; ILO Bangkok.

Cambodia Socio-economic Survey 2013. 2014. National Institute of Statistics, Ministry of Planning.

Cambodia Socio-economic Survey 2014. 2015. National Institute of Statistics, Ministry of Planning.

Cambodia Socio-economic Survey 2015. 2016. National Institute of Statistics, Ministry of Planning.

Cambodia Socio-economic Survey 2016. 2017. National Institute of Statistics, Ministry of Planning.

Cambodia Socio-economic Survey 2017. 2018. National Institute of Statistics, Ministry of Planning.

Education Statistics and Indicators. Ministry of Education, Youth and Sport. EMIS.

ILO. 2016. Cambodia Garment and Footwear Sector Bulletin. Issue 3.

Ministry of Economy and Finance. 2019. Budget in Brief. Fiscal year 2019.

Ministry of Labor and Vocational Training. 2017. National Technical Vocational Education and Training Policy 2017-2025.

National Employment Agency. 2015. Skills Shortages and Skills Gaps in the Cambodian Labour Market: Evidence from Employer Skills Needs Survey 2014. Phnom Penh.

National Employment Agency. 2016. Skills Shortages and Skills Gaps in the Cambodian Labour Market: Evidence from Employer Skills Needs Survey 2015. Phnom Penh.

National Employment Agency. 2017. Labor Demand Forecasts 2017-2021. Phnom Penh.

National Employment Agency. 2018. Skills Shortages and Skills Gaps in the Cambodian Labour Market: Evidence from Employer Skills Needs Survey 2017. Phnom Penh.

Phann Dalis. 2014. Links between Employment and Poverty in Cambodia, CDRI Working Paper Series No. 92.

Royal Government of Cambodia. 2015. Cambodia Industrial Development Policy 2015-2025.

UNDP Cambodia. 2014. Competitiveness and Linkages in Cambodia's Manufacturing Sector. Discussion Paper No. 12.

United Nations. Department of Economic and Social Affairs. 2019. World Population Prospects. The 2019 Revision. Highlights, United Nations, New York.

World Bank. 2019a. Cambodia's Future Jobs: Linking to the Economy of Tomorrow.

World Bank Group. 2019b. Cambodia Economic Update.

ANNEXES
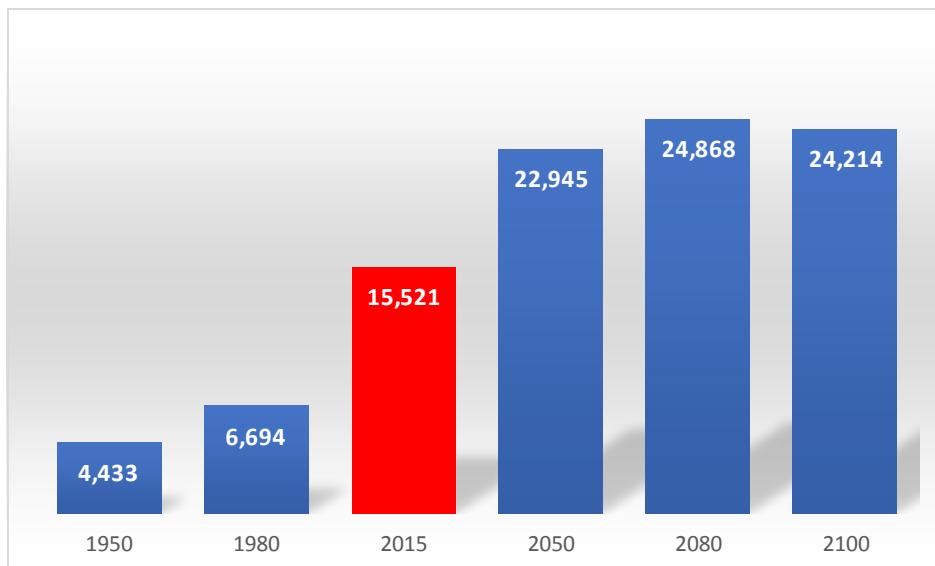
Annex 1 Demographic trends

1. The long-run demographic background

1.1 The demographic transition; timing and impact

Between 1950 and 2015, the Cambodia population has increased from 4.4 million to 15.5 million, despite the decline registered during the Khmer rouge regime. According to the United Nations Department of Economic and Social Affairs projections (UN DESA, 2019), in a zero-migration scenario, the population of Cambodia will reach 23 million in 2050, a maximum of almost 25 million by 2080 and then slightly decline during the following 20 years.

Figure 1.1 – Total population 1950-2100 in thousand; selected years between 1950 and 2100
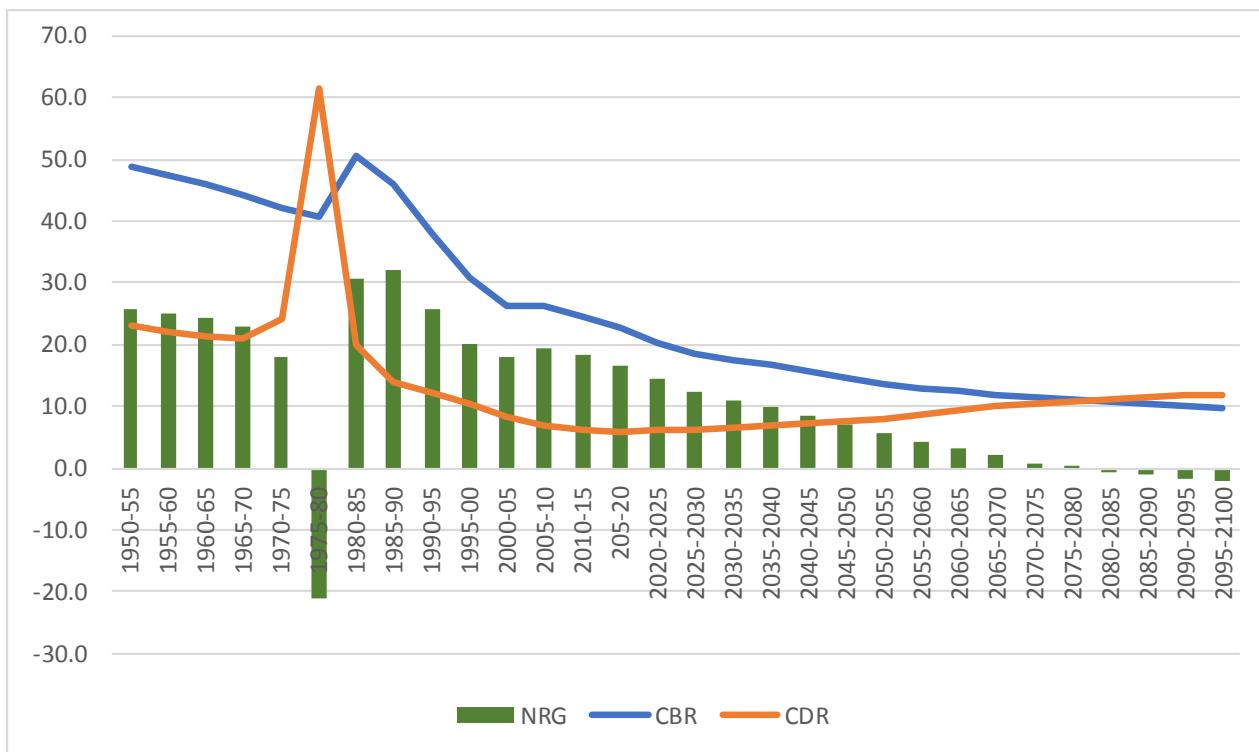
Source: Elaboration on UN DESA estimates 1950–1955 to 2010–2015 and forecast (zero migration scenario) 2015–2020 to 2095–2100; UN DESA, 2019.

1.2 Mortality, fertility and natural balance

The notable demographic expansion registered by Cambodia is the result of a process known as demographic transition[14], a phenomenon that in Cambodia was already in its way in 1950, when the crude mortality rate (CMR) was 23.2 per thousand, already well below the standard value of a traditional society (40, 50 per thousand), while, the crude birth rate (CBR) was still just below 50 per thousand. Therefore, total population was growing at an average yearly rate of almost 2.6 per cent (Figure 1.2).

---

[14] The Demographic transition has been defined as the passage from a traditional demographic regime characterized by high fertility and high mortality, to a modern demographic regime characterized by low fertility and low mortality. This process was defined a "transition" because it was assumed that it would bring from a situation od equilibrium to another situation of equilibrium.

Figure 1.2 – Crude birth rate, Crude death rate and natural rate of growth; 1950-2100

Source: Elaboration on UN DESA estimates 1950–1955 to 2010–2015 and forecast (zero migration scenario) 2015–2020 to 2095–2100; UN DESA, 2019.

During the remaining part of XX century, the CBR fell slightly more rapidly than the CDR (respectively from 49 per thousand to 30.7 per thousand and from 23.2 to 8.3 per thousand), and the natural growth rate fell to around 1.8 per cent. These trends were interrupted in the second half of the 70s that registered a dramatic increase of the death rate and decline of the birth rate, followed by a peak of the birth rate. At present, the CBR and the CDR are respectively equal to 22.7 per thousand and 6 per thousand, resulting in a natural rate of population growth of almost 1.7 per cent per year.

According to UN DESA projections (the zero-migration scenario), the CBR and the CDR will tend to slowly progressively converge, reaching a common value of around 11% in 2080, and in the last 20 years of the century the population of Cambodia is projected to slightly decline.

Another way to capture the progress of the demographic transition is to analyze other indicators of fertility and mortality, and more specifically the total fertility rate and the life expectancy at birth, as well as one of its most important determinants, the infant mortality rate (Table 1.1). To better evaluate the performance of Cambodia, we have reported in table 1.2 the same indicators for all ASEAN countries, in selected year.

