

United Republic of Tanzania

Report to the Government

**Actuarial Valuation of the
National Social Security Fund
as of 30 June 2002**

**International Labour Office
International Financial and Actuarial Service
Social Protection Sector**

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Foreword

The National Social Security Fund (NSSF) was established as of 1 July 1998 to replace the former National Provident Fund (NPF) and to extend pensions and other benefits in case of retirement, invalidity or death of an insured person, as well maternity.

Under a Trust Fund Agreement, the National Social Security Fund of The United Republic of Tanzania (URT) sought technical assistance from the ILO in order to conduct an actuarial review of the social insurance pension scheme introduced by the Government of the URT on the basis of the recommendations made in a previous actuarial study conducted by the ILO.¹

In the year 2000, the ILO submitted to the Government of The United Republic of Tanzania a report on social security policy issues and legislation including a review of provisions for employment injury insurance.

The present report focuses on the results of the actuarial study of the social insurance pension scheme of the NSSF as of 30 June 2002. It provides an assessment of the future financial developments of the NSSF; offers recommendations for strengthening its financial system, including the setting of the contribution rate at an appropriate level; and reviews the financial implications of possible new forms of benefit provision in case of employment injury and health care. The report stresses the need for the authorities to adopt certain important measures to ensure the viability and public credibility of the NSSF, including reforms to the benefit provisions, changes to the financial management and strengthening administration and institutional arrangements.

The draft report presented to the NSSF was discussed with the representatives of the ILO in March 2004. The present report embodies some of the suggestions made at this discussion by the senior management of the NSSF. In particular, the report contains the fresh recommendations made with regard to the provision to allow for the partial refund of members contributions in the event of a member becoming unemployed.

1 See the ILO (1995), United Republic of Tanzania, “Financial and actuarial report on the proposed Social Insurance Pensions Scheme”, Project findings and recommendations (ILO/UNDP/Tanzania/R.12), Geneva, 46 pp.

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The actuary carried out the assignment during the period from 11 August 2002 to 20 September 2002, of which the period from 11 to 24 August 2002 was spent in Dar-es-Salaam collecting statistical data and other information required to do the valuation and discussing issues relating to the valuation with NSSF senior management. Several persons were consulted (see Appendix V). The period from 25 to 31 August 2002 was spent in Geneva initiating actuarial projections. Results of the projections and preparation of the report were later completed by the actuary. The actuarial projections were carried out by Ms. Anna Hagemejer, actuarial assistant, making use of the model developed by the International Financial and Actuarial Service of the ILO. The present report has been prepared on the basis of the actuary's draft version, which has been reviewed by the International Financial and Actuarial Service of the ILO.

Abbreviations and acronyms

AE	Administrative expenses
AME	Average monthly earnings
GAP	General average premium
GDP	Gross domestic product
ILO	International Labour Organization
LMC	Last monthly contribution
m	Million
NBOS	National Bureau of Statistics
NPF	National Provident Fund
NSSF	National Social Security Fund
p.a.	Per annum
PAYG	Pay-as-you-go cost rate
PPF	Parastatal Pension Fund
Tsh.	Tanzanian shillings
URT	United Republic of Tanzania

Currency and exchange rate

The exchange rate for the month of June 2002 was 965 Tanzanian shillings to 1 United States dollar.

Executive summary

The coverage of the NSSF, estimated at 260,000 active insured members, remains very low in a country of nearly 34.5 million persons and a labour force of about 18 million economically active persons.²

The total annual income of the NSSF was Tsh. 53 billion in 2001. The annual investment income of the NSSF alone, since 1998, was enough each year to cover the annual expenditure on benefits, of which the majority were contribution withdrawals. As a result the reserve has gone up to Tsh. 201 trillion as of the end of the 2001 financial year.³

Administration expenses have significantly increased since 1998, by 30 per cent, to account for approximately 5.0 per cent of insurable earnings. This rate is significantly higher than average, and the present actuarial projections assume NSSF authorities will take necessary action to bring down the administrative expenses to a more appropriate level of no more than 3 per cent of insurable earnings in the near future.

Actuarial projections

The actuarial valuation of the NSSF under status quo provisions was completed to reflect the situation as of 30 June 2002 on the assumption that:

- There are 260,000 insured members currently paying monthly contributions and 100,000 inactive insured members who have accrued pension credits in the past such that they are entitled to some NSSF benefits in the future;
- The annual growth of insured membership will be 2 per cent as of 2005 onwards.⁴ This is a relatively conservative assumption in view of the potential for NSSF to cover more people;
- Life expectancy of members reaching the retirement age of 60 is 15.6 years for women and 14.5 years for men;
- Annual inflation is assumed at 4 per cent as of 2005 and onwards;
- Insurable earnings will grow at 5 per cent per annum in the long run, i.e. at 1 percentage point higher than inflation;
- Existing benefit provisions will be maintained;
- Pensions-in-payment will be adjusted yearly in the future in line with inflation;
- Investment returns on the NSSF reserve are assumed at 2 percentage points higher than inflation in the long run, i.e. at 6 per cent annually; and
- Administration expenses will not be more than 3 per cent of insurable earnings each year.

2 See (2001), World Bank population statistics.
See (2001), Labour Force Survey 2000/01, Tanzania.

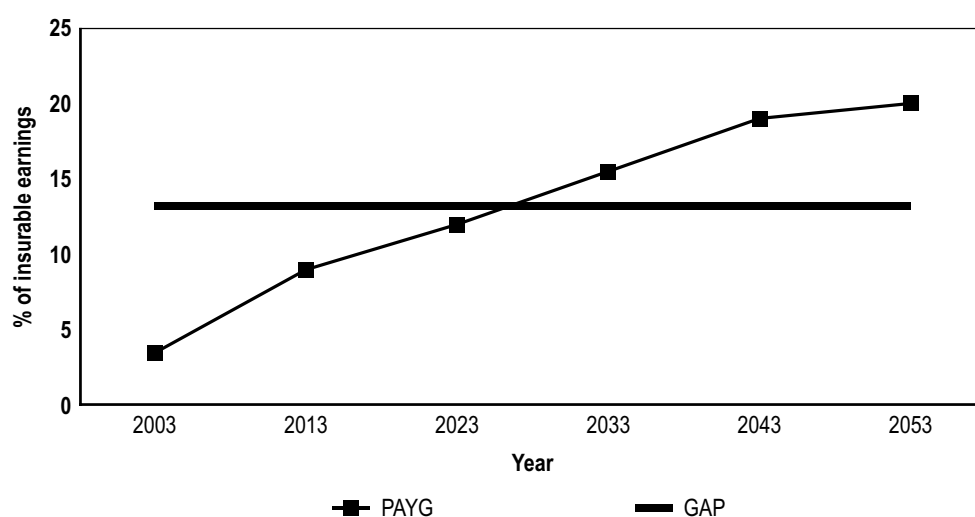
3 The investment income indicates that the average rate of return ranged between 13 and 17 per cent over the same period. This should be viewed in relation to an annual inflation rate of less than 10 per cent over the same period.

4 This simplistic assumption has been defined on the basis of an annual growth rate rather than on the basis of the expected growth of the reference population currently employed. This is justified in view of the observed low rate of coverage of legally insured workers by the NSSF.

The number of active members is projected to increase nearly three-fold from 260,000 persons in 2002 to about 330,000 persons in 2015 and 725,000 persons after 50 years (2053). The number of retirement pensioners is projected to increase from about 5,000 persons initially to 18,000 persons by year 2015 and to nearly 100,000 persons after 50 years (2053). Figure 0.1 below depicts the situation. The dependency ratio in respect of the retirement pensioners in year 2053 is estimated at 7.5 active contributors per retiree. (see Section 6.1.1 on demographic projections)

As the NSSF matures, individual pensions will gradually replace a higher percentage of past insurable earnings up to 60 percent. The yearly pay-as-you-go (PAYG) cost rate of pensions in terms of insurable earnings is expected to escalate from 3.1 per cent of insurable earnings in 2003 to 19.5 per cent by year 2053. Figure 0.1 illustrates the trend to year 2053. Under status quo benefit provisions of the NSSF, the general average premium (GAP) over 50 years is estimated to be 13.19 per cent of insurable earnings. This means that if 13.19 per cent of insurable earnings were collected throughout the next 50 years, the NSSF would remain in financial equilibrium and no additional external resources would be needed to cover expenditure.

Figure 0.1 Pay-as-you-go cost rate (PAYG) and general average premium (GAP) of the NSSF pension scheme up to year 2053, under status quo provisions



The projected income and expenditure of the NSSF under status quo benefit and financing provisions show the NSSF reserve would be depleted by year 2021. Hence, a contribution rate of 11.7 per cent of insurable earnings is recommended to ensure the financial equilibrium of the NSSF over the next 20 years, such that the reserve would remain positive, representing approximately 3.8 times annual expenditure by year 20 in 2022. This rate is in consonance with the 50-year GAP of 13.19 per cent of insurable earnings. The recommended contribution rate of 11.7 per cent takes into account the provision of only current NSSF benefits and *administration expenses limited to 3 per cent of insurable earnings*. From an accounting perspective, this means that a separate fund should be maintained for payment of NSSF pensions only and it should receive an allocation equivalent to 11.7 per cent of insurable earnings which cannot be utilized for any purpose other than for the efficient administration and payment of lifetime pensions and other benefits. The basis of allocation of any contributions collected in excess of the recommended contribution rate should be embodied in legislation. As explained below, excess contributions collected could serve to fund the proposed employment injury and health care benefits.

The present actuarial study has revealed that if full validation is assumed – i.e. full conversion of the NPF balances into pension credits by all members – then the contribution rate of 8 per cent of insurable earnings as recommended under the former 1993/94 ILO actuarial study⁵ could be insufficient to guarantee long-term financial sustainability of the NSSF. In other words, the accumulation of contributions at 8 per cent of insurable earnings in addition to the estimated initial reserve as of 30 June 2002 of the NSSF (Tsh. 68,100 million) plus the estimated total balances in the NPF accounts (Tsh. 68,130 million) could be inadequate to finance the NSSF over the period of equilibrium of 20 years, under the partial funding scaled-premium financial system previously recommended.⁶

Recommendations

Recommendations for financing and financial governance

(1) Recommended financing levels

The scaled premium system of financing is recommended to establish the contribution rate schedule of the NSSF. A gross contribution rate of 11.7 per cent of insurable earnings over a period of equilibrium of 20 years to year 2022 is recommended to cover the items of pension expenditure and their strict administration during the next 20 years. This entails an assumption that allocation of 3 per cent of insurable earnings will meet administrative expenses of the pension scheme only such that expenses of administration related to the refunds pertaining to the NPF and to processing of maternity benefit claims would be met out of the other respective funds originally maintained for those purposes. The allocation of administrative expenses for these separate schemes is discussed in Section 7.4.

The total contribution rates recommended for financing both current pension and maternity benefits is equivalent to 12.75 per cent of insurable earnings. As the relevant authorities intend to maintain the current total contribution rate of 20 per cent of insurable earnings, the ILO recommends that the balance of 7.25 per cent of insurable earnings be tentatively allocated towards the introduction of an employment injury benefit scheme (approximately 1 per cent) and a health insurance scheme (up to 6.25 per cent).⁷ It is emphasised that the appropriate contribution rate for health insurance should be determined by an actuarial study. Alternatively, the NSSF may wish to allocate this excess contribution rate to be assigned to some form of savings scheme that can be withdrawn as is currently expected.

The contribution rate might have to be revised before the expiry of the period of equilibrium in 2022, and if the future experience is adverse compared to the assumptions underlying this actuarial valuation (for example, lower rates of investment returns, higher administrative expenses), then the above contribution rate may need to be increased sooner. On the other hand, if future experience is more favourable, it may not be necessary to raise the contribution rate at the end of the said period of equilibrium. Future actuarial studies at regular intervals, such as every three years, will be necessary to make timely recommendations as to the adequacy of the recommended contribution rate. Step-by-step increases may be considered in due course. (see Section 7.1)

5 Idem

6 A contribution rate of 8 per cent of insurable earnings would be adequate to provide a period of equilibrium of another eight years only.

7 The rate of 6.25 per cent has been fixed arbitrarily for this purpose – being the remainder of the contributions that it is intended would be collected in the future.

