National Social Security Fund for Civil Servants

Reform for a more sustainable pension scheme

ILO   AFD

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ABBREVIATIONS

CPI	Consumer price index
DB	Defined benefit
DC	Defined contribution
GAP	general average premium
GAP	General average premium
GDP	Gross domestic product
ILO	International Labour Organization
IMF	International Monetary Fund
KHR	Cambodian riel
MoLVT	Ministry of Labour and Vocational Training
MoSVY	Ministry of Social Affairs, Veterans and Youth Rehabilitation
NSSF	National Social Security Fund
NSSF-C	National Social Security Fund for Civil Servants
NSPPF	National Social Protection Policy Framework
PAYG	pay-as-you-go

EXECUTIVE SUMMARY

Civil servants are protected under the 1994 Law on Common Statute of Civil Servants, which provides social security benefits, including pensions, such as in case of old-age (retirement), invalidity and death of the member (survivors'). The National Social Security Fund for Civil Servants (NSSF-C) is responsible for the administration of the scheme. The long term pension includes three main benefits:

1. Members are entitled to retirement benefits at a minimum amount of 60 per cent of the final basic salary after 20 years of service and a maximum of 80 per cent of the final salary for 30 years of service. The pension amount is also subject to a minimum amount depending on the salary grade. Civil servants who are not eligible for a pension receive a lump sum payment.

2. Members are entitled to a minimum invalidity pension in case of illness.

3. Widows, widowers and children under 21 are entitled to a survivors' pension at the death of a pensioner.

To date, all benefits listed above have been financed through a pure pay-as-you-go (PAYG) strategy by the Treasury, through the budget of the Ministry of Social Affairs, Veterans and Youth Rehabilitation (MoSVY). The Government has established a provision for benefits to be paid on the basis of contributions shared by the Government and the civil servants. However, the contributory mechanism has not been implemented yet and contributions have never been collected. In July 2016, there were 189,000 active members. In December 2015, there were about 45,000 old-age and invalidity pensioners at the NSSF-C.

The actuarial valuation looked into the ability of the NSSF-C to meet its future obligations at the time they fall due under its current design parameters. Demographic factors are key, as they have direct implications for the financing of a pension scheme. Population growth will slow down in Cambodia over the next decades. This means that there will be fewer and fewer people to finance pensions. This context places particular pressure on PAYG schemes. As life expectancy continues to rise, more Cambodians will reach retirement age and will require pensions for longer periods of time.

The actuarial review shows that a fully funded defined contribution (DC) scheme represents a high level of risk for a country like Cambodia, where high salary growth will continue to be the norm. Establishing a DC scheme as the core of the pension system for civil servants would make their old age protection a gamble determined by market factors out of the Government's control. This would constitute a volatile policy issue for the Government, as it has in other countries where workers, particularly civil servants, will ultimately always look to the Government for adequate protection. These risks are exacerbated by the undeveloped nature of the country's financial markets. Cambodia does not currently have a financial market that can support a funded pension system. The evidence points to a defined benefit (DB) plan as the most appropriate system for the Cambodian context.

It is recommended that the foundation of the system should be a DB scheme. The study shows that in the early stages, Cambodia would benefit more from a PAYG system with a solid strategy to gradually increase investment as the financial market develops. A mandatory or voluntary DC scheme for civil servants could be considered as a top-up measure to secure higher income replacements.

The report presents the results of the actuarial review of the current NSSF-C scheme, as well as three options for reform. In line with the findings above, these options are based on a DB model.

The study found some issues with the current design of the NSSF-C scheme. Mainly, due to the nature of the minimum pension provision, a considerable portion of civil servants receive a minimum pension instead of receiving a pension calculated on their individual careers. This means that there are no rewards for longer careers, which leads to longer retirements, and in turn, the longer retirements increase the cost of the scheme. Secondly, the current pension formula considers only the basic salary. However, the basic salary represents about 58 per cent of the total remuneration paid to the average civil servant. Thus, the real income replacement upon retirement is well below that of working income. Finally, the scheme does not comply with ILO Minimum Standards in the case of income replacement for invalidity and survivors' benefits, and includes strong gender disparities. The study demonstrates the projected expense of the system under this current design. Projections show that **in 2016, there were 4.1 active members for each old-age pensioner; in 50 years, there will be only 1.9 active members for each old-age pensioner.** The cost of the scheme is rising rapidly. The PAYG cost increases from 12.5 per cent to 50 per cent over the projection period. **This means that at the end of the projection period, 50 per cent of all the civil servant salary expenditure will go to pay pensions. So, while the Government currently directs around 0.3 per cent of GDP to the pensions of civil servants, within 15 years this will have doubled** and will reach about 1.7 per cent of GDP by 2115. This cost is particularly high because civil servants are not contributing to the scheme. Following the advice of the Government, all options for reform in this document assume that contributions will be introduced, so that the Government and civil servants will contribute equally. The first option for reform proposes a simplified design that meets ILO Minimum Standards. Under this option, the total cost of the scheme would be 1.2 per cent of GDP in 2115. If contributions are introduced (for example at the same level of private sector), the total burden to the state would be 0.7 per cent of GDP in 2115. In terms of the administrative arrangements, the reformed scheme could remain within the NSSF-C, or be handed over to the NSSF for management as a distinct fund only for civil servants.

Option 2 proposes that current civil servants could continue to receive benefits according to the existing provisions, with the exception that the minimum pension, once in payment, would be adjusted each year according to the CPI, not to the salary. New recruits could join the NSSF private sector General Scheme. This will mean that the NSSF-C will continue to function until its last member passes away. Under this scenario the total cost of the scheme would be 1.2 per cent of GDP in 2115. If contributions are introduced, the total burden to the state would be 0.5 per cent of GDP in 2115. Option 2 represents a deeper but longer-term administrative integration of NSSF and NSSF-C. Financially, administratively and politically, this is the most uncomplicated reform option.

Option 3 is similar to Option 2, but proposes introducing a grandfather clause in order to register young civil servants (age 30 and below) into the NSSF General Scheme. The benefit of this option is a much faster integration between the funds. However, this benefit might be outweighed by the challenges of the Government covering the substantial cost of past accrued liabilities upfront – not only because of the availability of these funds, but because of the financial market's inability to absorb them. Given that under this scenario the total cost of the scheme would be the same as under Option 2, Option 3 is not advisable.

The final decision on the most appropriate reform option will depend on the Government, in consultation with civil servant representatives. As the decision will possible also influence the functioning of NSSF the consultation of the board members should also be considered. At the forefront of this decision should be the level of protection afforded to pensioners, balanced with the cost and sustainability of the scheme.

INTRODUCTION

This technical note is based on the actuarial study for the design of a pension system for public sector workers, which presents an in-depth financial analysis of different design solutions. This paper tries to capture the central elements of that analysis, and also includes some new design options that resulted from the evolving national dialogue on this subject.

The first draft of this report was presented and discussed with tripartite stakeholders at a high-level meeting on the 13th and 14th of November, 2017, in Siem Reap. The final policy options presented here, and their distinct design parameters, are the result of this discussion.

1. BASIC CONCEPTS FOR PENSION DESIGN

Social insurance pension can be designed on the basis of defined benefit (DB) or defined contribution (DC) plans.

1.1 THE RELATIONSHIP BETWEEN CONTRIBUTION AND BENEFITS

In a **defined benefit scheme**, a pension is calculated on the basis of years of contributions and the insurable earnings. The formula for the pension generally promises an annual pension which is a certain percentage of the annual income (called the **accrual rate**) per contribution year. The accrual rate multiplied by the number of years of contribution gives us the **replacement rate**.

The pension is then generally calculated by multiplying the replacement rate by the reference income of the beneficiary. The reference income can be the last income of the contributor or the average income over a certain number of years.

The Government can review these parameters through legislative reforms, adjusting it, for instance, to changes in the economy, demographics or labour market.

In a **defined contribution scheme**, contributions are simply saved. The accumulating amounts of contributions earn interest during the active years of contribution and, at the point of retirement, the amount of lifetime savings is paid out either in form of a lump sum, or converted into an annuity (a yearly amount that is paid until death).

A recent addition to pension design types is the so-called **notional defined contribution scheme.** This uses the principal calculation of a defined contribution pension in schemes that do not have real reserves. The virtual annual rates of return (i.e. fictitious interest rates) used for the accumulation of interest in the fictitious account balances are normally stipulated by law.

1.2 FINANCING PENSION SCHEMES

Pensions can be financed on a pay-as-you-go, partially funded or fully funded basis.

Full funding means that the level of reserves at any point in time can cover all future pension liabilities acquired, at least in theory. Defined contribution schemes are automatically fully funded, as their liabilities to individual contributors are always equal to the amount they have saved. In theory, defined benefit schemes can be fully funded too, but in practice, they rarely are.

Partial funding means that at any point in time, the pension scheme must have a minimum level of reserves. This amount – generally defined by law – is less than the actuarial equivalent of all future liabilities. The fact that new generations of workers will continue joining the mandatory social security scheme makes partial funding possible, because their contributions help guarantee most of the scheme's future liquidities. Reserves largely serve the purpose of smoothing contribution rates and helping to smooth the effects of economic downturns.

Pay-as-you-go (PAYG) is an extreme case of partial funding with a very low level of reserves, as PAYG schemes rely almost entirely on the future contributions of the active generations to pay the pension of each contemporary pensioner generation. Defined benefit schemes tend to be PAYG, as they rely on the future contributions of the active generations to pay the pensions of the retired population.

2. DEMOGRAPHIC AND ECONOMIC CONTEXT

The future income and expenditures of any social security scheme are closely affected by changes in the size and age structure of the population, employment levels, economic and wage growth, inflation, and rates of return on investments.

2.1 HIGH ECONOMIC GROWTH

Cambodia is one of the fastest growing economies in the world, with an average annual growth of 7 per cent in the last decade. According to the IMF, this trend is expected to continue in the foreseeable future. Wage growth has also followed this high trend. For example, in the public sector over the past 10 years, the average wage increase was 17.7 per cent.

Figure 1 – Economic growth in Cambodia (2006–2015)

The high growth in real gross domestic product (GDP) is expected to continue for the next 20 years and will be accompanied with a high average salary increase.

Figure 2 – Economic growth projections (2016–2112)
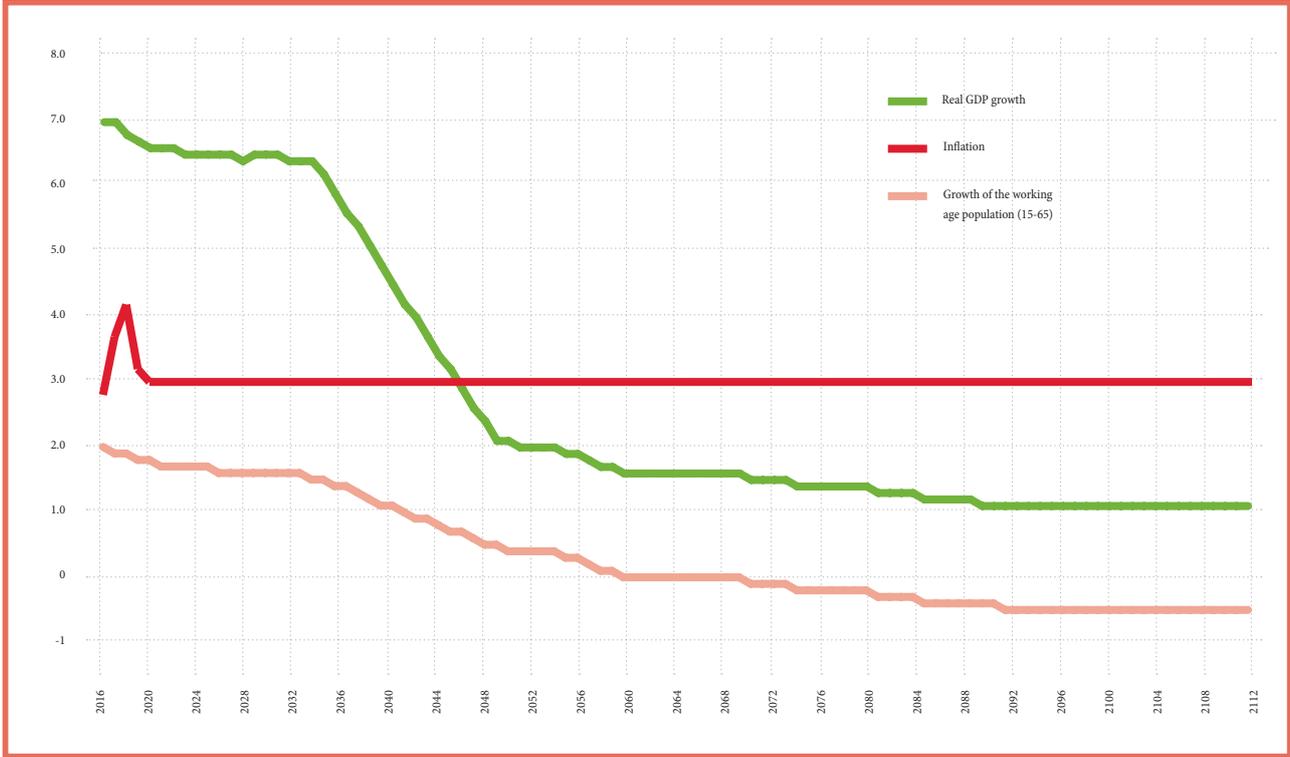
2.2 HIGH POPULATION GROWTH

Following the years of conflict, Cambodia's population expanded rapidly from a little more than 10 million people 20 years ago to 15.6 million in 2015. This represents an average annual growth of 1.9 per cent.