Table 1.1 – Cambodia; Crude birth rate, Total fertility rate, Crude death rate, Infant mortality rate and Life expectancy at birth; average yearly values; 1950-1955 to 2005-2015

|	Crude birth rate	Total fertility rate	Crude death rate	Infant mortality rate	Life Expectancy at birth		
					Total	Male	Female
1950-55	49	7	23	142	40	39	42
1955-60	47	7	22	135	41	40	43
1960-65	46	7	22	134	41	40	43
1965-70	44	7	21	132	42	40	44
1970-75	42	6	24	139	38	35	41
1975-80	41	5	62	319	14	12	18
1980-85	51	6	20	152	45	43	47
1985-90	46	6	14	86	52	50	54
1990-95	38	5	12	86	54	52	57
1995-00	31	4	11	86	56	54	59
2000-05	26	3	8	66	61	59	63
2005-10	26	3	7	45	65	63	67
2010-15	25	3	6	30	68	66	70
1950-2015	24	4	17	112	-27	-27	-28

Source: Elaboration on UN DESA estimates 1950–1955 to 2010–2015 and forecast (zero migration scenario) 2015–2020 to 2095–2100; UN DESA, 2019.

Due to political events, in Cambodia the demographic transition started in earnest only at the beginning of the 80s. Therefore, Cambodia still lags behind the other ASEAN countries in the process of demographic transformation (Table 1.2).

Table 1.2 – ASEAN countries; Total Fertility Rate (TFR), Life Expectancy at Birth (LEB), and Infant Mortality Rate (IMR); 1950-1955 and 2005-2015

Asean countries	TFR			Asean countries	LRB			Asean countries	IMR		
	1950	2015	Diff.		1950	2015	Diff.		1950	2015	Diff.
Philippines	7.4	3.1	-4.4	Singapore	60.2	82.30	22.1	Laos	175.9	47.0	-128.9
Laos	5.9	2.9	-3.0	Thailand	50.8	75.2	24.4	Myanmar	213.0	43.7	-169.4
Cambodia	6.9	2.7	-4.2	Brunei	50.9	75.0	24.1	Cambodia	142.4	30.0	-112.4
Indonesia	5.5	2.5	-3.0	Malaysia	55.0	75.0	20.0	Indonesia	184.0	25.0	-158.9
Myanmar	6.0	2.3	-3.8	Vietnam	53.5	75.0	21.5	Philippines	85.1	23.7	-61.4
Malaysia	6.4	2.1	-4.2	Philippines	56.5	70.2	13.7	Vietnam	103.4	17.9	-85.5
Brunei	6.9	2.0	-4.9	Indonesia	41.8	70.0	28.2	Thailand	127.2	10.1	-117.1
Vietnam	5.4	2.0	-3.4	Cambodia	40.3	67.6	27.3	Brunei	108.4	8.8	-99.7
Thailand	6.1	1.5	-4.6	Laos	40.9	65.5	24.6	Malaysia	101.5	6.4	-95.1
Singapore	6.6	1.2	-5.4	Myanmar	36.4	64.7	28.3	Singapore	61.0	2.1	-58.9
Average	6.3	2.2	-4.1	Average	48.6	72.0	23.4	Average	130.2	21.5	-108.7
Max-Min	2.0	1.8	-0.2	Max-Min	23.9	17.6	-6.2	Max-Min	152.1	44.9	-107.2

Source: Elaboration on UN DESA; UN DESA, 2019

In Cambodia, the Total Fertility Rate (TFR) declined steadily from almost 7 children per woman at the beginning of the 1950 to around 5,4 at the end of the 70s. It then climbed back to 6.4 at the beginning of the '80s, once the Khmer rouge nightmare was over and people tried not only to go back to normal life, but also to regain some of the time they had lost in the previous decade. In the following 30 years, the TFR declined very fast to a present value of 2.7 children per woman.

A comparison with the other ASEAN countries shows that, at the beginning of 1950s the TFR of Cambodia was one of the highest being second only to that of the Philippines; by now it ranks eight being lower than that of the Philippines and Laos. It must however be underlined that in this 65-year interval the average of the TFR of the 10 countries has decreased from 6.3 to 2.2 children per woman and in four countries (Brunei, Thailand, Vietnam, and Singapore) is already below replacement level, while also Myanmar is very close to this historical divide.
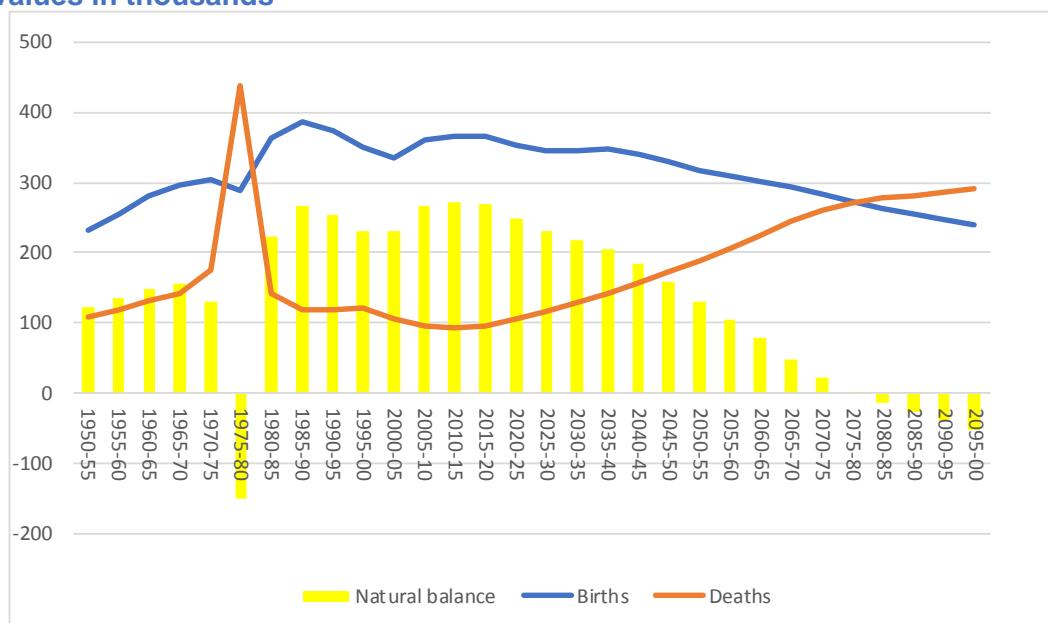
A similar story can be told for the Infant Mortality Rate (IMR). At the beginning of the '50s with a value of 142 per thousand Cambodia ranked seventh before Myanmar, Indonesia and Laos and not very far from Vietnam. After some small improvements in the '50s and in the '60s, the situation became dramatic during the '70s with one child out of three dying in the first year of life. Also, in this case Cambodia could start its modernization process only in the 80s. However, despite this delay, the IMR has declined to 30 per thousand, but still ranks eight just before Laos and Myanmar. The best performances, with values below 10 per thousand are those of Brunei and Malaysia, bur especially of Singapore.

1.3 Some demographic accounting

The numbers of births and deaths help to better understand the quantitative impact of the demographic transition. In 1950, the total population was growing at around 120,000 per year, as a difference between 232,000 births and 110,000 deaths.

The number of average yearly births exhibits a positive trend up to the present five-year period in which it is expected to reach a maximum of 366,000. If we do not consider the second half of the 70s, the number of deaths reached a maximum of 166,000 between 1965 and 1970 and by now is down to 97,000. The natural growth reflects mainly the trend of birth and has progressively increased up to the present five-year period in which total population is expected to increase by 272,000.

Figure 1.3 – Cambodia- births, deaths and population increase, from 1950–1955 to 2095–2100; values in thousands

Source: UN DESA estimates 1950–1955 to 2010–2015 and forecast (zero migration scenario for the period 2015–2100; UN DESA, 2019

In the remaining part of the century, births are expected to slowly decline and to be down to 330,000 in 2050 and 240,000 by 2100. Deaths are projected to continue to decline up to the next five-year period to then progressively and rapidly increase from a lowest value of 105,000 to a maximum of almost 300,000 at the end of the century. Therefore, in this scenario the natural growth will progressively decline to around 160,000 by the middle of the century and become negative around 2080.

The migration balance has not played a relevant role, alternating a first period of negative values from 1965 to 1990, followed by a ten-year period characterized by relevant immigration flows and then a new phase of negative flows that at present are estimated to be around 30,000 per year.

Table 1.3 synthesizes the impact of the main demographic variables (births, deaths, and migrations) on the development of the Cambodia population over the entire period and for each 5-year period.