(2) Careful refund of contributions collected only in excess of those for pensions and maternity benefits

The NSSF, from its inception in 1998, has collected 20 per cent of insurable earnings even though this is above the ILO's recommendation of 8 per cent of insurable earnings. The maintenance of the contribution rate at a level higher than necessary seems to have been justified on grounds that the NSSF continues to permit insured members to withdraw their contributions under certain conditions. This situation has probably created a public perception that the NSSF is a continuity of the former NPF and that their contributions are savings that can still be withdrawn for specific purposes. This appears to be in conflict with the basic objective of a social insurance pension scheme, where in principle all monies collected should be utilized for the explicit purpose of providing lifetime pensions and other benefits according to the enacted legal provisions.

The NSSF could intensify its efforts towards public education to explain to its members the significant changes and advantages brought about as a result of the conversion in 1998 of the NPF – a predominantly savings scheme – to a social insurance pension scheme where no withdrawal should be permitted.

It is recommended that appropriate regulations be enacted to define the basis for handling the excess contributions collected by the NSSF. For example, excess contributions could be allocated for provision of benefits that are not provided at present by the NSSF, such as health care and/or employment-related injuries, sickness and survivors' benefits as mentioned above. As an alternative, excess contributions could be directed to a similar type of provident fund scheme, within or outside of the NSSF. The basis of allocation of the excess contributions collected and the interest thereon should be determined after holding consultations between the Government and representatives of employers and workers on the basis of supporting evidence from actuarial studies. A penalty may have to be imposed on early withdrawals of balances.

(3) Recommended maintenance of separate accounts

At present, contributions collected are mostly maintained in the single reserve fund instead of being separated into different funds corresponding to the different benefit schemes. This practice not only fails to give a clear picture of the administrative expenses of each benefit branch but also fails to permit the management of the NSSF to enforce rigorous financial monitoring and take timely decisions. It is recommended not to encourage cross-subsidization between different benefit schemes.

For the purpose of ensuring proper financial controls, good governance and clear accountability of the performance of each benefit branch of the NSSF, a new accounting basis should be adopted so that the income from contributions, investments and other sources and the expenses relating to benefits and administration are allocated to the respective accounts of each benefit branch. Hence, it is recommended to maintain four separate accounts and reserve funds for the pension scheme, maternity benefit scheme, the National Provident Fund, and a surplus fund. If employment injury and health care benefits are introduced in the future, the number of accounts and reserves would increase to six. This separation should be reflected in the on-going financial operations and accounting of the NSSF.

When the new accounting procedure to segregate accounts by benefit branches is established, the existing single fund (into which all monies have been so far allocated) amounting to Tsh. 238.3 trillion as of 30 June 2002 should be distributed amongst the new separate accounts as per the recommendations made. Thereafter, such accounts should be charged and debited with all income and expenditure related to the operations of the respective benefit branch. Consequently and in due course, separate reserve funds will develop for each benefit branch.

Any transfer of funds between different accounts should be permitted only under exceptional circumstances and only then as a loan. A decision to this effect should be taken at the highest level of authority of the NSSF, and the decision-taking authority should specify a basis for repayment of the amount lent. A transfer would thus be reflected as a liability (amount borrowed) in the balance sheet of the receiving scheme account and as an asset in the balance sheet of the lending scheme account.

It is recommended that utmost care should be placed on the control of withdrawals of fund balances. The NSSF should investigate thoroughly its administrative processes to ensure such controls take place. It should investigate how to administer the maintenance of a separate account in respect of ex-NPF balances for each insured member. This should include the delivery of readily available information to insured members. (see Section 7.3)

In line with its management performance system, the NSSF should develop an appropriate management information/statistics reporting system. Relevant statistics should be made available to the higher management on a regular basis, in a simplified format, to facilitate the performance monitoring recommended to be adopted. Members of the NSSF Board may wish to receive technical briefings to fully appreciate the meaning of these statistics. (see Section 7.7)

Recommendations on the improvement of benefit provisions

(1) Allowing refunds of members' NSSF contributions and discouraging early withdrawals (see Section 8.1)

The National Social Security Policy Document expects the NSSF management to make provisions to enable a member to withdraw up to 25 per cent of his or her paid contributions⁸ in case the person becomes unemployed and remains so for six months. The provisions of the NSSF pension scheme do not provide for this practice of refunding contributions in the event of a member becoming unemployed. Therefore the contribution income allocated to the current pension scheme cannot be withdrawn under the aforementioned circumstances.

If partial withdrawal of members' contributions, including those towards pensions and maternity benefits, were to continue to be allowed, a reduced scale of benefits would have to be offered to those members concerned. In order to allow 25 per cent of contributions to be withdrawn, equivalent to 5 per cent of insurable earnings, the scale of benefits needs to be reduced by 30 per cent in relation to the original scale of benefits, and no retirement grants nor invalidity grants could be payable. Contributions would still be required to the rate of 20%. Alternatively, the refund of contributions could be limited only to pre-1998 accounts of NPF and contributions now collected in excess of those allocated to pensions and other benefits (cf. above).

The ILO recommends reconsideration of this entire matter because the NSSF was not designed to provide benefits in case of unemployment. For provision of unemployment benefits, a separate fund built from appropriate contributions should be developed. In countries where unemployment insurance schemes operate there are facilities to provide job-search assistance and retraining services in case of unemployment.⁹ The request to allow for withdrawal of members' contributions erodes the protection offered under the NSSF provisions for retirement, invalidity and death. The priority of the NSSF should be the provision of the social security benefits prescribed in the NSSF Act.

⁸ This includes all member-paid contributions made to the former NPF as well as all contributions made to the NSSF after 1 July 1998.

⁹ ILO studies conducted in other countries where unemployment exists at levels that are not excessive (between 5-12 per cent of the labour force) have indicated that a contribution rate of 3 to 5 per cent in the long term should be sufficient to provide unemployment cash benefits for periods up to 9 to 12 months replacing 50 to 75 per cent of insurable earnings and also to provide job-search assistance and retraining.

In order to discourage early withdrawal of ex-NPF balances before reaching the retirement age, it is recommended to impose a penalty in the form of a reduction of the gross NPF balance by 0.2 per cent for each complete month below the age of 55 years at the time of application for a refund of the contributions made to the NPF. The level of the penalty, equivalent to 2.4 per cent per annum, is representative of the actual financial implications it has for the scheme and should be maintained despite possible reservation to adopt this recommended high level.

(2) Minimum pension (see Section 8.6)

It is recommended to link the level of the NSSF minimum pension to the average insurable earnings of members rather than to the arbitrarily-set legal minimum wage. Specifically, it is recommended that until the next actuarial review, the minimum pension should be set equal to 50 per cent of the average insurable earnings and that it should be revalorised every year. This basis should be reviewed in the context of future actuarial valuations.

(3) Regular and systematic adjustment of pensions-in-payment and other fixed benefits
(see Section 8.1)

It is recommended to introduce a specific regulation stating the periodicity, conditions and formula for pension revalorisation. It is recommended that pensions-in-payment be increased every year, either at the beginning of each financial year or at the beginning of each calendar year. The legislation may provide for more frequent but ad hoc adjustments in case of extreme adverse inflationary situations. Regular pension revaluations should be made only if the NSSF pension fund had earned a positive real rate of return on its assets and annual surpluses are experienced. The rate of revaluation should depend on the experienced real rate of return on the assets and the rate of inflation.

Administrative machinery enabling systematic calculation of the average monthly insurable earnings of NSSF members and the average rate of return on the assets should be put into place.

Other fixed benefits, such as the funeral benefit, should also be revalorised on the same basis as pensions-in-payment.

(4) Transitional grandfather provisions for ex-NPF members (see Section 8.9)

Transitional provisions were recommended in the previous ILO actuarial study of 1993/94¹⁰ as a concession to older members of the former NPF in order to qualify for the minimum pension of 30 per cent of insurable earnings. These older members (then aged between 45 and 59 years in 1998) were expected to retire within the first 15 years of implementation of the NSSF pension scheme. The provisions would allow these persons to qualify for the minimum pension of 30 per cent of insurable earnings on retirement (at the age of 60 years) under the NSSF if they had contributed for a lower specified number of months and even if they had not contributed for 180 months.

If this facility were extended to members aged between 45 years and 59 years who had joined the NSSF on or after 1 July 1998, it would become an open-ended liability to the NSSF pension scheme. Hence, it is recommended that the transitional provisions should not be applicable to members who had joined the NSSF after 1 July 1998 nor to early retirees.

10 Idem

(5) Pensions instead of lump sums (see Section 8.4)

Lump sums are discouraged as they do not offer sufficient income protection to pensioners, especially in the event of high inflation. They do not meet the standards set in ILO Convention No. 102 concerning Minimum Standards of Social Security.

In accordance with the recommendations on the Minimum Standards of Social Security laid down in the ILO Convention No. 102, it is recommended that pensions be paid to the survivors of pensioners instead of paying lump sums. The pension paid to the survivors of a deceased pensioner may be divided amongst them as in the case of pensions paid to survivors of an active member. Where the surviving spouse is more than 10 years younger than the deceased insured member, a set payment period may be introduced, e.g. up to 10 years. The additional contribution required for this benefit improvement is estimated to be only 0.19 per cent of insurable earnings.

It is recommended that the retirement and invalidity grants be based on the actual pension amount payable to the insured member instead of the basis adopted at present. The retirement and invalidity grants are currently set equal to 24 times the pension. The amount payable should be determined on the basis of the actual pension amount payable to the member in the event she or he qualifies to receive the minimum pension. The additional contribution required for this benefit improvement is estimated to be only 0.01 per cent of insurable earnings.

(6) Funeral benefits should be improved (see Section 8.2)

The funeral benefit should be the same for all members and initially fixed at Tsh. 300,000. The amount of the benefit should be adjusted regularly as in the case of pensions-in-payment.

(7) Special lump sums in case of non-qualification for a pension (see Section 8.7)

Special lump sums payable in case of non-qualification for a pension should be set in relation to the average of the last 12 months of insurable earnings on which contributions have been paid.

(8) Pensions for early and deferred retirements (see Section 8.8)

For early retirees *within five years* of the normal retirement age of 60 years, the pension amount determined according to the normal formula should be reduced by 0.5 per cent for each complete month of age below the age of 60 years. For late retirees, after the age of 60 years the pension amount that is determined according to the normal formula should be increased by 0.6 per cent for each complete month of age above the age of 60 years.

Administration and institutional issues

(1) Harmonization of social security

At present there are four institutions providing social security benefits to workers of the formal sector – namely the NSSF, Civil Servants Pension Scheme, Local Authority Provident Fund and Parastatal Pension Fund. A separate Health Insurance Fund exists for the benefit of civil servants and their families. There is evidence of existence of competition between different institutions in reaching the potential insured population. The Government has recently decided to adopt a national social security policy aimed at harmonizing these four public social security schemes. The ILO recommends that such a comprehensive policy should be developed through sound public consultations and should be based on expert advice on the relevant policy, administrative and financial issues. The ILO stands ready to assist the Government of Tanzania in this respect.

(2) Extension of coverage

Currently, the NSSF covers less than 25 per cent of the employed population. The future financial development of the NSSF could significantly improve, and the scheme could cost less to workers and employers, if a larger share of the eligible employed population could be covered by the NSSF. Significant efforts to accomplish the following are recommended:

- Through publicity campaigns, raise public awareness on the advantages of joining the NSSF;
- Improve enforcement activities of the NSSF – through a better inspectorate – to enlist those employers who have so far avoided registration;
- Provide better administrative services so that public perception of the NSSF would improve and attract more members.

(3) Maintenance of individual records

An appropriate system for maintenance of individual records should be designed and duly implemented. An organizational audit is recommended in this respect. It should be updated regularly and effectively in order to provide better service. (see Section 7.7)

(4) Performance management

The NSSF management/Board should consider adopting a set of objectives and action plans (including allocation of resources to achieve the objectives) to increase coverage to a larger proportion of the population, strengthening management accountability and public perception. This should be part of a wider scheme to monitor, evaluate and report on the performance of the NSSF with regard to its objectives and targets for coverage, finance and administration. A thorough technical review of administrative and institutional arrangements could assist in developing a proper course of action in this respect.