Figure 3: Population and population growth, Cambodia, 1991–2015
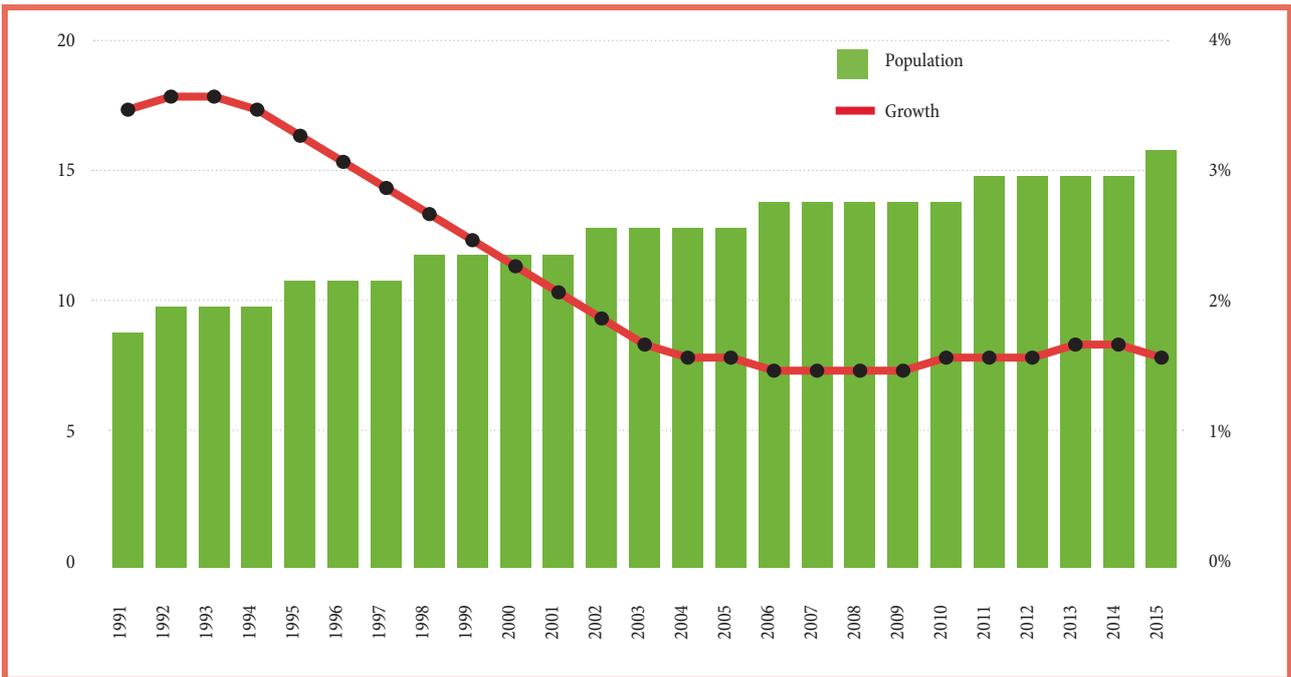
A high fertility rate has been the motor of this high population growth. Like neighbouring countries, Cambodia has recently experienced a decline in fertility, but its total fertility rate, at 2.7 in 2015, still remains high within in the region.

Figure 4 – Fertility trends in Cambodia (1990–2015)
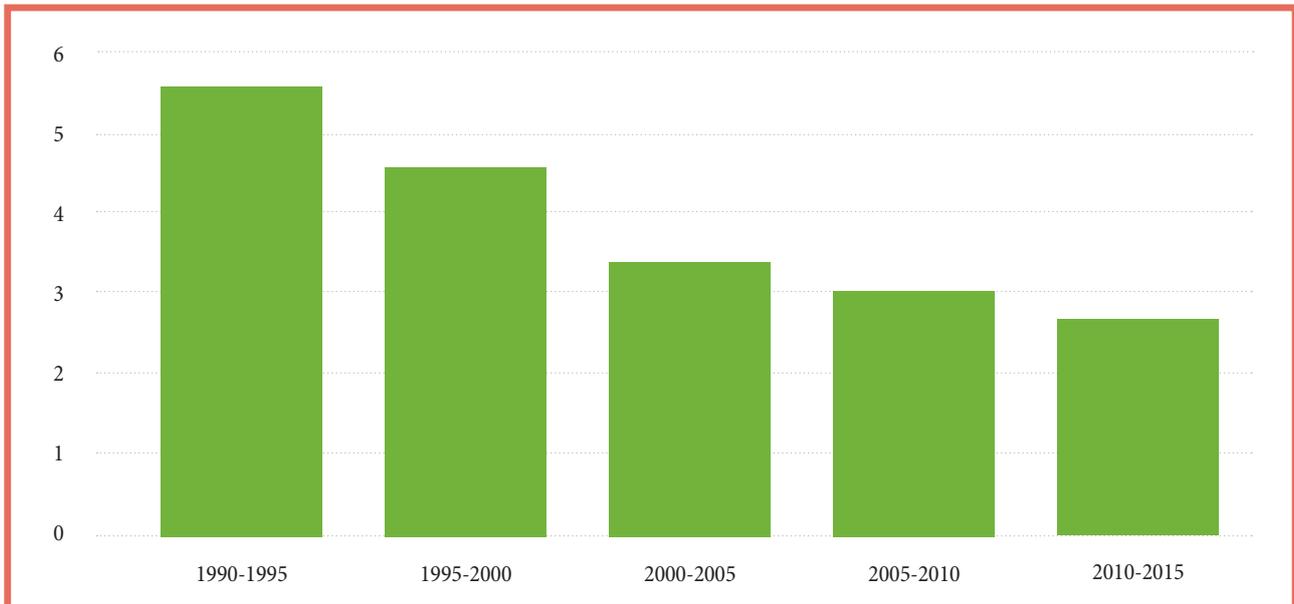
2.3 HIGH LIFE EXPECTANCY GROWTH

Life expectancy at birth in 2015 is estimated at almost 67 years for males and 71 years for females. Life expectancy has increased considerably over the last 20 years, by about 12 years. Life expectancy at birth will continue to increase. From an average of 69 in 2015, it is expected to increase to 81 by 2065. When it comes to pension schemes, however, life expectancy at retirement age is more relevant. In 2015, the life expectancy at age 55 is 20 years. In 2065, it will be 29 years, meaning that the number of retirement years will have increased by almost a third.

Figure 5 – Life expectancy trends by gender (1990–2015)
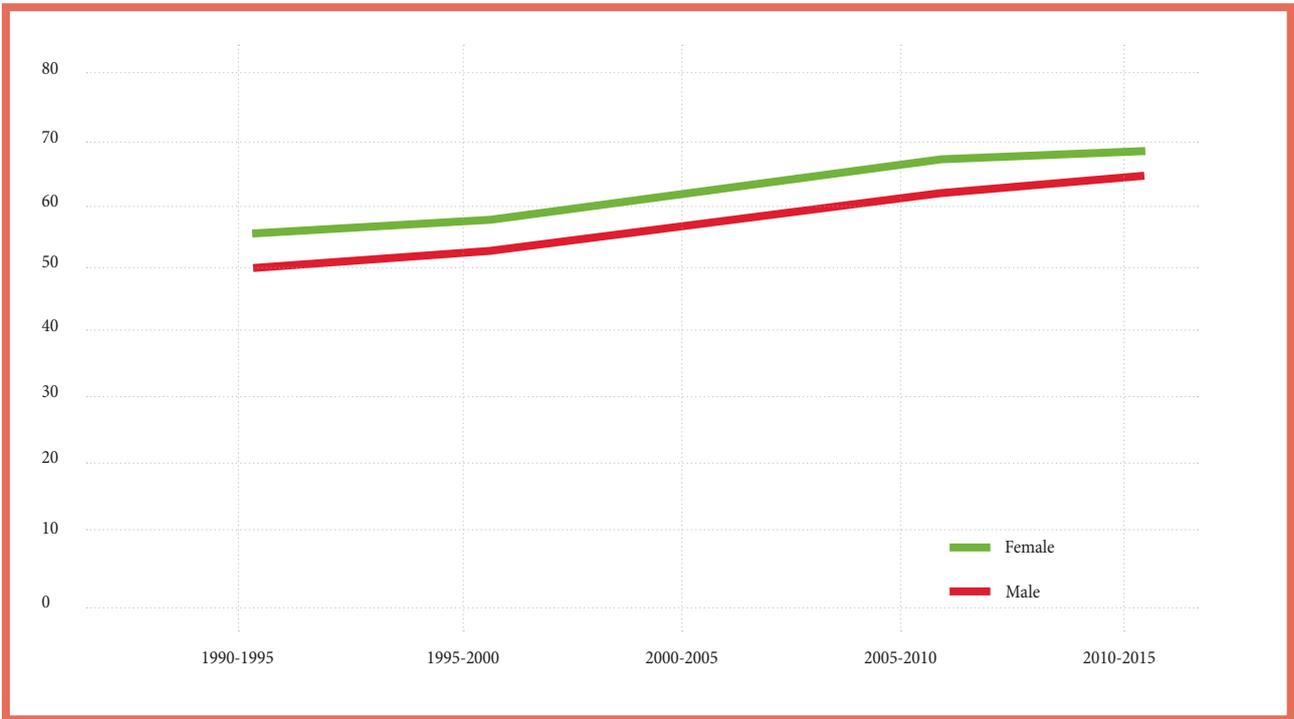
Figure 6 - Life expectancy projections by gender (2015–2115)
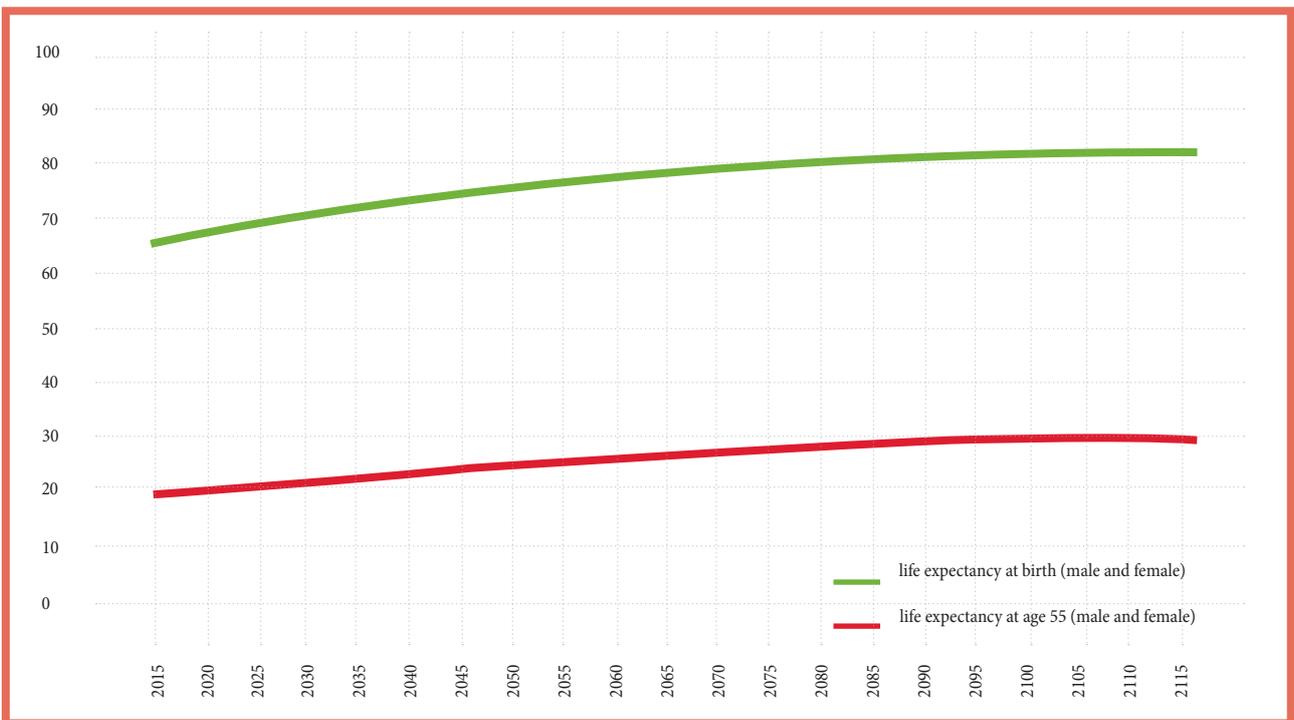
2.4 FUTURE POPULATION GROWTH

Based on these projected trends, the population of Cambodia is expected to continue growing for the next 60 years. The highest growth will be in the population aged 60 and above. **Today, for every elderly person aged 60 and above, there are 10 people aged 15–60. Within 50 years, this ratio will have fallen to only 2.5 people aged 15–60 for every elderly person over 60.** This illustrates the importance of appropriate long-term planning for pensions systems.

Figure 7 – Population growth in Cambodia by age brackets (2013–2013)
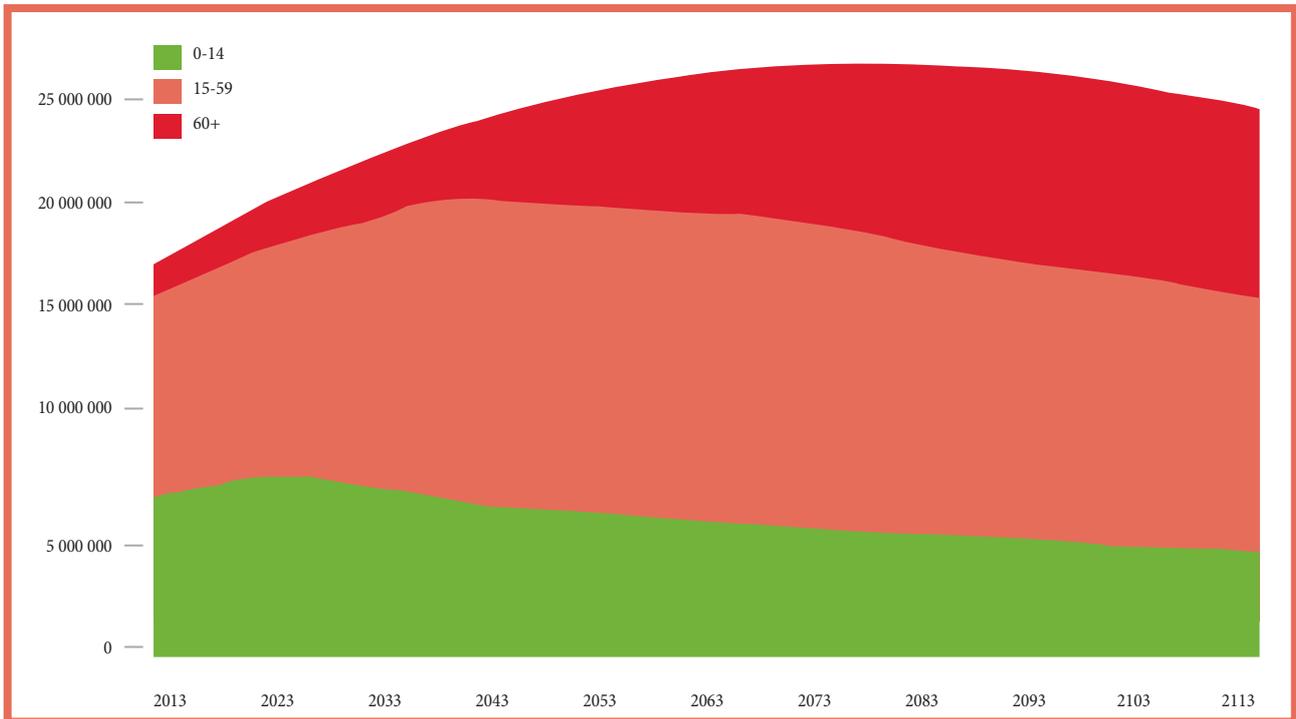
3. IMPLICATIONS OF THE DEMOGRAPHIC AND ECONOMIC CONTEXT FOR THE PENSIONS SYSTEM

The factors discussed above have important implications for the financing of a social security pension scheme:

1. Slower population growth

Population growth will slow down in Cambodia over the next decades. This means that there will be fewer and fewer people to finance pensions. This context places particular pressure on PAYG schemes.