Table 1.3 – Cambodia: demographic accounting; births, deaths, natural balance, migration balance and total balance; absolute values in thousand; 1950-55/2010-215
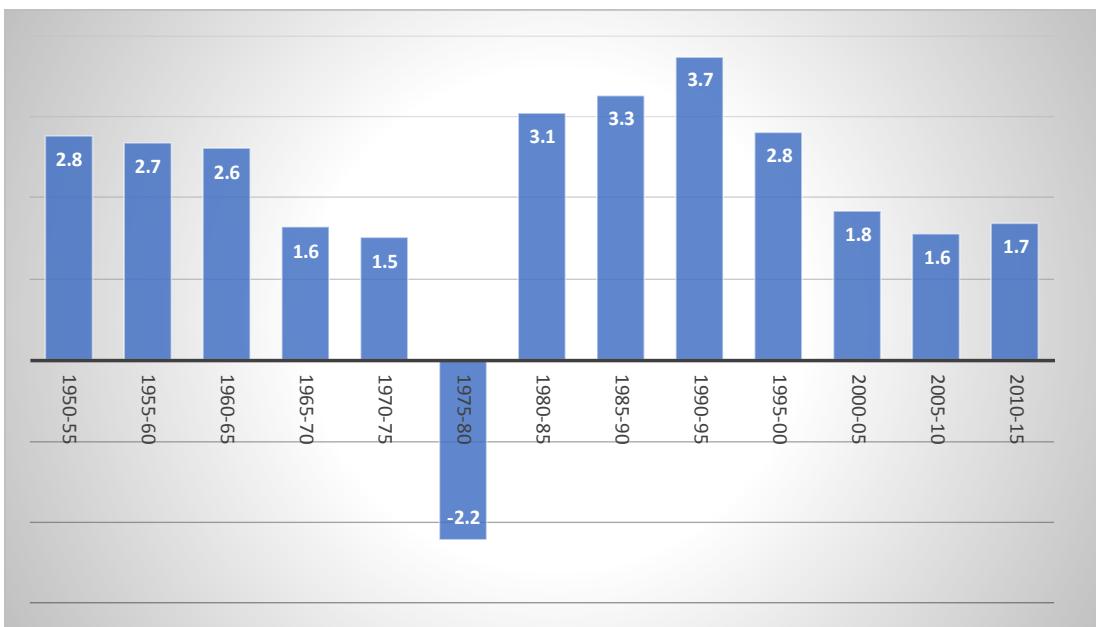
	Births	Deaths	Natural Balance	Net Migration	Population change
	Absolute values in thousand				
1950-55	1,161	549	613	0	613
1955-60	1,273	596	677	0	677
1960-65	1,400	655	745	0	745
1965-70	1,485	707	778	-248	529
1970-75	1,527	875	653	-125	528
1975-80	1,445	2,191	-746	-85	-831
1980-85	1,824	714	1,110	-89	1,021
1985-90	1,928	589	1,339	-78	1,261
1990-95	1,866	594	1,271	409	1,681
1995-00	1,753	603	1,151	348	1,499
2000-05	1,681	528	1,153	-35	1,118
2005-10	1,811	476	1,335	-296	1,039
2010-15	1,829	470	1,359	-150	1,209
1950-2015	20,983	9,546	11,437	-1,891	9,546

Source: Elaboration on UN DESA data, UN DESA, 2019

Between 1950 and 2015 Total population increased by 9.5 million as a result of a natural balance of 11.4 million and a negative migration balance of 1.9 million. The natural balance was the result of 21 million births and 9.5 million deaths

To be underlined that the natural balance is declining both in absolute and percentage terms. From 1990 to 1995 the yearly natural increase of Cambodia's population was equal to 340,000; between 2010 to 2015 it was down to 240,000.

Figure 1.4 – Total population; yearly average growth rate; 1950-2015

Source: Elaboration on UN DESA data, UN DESA, 2019

Moving to percentages, the natural rate of growth of total population progressively declined up to 1975 and registered a negative value of 2.2% between 1975 and 1980. In the following 15 years, the yearly rate of growth of total population progressively increased to a maximum of 3.7% between 1990 and 1995. Since then it has progressively decreased to a present value of around 1.7%.

1.3.1 Population's age structure

The demographic transition has a huge impact not only on the population level, but also on its age structure. In an initial phase[15], the demographic transition generates waves of newborns of increasing magnitude, followed by waves of decreasing magnitude. The passage of time makes each wave, each cohort move along the path of life, determining first a huge expansion of the proportion of the young, then of the population in working age, and then of the elderly. With time, in a closed population, the ageing process will end up increasing the number of deaths, while births continue to decrease and sooner or later total population will start to decline. Therefore, the growth of total population is paralleled by a notable change of the age structure.

---

[15] The initial driving factor of the demographic revolution is represented by the drop in infant mortality that, together with the improvement in dietary and health conditions, progressively increases life expectancy. The decline in Infant mortality is responsible for the arrival in reproductive age of larger and larger cohorts of young people. In this phase fertility is still at the traditional level and the combination of larger cohorts in reproductive age and high fertility provokes the increase in the yearly number of births. Only with time the successive decline in fertility determines the decline in the number of births.

Table 1.4 – Cambodia total population by main age group; absolute values and absolute changes in thousand, percentage composition and percentage change; selected periods, 1950-2010

	0-14	15-64	65+	Total	0-14	15-64	65+	Total
	Absolute values				Percenatge composition			
1950	1,871	2,441	120	4,433	42.2	55.1	2.7	100.0
1970	3,187	3,631	179	6,997	45.5	51.9	2.6	100.0
1980	2,749	3,763	181	6,694	41.1	56.2	2.7	100.0
2000	5,056	6,725	374	12,155	41.6	55.3	3.1	100.0
2015	4,905	9,977	639	15,521	31.6	64.3	4.1	100.0
	Absolute changes				Percenatge change			
1950-1970	1,315	1,189	59	2,564	70.3	48.7	49.4	57.8
1970-1980	-438	133	2	-303	-13.7	3.6	1.2	-4.3
1980-2000	2,307	2,962	193	5,461	83.9	78.7	106.4	81.6
2000-2015	-150	3,252	265	3,366	-3.0	48.3	70.8	27.7
1950-2015	3,034	7,536	519	11,089	162.1	308.7	433.0	250.2

Source: Elaboration on UN DESA data, UN DESA, 2019

In Cambodia between 1950 to 1970 the young increased by 70,3% and their share reached 45.5%, while the shares of WAP and of the elderly declined. After the dramatic events of the 1970 during which the total population declined mainly due to the decline of the young, the demographic transitions restarted. Between 1980 and 2000 the number of young people increased by 83.9 and their share slightly increased to 41.6%. In the last 15 years the number of young has slightly decreased, while WAP has increased by almost 50% and the ageing process has started. In 2015 the young weighted 31.6%, the WAP 64.3% and the elderly 4.1%.

Annex 2. The general education streams

2. The Cambodia Education System: some historical notes

To understand the delay in educational attainment that still deeply affects Cambodia despite the notable efforts made by its government in the last three decades, it is necessary to recall some historical events. In fact, there is no doubt that the low level of education of the Cambodia population is a legacy of its past starting from the lack of interest in education of the French colonial government, the Khmer rouge regime and finally the baby boom of the 80s and 90s we have analyzed in the previous section of this report.

It was only in 1917 that the French colonial government passed a Law on Education that introduced a basic primary and secondary education system, loosely modeled on the French system. Previously, education was offered only by Buddhist temples, and was therefore directed exclusively to the male population. The new system was Also fundamentally elitist, reaching a very small percent of the population and functioning mainly to train civil servants for colonial service throughout French Indochina.

In his history of Cambodia, D.P. Chandler writes: "Before the 1930s, the French spent almost nothing on education. A French official in 1922 accurately characterized efforts in this field as a mere facade". We had to wait until 1930 to register the fact that six Cambodians (two princes and 4 men destined to be ministers in the 1940s and 1950s) graduated from a French Lycée in Saigon. The first Lycée, the Lycée Sisowath, whose graduates would then play a relevant role in the political life of Cambodia, was open in 1936. On the meantime, "Primary education for the most part remained in the hands of the Sangha and the French sponsored, at very little cost, a network of some five thousand extant Wat schools in which students learned traditional subjects in time honored ways".

It was only after reaching political independence that Cambodia acquires a universal education, complemented by a network of vocational colleges such as the School of Health (1953), the Royal School of Administration (1956), the College of Education (1959), the National School of Commerce (1958) and the National Institute of Judicial, Political and Economic Studies (1961).
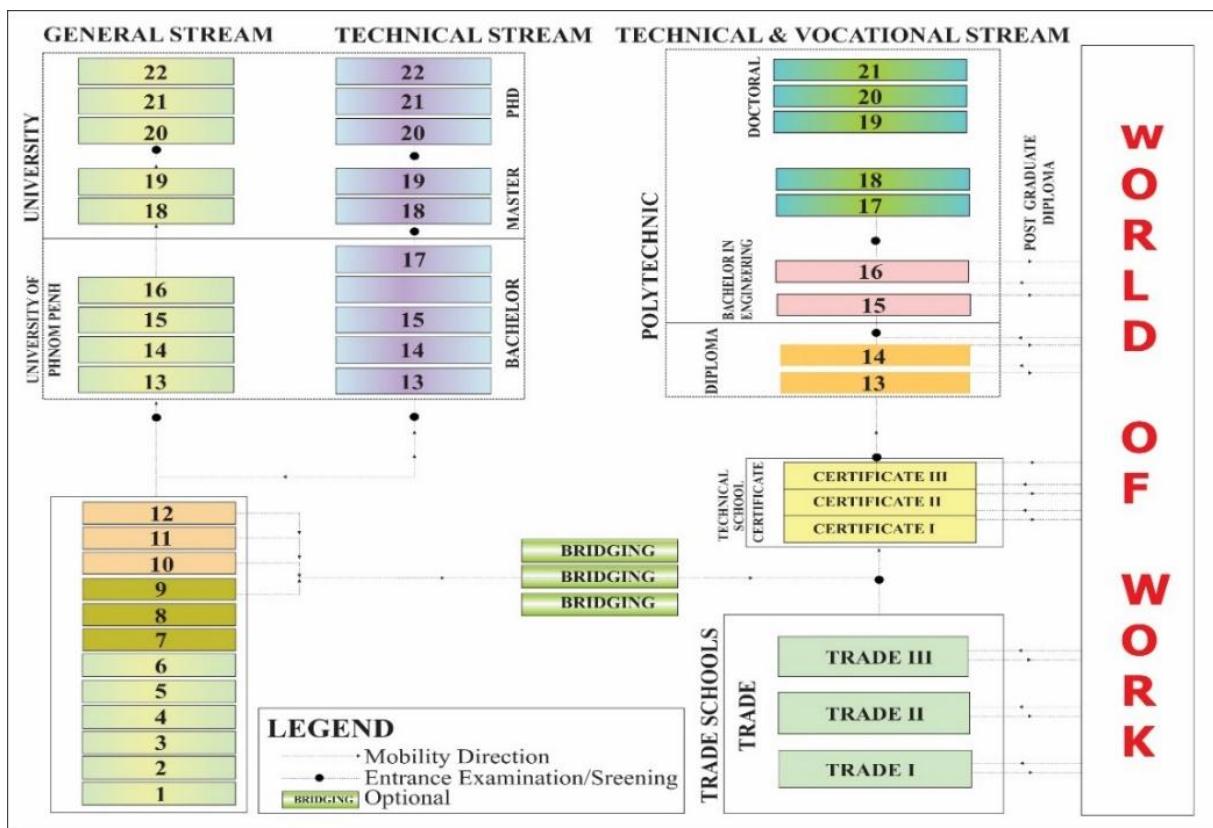
Apart from a Buddhist University established in 1954, the first public institution of higher education, the Khmer Royal University, was established at the beginning of the 1960s and in 1965 became the Royal University. In the same year, six more tertiary training institutions were created – the Royal Technical University, the Royal University of Fine Arts, the Royal University of Kompong Cham, the Royal University of Takeo, the Royal University of Agronomic Sciences and the Popular University. These were followed in 1968 by the Royal University of Battambang.