(5) Administrative expenses

The administrative expenses incurred by the NSSF since its inception in 1998 have been very high. They represented about 5 per cent of insurable earnings for each year. This has been attributed to the large number of claims received from unemployed members applying for refund of contributions. Hereafter the expenses relating to the administration of the refunds of members' contributions should not be debited to the pension fund.

Administrative expenses should be clearly monitored and reported in the financial accounts of the NSSF. The members should know the way in which they are indirectly paying for the delivery of administrative tasks. Since withdrawals are reported to cause much of the administrative burden, this information should be transparent to members.

1. Past ILO recommendations concerning the NSSF

1.1 Former recommendations on the design and financing of the NSSF

The benefit provisions of the present NSSF scheme are very similar to those contained under Alternative 1 of the actuarial study conducted by the ILO in 1993/94 in the context of a project investigating the feasibility of converting the former NPF into a social insurance pension scheme. The financial system that had been recommended for financing the Alternative 1 scheme was a partial funding financial system known as the scaled premium financial system. The contribution rate was recommended to be set at 8 per cent of insurable earnings for 20 years, inclusive of administrative expenses, estimated at 2 per cent of insurable earnings. The ILO had advised that with the introduction of the NSSF provisions, as stated under the Alternative 1 scheme, the former NPF should cease to operate and contributions should no longer be paid into the NPF. The insured members who had previously contributed to the NPF would be given the option, at the time a claim is made under the NSSF, of either converting their NPF balance accounts into pension credits or availing themselves of their NPF balances in the form of a lump-sum payment.

Another set of provisions under the former ILO study, referred to as the Alternative 2 scheme, was presented suggesting that the NSSF would operate along with the NPF and for which a lower rate of contribution would be appropriate.

These two sets of recommendations however have not been implemented.

The present benefit provisions of the NSSF resemble those of the ILO-recommended Alternative 1 scheme described in the former ILO study but the financing provisions adopted by the NSSF more closely resemble those of the Alternative 2 scheme under the same ILO study. Indeed, the level of the contribution rate has been maintained at 20 per cent of insurable earnings as collected under the former NPF (rather than collecting only 8 per cent of insurable earnings as recommended by the ILO), and all the monies received are paid into a single fund. The accumulated fund thus includes, in principle, amounts to cover the reserve for pensions and the excess contributions collected over and above the recommended 8 per cent contribution rate. The management of the NSSF however has not segregated its assets. All benefits, refunds of contributions and expenses appear to be taken out from this single fund. No clear financial monitoring and evaluation mechanism exists. This is an unsatisfactory situation from an accounting perspective and it could jeopardize the long-term financial sustainability of the NSSF as well as its public credibility in delivering meaningful lifetime pensions.

1.2 Former recommendations on policy and extension of the NSSF

The ILO report of 2000 on policy issues and legislation recommended:

- (a) Closer coordination and harmonization of the different statutory public pension schemes in Tanzania are needed with particular emphasis on:
 - A phasing-out strategy to discourage the withdrawal of personal balances, notably under the NSSF;
 - A revision of the methods used to calculate pensions awarded to older entrants under the transitional rules;
 - Extensive public information campaigns to raise public awareness concerning social insurance principles underlying the NSSF Act of 1998, inter alia, which should reaffirm that:
 - i) Contributions made to the NSSF after July 1998 are for the provision of pensions and other benefits as prescribed in the Act. This implies that, in principle, the withdrawal of personal balances resulting from the accumulation of contributions made after July 1998 should not take place; and
 - ii) Lifetime pensions provide better income protection than lump-sum benefits and anticipated withdrawals;
 - Measures to adjust pensions-in-payment ensure that meaningful benefits are paid to retirees and also preserve the credibility of the NSSF;
 - Specific reforms including: the revision of funeral benefits; the revision of the formula used to determine contribution credits; the abolition of the requirement to retire for persons aged 60 and over; the introduction of a medical board, medical appeal tribunal and appeal board; the cessation of emigration benefits; the immediate extension of the time limit imposed on claims for maternity benefits; and other reforms of lesser urgency to be studied and implemented in due course;¹¹
- (b) More decisive action to raise the currently low level of employment injury protection;
- (c) Removal of the obstacles to the sound planning of social health insurance.

It is understood that the Government has recently adopted a National Social Security Policy and intends to focus on the harmonization and rationalization of existing public pension schemes. Significant efforts from a political, institutional, financial and administrative perspective are oriented towards its successful implementation.

¹¹ See Section 2.9 of the ILO report (2000).

2. Context

2.1 Economic context

Consequent to macroeconomic reforms introduced by the Government and the tight monetary policy adopted in the recent past, the economic indicators have improved during the last four years. The inflation rate came down from 7.8 per cent in 1998/99 to 5.2 per cent in 2000/01. According to the senior management of the NSSF, the inflation rate is expected to come down further in the coming years. Interest rates had also come down during this period; for example, interest rates on treasury bonds had reduced from 15.7 per cent to 6.4 per cent. (see Table 2.1)

During the last four years, the GDP growth rate increased from 4.4 per cent to 5.3 per cent. The highest growth rates were recorded in the mining and quarrying sectors. The per capita GDP increased from Tsh. 170,844 in 1998 to Tsh. 231,426 in 2001 (an increase by 35.5 per cent), reflecting an average growth rate of 10.7 per cent per annum. However during the same period the Tanzanian shilling depreciated against the US dollar by 33.2 per cent.

Unemployment continues to be a major problem and the number unemployed is said to have increased with the restructuring of the organizations in the public sector (though accurate numbers of the unemployed are not readily available). Unemployment has caused a major problem to the NSSF as the unemployed members of the former NPF and the present pension scheme apply for refunds of their contributions. This situation has given rise to a large number of withdrawals from the NSSF, thereby causing financial strain on the pension fund.

Table 2.1 Economic indicators of The United Republic of Tanzania

	1998	1999	2000	2001
Per capita GDP (Tsh.)	170,844	193,453	208,893	231,426
Exchange rate (Tsh./US\$)	664.7	748.10	800.7	917.4
Inflation rate (% p.a.)	12.9	7.8	6.0	5.2
Fixed deposit interest rate (% p.a.)	11.5	11.0	10.5	4.9
Treasury bills rate (% p.a.)	13.2	11.0	10.3	5.4
Treasury bonds rate (% p.a.)	17.4	15.7	12.6	6.4
Lending interest rate (short-term) (% p.a.)	28.0	21.4	19.1	20.9

Source: Presidents Office: Planning and Privatization / NSSF Finance Department, 1999-2002.

2.2 Demographic context

During the period 1995 to 2000, the number of persons aged between 15 and 59 increased from 13.8 million to 16.1 million; however the membership of the NSSF did not show a commensurate increase.

A population census was due to be held in August 2002. Its results were not yet available at the time of this actuarial valuation.

The studies carried out in the recent past by the National Bureau of Statistics (NBOS) revealed that the total population of mainland Tanzania in mid 2000 was around 31.5 million persons, of which, 15.4 million were male and 16.1 million, female). The number of persons in active ages 15 to 59 years was estimated to be 16.1 million, of which, 7,688,000 were male and 8,366,000, female. According to the projections made by the NBOS, the total population in the year 2010 would increase to 41.7 million, growing by 2.9 per cent annually.

The NBOS studies also indicate that higher growth rates will be experienced in the active age group 15 to 59 years (3.1 per cent for males and 2.9 per cent for females), leading to 10.5 million males and 11.1 million females by the year 2010.

2.3 Governance of social security in Tanzania

At present four institutions are engaged in providing social security protection to employees in the formal sector:

- The Civil Servants Pension Scheme covers pensionable civil servants and provides pensions;
- The Local Authority Provident Fund covers employees of the local authorities and provides lump-sum benefits at retirement;
- The Parastatal Pension Fund (PPF) covers employees of current and former parastatal organizations and provides pensions and lump-sum benefits;
- The National Social Security Fund (NSSF) covers employees in the private sector, non-pensionable employees of parastatal organizations and non-pensionable civil servants and provides both pensions and lump-sum benefits.

In addition to these four schemes, a National Health Insurance Fund provides health insurance benefits to civil servants and their families.

It is understood that in recent past there had been a measure of competition between the PPF and the NSSF to register under their respective organizations the employees of former parastatal organizations and employees of some private sector organizations by making use of certain ambiguous provisions in the respective Acts.

The senior management of the NSSF has acknowledged that the Government is developing a national social security policy and is also examining the feasibility of harmonizing the benefits provided under the four schemes mentioned above, and that it has requested the NSSF to make provisions in the NSSF scheme for withdrawals of NSF contributions, when a member becomes unemployed and remains so for six months, of around 25 per cent of the contributions made by the member. This is contrary to ILO recommendations as discussed throughout the report.

2.4 Key legal provisions of the NSSF Act and ILO Convention No. 102

The NSSF was established with effect from 1 July 1998 following the enactment of the National Social Security Fund Act 28 of 1997. It operates under a tripartite board. The salient features of the social insurance scheme are given in Appendix I and key points highlighted below.

(1) Insurance coverage

The following categories of persons are eligible for registration:

- Every person who had been a member of the NPF;
- Every person who is self-employed or who is employed in the private sector, other than in a parastatal organization coming under the purview of the Parastatal Pension Fund Act 1978; and
- Every non-pensionable employee in the government service and parastatal organizations.

(2) Benefits

The Act makes provision (under section 21) to pay the following classes of benefits to persons insured under the NSSF:

- Retirement pensions;
- Invalidity pensions;
- Survivors' pensions;
- Funeral grants;
- Maternity benefits;
- Employment injury benefits; and
- Health insurance benefits.

Retirement, invalidity and survivors' pensions, and funeral grants are provided since the inception of the scheme, and with effect from 1 October 1999, maternity benefits have also been provided. The NSSF intends to provide employment injury and health insurance benefits in the near future. ILO Convention No. 102 foresees the payment of income-replacement benefits in the case of unemployment and family needs as well.

(3) Minimum pension

As per sections 24(3) and 29(3) of the Act, the minimum monthly pension payable is 80 per cent of the minimum wage.

(4) Benefits payable to survivors of pensioners

The Act provides for payment of a lump sum to the survivors of a pensioner whereas the ILO Convention No. 102 on the Minimum Standards of Social Security recommends payment of pensions to the survivors.

(5) Early retirement provisions

According to the provisions in section 27 of the Act, an insured person who is within five years of the pensionable age and has paid contributions for at least 180 months, may claim early retirement pension. The pension payable according to the provisions in the Act will be the amount determined according to the normal retirement pension formula, but reduced by 0.5 per cent of the monthly average earnings.

(6) Financing

The contribution rate fixed under the Act, i.e. in its first schedule, is set at 20 per cent of insurable earnings whose payment is divided equally between the employee and the employer in the case of employed members.

(7) Administrative expenses

According to section 61(4) of the Act, the NSSF Board is empowered to transfer funds from the investment income to its account for administrative expenses, with the amount not exceeding 15 per cent of the total income collected in that year. It is not clear whether the total income includes the contribution income as well. International best practice indicates significant lower levels of incurred administrative expenses.

3. Analysis of past performance since inception of the NSSF in 1998

3.1 Demographic developments since 1998

Between 1998 and 2001 nearly 180,000 persons joined the NSSF while 111,000 withdrew. The number of active members of the NSSF as at 30 June 1998 was only 256,826, and the number of inactive members (mostly members of the NPF) who have accrued credits in the past (which gives them entitlement to some NSSF benefits in the future) was 100,183. The combined inactive and active membership brings the total membership to only 357,009; this implies that only a small percentage of the population in the active age group 15 to 59 are actually insured by the NSSF. Account must be taken that public social security measures other than those of the NSSF are currently in place in Tanzania.

The number of new entrants was 59,545 in 2001, representing a decrease from 1999 (67,698). The number of members who withdrew decreased from 36,108 in 1999 to 29,290 in 2001.

3.2 Financial developments since 1998

Tables 3.1 to 3.4 show the financial development of the NSSF for the financial years ending in 1999, 2000 and 2001. The total income of the NSSF from contributions and investments was about Tsh. 53 trillion in 2001. The investment income alone was adequate to meet the benefit payments. The reserve as at the end of the financial year 2000/01 was about Tsh. 201 trillion. The reserves increased at a nominal rate of 17.0 per cent per annum and the contribution income recorded a growth rate of 17.7 per cent per annum. On the expenditure side, the majority of the benefit payments were made in the form of contribution withdrawals as nearly all claims settled in the financial year 2000/01 consisted of withdrawals (29,290) – only 365 claims were settled under the pension scheme.