2. Increase in life expectancy

As life expectancy continues to rise, more Cambodians will reach retirement age and will require pensions for longer periods of time. For policy makers this means that the system will be increasingly costly, but also that there will be a stronger demand for a good pension system. At the individual level, this means that the lack of access to an adequate pension could be catastrophic

3. Rapid economic and salary growth

Rapid economic and salary growth are two determining factors for identifying the most appropriate funding system: PAYG or fully funded.

In his paper Criteria for The Optimal Design of a Social Security Retirement System, Professor Robert L. Brown of the University of Waterloo, Canada and eminent specialist in social security pointed out:

> More heavily funded social security retirement systems (SSRS) are preferable when rates of return on investments exceed the rate of growth of the contributions base of the system (which is the reality in many advanced economies with aging populations today). Less funding (and hence more PAYGO financing) would be preferred when the growth of the contributions base exceeds the rate of return on investments […]
> It is worthy of note, however, that a funded SSRS is inherently no more secure and no more predictable (i.e., less volatile) than a PAYGO scheme.

In a fully funded system, high salary growth increases the risk of all stakeholders, including the government, employers and employees. A fully funded system relies mainly on return on assets to finance benefits. If salary increases are high, the return on assets needs to be high as well, so as not affect the financial health of the scheme. This is illustrated in the figure below.

The income replacement rate is the percentage of previous earnings paid through a pension. This is a key design feature and indicator of adequacy. The actuarial review of the Cambodian system illustrates that in a fully funded DC scheme, the income replacement rate is highly sensitive to any variations in real salary increase and/or real return on assets.

Table 1 – Sensitivity analysis on the effects of real salary and real return on assets variations on final replacement rate under a DC pension model in Cambodia (percentages)

REAL SALARY INCREASE (%)	REAL RETURN ON ASSETS (%)				
	2	3	4	5	6
2	31	40	53	69	89
3	27	35	45	58	75
4	23	30	39	50	64
5	21	26	34	43	55
6	18	23	30	38	48

In the previous example, assuming a contribution rate of 20 per cent, in the best-case scenario pensioners could receive up to 89 per cent replacement rate, but in the worst-case scenario they might receive only 18 per cent. This extreme range exemplifies the high level of risk that a fully funded option represents for Cambodia. These risks are exacerbated by the undeveloped nature of the country's financial markets.

All the factors outlined above will affect the Cambodian system to a certain degree. **The best possible system will be one that is designed to minimize risks particular to the Cambodian demographic, economic and financial context.**

The actuarial study shows that in the case of Cambodia, establishing a DC scheme as the core of the system would make old age protection a gamble, with contributors having no control over the kind of pension they would receive. While it is clear that a DC scheme should not be the foundation of the Cambodian pension system, it is possible for it to play a supporting role.

Additionally, in assessing the most adequate funding modality for Cambodia, it is important to note that Cambodia does not currently have a financial market that can support a funded pension system. For the moment, the Cambodian financial system offers limited investment alternatives. One-year term deposits are the longest maturity savings instruments available. Extending bank deposit maturities beyond a one-year term would theoretically be possible, but interest rates would not be more attractive.

The development of the securities market is still at an early stage. The Government is just starting to consider the issuance of the first government bonds, but the process will take some years. Despite the strong commitment of the Securities and Exchange Commission to introduce corporate bonds and attract new companies to the stock exchange, it is not expected that the market will have enough dimension to absorb NSSF-C projected reserves.

It is recommended that while the foundation of the system should be a DB scheme, a diversified system will be the best strategy to meet future challenges. The study shows that in the early stages, Cambodia would benefit more from a PAYG system with a solid strategy to gradually increase investment as the financial market develops. In addition, social security systems are flexible and in the future, a partially funded system could allow for a more flexible financing strategy in a country like Cambodia.

The next chapter of this report presents the results of the actuarial review of the current NSSF-C scheme, as well as three options for reforms. In line with the findings above, these options are based on a DB model.

4. FINDINGS ON THE NSSF-C SCHEME

The actuarial study carried out an in-depth diagnostic of the current civil servant pension scheme managed by the National Social Security Fund for Civil Servants (NSSF-C).

4.1 THE DESIGN

The current provisions of the NSSF-C are summarized in the following table.

Table 2 – Current design parameters

DESIGN PARAMETERS	CURRENT
Insurable earnings	Basic salary
Invalidity pension minimum eligibility	20 years for non-work related No conditions for work related
Survivors' pension minimum eligibility	No conditions
Old-age pension minimum eligibility	20 years (30 not related to age)
Old-age accrual rate	60% first 20 years and 2% per additional year up to 80%
Non work related invalidity: accrual rate and minimum replacement rate	50% first 20 years and 1.5% per additional year up to 80%
Work related invalidity: accrual rate and minimum replacement rate	4% per year for first 20 years and 1.5% per additional year up to 95%
Survivors' pension minimum replacement rate	Monthly payment of KHR10,000 for orphans under 21. Monthly payment of KHR15,000 for widows
Spouse share of survivors' pension	N/A
Child share of survivors' pension	N/A
Retirement age	55, 58, 60
Minimum pension as average of total salary	Minimum monthly basic salary according to body, grade and steps
Adjustment to pension	Salary for the minimum pension

The minimum pension

According to the parameters set out above, the maximum pension a civil servant can receive is 80 per cent of the basic salary. In addition, the current system also applies a minimum pension
provision which guarantees civil servants a pension that is at least the amount of the lowest basic salary of their respective body and grade.

The actuarial review showed that the difference in salaries between grades is minimal: 100 per cent of the lowest salary grade is usually over 80 per cent of the highest salary grade. This means that instead of receiving a pension calculated on their individual career, a considerable portion of civil servants receive the minimum pension. The data collected revealed that up to 95 per cent of pensioners receive the minimum pension. This raises many issues regarding the current design of the scheme:

- As the pension formula is only applied to 5 per cent of retirees, it is almost meaningless.

- Civil servants can receive the same pension after working for 20 or 30 years, with no additional reward for a longer career. A civil servant who contributes for 20 years will have an accrual rate of 4 per cent per year (80 per cent divided by 20), while a civil servant who contributes for 30 years will have an accrual rate of 2.67 per cent per year (80 per cent divided by 30). This means that shorter careers have higher annual accrual income replacement rates. This is a source of inequity, and also increases the cost of the scheme, since it leads to longer retirements.

- The design is counterproductive as it provides no incentive to contribute after 20 years: ten additional years of contribution do not yield any additional benefits.

When introducing a contributory system for civil servants, these issues must be carefully considered.

The basic salary

The pension formula considers only the basic salary. However, the basic salary represents about 58 per cent of the total remuneration paid to the average civil servant.[1] This means that the effective maximum income replacement rate is not 80 per cent as calculated by the pension formula but 46.4 per cent (58 per cent multiplied by 80 per cent). The goal of an old age pension is to smooth consumption from the working life to retirement and thus, if the replacement rate is not calculated on all earnings, the effect could be less than intended.

ILO Minimum Standards

The ILO Social Security (Minimum Standards) Convention, 1952 (No. 102) provides an internationally recognized basis for designing a social security pension scheme which is adequate and sustainable.

. . . .

[1] Excluding the allowances for spouse (KHR15,000 per month) and children (KHR10,000 per month and child).

In terms of old age pensions, the minimum replacement rate recommended is 40 per cent. The ILO Convention concerning Invalidity, Old-Age and Survivors' Benefits, 1967 (No. 128) provides a more generous alternative for old-age benefits, with a replacement rate of 45 per cent[2] after 30 years, instead of 40 per cent.

Table 3 – Minimum standards, ILO Convention No. 102: Old age, disability and survivors' benefits

TYPE OF BENEFITS	INCOME REPLACEMENT LEVEL (%)	CONDITION OF ELIGIBILITY	DURATION OF BENEFITS
Old age	40	30 years	Lifetime
Invalidity	40	15 years	Lifetime or until old age pension is paid
Survivors'	40	15 years	Lifetime

Currently, the NSSF-C old age pension system complies with ILO minimum standards. However, compliance is less clear in the case of income replacement level for invalidity and survivors' benefits. In fact, there are some cases where, even after 15 years of contributions, there is no qualification. Even when contributors qualify, the survivors' pension is so low that following the death of the civil servant, survivors are not protected from poverty. Currently, the spouse and each child receive KHR15,000 and KHR10,000 respectively.[3] Likewise, when a female civil servant dies, regardless of whether she is a beneficiary of a pension, her husband does not receive a survivors' pension. This represents a disparity in the rights of female and male civil servants.

4.2 FINANCIAL SUSTAINABILITY

It is very rare today to see a pension scheme where active members are not contributing. Collecting contributions from workers is not only a means to reduce the burden of employers – in this case, the Government – but it is also key to give people ownership of the schemes and its benefits. It is also essential to provide more equity between different groups of citizens.

Chapter 6 demonstrates the projected expense of the system under the current design, showing an increasing burden for government that is usually shared with beneficiaries.

[2] Some of the stakeholders have shown a preference for 45 per cent instead of 40 per cent.
[3] Sub-decree 278, dated 29 December 2016, and Sub-decree 41, dated 17 March 2017, increased the survivor pension benefit for spouse children from KHR6,000 and KHR5,000, respectively.

4.3 THE DATA

In general, for both plans (NSSF-C and NSSF), it will be important to centralize the data and have only one system for calculating pensions and lump sums. Controls should be put in place each time information is exchanged with another partner, stored in the data warehouse and extracted to produce reports, studies or analyses. Consistency tests can be put in place to ensure the quality of the information. If data is entered manually, samples can be drawn to ensure the quality of the work. Reconciliation of aggregate figures about contributors and pensioners should be made periodically. Any differences should be understood and explained.

Portability should exist between each social security pension scheme, so that members can move from one scheme to another according to their changes in employment. All years of service credited to any social security pension scheme should be considered in verifying the eligibility conditions and calculating the pension of a member. With only one administrative institution, it will be easier to integrate all components of the system and to consider special cases like employees who have worked in both the private and public sector. A well designed social security system should encompass these cases.

If the public sector and the private sector are merged together, it is essential to ensure that past deficits accumulated by the public sector are not transferred to the private sector, otherwise the membership of the NSSF, the majority being garment sector workers, will end up paying the pensions of past civil servants, which will constitute an extremely unfair situation. Therefore, it is a strong ILO recommendation that past service accumulated at the NSSF-C and the NFV should be paid by the government and not by employers and employees of the private sector. It is also possible to design a transition mechanism from the current situation to a new social security pension scheme.

5. RESULTS OF THE ACTUARIAL VALUATION

The total expenditure of a scheme is normally measured as a percentage of insurable earnings, which is the PAYG rate. The PAYG rate represents the contribution rate that would be required to pay all the expenditures of the scheme (including benefits, administration and other expenses), year after year, in the absence of a reserve. In the case of the NSSF-C, the PAYG rate rises from 21.3 per cent in 2016 to 86.5 per cent in 2115. This high increase is mainly due to the increase of ratio of pensioners to contributors, known as the demographic ratio. Over time, there will be more and more pensioners receiving benefits, while the number of contributors will not grow as fast. **In 2016, there were 4.1 active members for each old-age pensioner; in 50 years, this ratio will have dropped to 1.9.**

Figure 8 – Projected PAYG rates, NSSF-C, based on the basic salary, 2016–2115 (percentages)

Another important result of the financial projection is the general average premium (GAP). For the present exercise, we will define the GAP the following way: it is the annual contribution as a percentage of insurable earnings that is necessary to pay for all expenditures (administration and benefits) over the entire projection period, reaching a reserve ratio of zero at the end of that time. In this case, the GAP necessary to pay for all expenditures over the next 100 years is 50.2 percent. This GAP is calculated on the basic salary.

If the future expenditures of the scheme are expressed as a function of the total salaries (basic salary plus allowances) instead of the basic salary, the PAYG cost increases from 12.5 per cent to 50 per cent over the projection period. **It means that at the end of the projection period, 50 per cent of all the civil servant salary expenditure will go to pay pensions.**

Another important result of the financial projection is the general average premium (GAP). For the present exercise, we will define the GAP the following way: it is the annual contribution as a percentage of insurable earnings that is necessary to pay for all expenditures (administration and benefits) over the entire projection period, reaching a reserve ratio of zero at the end of that time. In this case, the GAP necessary to pay for all expenditures over the next 100 years is 50.2 percent. This GAP is calculated on the basic salary.

If the future expenditures of the scheme are expressed as a function of the total salaries (basic salary plus allowances) instead of the basic salary, the PAYG cost increases from 12.5 per cent to 50 per cent over the projection period. It means that at the end of the projection period, 50 per cent of all the civil servant salary expenditure will go to pay pensions.