During the Khmer Rouge period, the Cambodia education system was systematically abolished: publishing houses were closed, teaching materials and textbooks destroyed, the buildings of schools and universities put to other uses. Large numbers of qualified teachers, researchers and technicians either fled the country or died.

2.1. The structure of the Cambodia education system

The structure of the education stream is at present pretty much defined and consolidated[16]. The Constitution of Cambodia promulgates free compulsory education for nine years, guaranteeing the universal right to basic quality education[17]. After a preschool phase of three years, children are expected to enroll in basic education at the age of six. Basic education is articulated into two levels, Primary education (6 years) and Lower secondary education (3 years). In order to be admitted to upper secondary school, students must pass a lower secondary exam at the end of the 9th year. The upper secondary school lasts three years. At the end of grade 12, students take an upper secondary exam. If they continue the educational stream, they can choose between a General stream and a Technological stream. Both streams offer 4 consecutive degrees: Associate, Bachelor, Master and Ph.D. In the general stream these degrees will require respectively 2, 4, 6, and 9 years; in the technological stream 2, 5, 7, and 10 years.

Picture 2.1 - Cambodia education and vocational training streams

Source: TVET, MLVT

---

[16] The present structure of the education system devoting 6 years to primary education, 3 years to lower secondary education, and three years to upper secondary education has been introduced in 1996. Between 1953 to 1970 the structure was (6-4-2-1), between 1976 and 1986 (4-3-3), between 1987 and 1995 (5-3-3).

[17] In the same vein, the Education Strategic plan 2009-2014 states that the MOEYS's immediate objective is to ensure that all Cambodian children and youth have equal opportunity to access quality education consistent with the Constitution and the Royal Government's commitment to the UN Child Rights Convention, regardless of social status, geography, ethnicity, religion, language, gender and physical form.

The vocational stream offers to children that cannot follow or cannot complete the Education stream (grade 1 to 9) the possibility to attend trade schools. Graduates from the trade schools that have taken a bridging course as well as students coming from grade 9 to 12 of the educational stream can follow a three-year vocational training program that allows them to obtain Certificates 1, 2 and 3. Picture 2.1 presents an integrated view of the education and vocational training streams according to this proposal.

The technical and vocational stream proposes a higher education path parallel to that of the educational streams and articulated in the same four levels: diploma (2 years), bachelor (in engineering) (4 years), post-graduate diploma (2 years), doctoral degree (3 years). Access to this path is open to students that have completed Certificate 3 and to students with high school certificates via a bridging course.

2.2 The long-term evolution

Starting in 1979, the new Cambodian government was faced with the challenge to completely rebuild the national education system. The first efforts were obviously directed to provide pre-schools, primary schools and non-formal education.

At the beginning of the '80s Cambodia had around 3,500 primary schools, with approximately 32,000 classes and 32,000 staffs for 1.5 million students. The dimension of the schools was very modest (on the average 9 classes per school) while classes were extremely numerous (almost 50 students per class) and were followed on the average by only one staff. Data do however suggest that attendance was in excess of the population in the legal age bracket, showing a strong motivation to face the problem of illiteracy (Table 2.1).

Table 2.1 – Main educational variables and indicators; school year 1981-82

	Preschools	Pri. Schools	Lo. Sec.	Up. Sec.	Total
Number of school	213	3,521	96	5	3,835
Number of classes	448	31,909	938	33	33,328
Number of students	16,579	1,538,839	39,515	1,517	1,596,450
Number of staff	818	31,884	1,586	65	34,353
Classes peer school	2	9	10	7	9
Student per school	78	437	412	303	416
Student per class	37	48	42	46	48
Student per staff	20	48	25	23	46
Staff per school	4	9	17	13	9
Staff per class	2	1	2	2	1
Inhabitants per school		311	5,544	94,440	548
Inhabitants per class		34	567	14,309	63
Gross enrolment ratio		140.5	7.4	0.3	76.0
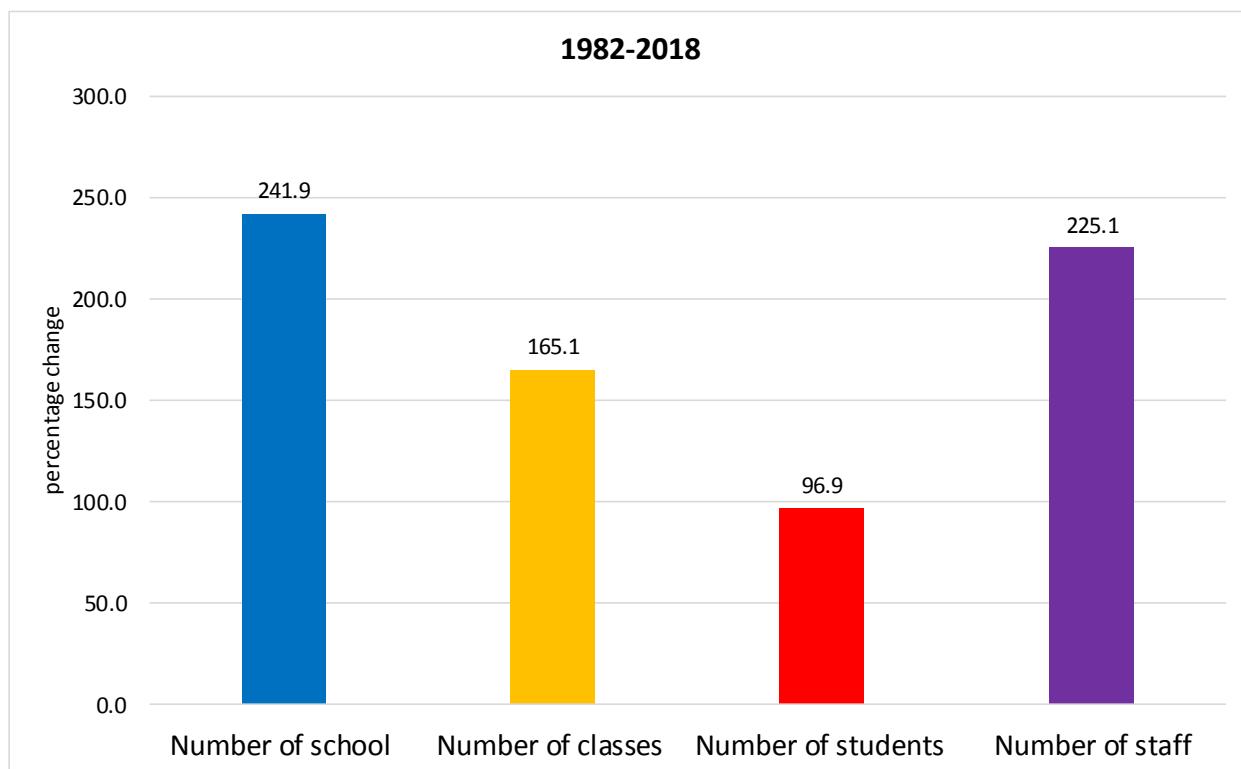
Source: Elaboration on EMIS data

The situation of the lower and upper secondary levels was dramatic. Cambodia had only 101 schools devoted to these educational levels. They were of very modest dimensions, with around 1,600 staff providing lower and upper secondary education to around 41,000 students. The number of students per class was very high, but the student-staff ratio was much better than in primary school. Coverage was extremely modest with an enrollment ratio of 7.4 per cent for the lower-secondary level and well below 1 per cent for the upper-secondary level.

An even more striking evidence of the problem of coverage for lower and upper secondary education is provided by the ratios between the number of children in the specific age brackets and the number of schools and classes in these two educational levels. According to the latter indicator, for instance, there were about 567 potential students for each lower-secondary class and more than 14,000 for each upper-secondary class.

In the following 30 years the education system of Cambodia has undergone a notable development. Figure 2.2 summarizes the evolution of the more important educational variables between the school years 1981-82 (the first for which we have a rather complete and reliable set of information) and the school year 2017-2018, while table 8 provides a more complete representation of the process. While the total number of students has almost doubled, the number of schools has increased by 2 times and half the number of classes by 165.1% and the staff by 225.1%.