Table 3.1 Key financial performance indicators of the NSSF, fiscal years ending in 1999 to 2001

	Financial year ending on 30 June		
	2001	2000	1999
Annual income			
Contributions (Tsh. - millions)	39,334	31,791	28,413
Investment income (Tsh. - millions)	13,169	13,347	11,945
Total income (Tsh. - millions)	52,503	45,138	40,358
Annual expenditure			
Total benefit payments (including withdrawals) (Tsh. - millions)	12,968	13,328	10,147
Withdrawal benefits (Tsh. - millions)	11,179	11,476	8,061
Administrative expenses (Tsh. - millions)	9,759	9,636	7,504
Admin. expenses as % of contribution income	24.81	30.31	26.41
Reserve level			
Reserve at end of year (Tsh. - millions)	200,308	169,219	146,457
Portfolio			
Total investments (Tsh. - millions)	117,350	99,835	85,358
Property investments (Tsh. - millions)	45,489	37,350	29,572
Annual growth rates			
Average rate of return on the fund (% p.a)	7.39	8.83	9.32
Average rate of return on investments (% p.a.)	12.91	15.53	16.58
Average rate of return on property investments (% p.a.)	3.40	2.96	3.63
Average rate of return on other investments (% p.a.)	16.77	20.15	21.16
Inflation rate (% p.a.)	5.2	6.0	7.8

Table 3.2 Income and expenditure of the NSSF, fiscal years ending in 1999 to 2001
(amounts in millions of Tsh.)

	2001	2000	1999
Income			
Interest on investments	11,264	11,916	10,754
Rent income	1,410	990	986
Other income	<u>495</u>	<u>441</u>	<u>205</u>
Total income	<u>13,169</u>	<u>13,347</u>	<u>11,945</u>
Expenses			
Administrative expenses	9,759	9,636	7,504
Depreciation	857	718	598
Benefits stale cheques	2	2	<1
Loss account	8	9	<1
Interest credited to members	<u>2,458</u>	<u>2,921</u>	<u>3,673</u>
Total expenditure	<u>13,085</u>	<u>13,286</u>	<u>11,776</u>
Surplus for the year	84	61	168
Corporate tax on surplus	<u>0</u>	<u>18</u>	<u>50</u>
Net annual surplus	84	43	118
Accumulated surplus/(deficit)	2,128	2,565	2,447
Less: Prior year adjustment	<u>0</u>	<u>480</u>	<u>0</u>
	<u>2,128</u>	<u>2,085</u>	<u>2,447</u>
Accumulated surplus/(deficit) carried forward	<u>2,213</u>	<u>2,128</u>	<u>2,565</u>

Source: Reports of the Auditors, NSSF, 1999-2002.

Table 3.3 Cash flow statement of the NSSF, fiscal years ending in 1999 to 2001
(amounts in millions of Tsh.)

	2001	2000	1999
Cash flows from operating activities			
Interest on investments	10,289	10,123	11,856
Rent received	969	718	14
Interest received on loans	75	27	154
Administrative expenditure	(8,669)	(9,295)	(7,622)
Cash receipts from veta	339	275	120
Staff loans	(1,432)	(1,029)	(1,212)
Miscellaneous receipts	40	16	(50)
Commission and fees expenses payable	<0	<0	0
Taxes	(631)	<0	<0
Net cash flows from operating activities (a)	<u>921</u>	<u>774</u>	<u>3,970</u>
Cash flows from investing activities			
Cash paid on investments	(68,618)	(80,470)	(28,817)
Redeemed investments	69,517	69,064	23,746
Payments to projects	(10,995)	(7,288)	(4,148)
Loan repayments	106	14	67
Purchase of properties	(349)	(508)	(1,195)
Gain on sale of shares	135	0	0
Promissory notes redeemed	1,275	1,305	1,375
Proceeds from sale of assets	<u>2</u>	<u>1</u>	<u>3</u>
Net cash flows from investing activities (b)	<u>(8,927)</u>	<u>(17,882)</u>	<u>(8,970)</u>
Cash flows from financing activities			
Members contributions	39,334	31,791	28,413
Benefit payments	(12,968)	(13,328)	(10,148)
Receipts on reserve accounts	<u>447</u>	<u>375</u>	<u>1,100</u>
Net cash flows from financing activities (c)	<u>26,813</u>	<u>18,838</u>	<u>19,365</u>
Net increase of cash and cash equivalents (a+b+c)	<u>18,807</u>	<u>1,730</u>	<u>14,385</u>
Cash and cash equivalents at beginning of the year	<u>21,926</u>	<u>20,196</u>	<u>5,832</u>
Cash and cash equivalents at end of the year	<u><u>40,733</u></u>	<u><u>21,926</u></u>	<u><u>20,196</u></u>

Source: Reports of the Auditors, NSSF, 1999-2002.

Table 3.4 Assets and liabilities of the NSSF, fiscal years ending in 1999 to 2001
(amounts in millions of Tsh.)

	2001	2000	1999	1998
Assets employed				
Fixed assets (net)	16,774	14,207	14,269	13,732
Deferred expenses	1,245	1,287	0	0
Investments	117,350	99,835	85,358	70,647
	<u>135,368</u>	<u>115,330</u>	<u>99,627</u>	<u>84,379</u>
Current assets				
Stationery stocks	86	197,733	155	67
Statutory contributions and penalties receivables	11,251	9,589	8,309	5,289
Debtors, advances and prepayments	5,304	4,170	4,224	2,606
Accrued interest on investments	3,796	4,763	4,750	6,502
Tax receivables	3,942	1,914	619	518
Short-term investments	38,832	29,483	25,574	21,035
Cash and bank balances	2,882	4,968	4,411	2,072
	<u>66,093</u>	<u>55,084</u>	<u>48,042</u>	<u>38,090</u>
Less: Current liabilities				
Creditors and accruals	987	961	843	616
Bank account overdrawn	166	234	369	167
	<u>1,153</u>	<u>1,195</u>	<u>1,211</u>	<u>783</u>
Net current assets/(liabilities)	<u>64,940</u>	<u>3,889</u>	<u>46,830</u>	<u>37,307</u>
Total	<u>200,308</u>	<u>169,219</u>	<u>146,457</u>	<u>121,687</u>
Financed by:				
Accumulated surplus/(deficit)	2,213	2,128	2,565	2,447
Fund contributions	179,736	148,732	125,533	100,880
Fixed assets revaluation reserve	18,359	18,359	18,359	18,359
Total	<u>200,308</u>	<u>169,219</u>	<u>146,457</u>	<u>121,687</u>

Source: Reports of the Auditors, NSSF, 1999-2002.

3.3 Analysis of administrative expenses

Administrative expenses have significantly increased since 1998, recording a 30 per cent growth during the two-year period ending on 30 June 2001. In the financial year 2000/01 administrative expenses amounted to 24.8 per cent of contribution income, equivalent to 75.3 per cent of benefit expenditure and 5.0 percentage points of insurable earnings. During the three-year period from 1998 to 2001, annual administrative expenses recorded a slight drop from 26.4 per cent to 24.8 per cent of contribution income, respectively. The current level is still very high in light of international best practice.

The major factor contributing towards high administrative expenses could be the large number of withdrawals effected in a year. In the previous actuarial study, the provision made for administrative expenses was only 2 per cent of insurable earnings, assuming that only the expenses connected with the operation of the pension scheme would be incurred by the NSSF. During the last three years however, the NSSF has had to deal with a large number of claims for early withdrawals, resulting in higher administrative expenses than anticipated. Furthermore, at present many operations that could be computerized are performed manually, and these manual operations also lead to high administrative expenses. A comprehensive computerization initiative is underway and expected to lead to substantial savings in future. Hence it is reasonable to expect that the high level of current administrative expenses will decrease as a percentage of contribution income. The expenses relating to the refunds of the contributions should not be debited to the pension scheme account. Further details on recommendations related to administrative expenses and financial governance are discussed in Section 7.

3.4 Analysis of investment results

During the period from 1 July 1998 to 30 June 2001 the average annual rate of return on the fund had dropped from 9.3 per cent to 7.4 per cent and the average rate of return on the invested assets had dropped from 16.6 per cent to 12.9 per cent. It is evident, that the uninvested assets of the NSSF – which form a sizeable portion of the total fund – had caused the rate of return on the fund as a whole to be so low. During the same period, the rate of inflation also had dropped from 12.9 per cent to 5.2 per cent.

A review of the investment objectives, strategy and practice is recommended in this report.

The main investments of the NSSF as at 30 June 2001 were government securities (53 per cent), fixed deposits (3 per cent) and real estate (39 per cent).

Investments in property account for nearly 39 per cent of the total invested assets of the NSSF, but the share of the investment income generated by such investments was only 11 per cent. The average rate of return on property investments had been around 3.40 per cent per annum whereas the average rate of return on other investments is about four times higher. This may be due to the long gestation periods associated with property development. However it is advisable to examine this matter carefully and take measures to reduce the share of the fund invested in property if the projected long-term average rate of return is found to be lower than the expected average rate of return on other investments.

4. Methodology

4.1 Approach

The actuarial valuation of the cost of a pension scheme involves estimation of the future benefit expenditure and the contribution base over a long period of time. A relatively young scheme which provides pension benefits, such as the NSSF scheme, is characterized by a steady increase in benefit expenditure both in relative terms (as a percentage of insurable earnings) and in absolute terms due to the following reasons:

- Each year a new group of pensioners (insured persons and dependants) will qualify to receive pensions;
- The level of benefits will increase with the period of contribution, and the longer the scheme operates the greater the average number of years of contributions during which pensions will be awarded;
- As the pensions are linked to earnings, the level of pensions should increase in step with the insured person's earnings;
- Improvement in life expectancy will lead to pensioners receiving benefits for a longer period of time; and
- Periodic revaluation of pensions-in-payment in order to maintain their purchasing power (real value).

The assessment of future benefits and contributions is done by means of actuarial projections, where based on certain economic and demographic assumptions, the operation of the scheme is simulated on a year-by-year basis making use of the computer-based ILO Pension Model.

The method involves estimation of the future annual expenditure to be met and the future insurable earnings of (a) the persons who are assumed to be insured as at the valuation date, and (b) those persons who are assumed to join the scheme in the future. For this purpose a year-by-year cohort methodology is adopted where the initial insured population is aged and is gradually replaced by successive cohorts of participants on an annual basis according to the demographic and coverage assumptions. Projection of insurable earnings and benefit expenditure are then performed according to the economic assumptions and scheme provisions. The estimated benefit expenditure and contribution base (insurable earnings) of future years and the assumed interest rate are then utilized to estimate the contribution rate required according to the adopted financial system.

Validity of the estimates made is linked to the realization of the assumptions underlying the projections. Changes in the demographic structure of the insured population as well as variations in the salary distributions can give rise to results that differ from those projected. Hence periodic actuarial reviews are necessary to assess the consistency of the assumptions made and to adjust them if needed.

The main objective of the pension projections is not to forecast the exact amounts of pension expenditure and contribution income but to check the financial viability of the scheme, i.e. the relative balance between the future income and expenditure.

Demographic projections – The first stage of the projection process was to estimate the number of contributors and the various categories of pensioners and other beneficiaries in each of the future years of the projection period. This stage is referred to as the demographic projections.

Financial projections – The second stage of the projection process was estimating the amounts of the expected insurable earnings and the amounts of the benefits attributed to the different categories of beneficiaries. This stage is referred to as the financial projections.

4.2 Reference financing system

The financial system of a social insurance pension scheme means the mechanism through which it is intended to ensure the financial equilibrium between the income and expenditure of the scheme over the years.

Financial systems frequently applied in social insurance pension schemes include pure assessment (pay-as-you-go [PAYG]), general average premium (GAP) and scaled premium, an intermediate between the two aforementioned systems. (see Appendix III for descriptions of each system)

Methods of financing a social insurance pension scheme should take into consideration the following:

- The increasing level of expenditure over a long period;
- Maintaining the solvency of the scheme;
- Solvency represents the primary objective of the financial system, so that benefits payments can be made as they fall due and administration expenses can be covered;
- Maintain stability of the contribution rate;
- In order to maintain the public confidence in the scheme it is necessary that the rates of contributions paid by employers and employees remain stable over relatively long periods of time;
- The sectors covered by the scheme should be able to bear the rates of contributions and it should not become a burden to them;
- The level of accumulation of reserves; and
- The capital market should be able to absorb the reserves formed under the scheme.