Figure 9 – Projected PAYG rates in relation to the total salaries (basic salary + allowances), NSSF-C, 2016–2114 (percentages)
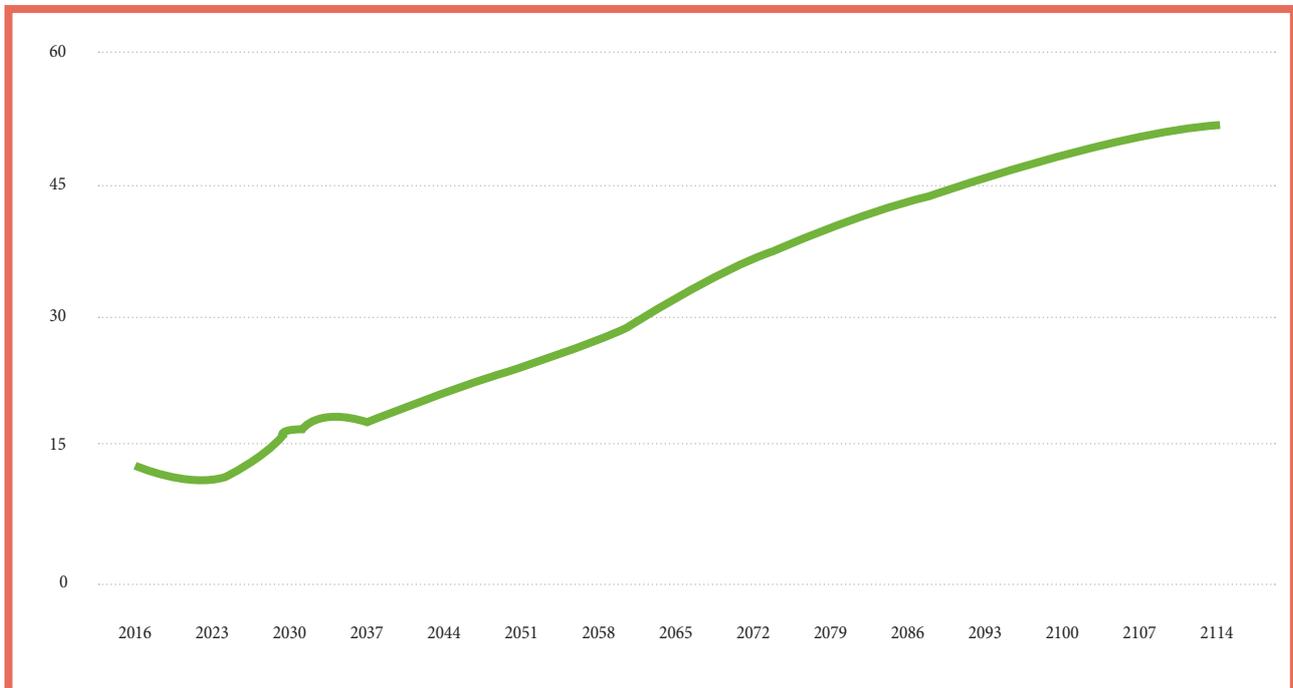
The following table shows the projected benefit in relation to the GDP. It shows that **while the Government currently directs around 0.3 per cent of GDP to the pensions of civil servants, within 15 years this will have doubled** and will reach about 1.7 per cent of GDP by the end of the projection period. This is more than the Government currently allocates to all social protection expenditures for the general population.

Figure 10 – Total expenditure in relation to the GDP, NSSF-C, 2016–2112 (percentages)
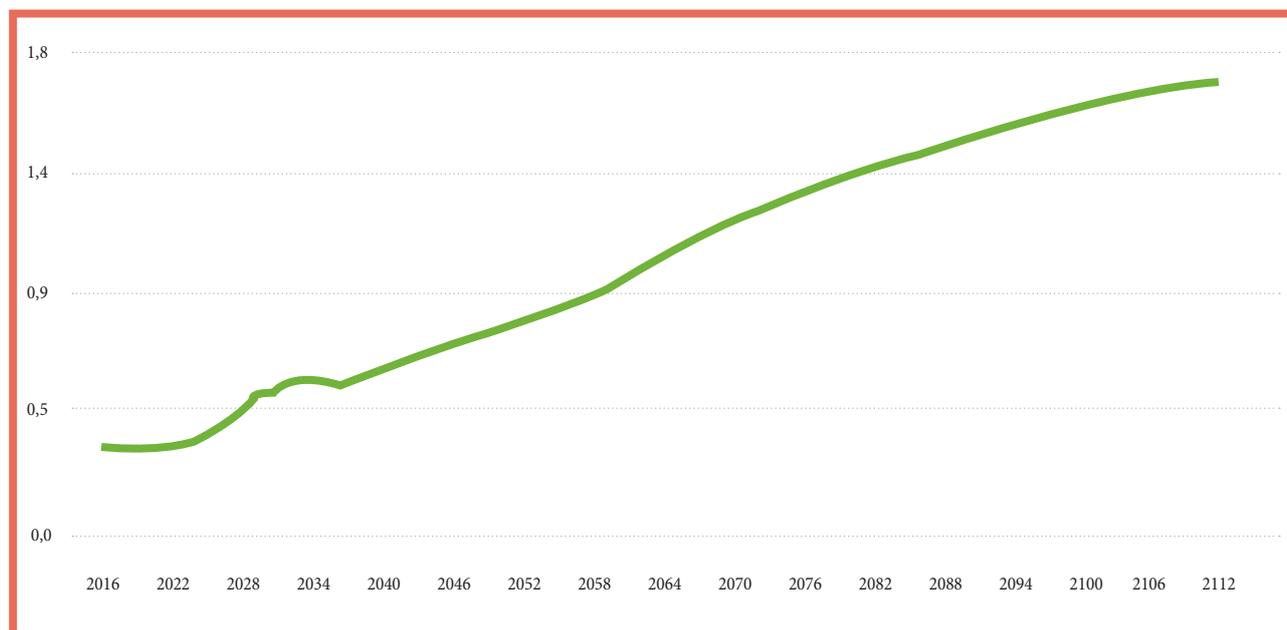
6. PENSION DESIGN OPTIONS

The first draft of this report was presented and discussed with tripartite stakeholders at a high-level meeting on the 13th and 14th of November, 2017, in Siem Reap. The final policy options presented here, and their distinct design parameters, are the result of this discussion.

6.1 OPTION 1: A PENSION SCHEME BASED ON THE TOTAL SALARY AND MEETING ILO MINIMUM STANDARDS

Option 1: The actuarial valuation included a review of the Cambodian legal framework in light of international social security standards and principles.[4] This review showed where national legislation concerning pensions, both for the public and private sector, stands in comparison with international minimum standards and identified gaps in protection and areas for improvement.[5] Consequently, the first option for reform follows the ILO minimum standards to address these gaps. It also proposes a simplified system.

[4] The ILO Social Security (Minimum Standards) Convention, 1952 (No. 102) is a landmark instrument that sets qualitative and quantitative benchmarks with respect to social security schemes, including old-age, invalidity and survivors' pension schemes The Convention concerning Invalidity, Old Age and Survivors' Benefits, 1967 (No. 128) and accompanying Recommendation No. 131 set higher standards for pension schemes to comply with.

[5] For the full review, please see Tables 1.1, 1.2 and 1.3 in the full actuarial valuation.

DESIGN PARAMETERS	CURRENT	OPTION 1
Insurable earnings	Basic salary	Basic salary + allowance
Invalidity pension minimum eligibility	20 years for non-work related No conditions for work related	5 years for non-work related No conditions for work related
Survivors' pension minimum eligibility	No conditions	5 years
Old-age pension minimum eligibility	20 years (30 not related to age)	15 years
Old-age accrual rate	60% first 20 years and 2% per additional year up to 80%	1.5% per year of service
Non work related invalidity: accrual rate and minimum replacement rate	50% first 20 years and 1.5% per additional year up to 80%	1.5% per year of service subject to a minimum of 45%
Work related invalidity: accrual rate and minimum replacement rate	4% per year for first 20 years and 1.5% per additional year up to 95%	60%
Survivors' pension minimum replacement rate	Monthly payment of KHR10,000 for orphans under 21. Monthly payment of KHR15,000 for widows	45%
Spouse share of survivors' pension	N/A	50%
Child share of survivors' pension	N/A	10%
Retirement age	55, 58, 60	60
Minimum pension as average of total salary	Minimum monthly basic salary according to body, grade and steps	30% of average salary
Adjustment to pension	Salary for the minimum pension	30% of average salary

Option 1 results

Under this reform scenario, the PAYG rate rises from 12 per cent in 2016 to 37 per cent in 2115, a fraction of the status quo projection. The GAP necessary to pay for all expenditures over the next 100 years is 21.3 percent. This GAP is calculated on the total salary.

The PAYG rate represents the contribution rate that would be required to pay all the expenditures of the scheme (including benefits, administration and other expenses), year after year, in the absence of a reserve.

Figure 11 – Projected PAYG rates, NSSF-C, Option 1, 2016–2115 (percentages)
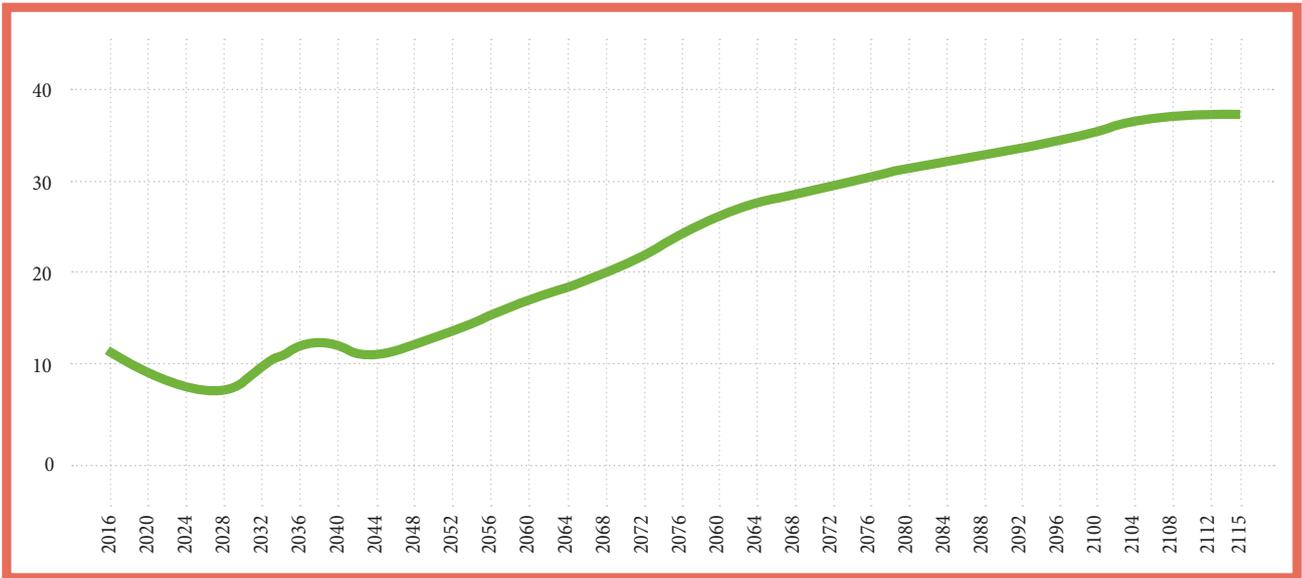
When we compare this to the total expenditure in relation to the GDP, there is a decrease of 0.5 per cent in the total burden to the state at the end of the projection period. The total cost of the scheme rises from 0.3 per cent of the GDP in 2016 to 1.2 per cent in 2115.

Figure 12 – Total expenditure in relation to the GDP, NSSF-C, 2016–2115 (percentages)
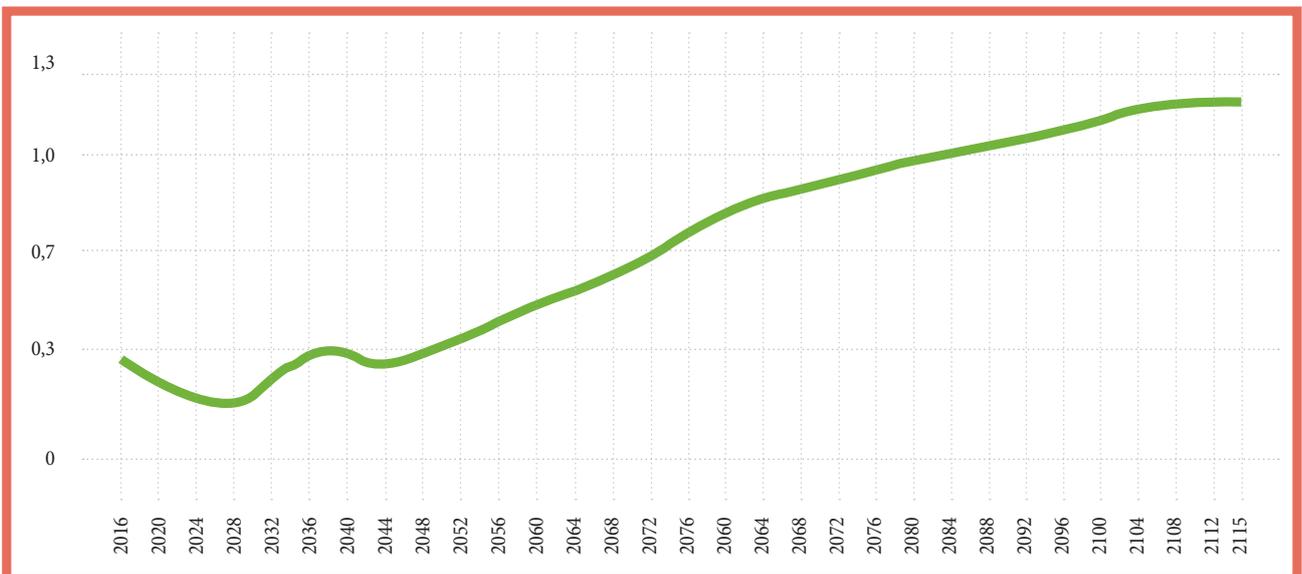
The preceding figure illustrates the total cost to the Government if civil servants do not contribute to the pension scheme under option 1. The following figure presents an additional scenario where civil servants would contribute the same rate as workers in the private sector (see table 6). Under such strategy, the ultimate cost decreases from 1.2 per cent of GDP to 0.7 per cent. It is assumed in this example that the Government still maintain a pure PAYG financing strategy.