Figure 2.2 – Students, schools, classes and staff; percentage change, 1982-2018
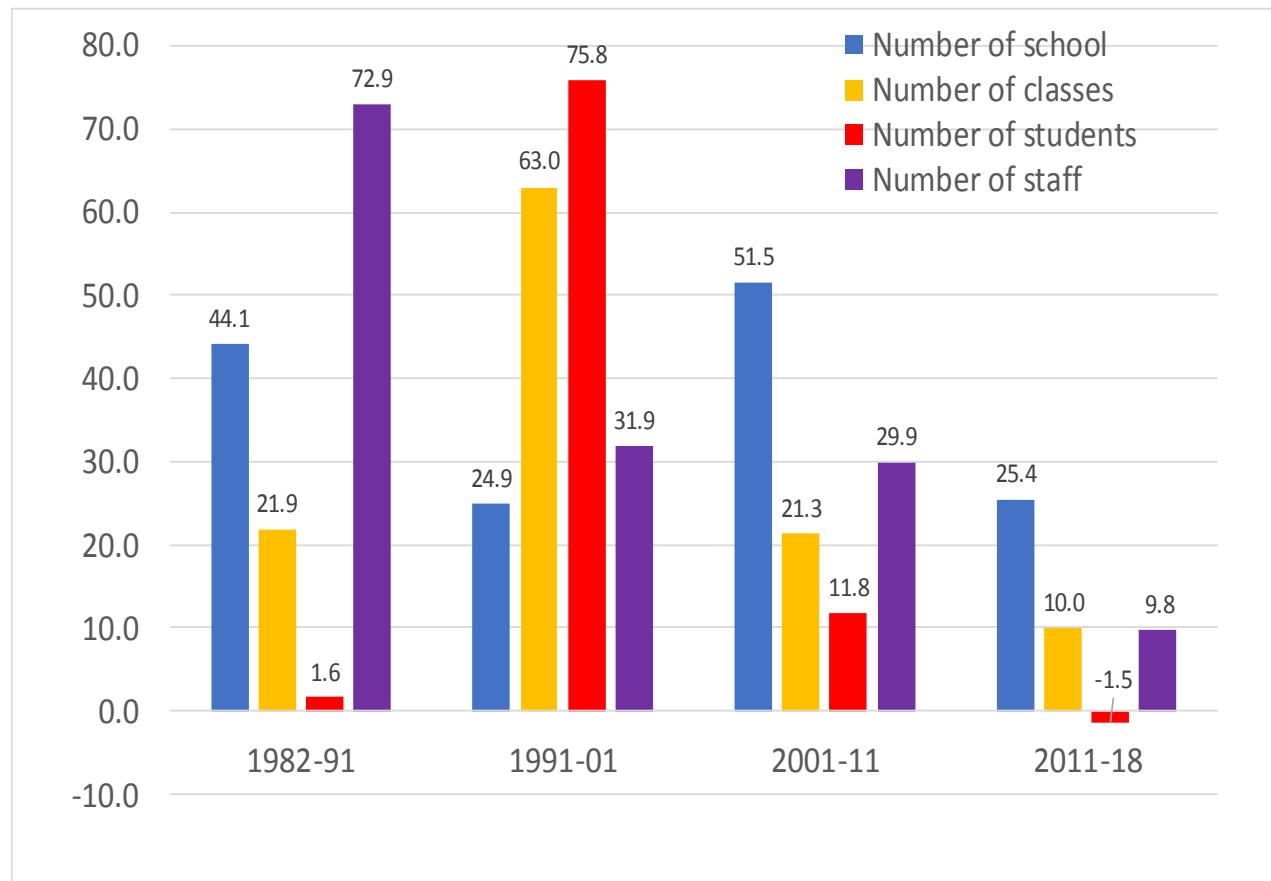
Source: Elaboration on EMIS data; 2017-2018

During the '80s the number of students increased only in a marginal way, but major efforts were directed toward the construction of new schools and the hiring of additional staff: the former increased by 44.1%, the latter by 72.9%.

110

In the '90s the number of students increased by around 76 per cent due to the pronounced demographic trends we have commented in a previous paragraph. This explosion of potential demand was faced mainly through an expansion of the number of classes (63%) and, in a lesser way, by an increase in the number of schools (24.9%); the staff increased by 31.9% (Figure 2.3).

Figure 2.3 – School, classes, students and staff; percentage change in 1982-91; 1991-2001; 2001-11; 2011-2018

Source: Elaboration on EMIS 2017-2018

In the first decade of the new millennium, while the rate of increase in the number of students declined to 11.8%[18], the number of schools increased by more than 50%, that of classes by 21.3% and the number of staffs by 29.9%. Finally, in the last 7 years, the total number of students slightly declined (-1.8%), but all other structural elements of the education system continued to increase: schools (+25.4%), classes (+10%), staff (+9.8%).

---

[18] More precisely, the number of students in the general educational stream has increased up to the school year 2004-2005, reaching a maximum value of 3,460,412. In the following years the number of students has progressively declined by around 270,000 and it was down to 3,190,109 in the school year 2010-11.

The different speed with which the different variables (number of students, schools, classes and staff) have changed through time has determined different trends of the main indicators over the four decades we are considering.
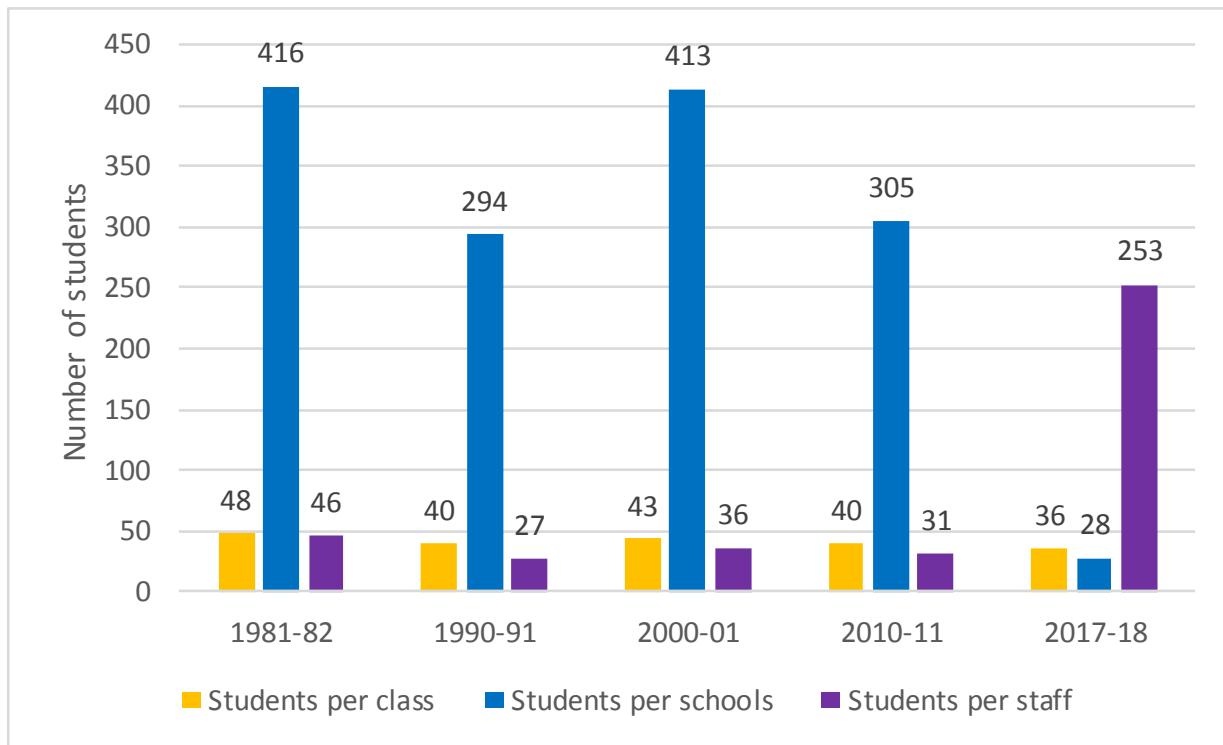
Table 2.2 – Number of schools, classes, students and staff by educational level; school years 1981-82, 1991-92, 2000-01, 2010-11, and 2017-18

| school year	Schools					Classes				
	Pre	Pri	College	Lycee	Total	Pre	Pri	College	Lycee	Total
	Absolute values					**Absolute values**				
1981-82	213	3,521	96	5	3,835	448	31,909	938	33	33,328
1990-91	397	4,665	397	66	5,525	1,789	32,858	5,064	919	40,630
2000-01	915	5,468	367	151	6,901	1,605	55,448	6,860	2,299	66,212
2010-11	2,092	6,767	1,189	407	10,455	3,343	57,697	12,504	6,786	80,330
2017-18	4,176	7,189	1,237	511	13,113	6,825	61,635	13,218	6,685	88,363
	Absolute change					**Absolute change**				
1982-91	184	1,144	301	61	1,690	1,341	949	4,126	886	7,302
1991-01	518	803	-30	85	1,376	-184	22,590	1,796	1,380	25,582
2001-11	1,177	1,299	822	256	3,554	1,738	2,249	5,644	4,487	14,118
2011-18	2,084	422	48	104	2,658	3,482	3,938	714	-101	8,033
1982-2018	3,963	3,668	1,141	506	9,278	6,377	29,726	12,280	6,652	55,035
	Percentage change					**Percentage change**				
1982-91	86.4	32.5	313.5	1220.0	44.1	299.3	3.0	439.9	2684.8	21.9
1991-01	130.5	17.2	-7.6	128.8	24.9	-10.3	68.8	35.5	150.2	63.0
2001-11	128.6	23.8	224.0	169.5	51.5	108.3	4.1	82.3	195.2	21.3
2011-18	99.6	6.2	4.0	25.6	25.4	104.2	6.8	5.7	-1.5	10.0
1982-2018	1860.6	104.2	1188.5	10120.0	241.9	1423.4	93.2	1309.2	20157.6	165.1
	Percentage composition					**Percentage composition**				
1981-82	5.6	91.8	2.5	0.1	100.0	1.3	95.7	2.8	0.1	100.0
1990-91	7.2	84.4	7.2	1.2	100.0	4.4	80.9	12.5	2.3	100.0
2000-01	13.3	79.2	5.3	2.2	100.0	2.4	83.7	10.4	3.5	100.0
2010-11	20.0	64.7	11.4	3.9	100.0	4.2	71.8	15.6	8.4	100.0
2017-18	31.8	54.8	9.4	3.9	100.0	7.7	69.8	15.0	7.6	100.0