For a relatively new social insurance pension scheme like the NSSF scheme it is advisable to adopt a partial funding system of financing which guarantees stability of the contribution rate for a period of about 15 years (known as the period of equilibrium). Attention should be given to the solvency of the scheme during and at the end of the period of equilibrium. It is prudent to require the scheme to have a specified minimum amount of the reserve during the period of equilibrium.

Amongst the systems of partial funding, the scaled premium financial system is generally recommended to finance social insurance pension schemes. Under this system, a contribution rate is established so that during the specified period of equilibrium, the contribution income and income from investments of the reserves, will in each year be at least adequate to meet the benefits and administrative expenses in the year. At the end of the period of equilibrium the contribution rate is raised for another subsequent period of equilibrium. In practice, such increases in the contribution rate are made before the end of the period of equilibrium so as to avoid an unusually large increase in the contribution rate.

Since the NSSF pension scheme is still only four years old, it will take a very long period to reach a mature stage. Hence it is prudent to fix as the contribution rate an affordable rate that will lead to creation of substantial reserves within the next 20 or 25 years.

With this objective in mind, the scaled premium system of financing described above is recommended for this scheme. It is further recommended that a minimum reserve ratio of three should be maintained.

5. Database and NSSF projection assumptions

5.1 Database as of the actuarial valuation date

The actuarial valuation date is 1 July 2002.

5.1.1 Insured population

The data relating to a sample of around 80,000 active insured persons (that is, those members who had made at least one contribution in the preceding period of 12 months) as at 30 June 2002 were obtained from the computer records of the NSSF. The NSSF has estimated the total number of active insured persons as at the date of valuation to be 256,826, based upon the membership survey files, monthly returns from regional offices, etc. The age/gender distribution of the estimated active insured population was assumed to be same as that of the sample for which such information was available. The assumed distribution is given in Table 5.1. In addition to those people who had contributed during the preceding 12 months, the scheme covers others who had contributed in the past but not in the said period (known as the inactive persons). The records maintained by the NSSF indicate that there were 100,183 inactive persons. The ages/gender/past contributions, etc., of a sample of inactive persons were also available in the computer files. The assumed distribution of inactive persons according to age and gender is given in Table 5.2.

5.1.2 Insurable earnings

Gender/age disaggregated contribution details were available in the computerized records of the NSSF for a sample of about 80,000 members. The age/gender specific insurable earnings for the insured population were constructed on the basis of this sample. The assumed average insurable earnings according to age and gender are shown in Tables 5.1 and 5.2.

5.1.3 Accrued past NPF and NSSF credits

The following information was extracted from the computer records of the NSSF for a sample of about 80,000 members whose contribution records had been updated to the valuation date:

- The NPF balances as at 30 June 1998;
- The amount of the last contribution paid; and
- The actual number of months of contributions paid after 30 June 1998.

For the full validation basis of the projections, the available number of credits from the NPF balances was calculated by applying to the balances the formula adopted by the NSSF for such purpose. The assumed past credits are shown in columns 4 and 9 of Table 5.1 and columns 3 and 7 of Table 5.2.

Table 5.1 NSSF database related to active members as at 30 June 2002

Age group	Males					Females				
	Number	Average monthly insurable earnings (Tsh.)	NPF credits (months)	No. of NSSF contributions (months)	Total no. of NSSF credits (months)	Number	Average monthly insurable earnings (Tsh.)	NPF credits (months)	No. of NSSF contributions (months)	Total no. of NSSF credits (months)
1	2	3	4	5	6 = (4 + 5)	7	8	9	10	11 = (9 + 10)
Active members										
15 - 19	334	59,050	2.2	31.8	34.0	431	54,274	2.1	32.6	34.7
20 - 24	12,020	62,954	7.1	28.8	35.9	7,145	69,167	7.3	30.2	37.5
25 - 29	36,024	78,758	13.6	30.1	43.7	16,975	84,219	13.8	31.5	45.3
30 - 34	38,928	94,561	20.5	29.6	50.1	15,792	96,205	21.3	31.6	52.9
35 - 39	30,022	107,026	26.5	29.3	55.8	10,257	105,079	27.5	31.3	58.8
40 - 44	25,395	115,017	31.0	28.5	59.5	6,831	117,514	32.6	30.5	63.1
45 - 49	18,067	136,396	34.3	25.5	59.8	3,941	159,617	36.1	27.3	63.4
50 - 54	16,699	145,335	40.1	24.4	64.5	2,382	162,296	41.9	26.0	67.9
55 - 59	8,233	137,192	39.6	25.1	64.7	711	147,520	40.6	26.5	67.1
60 +	6,179	106,372	34.8	25.3	60.1	460	107,459	37.6	27.7	65.3
Total	191,901	104,776	25.1	28.1	53.2	64,925	100,377	25.5	30.7	56.2

Source : NSSF, ILO calculations.

Table 5.2 NSSF database related to inactive members as at 30 June 2002

Age group	Males				Females			
	Number	NPF credits (months)	No. of NSSF contributions (months)	Total no. of NSSF credits (months)	Number	NPF credits (months)	No. of NSSF contributions (months)	Total no. of NSSF credits (months)
1	2	3	4	5 = (3+4)	6	7	8	9 = (7+8)
Active members								
15 - 19	101	5.2	6.8	12.0183	5.2	6.8	12.0	
20 - 24	3592	18.2	4.6	22.8	4460	18.2	4.6	22.8
25 - 29	9857	12.1	4.8	16.9	10491	12.1	4.8	16.9
30 - 34	10047	25.3	3.3	28.6	9867	25.3	3.3	28.6
35 - 39	7538	31.1	2.7	33.8	6999	31.1	2.7	33.8
40 - 44	6257	34.9	13.5	48.4	5517	34.9	13.5	48.4
45 - 49	4710	34.6	21.0	55.6	4012	34.6	21.0	55.6
50 - 54	4845	40.0	19.8	59.8	3933	40.0	19.8	59.8
55 - 59	2341	38.9	20.5	59.4	1801	38.9	20.5	59.4
60 +	2029	43.3	20.5	63.8	1604	43.3	20.5	63.8
Total	51317	27.8	9.5	37.3	48866	26.7	8.8	35.5

Source: Computer Department of NSSF.

5.1.4 Pensions-in-payment

Only few pensions have been awarded since the inception of the NSSF. However, many contribution withdrawals have had to be made despite the regulations of the NSSF. Data on pensioners is presented in Table 5.3.

Table 5.3 NSSF pensioners as at 30 June 2002

Age	Males			Females		
	Number	Total monthly pensions (Tsh. – thousands)	Average monthly pension (Tsh.)	Number	Total monthly pension (Tsh. – thousands)	Average monthly pension (Tsh.)
55	1	25	24,853			
56	5	568	113,532	1	52	51,750
57	16	1,907	119,170			
58	12	759	63,236	1	24	24,000
59	4	160	40,061	1	24	24,000
60	16	452	28,249			
61	20	809	40,454	3	98	32,744
62	38	1,027	27,015	1	24	24,000
63	52	1,537	29,555	4	107	26,733
64	47	1,197	25,459	4	96	24,000
65	44	1,235	28,075			
66	39	1,004	25,745	1	24	24,000
67	40	1,028	25,689			
68	35	873	24,946	1	24	24,000
69	19	583	30,710			
70	19	506	26,622			
71	12	288	24,000	1	24	24,000
72	27	655	24,270			
73	11	269	24,472			
74	9	230	25,558			
75	6	197	32,888			
76	9	280	31,125			
77	2	48	24,000			
78	5	120	24,000			
79	5	120	24,000			
80	4	96	24,000			
81 +	13	479	36,862			
Total	510	16,452	32,259	18	496,915	27,606

Source: Computer Department of NSSF.

5.1.5. Estimated initial reserves of the NPF and pension scheme

The computer department of the NSSF furnished the samples of the NPF accounts as at 30 June 1998, representing two large samples of active and inactive members. The NPF database of the whole insured population as at 30 June 1998 was estimated based on the data of these two samples. These account balances as of 30 June 1998 were then actualised to 30 June 2002 by accumulating interest up to 30 June 2002. This method produced an estimate total of the NPF balances as at 30 June 2002 of Tsh. 68,130 million.

The initial reserve of the pension scheme was afterwards determined to be equal to eight-twentieths (8/20) of the difference between: (a) the total reserve of the NSSF and (b) the abovementioned estimated amount of the total of the NPF balances. The estimated initial reserve of the pension scheme is Tsh. 68,100 million.

5.2 Demographic and economic assumptions

5.2.1 Growth of the insured population

The ILO pension model requires population and labour force statistics of the country in order to make the necessary projections of a national social insurance scheme. In Tanzania recent statistics of the population and the labour force in the various sectors were not readily available. Furthermore, the NSSF at present covers only a very small percentage of the employed population of the country and faces competition from other social security organizations. It is therefore reasonable to assume that its overall growth will not necessarily have a strong correlation to the rate of growth of the labour force of the country as a whole. In view of these circumstances, the opinions of the senior management of the NSSF were sought in order to formulate a simplistic assumption on the expected future growth of the insured population.

The assumed rates of growth of the active insured population are set at 4 per cent in year one, 3 per cent in year two, and 2 per cent per annum thereafter.

5.2.2 Gender/age distribution of insured new entrants

These were established on the basis of the actual experience of the NSSF during the preceding three years. The assumed distribution is shown in Table 5.4. It has been assumed that the ratio of males to females in the population of active members will remain unchanged (i.e. remain the same as the ratio at the valuation date). It has also been assumed that starting salaries of the first group of new entrants are the same as the salaries at the corresponding ages of the insured population as at the valuation date. For each subsequent group of new entrants, starting salaries are increased to reflect the rate of salary escalation on account of the increase in the cost of living. The assumed relative salary scales for new entrants after they enter the scheme are the same as the relative salary scales for the initial population.

Table 5.4 Assumed age distribution of 100 new entrants of same gender to NSSF

Age at entry	Number of entrants	
	Males	Females
15 - 19	0.31	1.29
20 - 24	11.30	21.36
25 - 29	27.73	37.11
30 - 34	22.69	20.30
35 - 39	13.86	9.27
40 - 44	10.22	5.75
45 - 49	6.25	2.80
50 - 54	5.24	1.64
55 - 59	2.40	0.48
Total	100.00	100.00

Source: Computer Department of NSSF, ILO calculations.

5.2.3 Mortality

There is no recently published population mortality table for Tanzania. Hence the mortality rates used in the 1993/94 ILO actuarial review¹² have been adopted in this valuation also. The mortality rates have been used to project benefits payable to the survivors on the death of insured members or pensioners. The mortality of invalidity pensioners is assumed to be equal to those of the other insured groups of persons. Assumed mortality rates are given in Table 5.5. According to the adopted rates, the life expectancy at age 60 is 14.49 years for males and 15.58 years for females.

Table 5.5 Assumed mortality rates of active lives:

Probability of death in the five-year interval

Age group	Males	Females
15 - 19	0.014134	0.011304
20 - 24	0.019491	0.016503
25 - 29	0.018813	0.015737
30 - 34	0.019905	0.015828
35 - 39	0.021974	0.017687
40 - 44	0.026030	0.020513
45 - 49	0.031357	0.025305
50 - 54	0.042142	0.034154
55 - 59	0.057664	0.045939
60 - 64	0.083452	0.068899
65 - 69	0.122526	0.107460
70 - 74	0.185712	0.170454
75 - 79	0.268968	0.259050

Source: 1993/94 ILO Actuarial Report¹³

¹² Idem

¹³ Idem

5.2.4 Invalidity

Invalidity rates have been calculated from the invalidity rates of the Italian experience by adjusting the basic rates to reflect the actual experience of the NSSF.¹⁴ The assumed invalidity rates are kept constant for the whole projection period. The assumed invalidity rates are shown in Table 5.6.