Figure 13 – Total government expenditure in relation to the GDP, with civil servants paying the same contribution rates as the private sector, NSSF-C, 2016–2112 (percentages)
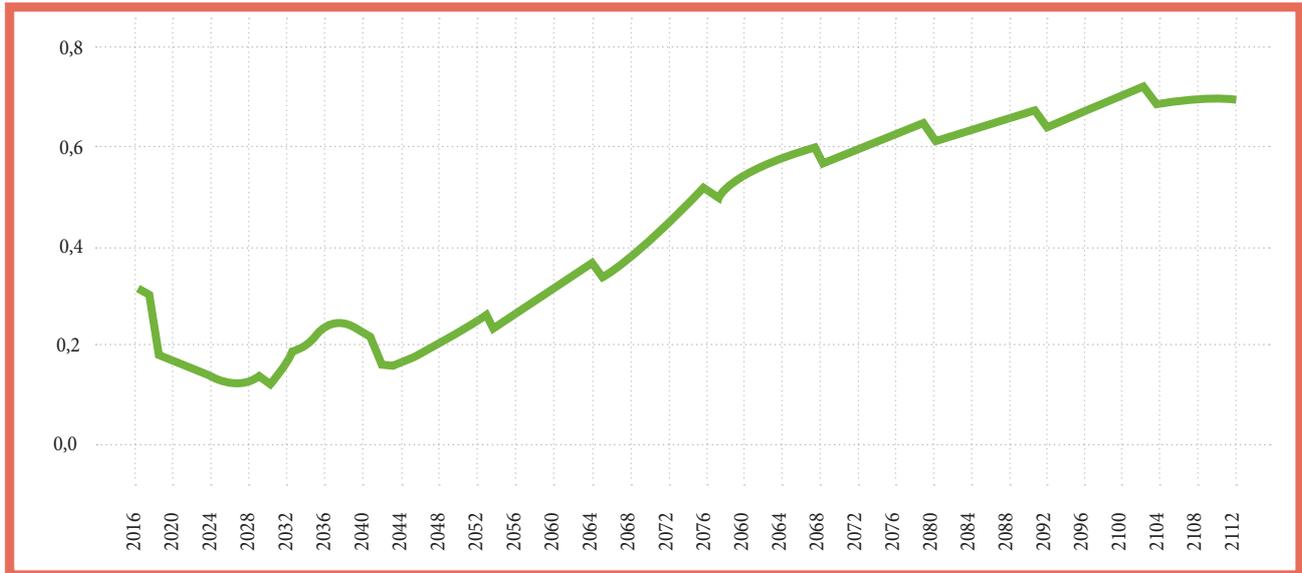
Note: Civil servants will start to pay contributions in 2018.

This scenario would be implemented under a PAYG defined benefit scheme. However, an additional funded defined contribution scheme can be implemented as a supplemental plan to increase the total replacement rate of civil servants. This is for instance the case in Thailand.

In terms of the administrative arrangements, the reformed scheme could remain within the NSSF-C, or be handed over to the NSSF for management but as a distinct fund only for civil servants. This is the arrangement in place for the civil servants' health insurance scheme launching soon.

6.2 OPTION 2: NEW CIVIL SERVANTS ENTER THE NSSF GENERAL SCHEME

With the understanding that it will be difficult to increase retirement age or implement contributions for existing civil servants – particularly those who are already at the end of their careers – the Government could consider a second option. Current civil servants could continue to receive benefits according to the existing provisions, with the exception that the minimum pension, once in payment, would be adjusted each year according to the CPI, not to the salary. New recruits could join the NSSF private sector scheme. This will mean that the NSSF-C will continue to function until its last member passes away. Integration between the funds, as envisioned by the National Social Protection Policy Framework (NSPPF), would be achieved over a long horizon.

This option is likely to be preferred by current civil servants, and thus would be easier to implement than option 1. It would not affect acquired rights, respecting the engagements already made by the government towards civil servants. Administratively, it also gives the NSSF a more manageable task. However, new civil servants would be bound by the provisions established for private sector workers by the NSSF's tripartite governing body, which means in the future the Government would not have absolute powers to change design parameters. This gradual strategy to merge systems has been used by other countries.

COUNTRY	SEPARATE PENSIONS FOR CIVIL SERVANTS	INTEGRATED PENSIONS FOR ALL FORMAL SECTOR WORKERS	COVERAGE ONLY FOR CIVIL SERVANTS
China	x		
Indonesia	x		
Republic of Korea	x		
Lao PDR	x		
Malaysia	x		
Philippines	x		
Thailand	x		
Hong Kong (China)		x	
Japan		x	
Mongolia		x	
Singapore		x	
Viet Nam		x	
Cambodia			x
Myanmar			x
Timor-Leste		x	

Option 2 results

In option 2, like in option 1, the PAYG rate rises from 12.5 per cent in 2016 to 37.5 per cent in 2115. The GAP necessary to pay for all expenditures over the next 100 years (and accumulate no reserve at the end of the projection period) is 22.0 percent. This GAP is calculated on the total salary.

Figure 14 – Projected PAYG rates, in relation to total salaries, NSSF-C, option 2, 2016–2112 (percentages)
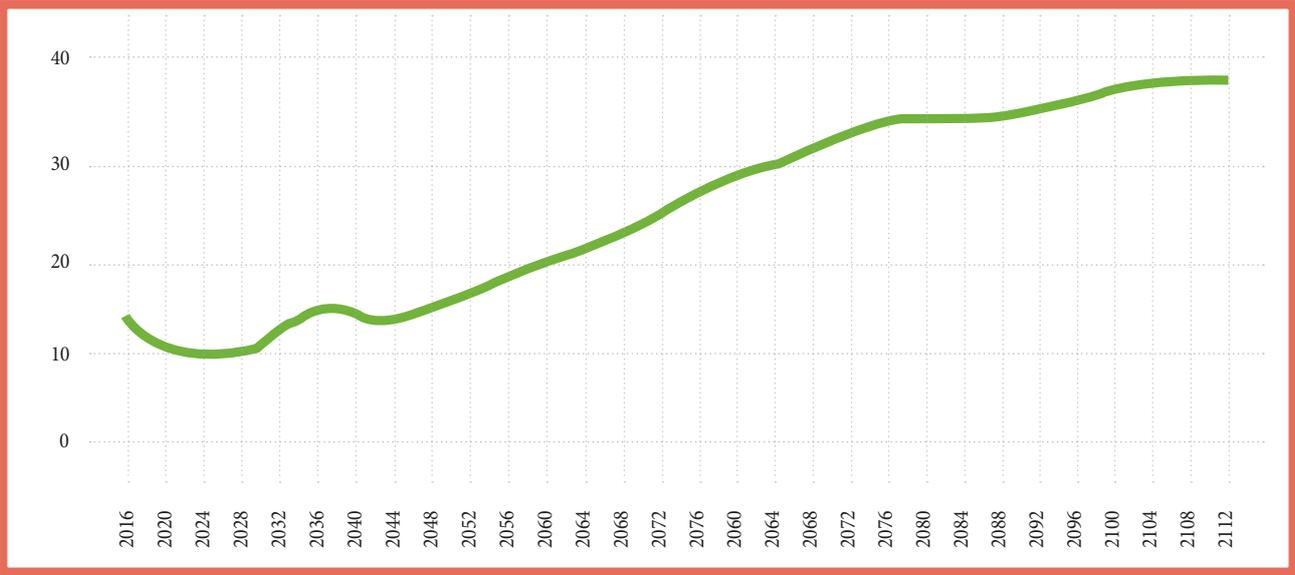
Note: In this figure, only civil servants are considered.

The next figure shows the breakdown of the cost by current members, new members and total members.

Figure 15 – Projected PAYG rates in relation to total salaries, NSSF-C, option 2, 2016–2112 (percentages)
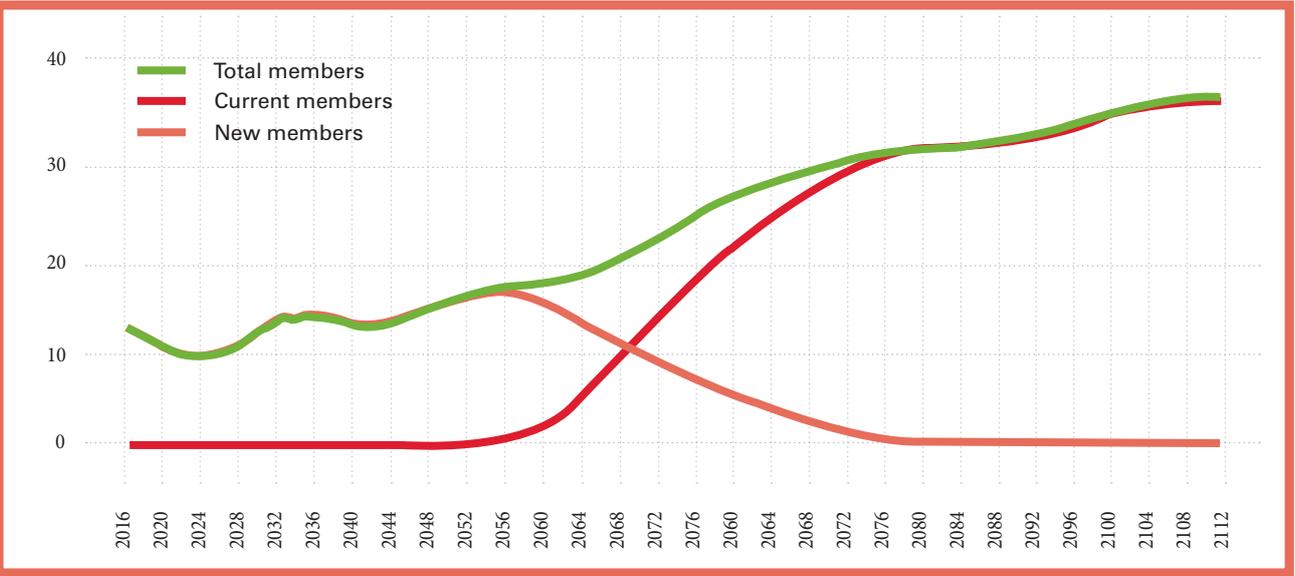
Note: In this figure, only civil servants are considered.

Figure 16– Total cost in relation to GDP, option-2, NSSF-C, 2016–2115 (percentages)
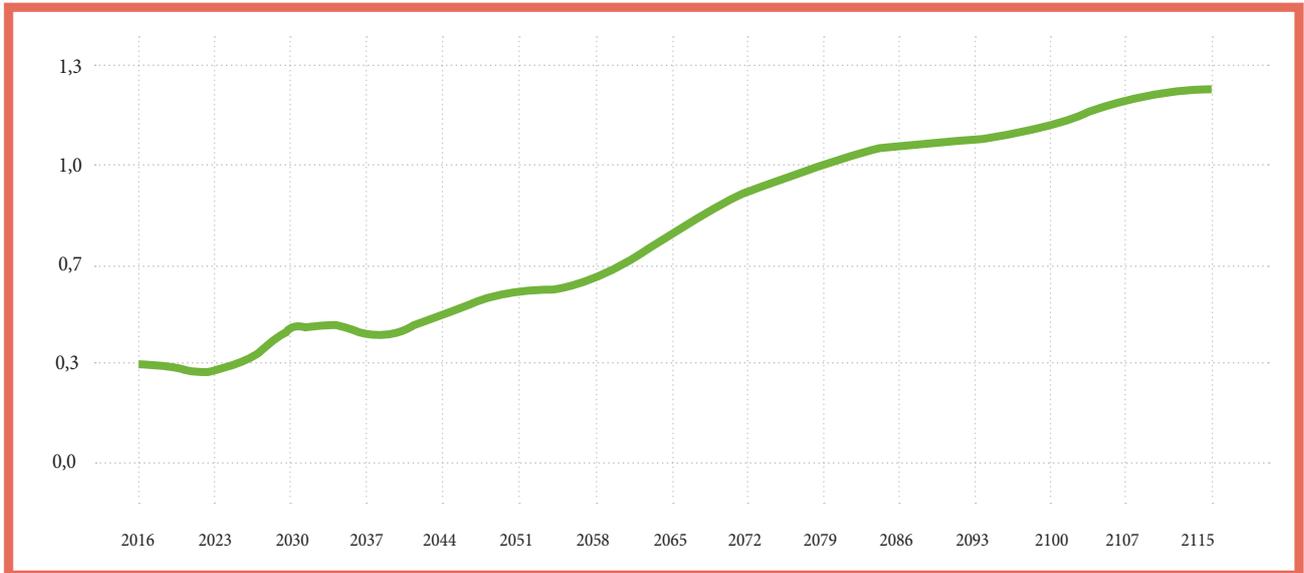
However, it is important to note that the preceding figures do not represent the real cost that the Government will pay under option 2. The future cost financed by the Government will depend on the contribution rate levied in the new General Scheme and the share of the contribution that is paid by Government and civil servants, respectively.

To estimate the cost that the Government will pay under option 2, we make two assumptions:

• The contribution rate for the General Scheme will increase according to a set schedule of 2.75 per cent increase every 10 years;[6] and

• From the total contribution rate, 50 per cent is paid by the government and 50 per cent by the new civil servants.

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[6] It is highly recommended that this schedule is formally adopted into policy.

Table 6 – Contribution rates of the General Scheme

YEARS	CONTRIBUTION RATES (%)
2018–2027	8.00
2028–2037	10.75
2038–2047	13.50
2048–2057	16.25
2058–2067	19.00
2068–2077	21.75
2078–2087	24.50
2088–2097	27.25
2098–2107	30.00
2108–2117	32.75

The following figure illustrates the total cost for the Government over a 100 year period; it shows that the total cost of the scheme rises from 0.3 per cent of the GDP in 2016 to 0.5 per cent in 2115. The ultimate cost that the Government will pay under option 2 is much lower than under the status quo, going from 1.7 to 0.5 per cent of the GDP (see Figure 10). This is due to the minimum pension, which is no longer a costly provision, and the fact that, ultimately, civil servants are paying half of the contributions of the scheme.