school year	Students					Staff				
	Pre	Pri	College	Lycee	Total	Pre	Pri	Lower	Upper	Total
	Absolute values					**Absolute values**				
1981-82	16,579	1,538,839	39,515	1,517	1,596,450	818	31,884	1,586	65	34,353
1990-91	51,421	1,322,143	201,496	47,562	1,622,622	2,959	40,014	14,351	2,057	59,381
2000-01	55,798	2,408,109	283,578	105,086	2,852,571	2,181	52,168	18,952	5,000	78,301
2010-11	103,315	2,191,192	560,868	334,734	3,190,109	3,711	56,339	30,012	11,686	101,748
2017-18	205,492	2,028,694	605,173	303,893	3,143,252	5,398	57,915	33,181	15,176	111,670
	Absolute change					**Absolute change**				
1982-91	34,842	-216,696	161,981	46,045	26,172	2,141	8,130	12,765	1,992	25,028
1991-01	4,377	1,085,966	82,082	57,524	1,229,949	-778	12,154	4,601	2,943	18,920
2001-11	47,517	-216,917	277,290	229,648	337,538	1,530	4,171	11,060	6,686	23,447
2011-18	102,177	-162,498	44,305	-30,841	-46,857	1,687	1,576	3,169	3,490	9,922
1982-2018	188,913	489,855	565,658	302,376	1,546,802	4,580	26,031	31,595	15,111	77,317
	Percentage change					**Percentage change**				
1982-91	210.2	-14.1	409.9	3035.3	1.6	261.7	25.5	804.9	3064.6	72.9
1991-01	8.5	82.1	40.7	120.9	75.8	-26.3	30.4	32.1	143.1	31.9
2001-11	85.2	-9.0	97.8	218.5	11.8	70.2	8.0	58.4	133.7	29.9
2011-18	98.9	-7.4	7.9	-9.2	-1.5	45.5	2.8	10.6	29.9	9.8
1982-2018	1139.5	31.8	1431.5	19932.5	96.9	559.9	81.6	1992.1	23247.7	225.1
	Percentage composition					**Percentage composition**				
1981-82	1.0	96.4	2.5	0.1	100.0	2.4	92.8	4.6	0.2	100.0
1990-91	3.2	81.5	12.4	2.9	100.0	5.0	67.4	24.2	3.5	100.0
2000-01	2.0	84.4	9.9	3.7	100.0	2.8	66.6	24.2	6.4	100.0
2010-11	3.2	68.7	17.6	10.5	100.0	3.6	55.4	29.5	11.5	100.0
2017-18	6.5	64.5	19.3	9.7	100.0	4.8	51.9	29.7	13.6	100.0

Source: Elaboration on EMIS 2010-2011, EMIS 2017-2018

During the '90s, the demographic pressure was so intense that the number of students per class, per school and per staff increased (Figure 2.4). However, in the following years all indicators present a great improvement. From 2001 to 2018 the number of students per class declined from 43 to 36, the number of students per staff from 36 to 28 and the number of students per school from 413 to 253.

Figure 2.4 – Students per class, per staff and per school; school years 1981-82, 1990-91, 2000-01 and 2017-18

Source: Elaboration on EMIS

Annex 3. Labour market: a long run perspective

3. Main labour market variables

The Annex provides a long-term perspective of the Cambodian labor market based on the data provided by the 1998, 2008 Censuses and the 2017 Cambodia Socio Economic Survey. Table 3.1 reports the absolute values of Working age population, Labor force, Employment and Unemployment in 1998, 2008 and 2017 as well as the absolute and percentage changes over the two intervals and the all period. Table 3.1 reports the values of the standard indicators of stock.

Table 3.1 - Main labor market variables by sex; absolute values in thousand in 1998, 2008 and 2017, absolute change and percentage change (1998-2008, 2008-2017, 1998-2017)

	1998	2008	2017	1998-2008		2008-2017		1998-2017	
	Absolute values			Abs. Var.	% Var.	Abs. Var.	% Var.	Abs. Var.	% Var.
Men									
WAP	2,845	3,971	5056	1,126	39.6	1,085	27.3	2,211	77.7
Labour Force	2,341	3,239	4488	898	38.4	1,249	38.6	2,147	91.7
Employment	2,229	3,190	4483	960	43.1	1,293	40.5	2,254	101.1
Unemployment	111	49	5	-62	-55.6	-44	-89.9	-106	-95.5
Women									
WAP	3,300	4,340	5360	1,040	31.5	1,020	23.5	2,060	62.4
Labour Force	2,514	3,405	4291	892	35.5	886	26.0	1,777	70.7
Employment	2,365	3,343	4283	978	41.4	940	28.1	1,918	81.1
Unemployment	148	62	8	-87	-58.3	-54	-87.1	-140	-94.6
Total									
WAP	6,144	8,311	10416	2,166	35.3	2,105	25.3	4,272	69.5
Labour Force	4,854	6,644	8779	1,790	36.9	2,135	32.1	3,925	80.9
Employment	4,595	6,533	8766	1,938	42.2	2,233	34.2	4,171	90.8
Unemployment	260	111	13	-148	-57.2	-98	-88.3	-247	-95.0

Source: Elaborations on 1998 and 2008 Censuses and 2017 Cambodia Social Economic Survey, NIS

Numerous analytical indications can be derived from tables 9 and 10. Limiting ourselves to underline the most relevant ones, we observe that in the 10-year period between the two censuses:

- WAP has registered a very relevant increase (2.166 million, equal to 35.3%),
- Growth has affected men much more than women (39.6% versus 31,5%); this has been due, in presence of an absolute increase only slightly higher for men, to the fact that, as a consequence of the Khmer rouge regime, in 1998 men in working age were half million less than women;
- Employment has increased by a little less than two million, additional jobs having been almost equally allocated to men and women;
- The percentage increase in employment (42.2%) has been higher than that in Labor Force (36.9%), that in its turn has been more pronounced than that of WAP;
- If we consider men and women separately, we see that for men the increase in Labor Force has been lower than the increase in WAP, while for women has been much higher;
- As a consequence, the rate of activity (roa) has increased for the total (from 79 per cent to 79.9 per cent) and for women (from 76.2 to 78.5 per cent), while it has slightly declined for

men (from 82.3 to 81.6 per cent); obviously we register a notable decline in the gender differential (from 6.1 to 3.1 percentage points);
* The rate of employment (roe) has increased both for men and women;
* The rate of unemployment (rou) has sharply declined (from 5.3 to 1.7 per cent) as well as its gender differential.

Extending our analysis to the elderly, we must underline that they have been the most dynamic component of the 15+ WAP. This suggests two considerations. In the first place, Cambodia has entered a phase in which its population is progressively ageing; in the second place, in a situation in which the large majority of people live in rural areas and of agriculture, in which the large majority of the labor force in the central age group earns a subsistence wage, and in which there no pension system, exits from employment are postponed as much as possible. Therefore, it could, and it will be argued that a large portion of those classified as employed in agriculture should be more correctly considered disguised unemployed.

Table 3.2 – Main labor market indicators by sex; 1998, 2008 and 2017

	1998	2008	2017	1998-2008	2008-2017	1998-2017
	Male					
roe	78.4	80.3	88.7	1.9	8.3	10.3
roa	82.3	81.6	88.8	-0.7	7.2	6.5
rou	4.8	1.5	0.1	-3.2	-1.4	-4.6
	Female					
roe	71.7	77.0	79.9	5.4	2.9	8.2
roa	76.2	78.5	80.1	2.3	1.6	3.9
rou	5.9	1.8	0.2	-4.1	-1.6	-5.7
	Total					
roe	74.8	78.6	84.2	3.8	5.5	9.4
roa	79.0	79.9	84.3	0.9	4.3	5.3
rou	5.3	1.7	0.1	-3.7	-1.5	-5.2
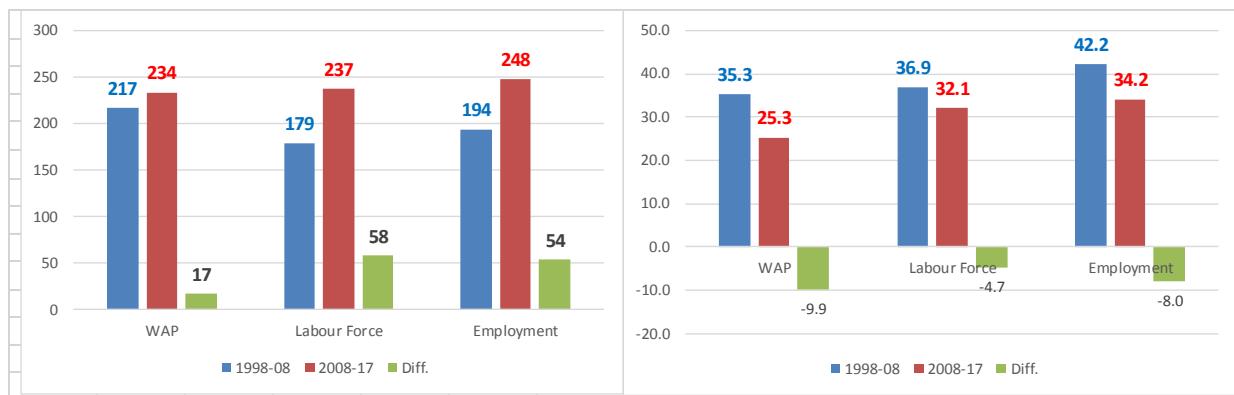
Source: Elaborations on 1998 and 2008 Censuses and 2017 Cambodia Social Economic Survey, NIS

Moving now to the following nine-year period, we resort to the data provided by Socio Economic Survey; moreover, given the different length of the two periods, our analysis will resort mainly to yearly average. We can then observe that, we respect to the previous period, all labor market relevant variables have increased more in absolute term, but less in percentage terms (Figure 3.1). This has been true for both men and women but particularly relevant for me.

Between 2008 and 2017 employment has increased more than labor force and both employment and labor force have increased more than WAP; therefore, unemployment has declined and the roe and the roa have increased. Both men and women register the same trends.