Table 5.6 Rates of entry into invalidity:
Probability of becoming invalid in the five-year interval

Age group	Males	Females
15 - 19	0.00015	0.00026
20 - 24	0.00098	0.00094
25 - 29	0.00243	0.00207
30 - 34	0.00456	0.00357
35 - 39	0.00737	0.00568
40 - 44	0.01148	0.00960
45 - 49	0.01833	0.01749
50 - 54	0.03302	0.03388
55 - 59	0.08333	0.06771

Source : Adjusted rates of the Italian experience.

5.2.5 Family structure

Information on the family structure of the insured is necessary for the projection of survivors' benefits. In order to estimate the benefits payable on the death of an insured person, assumptions have to be made on: (a) the probability of being married, (b) the age difference between spouses, (c) the average number of children being eligible for child supplement, and (d) the average age of those children. The factors used in the previous valuation¹⁵ have been used in the present valuation and are shown in Table 5.7.

14 ...

15 Idem

Table 5.7 Assumptions regarding survivors

Age of insured at death	Percentage married	Average number of dependent children	Average age of the dependent children	Average age of widow/widower
i) For survivors of deceased insured males				
15 - 19	2.2	1	2	16
20 - 24	24.9	2	3	19
25 - 29	69.4	2	4	23
30 - 34	79.3	3	5	27
35 - 39	84.0	4	8	31
40 - 44	84.3	4	9	35
45 - 49	85.7	3	10	38
50 - 54	90.4	2	10	43
55 - 59	87.0	1	11	47
60 +	80.2	0	0	52+
(ii) For survivors of deceased insured females				
15 - 19	22.2	1	2	19
20 - 24	59.7	2	3	25
25 - 29	72.8	3	5	31
30 - 34	75.0	4	8	37
35 - 39	70.0	3	9	43
40 - 44	70.4	2	10	49
45 - 49	72.8	1	11	55
50 - 54	58.5	1	12	61
55 - 59	51.2	1	14	67
60+	41.1	0	0	71+

Source: Previous Actuarial Report¹⁶. Tanzania RCHS Survey 1999.

¹⁶ Idem

5.3 Economic assumptions and scheme-specific financial parameters

5.3.1 Growth of insurable earnings

Normally, there is a correlation between the rate of salary escalation, granted to compensate the increase in the cost of living, and the rate of inflation in the country. As noted, the rate of inflation has reduced substantially. Hence, with the concurrence of the senior management of the NSSF, the following rates of escalation of insurable earnings have been assumed:

- 7 per cent in year one;
- 6 per cent in year two; and
- 5 per cent per annum in year three and thereafter.

It has been assumed that the average rate of salary escalation will exceed the average rate of inflation by at least 1 per cent from year three onwards.

The salary increases granted on account of the period of service, promotions and increase in productivity would be reflected in the salary scale function chosen for and used in the valuation as shown in Table 5.8.

Table 5.8 Relative salary scales

Age group	Males	Females
15 - 19	100	100
20 - 24	122	125
25 - 29	138	143
30 - 34	152	157
35 - 39	163	168
40 - 44	169	176
45 - 49	173	183
50 - 54	175	187
55 - 59	175	187

Source: Records of the Computer Department of NSSF, ILO calculations.

5.3.2 Density of contribution payments

The density of contribution refers to the average proportion of the year during which an active insured person actually contributes to the NSSF. This variable is applied to the annual rate of salary (12 times the monthly salary rate presented in Table 5.1) in order to obtain the actual earnings on which contributions have been paid, taking into account periods of absence of earnings during a given year. The density of contributions is assumed to stay constant over the projection period. The density assumed is 70 per cent and this is based on the actual experience of the NSSF during the preceding three years.

5.3.3 Annual adjustment of pensions-in-payment and set benefit rates

It was assumed that pensions-in-payment would be adjusted at the rates of 5.6 per cent in year one, 4.8 per cent in year two, and 4 per cent per annum from year three onwards.

5.3.4 Rate of increase in the reference minimum wage

It was assumed that the minimum wage of Tsh. 30,000 would increase at the rate of 16 per cent in year one, 8 per cent in year three and 5 per cent per annum from year three onwards. This assumption may be perceived as significantly lower than would be indicated by observed levels of increase in the minimum wage. This is however a reasonable assumption given the need for coherence with other economic assumptions for this actuarial review, e.g. the inflation rate assumption.

5.3.5 Inflation

During the past three years the inflation rate decreased to 5.2 per cent per annum (see Section 2.1 and Table 2.1). The relevant authorities of Tanzania are confident that it will drop further. Hence, for this valuation, from year three onwards the rate of inflation is assumed to be 4 per cent per annum.

5.3.6 Rate of interest and return on investment

An average rate of interest must be assumed in the valuation in order to estimate the future investment income of the NSSF. It should be related to the expected average long-term rate of return on investments of the NSSF reserves. High rates of interest are normally associated with high inflation rates. Even though relatively high rates of return had been experienced in the past, in view of the expected fall in the rate of inflation, it was considered prudent to use lower rates of interest in the actuarial projections.

The assumed rates of interest are set at 7 per cent in year one, 6 per cent in year two, 6 per cent per annum in year three and thereafter. This means the assumed interest rates exceed assumed future inflation rates by 2 per cent (implying a real interest rate of 2 per cent) from year three onwards.

What is significant in an actuarial valuation conducted for determination of the contribution rate is the difference, in the long term, between the assumed values of the future interest rates, salary escalation rates, and the inflation, rates rather than their absolute values. When the gap between the assumed interest rates and the salary escalation rates is bigger, it would lead to lower contribution rates, and vice versa.

5.3.7 Administration expenses

The projections assume future NSSF administration expenses shall be contained at a level below 3 per cent of insurable earnings. This assumption is set at a lower rate than the ratios observed in the past (around 5 per cent of insurable earnings) and is in line with international best practice for social security schemes. Any excess administrative costs should be carefully monitored, with actions taken to understand the reasons for the excess costs and how to reduce them accordingly. Section 7.2 presents recommendations on the containment of administration expenses.

5.4 Projection scenarios

5.4.1 *Status quo projections*

Several projections were made assuming that the status quo benefit provisions, as described in Appendix I, will continue to be paid.¹⁷ It has been assumed that all pensions-in-payment will be adjusted annually as recommended at 80 per cent of the rate of increase of insurable earnings and the level of the funeral benefit will be raised to Tsh. 300,000, as recommended. Two scenarios related to the validation of credits under the former NPF were examined, namely:

- **Full validation** – All the members of the former NPF would apply for full conversion of their NPF balances into pension credits; and
- **Nil validation** – No member of the former NPF would apply for full conversion of the NPF balances into pension credits.

5.4.2 *Benefit reform projections*

Further projections were made to estimate the financial implications of providing the following alternative benefits, assuming that all NPF balances will be converted into pension credits (full validation):

- The survivors of the pensioners would be paid pensions instead of a lump-sum benefit as per ILO Convention No. 102 (see Section 8.4);
- The minimum pension will be 50 per cent of the average monthly insurable earnings of the membership instead of 80 per cent of the minimum wage (see Section 8.6); and
- The retirement and invalidity grants would be based on the actual pension amount payable instead of being based on the pension payable as per the actual earnings of the member when a member qualifies to receive the minimum pension (see Section 8.5).

Results are discussed in the relevant subsections of Section 8.

¹⁷ This means, as at present, lump-sum benefits will be paid to the survivors of pensioners and the grants will be based on the pension amount payable according to the normal formula even when the person qualifies for the minimum pension.

6. Status quo projections and the actuarial valuation of selected benefit reform options

6.1 Status quo projections, assuming full validation of NPF credits

It has been assumed that the current benefit provisions will continue to apply, but the pensions-in-payment will be revalued annually at 80 per cent of the rate of increase of insurable earnings and the funeral benefit will be raised to Tsh. 300,000. Other projection assumptions are provided in Section 5. (see Section 5.4.1)

6.1.1 Demographic projections

Despite conservative net growth rates assumed regarding the insured population, the number of active members is projected to increase nearly three-fold from 260,000 persons in 2002 to about 330,000 persons in 2015 and 725,000 persons after 50 years (2053). These figures must be compared with the projected number of pensioners. The number of pensioners is very small initially as very few persons have accumulated sufficient pension credits to draw a pension under the NSSF, but the number will escalate exponentially over the 50-year projection period due to the maturing process that would be experienced by the NSSF. The transition provisions of the NSSF will, in the interim, allow some older members to draw pensions, with lesser periods of contributory membership in the NSSF. The maturing process will be accelerated as a result of those provisions.

The number of retirement pensioners is projected to increase from about 5,000 persons initially to 18,000 persons by year 2015 and to nearly 100,000 persons after 50 years (2053). There are 38 active contributors supporting each individual pensioner in 2003 but this will steadily decrease to 4.9 active contributors per pensioner in year 2013, 3.2 in year 2033 and 2.6 by year 2053. The dependency ratio in respect of the retirement pensioners in year 2053 is estimated at 7.5 active contributors per retiree. This is in line with the experience of other countries with similar population age profiles and retirement age. The present low coverage rate of the NSSF is less than 25 per cent of the employed population eligible.

Table 6.1 shows the number of active members and pensioners over the next 50 years. The last column indicates the ratio of retirement pensioners to active insured persons. The ratio increases from 1.9 per cent in the year 2003 to 13.3 per cent in the year 2053. There are 38 active members supporting each pensioner in 2003, but this ratio will steadily decrease to 4.9 active members per pensioner in year 2013, 3.2 in year 2033 and 2.6 by year 2053 under status quo benefit provisions.

The dependency ratio – in respect to the retirement pensioners – in the year 2053 is estimated to be 7.5 active members per retiree.

Table 6.1 NSSF demographic projections up to year 2053, under status quo provisions

Year	No. of active insured persons	Number of beneficiaries							Ratio of retirement pensioners to active members
		Pensioners					Recipients of special lump sums		
		Retired	Invalids	Widows/ Widowers	Orphans	Total number of pensioners	Retirement	Others	
2003	267,099	5,019	480	466	1,609	7,574	314	116	1.88
2008	297,790	13,231	2,876	4,840	16,902	37,849	420	670	4.44
2013	328,784	18,003	5,403	9,822	33,894	67,122	347	942	5.48
2018	363,004	18,210	7,995	15,342	44,666	86,213	322	1,177	5.02
2023	400,786	21,320	10,602	21,354	49,630	102,906	310	1,498	5.32
2028	442,500	28,879	13,157	27,712	54,763	124,511	259	1,841	8.31
2033	488,556	40,585	15,608	34,315	60,463	150,971	327	2,242	8.31
2038	539,406	55,987	17,958	41,083	66,756	181,784	336	2,822	10.38
2043	595,547	71,060	20,260	47,940	73,704	212,964	413	3,586	11.93
2048	657,532	84,488	22,595	54,850	81,376	243,309	439	4,442	12.85
2053	725,969	96,709	25,048	61,852	89,845	273,454	485	5,301	13.32

Table 6.2 shows the different types of beneficiaries per 1,000 active contributors at five-year intervals. The total number of beneficiaries per 1,000 actives increases more than tenfold from around 30 in the year 2003 to 385 in the year 2053.

Table 6.2 Demographics ratios (beneficiaries per 1,000 insured active members)

Year	No. of active insured persons	Number of beneficiaries						Total number of beneficiaries
		Pensioners				Recipients of special lump sums		
		Retired	Persons with disabilities	Widows/ Widowers	Orphans	Retirement	Others	
2003	1000	18.8	1.8	1.7	6.0	1.2	0.4	30.0
2008	1000	44.4	9.7	16.3	56.8	1.4	2.5	130.8
2013	1000	54.4	16.4	29.9	103.1	1.1	2.9	208.1
2018	1000	50.2	22.0	42.3	123.1	0.9	3.2	241.6
2023	1000	53.2	26.5	53.3	123.8	0.8	3.7	261.3
2028	1000	65.3	29.7	62.6	123.8	0.6	4.2	286.1
2033	1000	83.1	32.0	70.2	123.8	0.7	4.6	314.3
2038	1000	103.8	33.3	76.2	123.8	0.6	5.2	342.9
2043	1000	119.3	34.0	80.5	123.8	0.7	6.0	364.3
2048	1000	128.5	34.4	83.4	123.8	0.7	6.8	377.5
2053	1000	133.2	34.5	85.2	123.8	0.7	7.3	384.6

6.1.2 Financial projections

Table 6.3 shows the projected insurable earnings and benefit expenditure expected to be paid in the future to the different categories of beneficiaries.