Figure 17 – Total cost paid by the Government in relation to the GDP, option 2, NSSF-C, 2016–2112 (percentages)
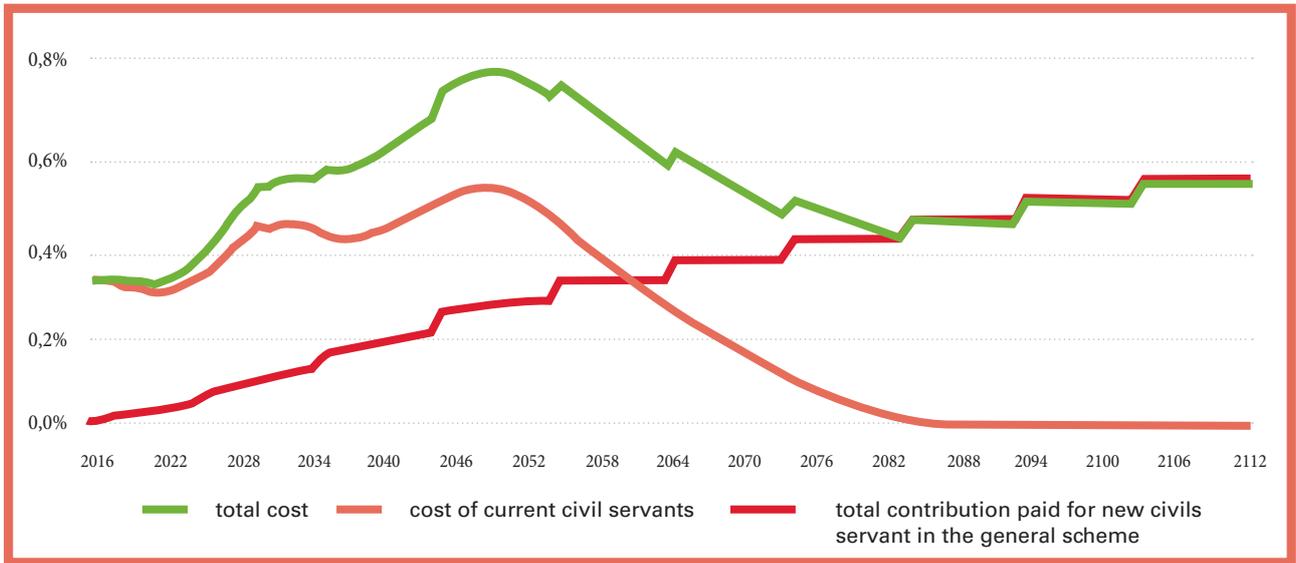
The inclusion of the new civil servants within the General Scheme will also slightly affect the total cost of the new General Scheme. The effect is positive because new civil servants will be younger at the beginning of the implementation. This is illustrated in the following figure.

Figure 18 – Projected PAYG rates, General Scheme, 2018–2116 (percentages)
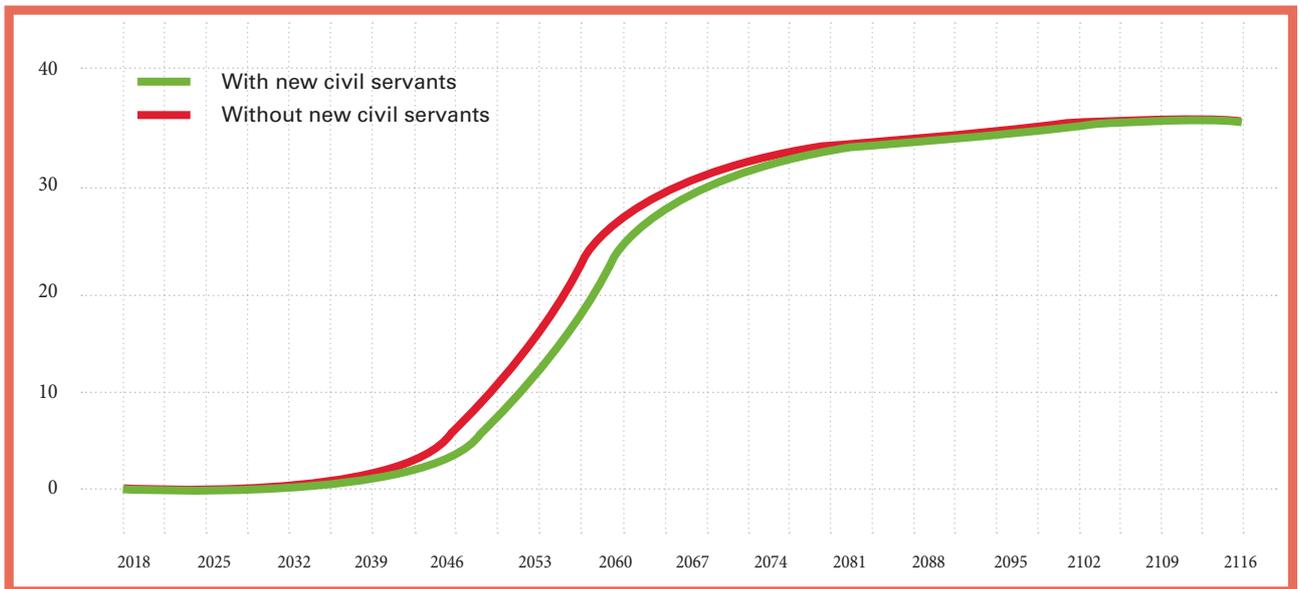
6.3 OPTION 3: NEW CIVIL SERVANTS AND CURRENT ONES AGED 30 AND UNDER ENTER THE NSSF GENERAL SCHEME

The Government is analysing the possibility of registering young civil servants with the new General Scheme with the full recognition of their past number of years of service. In such a scenario, the Government will be liable for the cost of the past accrued liabilities. No past liabilities may be brought into the General Scheme as this would represent a situation where the employers and workers of the private sector pay for past accrued liabilities of the public sector. As per the NSPPF, such cross-subsidization is not permitted for pension schemes. So, under this approach, the Government would pay a lump sum to the new General Scheme, on the date of transfer, to cover the cost of the past accrued liabilities.

The contribution schedule under this scenario may also depend on whether a grandfather clause is applied.

> **Grandfather clause:** A provision exempting persons or other entities engaged in an activity from new rules or legislation affecting the activity, or granting special privileges when including such groups in new legislative provisions, for example, special credits (such as fictitious insurance years) granted to older workers when a new benefit system is introduced, in order

If this option is selected, once the scenarios and the provisions regarding the new pension system in Cambodia are set, and the affected population is identified, it will be important to proceed to a more precise calculation of the following costs:

- The value of the accrued liabilities regarding the past years of service of young civil servants using the real population on the date of transfer and their real information (salaries, date of birth, number of years of service); and
- The cost of the grandfathering provision for the recognition of additional number of years of service for the employees of the private sector. Using the real information, the additional cost and the way to finance it will need to be discussed and decided.

In order to estimate the cost of the option 3, the following scenario was created. It should be understood that within this scenario, the following conditions are assumed:

- For illustrative purpose, all the civil servants aged 30 and under will be transferred to the new General Scheme. The cost of the accrued liabilities presented in this report is an estimation and in no case represents the real amount the Government would pay. In fact, if option 3 is selected, a more precise calculation should be done with the real population numbers and real information on the transfer date, regarding the population of young civil servants that would be transferred. An actuarial valuation should be performed every three years in order to determine if the amount of assets is still in line with the value of accrued liabilities.
- For simplicity, the estimate of the cost for transferring the young civil servants is based on the information transmitted by NSSF-C on June 2016 and on the last actuarial valuation.

•The basis of the simulation is the same as the one in the option 2, except that young civil servants aged 30 and below are transferred to the new General Scheme and the cost for past accrued liabilities is paid by Government to the General Scheme.

The following tables display some information about the population of civil servants below age 30 used in this sensitivity analysis.

Table 7 – Civil servants aged 30 and below, statistics and estimation of past accrued liabilities

AGE	NUMBER	AVERAGE YEARS OF SERVICE	AVERAGE MONTHLY TOTAL SALARY	TOTAL ACCRUED LIABILITIES FOR PEOPLE HAVING 5 YEARS OR LESS OF SERVICE (000 000 000 KHR)	TOTAL ACCRUED LIABILITIES FOR PEOPLE HAVING 10 YEARS OR LESS OF SERVICE (000 000 000 KHR)	TOTAL ACCRUED LIABILITIES (000 000 000 KHR)
19	27	0.9	809281	0.134	0.134	0.134
20	359	1.1	835113	1.941	1.941	1.941
21	1373	1.2	828882	8.370	8.370	8.370
22	2261	1.5	835390	18.009	18.009	18.009
23	3251	2.0	842232	34.431	34.744	34.744
24	4228	2.4	846680	52.590	55.552	55.552
25	4860	2.9	854887	68.532	77.118	77.118
26	6330	3.5	860368	88.517	120.275	120.275
27	6371	4.2	864341	77.777	146.761	146.761
28	7164	4.9	870610	74.520	195.826	196.520
29	7163	5.6	878899	59.682	222.224	224.905
30	7057	6.5	886466	42.745	238.210	255.670
Total	50444	4.1	863579	527.249	1119.165	1140.000

Note: age is nearest age in June 2016

Under option 3, the Government should pay an amount of about KHR1,140,000 million (or US$285 million) [7] for the recognition of the accrued liabilities of the civil servants aged 30 and below. This amount of money is only an estimate and should be calculated more precisely with updated information if this option is selected. The amount of liabilities should also be recalculated periodically in order to ensure that the amount of assets (payment from the government) is still in line with liabilities, as well as to incorporate any new economic, demographic or financial parameters. An actuarial valuation would need to take place at least every three years and any surplus or deficits found should be considered in the context of a predefined financing policy.[8]

The magnitude of these liabilities, which would need to be transferred to the General Scheme in full at the beginning of the integration, makes option 3 less feasible. This is not only because of the availability of such funds, but because, as it was pointed out earlier in this report when discussing DC modalities, Cambodia currently does not have a financial market which could support these reserves.

The following figure illustrates the cost to the Government in relation to GDP for option 3. At the beginning of the projection period and at the end, there is no difference in comparison to the results of the option 2. Differences appear after the year 2040, over the next 40 years: this is when people aged below 30 will receive their old-age pension. However, the cost of option 3 at the end of the projection period is ultimately the same as that of option 2.

Figure 19 – Total cost paid by the Government in relation to the GDP, option 3, NSSF-C, 2016–2115 (percentages)
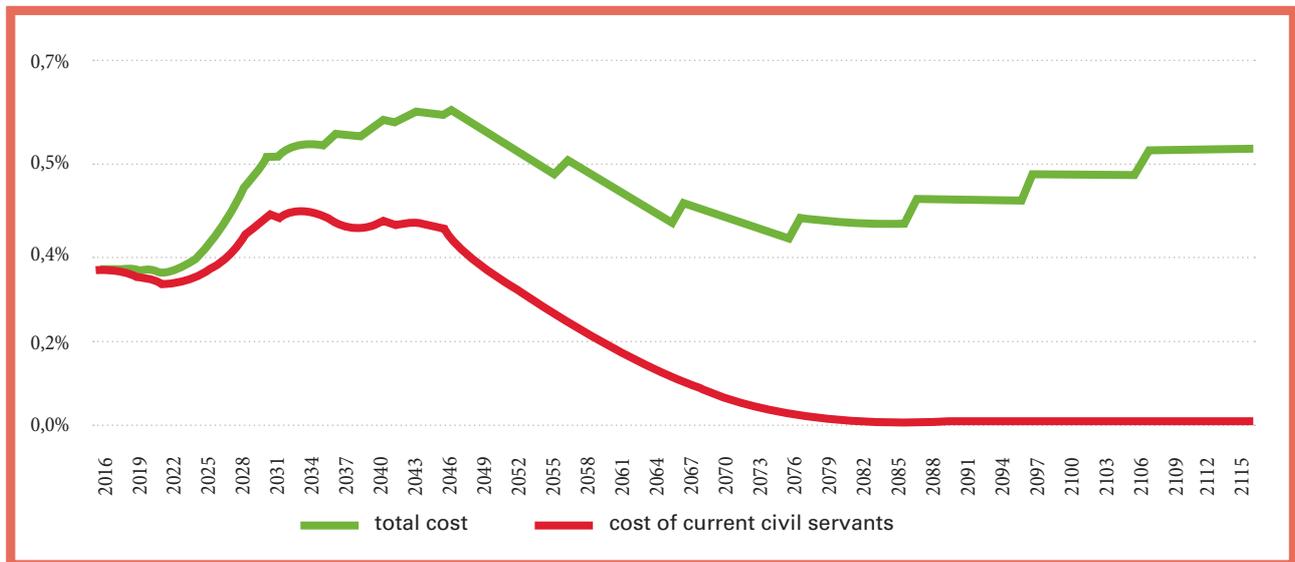
As in option 2, the inclusion of both the new civil servants and those aged under 30 will not considerably affect the PAYG of the General Scheme.