To be underlined that between 2008 and 2017 the number of jobs has increased at a notable yearly average of 250,000, versus 194,000 in the previous ten years. To evaluate this performance, we must however wait to analyze employment growth by geographical location and sector.

Figure 3.1 - WAP (15-64), Labor force and Employment; yearly absolute and percentage rate of growth; 1998-2008 and 2008-2017

Source: Elaborations on 1998 and 2008 Censuses and 2017 Cambodia Social Economic Survey, NIS

The urban-rural divide

The urban/rural distinction has always been and remains a very relevant feature of the Cambodian economy (Table 3). In 2008 the percentage of WAP living in urban area amounted to only 22.3%, with even lower percentages for the Employed and the Labor force (respectively 18.4% and 18.9%). As these data suggest, the percentage of unemployed residing in urban areas was much higher (50.8%).

Table 3.3 – Urban and Rural Employed, Unemployed, Labor force, and WAP; 2008 and 2017; absolute values and absolute changes in thousand

	2008			2017			Difference		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Male									
Employed	633	2,557	3,190	1,116	3,367	4,483	483	810	1,293
Unemployed	23	26	49	3	2	5	-20	-24	-44
Labour force	656	2,583	3,239	1,119	3,369	4,488	463	786	1,249
WAP	880	2,609	3,971	1,320	3,737	5,057	440	1,128	1,086
Female									
Employed	567	2,777	3,343	1,026	3,257	4,283	459	480	940
Unemployed	33	29	62	5	3	8	-28	-26	-54
Labour force	600	2,805	3,405	1,031	3,260	4,291	431	455	886
WAP	976	2,834	4,340	1,444	3,915	5,359	468	1,080	1,019
Total									
Employed	1,200	5,333	6,533	2,142	6,624	8,766	942	1,291	2,233
Unemployed	56	55	111	8	5	13	-48	-50	-98
Labour force	1,256	5,388	6,644	2,150	6,629	8,779	894	1,241	2,135
WAP	1,857	5,443	8,311	2,764	7,652	10,416	907	2,209	2,105

Source: Elaborations on 2008 Census and 2017 Cambodia Social Economic Survey, NIS

After 9 years the situation has only slightly changed, with the proportion of working age increasing to 26.5%, and those of employment and labor force to 24.4% and 24.5%. In substance only ¼ of labor force reside in urban areas.

116

Table 3.4 – Percentage of Employed, Unemployed, Labor force and WAP residing in urban areas; 2008 and 2017 and absolute changes

	2008	2017	Diff.	2008	2017	Diff.	2008	2017	Diff.
	Male			Female			Total		
Employed	19.8	24.9	5.1	17.0	24.0	7.0	18.4	24.4	6.1
Unemployed	47.6	60.0	12.4	53.3	62.5	9.2	50.8	61.5	10.8
Labour force	20.3	24.9	4.7	17.6	24.0	6.4	18.9	24.5	5.6
WAP	22.2	26.1	3.9	22.5	26.9	4.4	22.3	26.5	4.2

Source: Elaborations on 2008 Census and 2017 Cambodia Social Economic Survey, NIS

Data also suggests that WAP and all its main components are older in rural than in urban areas, the phenomenon being especially evident for the employed and the unemployed.

Relevant information emerges from the main labor market indicators (Table 3.5). In rural areas to live and to work are two sides of the same coin, as shown by the fact that Labor market participation was around 99% in 2008 and is still 87% in 2017, while unemployment is basically absent as we could expect in a situation in which there is no labor market as we normally understand it. Finally, some gender differential is starting to appear, probably signaling the initial appearance of labor division.

Table 3.5 - Main labor market indicators by sex and geographical areas; 2008 and 2017

	Rate of employment			Rate of participation			Rate of unemployment		
	Males	Feamales	Total	Males	Feamales	Total	Males	Feamales	Total
2008									
Urban	71.9	58.0	64.6	74.6	61.4	67.6	3.6	5.5	4.5
Rural	98.0	98.0	98.0	99.0	99.0	99.0	1.0	1.0	1.0
Total	80.3	77.0	78.6	81.6	78.5	79.9	1.5	1.8	1.7
2017									
Urban	84.6	71.0	77.5	84.8	71.4	77.8	0.3	0.5	0.3
Rural	90.1	83.2	86.6	90.2	83.3	86.6	0.1	0.1	0.1
Total	88.7	79.9	84.2	88.8	80.1	84.3	0.1	0.2	0.1
Difference									
Urban	**12.7**	**13.0**	**12.9**	**10.2**	**10.0**	**10.1**	**-3.3**	**-5.0**	**-4.2**
Rural	**-7.9**	**-14.8**	**-11.4**	**-8.9**	**-15.7**	**-12.4**	**-0.9**	**-0.9**	**-1.0**
Total	**8.3**	**2.9**	**5.6**	**7.2**	**1.6**	**4.3**	**-1.4**	**-1.6**	**-1.5**

Source: Elaborations on 2008 Census and 2017 Cambodia Social Economic Survey, NIS

Obviously, the situation in urban areas is quite different. In 2008 the rate of activity was 67.6% and the gender differential quite high, the men rate being 74.6% and the women rate 61.4%. The total unemployment rate was 4.5%, the women rate being higher (5.5% vs. 3.6%).

The notable expansion of employment registered in urban areas between 2008 and 2017 (on the average around 100,000 jobs per year, almost equally divided between men and women), has determined a notable increase of the total rate of employment from 64.6% to 77.5% and similar increases for the rates of men and women. The rates of participation have increased just a little less so that also in urban areas the rate of employment has become negligible.

Economic sectors

As we have already seen, between 1998 and 2008 the level of employment has increased by more than 2 million, almost perfectly divided between men and women. A similar growth with a similar pattern has been registered from 2008 to 2017 (Table 6). What sharply distinguishes the last period from the previous one is the very pronounced change in employment structure by sector. In fact, between 2008 and 2017 the share of the agricultural sector has declined by almost half (from 77%, to 37%) that of the secondary sector has increased six times (from 4.2% to 26.3%) and that of the tertiary sector two times (from 18.3% to 36.8%). In substance, while at the end of the past century Cambodia was essentially a rural society in which more than ¾ of the labor force (of the WAP) was working in the fields, by now agriculture and Services give employment to around the same share of the labor force, more than ¼ work in Industry.

Table 3.6 – Employed by sex and sector; 1998, 2008, and 2017

	Males			Females			Total		
	1998	2008	2017	1998	2008	2017	1998	2008	2017
Primary	1,656	2,314	1572	2,020	2,621	1669	3,676	4,935	3241
Secondary	117	271	1224	85	315	1077	202	586	2301
Tertiary	545	760	1685	329	560	1538	874	1,320	3223
Not reported	12	0		10	0		21	0	0
Total	2,330	3,346	4,481	2,443	3,495	4,284	4,773	6,841	8,765
Primary	71.1	69.2	35.1	82.7	75.0	39.0	77.0	72.1	37.0
Secondary	5.0	8.1	27.3	3.5	9.0	25.1	4.2	8.6	26.3
Tertiary	23.4	22.7	37.6	13.5	16.0	35.9	18.3	19.3	36.8
Not reported	0.5	0.0	0.0	0.4	0.0	0.0	0.4	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Elaborations on 1998, 2008 Censuses and 2017 Cambodia Social Economic Survey, NIS

This huge structural change has been caused by the evolution of the employment level of the three sectors (Table 3.7): the employment level of the agricultural sector has declined by around 450,000, that of Industry has increased by 2.1 million and that of Services by 2.35 million.
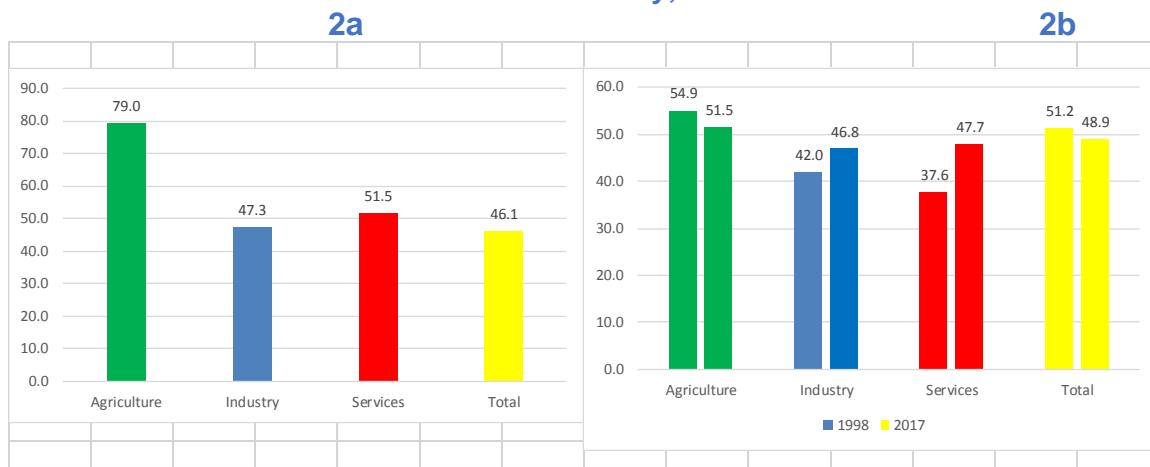
Table 3.7 - Employed by sex and sector; absolute change in thousand; 1998-2008, 2008-2017

	1998-08	2008-17	1998-17	1998-08	2008-17	1998-17	1998-08	2008-17	1998-17
Agriculture	647	-742	-96	591	-952	-361	1,238	-1,694	-456
Industry	154	953	1,107	230	762	992	384	1,715	2,099
Services	215	925	1,140	231	978	1,209	446	1,903	2,349
Total	1,016	1,135	2,151	1,052	789	1,841	2,068	1,924	3,992

Source: Elaborations on 1998, 2008 Censuses and 2017 Cambodia Social Economic Survey, NIS