Table 6.3 NSSF projected contribution base and benefit expenditure up to year 2053, under status quo provisions (amounts in millions of Tsh.)

Year	Total insurable earnings	Pensions				Special lump sums		Grants		Total benefits
		Retirement	Invalids	Survivors	Total pensions	Retirement	Others	Retirement	Invalids	
2003	248,422	2,155	258	641	3,054	73	57	3,723	502	7,409
2008	356,854	6,271	1,987	8,630	16,888	498	414	1,515	784	20,099
2013	502,849	10,882	4,891	22,358	38,131	830	722	1,615	1,194	42,492
2018	708,574	14,020	9,495	39,386	62,901	1,297	952	1,830	1,794	68,774
2023	998,464	23,090	16,506	59,591	99,187	1,804	1,460	5,755	2,646	110,852
2028	1,406,953	45,163	26,786	87,889	159,838	1,985	2,436	12,179	3,824	180,262
2033	1,982,563	89,631	41,359	127,811	258,801	3,212	4,130	22,736	5,421	294,300
2038	2,793,666	169,000	61,560	183,992	414,552	4,227	7,203	37,318	7,612	470,912
2043	3,936,604	281,273	89,398	263,039	633,710	6,626	12,294	51,478	10,707	714,815
2048	5,547,140	429,118	127,895	374,233	931,246	8,994	19,964	70,277	15,087	1,045,568
2053	7,816,574	626,885	181,395	530,417	1,338,697	12,672	30,871	99,005	21,260	1,502,505

Table 6.4 indicates the average income replacement ratios, i.e. the average of the retirement and other pensions as a ratio of the average insurable earnings. The replacement ratio of retirement pensions is expected to increase from 46 per cent of average insurable earnings in 2003 to 60 per cent in 2053, as the scheme matures.

Table 6.4 Projections of average benefit levels to average insurable earnings, under status quo provisions

Year	Average insurable earnings	Pensions		
		Retirement	Persons with disabilities	Widows
2003	100	46.2	57.8	23.5
2008	100	39.6	57.7	23.6
2013	100	39.5	59.2	23.8
2018	100	39.4	60.8	23.9
2023	100	43.5	62.5	24.0
2028	100	49.2	64.0	24.0
2033	100	54.4	65.3	24.1
2038	100	58.3	66.2	24.0
2043	100	59.9	66.8	24.0
2048	100	60.2	67.7	23.9
2053	100	60.2	67.3	23.9

6.1.3. Projected cost and financing requirements

The projected annual income, expenditure and year-end reserves according to the current rate of contribution at 8 per cent of insurable earnings are shown in Table 6.5, which indicates the reserve will be exhausted by the year 2021.

Table 6.5 Projected income, expenditure and funding of the NSSF under status quo provisions, according to current contribution rate of 8 per cent* (amounts in billions of Tsh.)

[initial fund = Tsh. 136,230 million]

Financial year ending on 30 June	Contributions	Investment income	Benefits	Administrative expenses	Fund/reserves at end of year	Funding ratio
2003	20	10	8	7	151	9.98
2008	29	10	21	11	204	6.47
2013	40	10	44	15	195	3.31
2018	57	5	71	21	95	1.03
2022	75	-0	103	28	0	-0.71

* Assuming pensions are indexed annually and all former NPF account balances are fully converted to NSSF pension credits.

The PAYG cost rates represent the total amount of benefits payable in any year as a percentage of insurable earnings of that year, whereas the general average premium (GAP) is set over a given period, e.g. 50 years, and indicates the constant level of contribution required to keep income and expenditure balanced. (see Appendix III and Figure 0.1 in the Executive summary)

The PAYG cost rates in Table 6.6 are projected to increase from 3 per cent of insurable earnings in 2003 to 19.5 per cent by 2053. The GAP rate over the next 50 years is estimated at 13.2 per cent of insurable earnings. (see Appendix III for a description of the GAP system)

Table 6.6 Development of pay-as-you-go cost rates

Year	PAYG (Cost rate)
2003	3.1
2008	5.9
2013	8.7
2018	10.0
2023	11.4
2028	13.1
2033	15.1
2038	17.1
2043	18.4
2048	19.1
2053	19.5

6.2 Sensitivity testing of status quo projections to variations of interest rates and population growth rates

The financing requirements estimated can only be valid to the extent the underlying assumptions are realized. However these are sensitive, in particular to the assumptions made with regard to future interest rates, salary escalation rates and growth of the insured population. In order to gauge the extent of the variation of the projected required contribution rates to the assumptions, further projections were made assuming higher and lower interest rates (that is the difference between the interest rate and the salary escalation rate was increased and decreased by 1 per cent), and higher and lower insured population growth rates.

The GAP for these sensitivity tests over the next 50 years can be compared with the required GAP rate of 13.2 per cent, under status quo provisions. Overall, when interest rates (difference between the interest rate and salary escalation rate) and the insured population growth rates are higher than assumed, then the resulting projected contribution rates become lower than anticipated, and vice versa. Generally, the sensitivity is not significantly pronounced:

- If the future interest rates are assumed to be 1 percentage point higher, i.e. 8 per cent in year one, 7 per cent in year two, 7 per cent in year three and thereafter, then the GAP over the 50 years reduces to 12.3 per cent of insurable earnings;
- If the future interest rates are assumed to be 1 percentage point lower, i.e. 6 per cent in year one, 5 per cent in year 2 and 5 per cent in year 3 and thereafter, then the GAP over the next 50 years increases to 14.0 per cent of insurable earnings;
- If the growth of the insured population is assumed to be higher by 1 percentage point; i.e. 5 per cent in year one, 4 per cent in year two, 3 per cent in year three and thereafter, then the GAP over the next 50 years reduces to 12.14 per cent of insurable earnings;
- If the growth of the insured population is assumed to be lower by 1 percentage point, i.e. 3 per cent in year one, 2 per cent in year two, 1 per cent in year three and thereafter, then the GAP over the next 50 years increases to 14.74 per cent of insurable earnings.

7. Recommendations on financing requirements and financial governance

Based on the actuarial projections of Section 6, the NSSF is encouraged to focus its attention on the following set of recommendations to ensure long-term financial sustainability of its benefit schemes and to strengthen its financial governance in future.

7.1 Recommended contribution rate

The net-scaled premium required for a period of equilibrium of 20 years to finance the present status quo benefits with revaluation of pensions and administrative expenses capped at 3 per cent of insurable earnings is 11.7 per cent of insurable earnings (see assumptions in Section 5).

In the event where a contribution rate of 11.7 per cent of insurable earnings would be enforced, to support status quo benefit provisions, the funding ratio reflecting the level of reserve in terms of annual benefit expenditure would remain positive (see Table 7.1). This assumes:

- Administration expenses amount to no more than 3 per cent of insurable earnings;
- The survivors of pensioners receive lump sums;
- Grants are based on the pension amount payable as per the present formula;
- The funeral benefit is raised to Tsh. 300,000; and
- Pensions-in-payment are revalued at 80 per cent of the average rate of increase of insurable earnings.

Projected cash flows indicate that the reserve is 10.6 times the annual expenditure in 2003 and will decrease to only 3.8 times by year 2022.

Table 7.1 provides an overview of the expected financial development of the NSSF pension scheme if 11.7 per cent of insurable earnings is collected to support the payment and administration of the benefits under status quo provisions.

Table 7.1 Projected income, expenditure and funding of the NSSF according to status quo provisions, contribution rate of 11.7 per cent* (amounts in billions of Tsh.)

[initial fund = Tsh. 136,230]

Financial year ending on 30 June	Contributions	Investment income	Benefits	Administrative expenses	Fund/reserves at end of year	Funding ratio
2003	29	10	8	7	160	10.61
2008	42	13	21	11	282	8.92
2013	59	18	44	15	385	6.55
2018	83	22	71	21	467	5.09
2022	109	24	103	28	496	3.79

* Assuming pensions are indexed annually and all former NPF account balances are fully converted to NSSF pension credits.

Recommended benefit improvements discussed in Section 8, i.e. providing retirement and invalidity grants, would require an additional contribution of 0.2 per cent of insurable earnings in addition to the required contribution rate of 11.7 per cent to maintain status quo benefit provisions.

In addition, a further loading of 0.1 per cent of insurable earnings is recommended to maintain a small contingency reserve under the account for the NSSF pension scheme.

The overall recommended gross contribution rate for financing the pension scheme is 12 per cent of insurable earnings.

The other benefit scheme account for maternity benefits should receive a contribution rate of 0.75 per cent of insurable earnings.

If the NSSF wishes to maintain the same contribution rate of 20 per cent of insurable earnings, then the balance of 7.25 per cent, i.e. 20 per cent *less* 12 per cent for the pension scheme less 0.75 per cent for the maternity benefits scheme, could be used to provide employment injury and health care benefits or to set up a temporary savings scheme.

For provision of employment injury benefits, a contribution rate of 1 per cent of insurable earnings should be adequate. Hence the balance of the contributions available to finance health care benefits would be 6.25 per cent of insurable earnings. The adequacy or inadequacy of this rate of contribution towards health benefits should be determined through a separate actuarial study. Table 7.2 summarises the details of the recommended financing of the NSSF.

Table 7.2 Recommended contribution rate allocations of the NSSF up to the year 2022, by benefit branch

Items	Contribution rate allocation (as % of insurable earnings)
Pension scheme (existing provisions) ⁽¹⁾	
Cost of existing NSSF pension scheme benefit per assumptions of Section 5	8.70
Cost of ILO-recommended benefit improvement (minimum pension level; survivors' pensions; and grants scheme)	0.20
Cost of administrative expenses related to pension scheme only	3.00
Contingency reserve for fluctuations	0.10
Total	12.00
Maternity benefit scheme (existing provisions)	
Cost of existing maternity benefit scheme	0.60
Cost of administrative expenses related to maternity benefits only ⁽²⁾	0.15
Total	0.75
(a) Alternatives for allocating contribution rate collected in excess of requirement for existing benefit provisions	
Employment injury benefit scheme (proposed scheme)	1.00
Health insurance scheme (proposed scheme)	6.25
(b) Temporary savings scheme for contribution withdrawals	
All NSSF benefit schemes	7.25

Notes: (1) The recommended improvements to benefit provisions of the NSSF have not been taken into account here;

(2) Administrative expenses for the maternity and employment injury benefit schemes have been arbitrarily determined as equivalent to 20 per cent and 25 per cent of the total contribution rate collected in respect of these schemes.

7.2 Reducing administrative expenses

An analysis of administrative expenses was mentioned in Section 3.3. The actual administrative expenses were 4.8 per cent of insurable earnings in 2001. It is recommended to take measures to ensure that administrative expenses come down in future and that only those expenses connected with the operation of the pension scheme are met from the contributions and investment income allocated to this scheme. A lower percentage of insurable earnings – 3 per cent – is considered to be adequate to meet future administrative expenses of the pension scheme. It is pertinent to mention once again, that the current high level of administrative expenses are mainly due to the large number of claims for withdrawal of contributions and also due to the extensive manual operations performed at present. The expenses connected with such contribution withdrawals should not be debited from the pension scheme account. The planned expansion of the computerization of operations will also help reduce the level of administrative expenses even though the number of pension payments and other benefit payments will increase in the medium-to long-term as the NSSF matures.

A provision of 3 per cent of insurable earnings has been made taking into consideration the above factors and also the experience of comparable schemes in other countries. If actual experience is more favourable, then the reserve of the pension scheme will augment. If actual expenses exceed the 3 per cent provisions made, then strain will be placed on the pension scheme, the extent of which should be estimated immediately. It is imperative that the management take appropriate measures to control/minimize administrative expenses.

7.3 Separation of accounts and reserves by benefit scheme

The NSSF is collecting contributions equivalent to 20 per cent of insurable earnings even after the cessation of the NPF, and has credited the whole amount to a single NSSF account.¹⁷ This NSSF account should represent, in principle, the notional sum of the balances of the ex-NPF and all contributions collected since the inception of the NSSF, plus invest income less benefits paid under the pension scheme, less all administrative expenses, and less maternity benefits. However, the partial withdrawals of contributions by unemployed members have also reduced this global fund in practice.