Figure 20 – The effects of including new or young civil servants on projected PAYG rates for the General Scheme, 2016–2114 (percentages)

Without new civil servants and without young civil servants

With new civil servants and young civil servants

With new civil servants
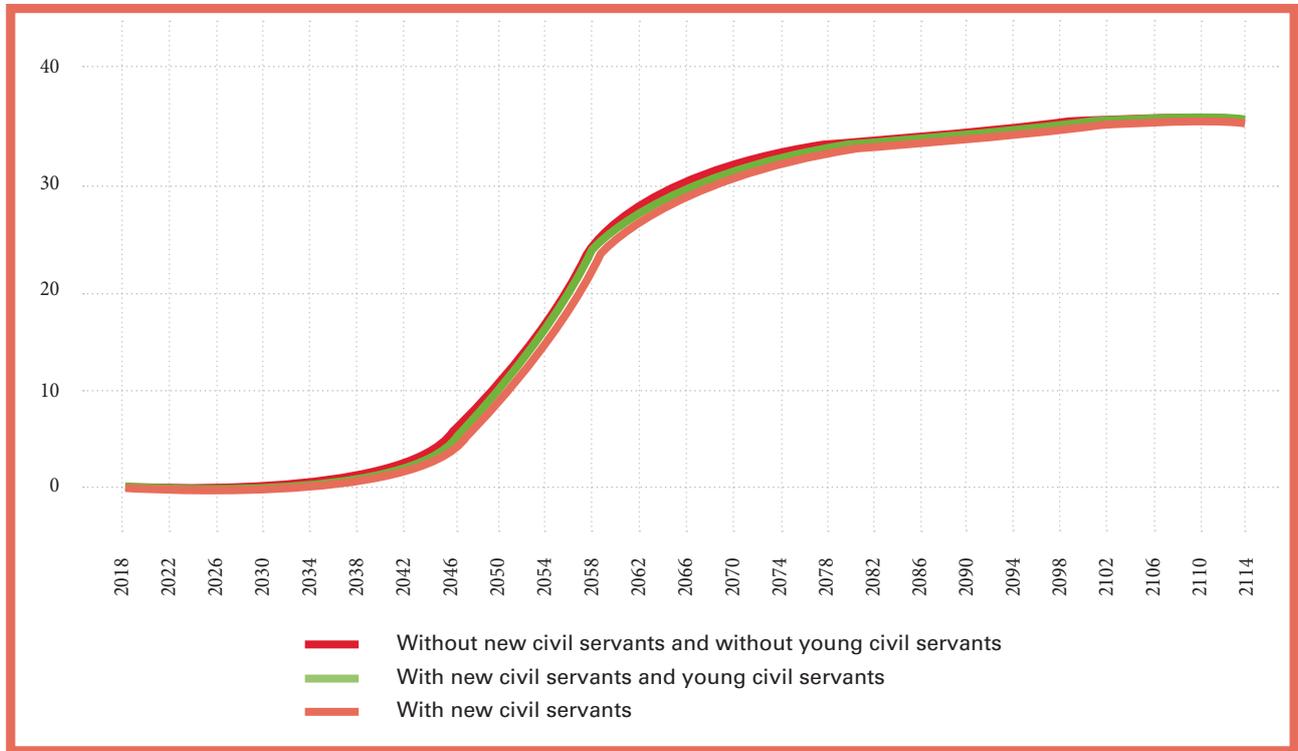
Conclusion and recommendations

Today, for every elderly person aged 55 and above there are six people aged 15–55. Within 50 years, there will be only 1.6 such people for every elderly person over 55. Such contexts place particular pressure on PAYG schemes, and illustrate the importance of appropriate long-term planning for pensions systems.
As life expectancy continues to rise, more Cambodians will reach retirement age and will require pensions for longer periods of time. For policy makers, this means that the system will be increasingly costly, but also that there will be a stronger demand for a good pension system.

The actuarial review shows that a fully funded DC scheme represents a high level of risk for a country like Cambodia, where high salary growth will continue to be the norm. These risks are exacerbated by the undeveloped nature of the country's financial markets. Cambodia does not currently have a financial market that can support a funded pension system.

The study finds that the current NSSF-C provision, which guarantees civil servants a minimum pension that is at least the amount of the lowest basic salary of their respective body and grade, is extremely costly and inefficient. Currently, 95 per cent of civil servants retire with this minimum pension instead of a pension calculated on the basis of their career.

The current system provides civil servants with the same pension after working 20 or 30 years, providing no rewards for long careers. This is a key feature to correct if contributions from civil servants will be introduced, otherwise they will have no incentive to contribute after 20 years.

Currently, the pension is calculated on the basis of the basic salary, although this represents only 58 per cent of the total remuneration paid to the average civil servant. This means that the effective replacement rate for the NSSF-C scheme is 46.4 per cent, and not 80 per cent as intended by the pension formula. This is in line with ILO Minimum Standards, but must be considered as the reform process establishes a new target replacement rate. The ILO proposals for reform use a 45 per cent replacement rate.

The table below presents a summary of the key results for every scenario. It is clear that the base scenario, which represents the status quo of the NSSF-C scheme, is on a costly and unsustainable path. The Government currently spends 0.3 per cent of GDP on civil servant pensions, and this amount will double within the next 15 years. By comparison, the Government currently spends 0.6 per cent of GDP on social assistance for the entire population.

Table 8 – Summary of results for NSSF-C pension projections (2016–2115)

RESULT TYPES, BY YEAR	STATUS QUO	REFORM OPTION 1	REFORM OPTION 2	REFORM OPTION 3
2016				
PAYG rate	12.5 %	12.5%	12.5%	12.5%
Total expenditure in relation to GDP	0.3%	0.3%	0.3%	0.3%
Government burden if 50% of the contribution rate is paid by civil servants	n/a	0.3%	0.3%	0.3%
2115				
PAYG rate	50%	37.0%	n/a	n/a
Total expenditure in relation to GDP	1.6%	1.2%	1.1%	1.1%
Government burden if 50% of the contribution rate paid in the private sector is paid by civil servants	n/a	0.7%	0.5%	0.5%

The following figure presents the cost to the government for each of the scenarios presented above.

Figure 21 – Total cost paid by the Government in relation to the GDP for status quo and all options, NSSF-C, 2016–2112 (percentages)
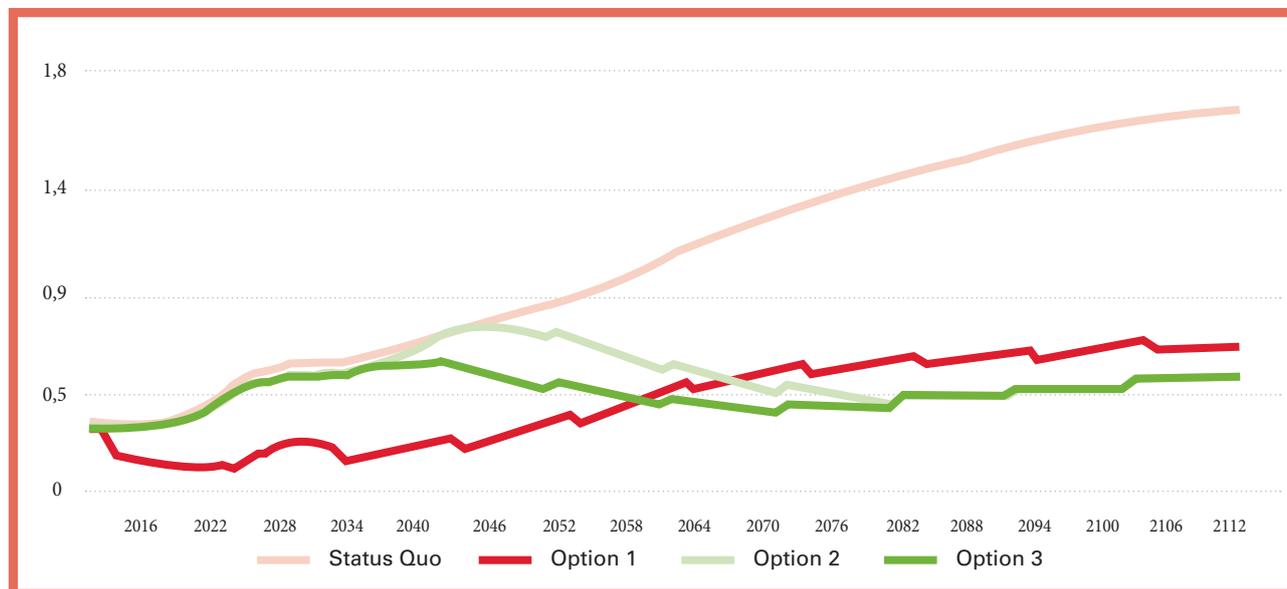
The following table presents a summary of the burden to the state under all scenarios and Annex 3 presents the total expenditure in Cambodian riel (KHR) for the Government under all scenarios.

Table 9 – Burden to the state as a percentage of GDP in all scenarios

SCENARIO		2016	2026	2036	2046	2056	2066	2076	2086	2096	2106	2116
Status Quo	N	0.3	0.4	0.6	0.7	0.8	01.0	1.2	1.4	1.5	1.6	1.7
	C	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Option 1	N	0.3	0.2	0.4	0.5	0.6	0.8	0.9	1.0	1.1	1.2	1.2
	C	0.3	0.1	0.2	0.2	0.3	0.5	0.6	0.6	0.7	0.7	0.7
Option 2	N	0.3	0.3	0.4	0.5	0.6	0.8	0.9	1.0	1.1	1.2	1.2
	C	0.3	0.4	0.6	0.7	0.8	0.6	0.5	0.5	0.5	0.5	0.5
Option 3	N	0.3	0.3	0.4	0.4	0.6	0.8	0.9	1.0	1.1	1.2	1.2
	C	0.3	0.4	0.6	0.6	0.5	0.4	0.4	0.4	0.5	0.5	0.5

Note: C = contributory; N = non-contributory.

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For the status quo option, there is no contributory option since it would be impractical to introduce under the current parameters; the rate would be extremely high. At the same time, if the Government continues shouldering the entire cost of the scheme, this will place increasing strain in the national budget. In terms of cost, all other options are preferable to the status quo. Adopting any of the proposed reform options would considerably reduce both the total cost of the scheme and the government's expenditure in relation to GDP.

Option 1 is the simplest reform possible: it simply aligns design parameters with ILO minimum standards and introduces a contributory mechanism. Option 1 maintains separate funds for private and public sector workers, although administrative integration can be achieved immediately by moving the public sector scheme to the NSSF, where it would be managed as a contributory scheme. This option achieves the fastest reductions in cost to the state over the short term, but in the long-term it is more expensive than options 2 and 3.

Figure 22 – Option 1: Administrative organisation and application fields

Option 2 pursues a deeper and more long-term type of integration. It maintains the existing scheme for current civil servants, but places new recruits directly under a General Scheme for all formal sector workers managed under the NSSF. The NSSF-C would thus continue to function until the last civil servant under the current scheme passed away. This is, financially, administratively and politically, the most uncomplicated of all reform options.

Figure 23. Option 2: New civil servants enter the NSSF General Scheme
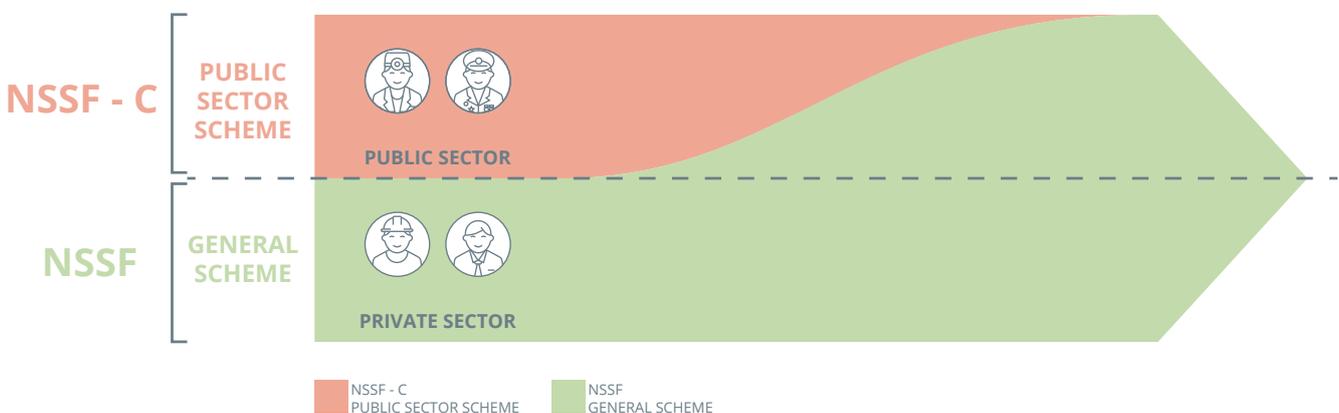
Option 3 is similar in final costs. However, it is administratively much more complicated, as it represents the merger of PAYG and funded schemes. The advantage of the grandfather provision would be to accelerate the merger of the two funds. However, this would come at a huge immediate burden to the state and might not actually be feasible under the current financial market conditions. Thus, the disadvantages of option 3 seem to outweigh its benefits.

Figure 24 – Option 3: New civil servants and current ones aged less than 30 enter the NSSF General Scheme
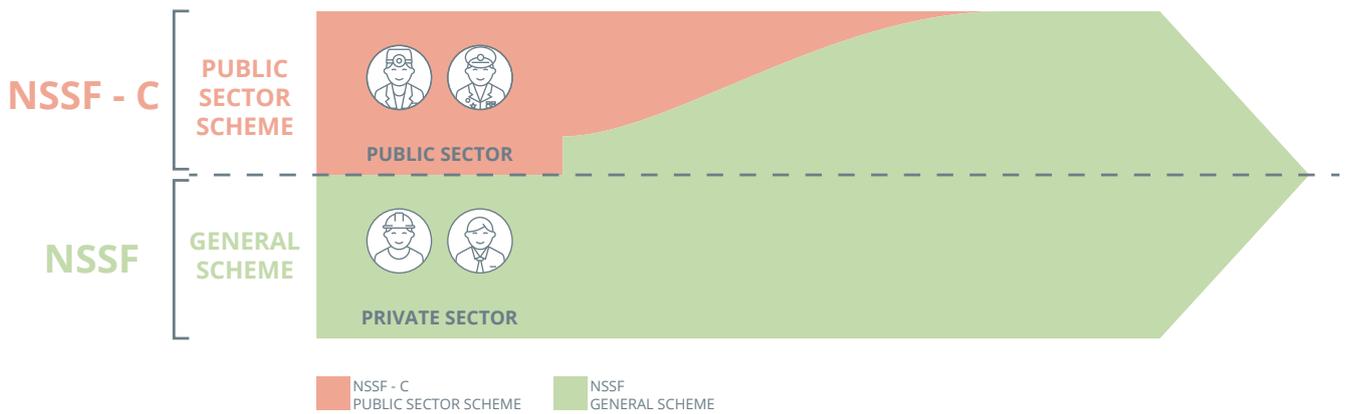
It is up to the Government, in consultation with civil servants' representatives, to decide which is the most appropriate reform option. The first criteria for this decision should be the level of protection that each affords pensioners, balanced against the cost and sustainability of the scheme. Any final proposal would also need to be approved by the tripartite Governing Board of the NSSF, as it would constitute a structural change to the institution.

ANNEX I: MAIN DEMOGRAPHIC AND ACTUARIAL ASSUMPTIONS AND DESCRIPTION OF THE MODEL

Main actuarial assumptions

The use of the ILO actuarial projection model relies on demographic and economic assumptions about the general population, the economic growth, the labour market and the increase and distribution of wages. Other economic assumptions are related to the future rate of return on investments, the indexation of benefits and the adjustment of parameters, such as the maximum insurable earnings and the future level of flat-rate benefits. The selection of assumptions for projections considered the recent experience of the scheme to the extent that this information was available.