Let's also observe that women represent 79% of the decline in Agricultural employment, 47.3% of the increase in Industrial employment and 51.5% of the employment in the Service sector Figure (3.2a). Therefore, women have taken 46.1% of the additional jobs and their share of total employment has declined from 51.2% to 48.9. However, while the presence of women has declined in Agriculture where it remains majority, it has increased in Industry (from 42.6% to 46.8%) and especially in Services (from 37.6% to 47.7%).
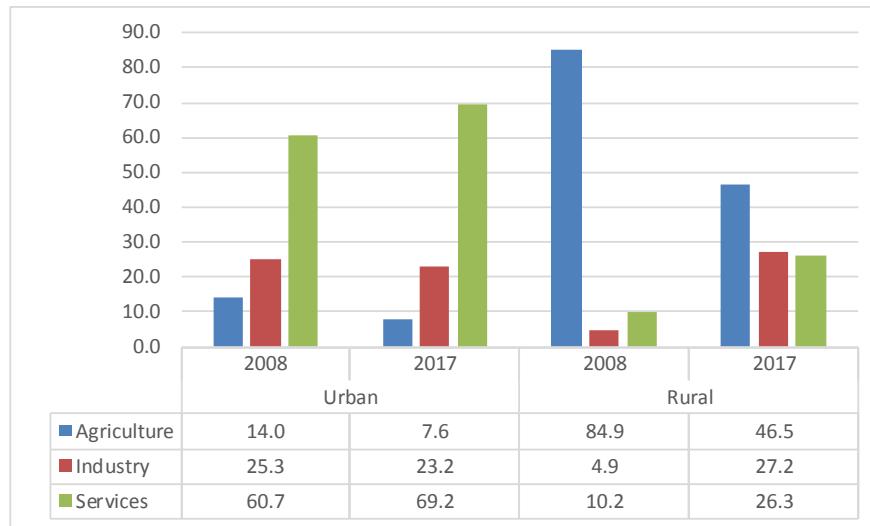
Figure 3.2 – Percentage of women by sector between 2008 and 2017; 14b) percentage of women in the main sectors and in the economy; 1998 and 2017

Source: Elaborations on 1998 Census and 2017 Cambodia Social Economic Survey, NIS

The structure of employment by sector differs notably between Urban and Rural areas and has evolved in a different way. Still in 2008, 85% of the employed worked in agriculture, Industry had a marginal weight of less than 5 per cent and Services accounted for 10.2%. Urban areas were already dominated by Services that accounted for 60% of the employed, followed by Industry with 23.3%, Agriculture accounting for 14%.

Figure 3.3 – Employment structure by sector and geographical area; 2008 and 2017

	Urban		Rural	
	2008	2017	2008	2017
Agriculture	14.0	7.6	84.9	46.5
Industry	25.3	23.2	4.9	27.2
Services	60.7	69.2	10.2	26.3
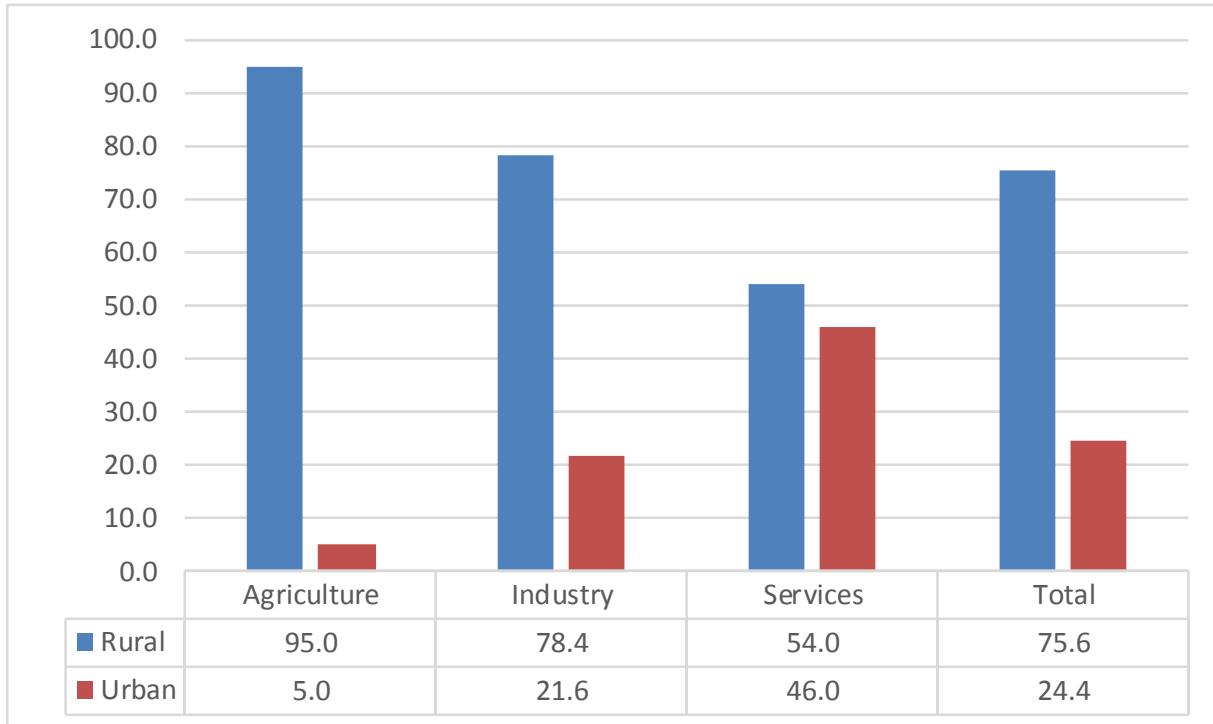
Source: Elaborations on 1998, 2008 Censuses and 2017 Cambodia Social Economic Survey, NIS

In the following 9 years the rural areas were the most affected by the evolution of the employment structure (figure 3.3). The share of employment in agriculture declined from 84.9% to 46.5%, that of Industry reached 27,2% a value higher than in urban areas, and that of Services increased to 26.3%. The process of tertiarization of Urban areas has continued and this sector has reached almost 70%, while both the shares of Agriculture and Industry have declined respectively to 7.6% and 23.2%.

These data hide however the role played by each area in providing employment in the different sector. While only 3.5 per cent of agricultural workers reside in urban areas, 47.3 per cent of manufacturing workers, 46.3 per cent of construction workers, and 50.4 per cent of service workers reside in rural areas (Figure 3.4).

Figure 3.4 – Employed by sector and urban/ rural residence; 2017

	Agriculture	Industry	Services	Total
■ Rural	95.0	78.4	54.0	75.6
■ Urban	5.0	21.6	46.0	24.4

Source: Elaborations 2017 Cambodia Social Economic Survey, NIS

Status in Employment

The structure of employment by sector and its evolution from 1998 to 2017 are reflected in the structure and dynamic of employment by status. The data also show that the Cambodian economy is started to become a more modern market economy. The most important signal is coming from the percentage of paid employees that has increased from 12.3% in 1998, to 17.3% in 2008, to 51% in 2017.

This process has affected both men and women; however, the percentage of men in paid employment remains higher than the percentage of women (56.6% vs. 45.2%). At the same time the percentage of unpaid family worker has dramatically declined from 41.1% to 4.3% and the process has been even more pronounced for women. The percentage of own account workers has remained quite high as a result of an increase of the share of women and a decline of the share of men. In conclusion, the Cambodian employees are concentrated into two positions: paid employees and own account workers, the first status being more important for men, the second for women.

Table 3.8 – Employment by sex and status; 1998, 2008 and 2017

	Total employment	Employers	Paid employees	Own account workers	Unpaid family worker	Other	Employers	Paid employees	Own account workers	Unpaid family worker	Other
	Absolutte value						Percentage composition				
1998											
Men	2,319	5	432	1,433	434	14	0.2	18.7	61.8	18.7	0.6
Women	2,433	3	154	757	1,517	3	0.1	6.3	31.1	62.4	0.1
Total	4,752	7	586	2,190	1,952	17	0.2	12.3	46.1	41.1	0.3
2008											
Men	3,346	6	693	1,825	820	2	0.2	20.7	54.5	24.5	0.1
Women	3,495	4	489	883	2,118	1	0.1	14.0	25.3	60.6	0.0
Total	6,841	10	1,182	2,708	2,938	3	0.1	17.3	39.6	42.9	0.0
2017											
Men	4,483	10	2,537	1,755	181	1	0.2	56.6	39.1	4.0	0.0
Women	4,283	1	1,935	2,148	199	0	0.0	45.2	50.2	4.6	0.0
Total	8,766	11	4,472	3,903	380	1	0.1	51.0	44.5	4.3	0.0

Source: Elaborations on 1998, 2008 Censuses and 2017 Cambodia Social Economic Survey, NIS

When we consider the rural-urban divide (Table 3.9) the previous considerations are reinforced with 2/3 of urban employees being paid employees and 1/3 own account workers and paid employees accounting also for more than half of men employment in rural areas.

Table 3.9 - Employment by sex, status and geographical areas; 2017

	Total employment	Employers	Paid employees	Own account workers	Unpaid family worker	Other	Employers	Paid employees	Own account workers	Unpaid family worker	Other
	Absolutte value						Percentage composition				
Urban											
Men	1,117	1	792	301	22	1	0.1	70.9	26.9	2.0	0.1
Women	1,026	0	585	405	36	0	0.0	57.0	39.5	3.5	0.0
Total	2,143	1	1,377	706	58	1	0.0	64.3	32.9	2.7	0.0
Rural											
Men	3,368	9	1,745	1,455	159	0	0.3	51.8	43.2	4.7	0.0
Women	3,258	1	1,350	1,743	164	0	0.0	41.4	53.5	5.0	0.0
Total	6,626	10	3,095	3,198	323	0	0.2	46.7	48.3	4.9	0.0

Source: Elaborations on 2017 Cambodia Social Economic Survey, NIS