The actuarial study on which this policy paper is based used the following main assumptions:

- According to official data, the total fertility rates was 2.73 in 2013. It is expected to decrease to 1.8 after 30 years;
- The ratio of the net migrants over the total population is about -0.2 percent at the beginning of the projection period and about -0.1 percent 35 years later;

- Life expectancy at age 60 is projected to increase over the next 50 years of projection from 16.4 to 23.2 years for males and from 17.9 to 24.8 years for females;

- The average growth of the insured population in the private sector is 1.5 percent per year during the first 25 years of projection and 0.4 percent for the next 25 years;

- Inflation is expected to be at 3 percent over the entire projection period, except for the first projection years;
- For the public sector, the salaries are projected in a context of high salary growth at the beginning of the projection period decreasing to a long-term assumption. Over the first 50 years of projection, salaries are expected to increase annually by 7.0 percent. The long-term assumption is 4.7 percent which is the same as the labour productivity.

- The return on the assets invested is 6.1 percent.

The actuarial model

The actuarial review uses a comprehensive methodology developed at the ILO for reviewing the long-term actuarial and financial status of national pension schemes. The review was undertaken by modifying the generic version of the ILO modelling tools to fit scheme's situation. These modelling tools include a population model, an economic model, a labour force model, a wage model, a long-term benefits model.

The following figure illustrates the structure of the ILO model.

Figure AI.1 – The structure of the ILO actuarial model
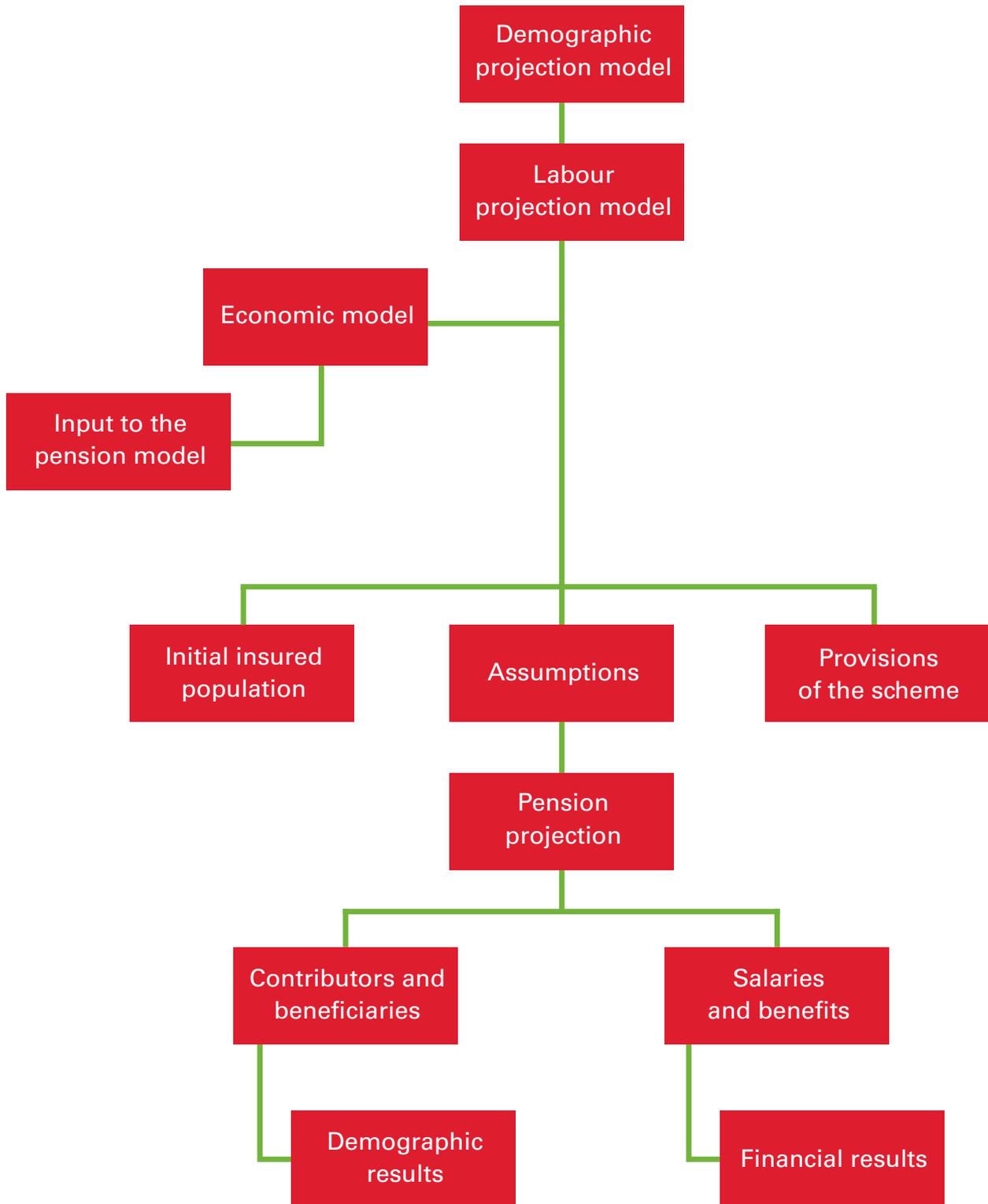
AI. 1   General population

The general population is projected by starting with the most current data on the general population, and applying appropriate mortality, fertility and migration assumptions.

AI.2   Active population and employed population

The projection of the labour force, i.e. the number of people available for work, is obtained by applying assumed labour force participation rates to the projected number of people in the general population. An unemployment rate is assumed for the future, and aggregate employment is calculated as the difference between labour force and unemployment. Growth in the insured population is linked to the growth in the employed population. In this model, the insured population is projected starting with the most current data on insured participants, and then applying appropriate mortality, disability and retirement rates.

AI.3   Economic growth and inflation

Labour productivity increases, and inflation rates are external inputs to the economic model. Real rates of economic growth are derived using the ILO economic projection model.

AI. 4   Salaries

A starting average wage is normally calculated by dividing the wage share of GDP by the total number of employed. In the medium term, real wage development is checked against labour productivity growth. In specific labour market situations, wages might grow faster or slower than productivity. However, due to the long-term perspective of the present study, the real wage increase is assumed to gradually converge with real labour productivity. In this model, to consider the long-term perspective of the actuarial valuation, the long-term real wage increase is based upon a long-term assumption which is in line with assumptions observed in other actuarial valuations and a long-term view of the economy.

Wage distribution assumptions are also needed to simulate the possible impact of the social protection system on the distribution of income, for example, through minimum and maximum pension provisions. Data on the wages by age and sex as well as on the dispersion of wages are used in the projection. Average earnings, which are used in the computation of benefits, are also projected.

AI.5   Pension projection approach

Pension projections require the demographic and macroeconomic framework already described and, in addition, a set of assumptions specific to the social insurance scheme. The database, as at the valuation date, includes the active insured population, the distribution of insurable wages among contributors and the distribution of past credited service and pensions in payment, if applicable. Data are disaggregated by age and sex. Scheme-specific assumptions, such as disability incidence rates, density of contribution and the distribution of retirement by age,

are determined with reference to scheme provisions and the scheme's historical experience if available. Pension projections are made following a year-by-year cohort methodology. Projections for pensions are made separately for each gender. The existing population is aged and gradually replaced by successive cohorts of participants on an annual basis according to the demographic and growth of the insured population assumptions. The projection of insurable earnings and

benefit expenditures are then made according to the economic assumptions and the scheme's provisions. Pensions are long-term benefits. Hence, the financial obligations that a society accepts when adopting financing provisions and benefit provisions for them are also of a long-term nature: participation in a pension scheme extends over a whole adult life, either as contributor or beneficiary, i.e. up to 70 years for someone entering the scheme at the age of 16 years, retiring at the age of 65 years and dying some 20 or so years later. During their working years, contributors gradually build entitlement to pensions that will be paid even after their death, to their survivors.

It is not the objective of pension projections to forecast the exact progression of a scheme's income and expenditure, but to verify its financial viability. This entails evaluating the scheme about the relative balance between future income and expenditure. This type of evaluation is essential, especially in the case of new pension scheme, which has not yet reached its mature stage.

ANNEX II: ILLUSTRATION OF THE CALCULATION OF MONTHLY PENSIONS ACCORDING TO THE DIFFERENT OPTIONS FOR THE NSSF-C

AII.1 The current situation

Under the current pension scheme, Chenda will be eligible for a pension at age 58. Chenda is aged 25 in 2019.

Chenda: Normal retirement pension under current scheme	
Retirement date:	2052
Pensionable basic salary on retirement:	KHR510,000
Total salary on retirement:	KHR880,000
Credited service:	33 years
Chenda's pension calculation on retirement	(3% x 20 + 2% x 10) x KHR510,000 = KHR408,000 subject to a minimum pension of KHR510,000
Effective income replacement rate on retirement	58% (KHR 510,000 / 880,000)
Total NSSF pension from age 58	**KHR510,000 per month**

AII.2   Option 1: A new pension scheme for all civil servants

Under option 1, Chenda will be eligible for a pension at age 60. Chenda is aged 25 in 2019.

Chenda: Normal retirement pension under a new scheme for civil servants (Option1)	
Retirement date:	2054
Pensionable basic salary on retirement:	KHR880,000
Credited service:	35 years
Chenda's pension calculation on retirement	(1.5% x 35) x KHR880,000 = KHR462,000
Effective income replacement rate on retirement	52.5% (KHR 462,000 / 880,000)
Total NSSF pension from age 60	**KHR462,000 per month**

AII.3   Option 2 and option 3: The General Scheme for new civil servants

Chenda has been hired as a civil servant just one month after the new pension system in Cambodia became effective, so he will take his retirement under the General Scheme. Chenda will be eligible for a pension at age 60. Chenda is aged 25 in 2019.

Chenda: Normal retirement pension under the general pension scheme	
Retirement date:	2054
Pensionable basic salary on retirement:	KHR880,000
Credited service:	35 years
Chenda's pension calculation on retirement	(1.75% x 15 + 1.25% x 20) x KHR880,000 = KHR451,000
Effective income replacement rate on retirement	51.3% (KHR 451,000 / 880,000)
Total NSSF pension from age 60	**KHR451,000 per month**

ANNEX III: GOVERNMENT EXPENDITURE

Table AIII.1 – Total cost to the Government under each scenario analysed, KHR, (000 000)

YEARS	STATUS QUO	OPTION 1	OPTION 2	OPTION 3
2016	256 318	239 839	256 201	254 285
2017	285 267	259 426	283 008	280 824
2018	316 757	170 740	317 628	1 483 385
2019	345 149	175 283	343 749	372 750
2020	384 877	181 426	380 261	412 681
2021	418 706	183 647	409 302	445 392
2022	470 881	188 865	456 207	496 121
2023	539 138	193 792	518 738	562 627
2024	619 427	201 225	592 416	640 233
2025	723 884	216 782	689 835	741 645
2030	1 616 887	535 136	1 581 080	1 685 837
2035	2 769 482	1 110 865	2 589 927	2 739 219
2040	4 360 873	1 139 012	4 242 936	4 480 655
2045	6 905 535	2 190 349	6 828 581	6 300 851
2050	10 136 126	3 449 076	10 379 459	7 508 430
2055	14 001 817	5 572 726	12 374 749	8 300 777
2060	19 527 824	7 696 970	14 381 998	9 960 587
2065	27 761 747	12 479 963	15 540 194	10 913 766
2070	38 489 580	17 607 295	18 235 348	13 676 128
2075	51 628 037	24 110 099	19 756 555	15 776 131
2080	68 538 571	30 058 508	23 863 711	21 205 513
2085	89 683 853	40 307 034	27 193 455	26 135 233
2090	115 786 876	49 104 287	35 994 167	35 828 773
2095	148 260 896	63 577 401	43 911 364	43 909 701
2100	188 945 769	77 214 247	59 090 683	59 090 680
2105	238 940 722	102 291 938	72 315 620	72 315 620
2110	298 685 715	122 835 214	96 822 328	96 822 328
2115	370 601 826	151 516 080	118 862 264	118 862 264

ANNEX IV: LIABILITIES FOR CIVIL SERVANTS AGED 31 TO 45

As requested Government, the following table presents the value of past accrued liabilities for civil servants aged 31 to 45. As in Table 7, the estimation of the value of the past accrued liabilities is calculated according to the provisions of the new General Scheme. The same assumptions used for the actuarial valuation are employed for this estimate. A more conservative approach may be adopted to take into account risks of adverse deviations.

Table 8 – Civil servants aged between 31 and 45 years old, statistics and estimation of the past accrued liabilities

AGE	NUMBER	AVERAGE YEARS OF SERVICE	AVERAGE MONTHLY TOTAL SALARY	TOTAL ACCRUED LIABILITIES FOR PEOPLE HAVING 5 YEARS OR LESS OF SERVICE (000 000 000 KHR)	TOTAL ACCRUED LIABILITIES FOR PEOPLE HAVING 10 YEARS OR LESS OF SERVICE (000 000 000 KHR)	TOTAL ACCRUED LIABILITIES (000 000 000 KHR)
31	6577	7.5	893024	28.076	206.666	273.005
32	6779	8.8	902635	18.705	173.065	330.344
33	6666	9.9	906318	12.387	132.902	367.954
34	6819	11.1	907495	8.639	103.357	417.491
35	5514	12.0	922561	4.274	65.801	362.495
36	6128	12.8	921811	2.858	60.654	427.153
37	4400	13.9	919760	1.687	33.956	327.866
38	2354	14.9	906257	0.742	13.714	187.748
39	2330	15.8	901634	0.390	9.299	194.238
40	2830	17.3	916815	0.423	8.038	251.708
41	4845	18.8	926211	0.323	6.456	453.790
42	6327	20.0	944704	0.420	5.018	613.135
43	8147	21.6	944249	0.205	5.041	841.173
44	8893	23.1	935112	0.271	3.571	961.929
45	6072	24.1	931557	0.146	2.115	669.974
Total	135125	11.3	899358	606.797	1948.817	7820.000

National Social Security Fund for Civil Servants

Reform for a more sustainable pension scheme