The contributions collected since the inception of the NSSF in excess of the then recommended 8 per cent of insurable earnings less maternity benefits paid should be considered as belonging to members.

However, in the past the NSSF has been refunding contributions made by an unemployed member even though the contributions meant for the pension scheme are not legally refundable, and it has been meeting the administrative expenses relating to refunds and maternity benefits from the same global fund. In view of these circumstances, assigning the excess amount to current members may not be appropriate. The ILO recommends that a special fund be created with the excess money collected for explicit purposes such as creating a special temporary saving scheme or introducing employment injury benefits and health care coverage as explained in the following paragraphs.

Different approaches to financing long-term pension benefits and short-term maternity benefits require maintaining separate accounts and reserves. This will avoid cross financing taking place between different benefit branches and will allow better follow-up of the reserves and sufficiency of the contribution rates applicable to the different branches.

¹⁷ Following the previous actuarial study, the rate of contribution recommended by the ILO for financing of the new pension scheme was only 8 per cent of insurable earnings.

The NPF balances should be held in a separate account and should be annually credited with an appropriate rate of interest. Ideally, expenses relating to refunds of the NPF balances should be debited from this separate account in order to determine the appropriate net rate of interest that should be credited to remaining NPF balances.

The ILO therefore recommends maintenance of four separate accounts and reserves in respect of the NPF balances, pension scheme, maternity benefit scheme and a special fund comprising the excess contributions collected. The special fund could be utilized to introduce employment injury and health care benefits or to establish a temporary savings scheme.

Assuming that the NSSF reserve available as at the date of the valuation was equal to Tsh. 238,300 million, the estimated initial reserves of the different benefit branches as at the date of the valuation should be as per the following:

Pension Fund	Tsh. 68,100 million
Maternity Benefit Fund	Tsh. 270 million
NPF	Tsh. 68,130 million
Special Fund	± Tsh. 101, 800 million

The special fund reserve should be adjusted according to the audited financial statement in case the size of the NSSF global reserve is found to be different from the assumed figure.

Table 7.3 summarises the recommendations to set up separate NSSF accounts by benefit branch.

Table 7.3 Recommended NSSF funds/accounts, by benefit branch, as of 30 June 2002

Existing schemes	Initial reserve at 30 June 2002	Future income	Future expenditure
1. Pension scheme	Tsh. 68,100m ⁽¹⁾	• 12% of insurable earnings • Investment income	Long-term pensions paid in case of retirement, invalidity and survivors' and related lump-sum payments
2. Maternity benefit scheme	Tsh. 270m	• 0.75% of insurable earnings	Short-term maternity cash benefits
3. Ex-National Provident Fund	Tsh. 68,130m	• No contribution • Investment income only	NPF withdrawals and related administrative expenses
4. Surplus fund (temporary)	± Tsh. 101,800m		Temporary until new benefit schemes are introduced. At that time the accumulated fund should be allocated towards those new benefit branches, e.g. for employment injury and health insurance
Proposed benefit schemes to affect surplus fund			
1. Employment injury fund	To be determined and paid from surplus fund ⁽²⁾	• 1% of insurable earnings • Investment income	Long- and short-term benefits in case of employment injury, sickness and death
Health insurance fund	To be determined and paid from surplus fund ⁽²⁾	• 6.25% of insurable earnings (to be confirmed through separate actuarial valuation) • Investment income	Health care benefits
2. Temporary special savings scheme	0	• 7.25% of insurable income	Partial withdrawals of contributions

Notes: (1) The initial reserve of the pension fund at 30 June 2002 is determined on the basis of an accumulation of 8 per cent of insurable earnings from 30 June 1998 to 30 June 2002 with interest (this corresponds to the recommended contribution rate under the former ILO actuarial valuation of 1993/94);

(2) The amounts of initial reserve as of 30 June 2002 for the employment injury and health insurance funds should add up to be equal to the remainder of the available audited NSSF as of 30 June 2002 (the remainder being what is left after allocations have been made to the other funds as listed under points 1 to 4).

In the event where the NSSF would elect to introduce an employment injury benefits scheme as per the recommendations of Section 8.13, this would need to be reflected in the accounting and financial measures to separate accounts and reserves by benefit scheme. The following actions may be considered:

- Set up a separate employment injury benefits scheme account where income and expenditure items are recorded and which should include the maintenance of an important long-term reserve to accumulate the large sums of individual capitalized values for pensions-in-payment;
- Allocate an initial reserve for the employment injury benefits scheme by calculating the capital value of the employment injury pensions already payable as per the proposed tables of factors shown in Appendix IV;
- Collect in future a contribution rate tentatively set at 1 per cent of insurable earnings; this does not require any increase of the present total contribution rate of 20 per cent of insurable earnings. Instead, it should come from the contributions collected in excess of the required amount of 12.75 per cent of insurable earnings for the pensions and maternity benefits schemes; and
- Apportion future global investment income and administrative expenses as per the recommended basis under Section 7.4.

7.4 Apportionment of administrative expenses and investment income by benefit branch account

Setting up separate accounts and reserves by branch of benefits requires apportioning expenses of administration.

Since it is not easy to accurately determine the administrative expenses relating to the different classes of benefits, there are different ways to apportion the total administrative expenses of the NSSF, including the following: using the ratio of the number of claims (including the number of monthly pensions paid) handled in a year under each benefit branch, or by using the ratio of total contribution income and benefit expenditure of the branch. This simple formula should be reviewed soon after implementation by examining the actual workload of each benefit branch and adjusted, if necessary.

The investment income produced by the assets of each benefit scheme account should be credited to the concerned account in principle. If separate identifiable investments are not held for each branch then it is recommended that the total investment income of the NSSF be apportioned to the different benefit branches on the basis of the ratio of the respective reserves to the total investment portfolio.

7.5 No ceiling on insurable earnings

The members in higher age groups are expected to retire within a relatively short period and could potentially pose an anti-selection problem if they are found to pay higher contributions by declaring higher insurable earnings. An age-and gender-based analysis of a sample of NSSF active members having contributed more than Tsh. 100,000 per month was made in order to assess the risk of anti-selection. This analysis has not revealed any marked difference in the age/gender distribution or in the past contributory periods of the members who contribute more than Tsh. 100,000 per month. A ceiling on insurable earnings is not recommended at this stage. However, the anti-selection risk should be reviewed at the next actuarial study.

7.6 Investment policy

The NSSF should adopt an investment policy that would enable the NSSF pension fund to generate over a long period a rate of return on investments higher than both the rate of escalation of salaries and the rate of inflation by at least two percentage points. When designing and implementing such a policy, the NSSF should keep in mind the criteria to be followed in selecting investments for social security schemes – namely security, yield, liquidity and social utility. Diversification of the portfolio of assets is necessary to maximize the return on the fund but it is understood that the available investment avenues are few and limited. The matching of assets and liabilities should also be of concern. The NSSF Investment Committee should be entrusted with the responsibility to set up the investment policy and performance targets, to select and provide broad guidelines to professional investment managers and to monitor and report on the investment performance of the NSSF. The NSSF should obtain the services of experienced investment managers who will be held accountable for the productive investment of the funds of the NSSF in line with its policy and performance targets.

7.7 Statistical reporting

In line with its management performance system, the NSSF should develop an appropriate management information/statistics reporting system. Relevant statistics should be made available to the higher management on a regular basis, in a simplified format, to facilitate the performance monitoring recommended to be adopted. At a minimum the following “progression” information (for the immediately preceding three years) should be reported every month or quarter to the management board of the NSSF for their information and necessary action:

- (1) Number of active insured members;
- (2) Number of pensioners by type of benefit;
- (3) Total and average monthly insurable earnings on which contributions have been collected;
- (4) Total benefit expenditure by type of benefit;
- (5) PAYG cost rate of each type of benefit (total amount of benefits divided by total amount of insurable earnings on which contributions have been collected);
- (6) Rates of investment return by category of investment;
- (7) Reserve level for each benefit branch (see Table 7.3);
- (8) Monthly surplus/deficit (income less expenditure) for each benefit branch of the NSSF;
- (9) Administrative expenses, if possible by type of benefit;
- (10) Number of staff and other administrative information to be monitored.

Steps should be taken to collect on a continuing basis the statistics required to conduct the periodic actuarial analysis of the NSSF and its benefit branches.

The following tabulations of details on the insured NSSF membership should be maintained for each fiscal or calendar year:

- (1) Distribution of the total insured population by sex and age, according to active/inactive status;
- (2) Insurable earnings (during the preceding one year) of active insured population by sex and age;
- (3) Months of past service (the total number of monthly contributions which have been paid by or on behalf of an insured person or have been credited to the person from the date of entry to the NSSF) up to the valuation date for active male and female insured persons and inactive male and female insured persons by age;
- (4) Number and total amount of retirement pensions-in-payment by sex and age;
- (5) Number and total amount of invalidity pensions-in-payment by sex and age;
- (6) Number and total amount of widows' pensions-in-payment by age of widow;
- (7) Number and total amount of widowers' pensions-in-payment by age of widower;
- (8) Number and total amount of orphans' pensions-in-payment by age of orphan;
- (9) Number and total amount of survivors' pensions-in-payment to parents by age of parent;
- (10) Distribution of new entrants and their initial declared insurable earnings by age and year of entry in the past three years – males and females separately; and
- (11) Remaining NPF account balances by sex and age and by active/inactive status.

Individual records should contain at a minimum:

- (1) For each ex-member of the NPF, a record of the accumulated amount of contributions and interest up to 30 June 1998 and the accumulated amount as at 30 June of each subsequent year should be recorded;
- (2) For each member of the NSSF, record the following information:
 - Date of birth (i.e. date, month and year of birth);
 - Date of entry to the NSSF (this would be the first of the month in which the first contribution to the pension scheme has been deducted from the employee's salary);
 - Sex code – male, female;
 - Running total of the number of contributions paid to the NSSF from the date of entry;
 - Details of the annual contributions paid during the preceding years since 1998 – i.e. record amount of contribution, month and year for which the contribution has been paid.

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- (3) When a benefit is awarded for invalidity, death or retirement, record the following information in respect of the insured member:
- Date, month and year of birth;
 - Date of entry to NSSF;
 - Sex code – male, female;
 - Total number of contributions paid from the date of entry to the pension scheme;
 - Claim type (member's death, invalidity, retirement, death of a pensioner);
 - Number of months of credits obtained by converting the balance in the ex-NPF into contributory periods towards the NSSF pension scheme;
 - Amount in the NPF which has been converted into credits;
 - Final average earnings of the member, as at the date of occurrence of the event;
 - Date of occurrence of invalidity, death or retirement – i.e. effective date;
 - Marital status as at the date of occurrence of the event: single/married/widow/widower/divorced/separated;
 - Date, month and year of birth of the spouse;
 - Number of children under 21 years of age at the effective date;
 - Dates of birth of children under 21 years of age;
 - Amount of the initial monthly pension;
 - Amount of grant;
 - Amount of funeral benefit;
 - Amount of lump sum payable in the form of 'refund of contributions made'.
- (4) For each beneficiary of the NSSF pension scheme, record the following information:
- Date, month and year of birth of the insured member;
 - Sex code of the insured member – male, female;
 - Date, month and year of birth of the beneficiary;
 - Sex code of the beneficiary – male, female.
- (5) For each beneficiary of a maternity benefit, record the following information:
- Date, month and year of birth of the insured;
 - Date of entry to the scheme;
 - Number of children born earlier;
 - Total average insurable earnings in each of the preceding three years;
 - Date of confinement;
 - Claim amount per day;
 - Total amount of claim paid.

7.8 Regular actuarial reviews

In view of the sensitivity of actuarial projections to main assumptions and uncertainties related to the database as of valuation date, it is necessary to conduct regular actuarial reviews to assess whether the actual experience is different from the assumptions made and, if so, whether a review of the recommended contribution rate financing is necessary.

8. Recommendations on the improvement of benefit provisions

Following the review of past experience and of the legal provisions in place, a series of policy considerations are raised to the attention of the NSSF to improve the benefit protection provided through its provisions and services.

8.1 Regular indexation of pensions-in-payment

When there is no provision for a regular review of pensions-in-payment, the value of pensions gradually get eroded due to inflation. In order to mitigate the ill effects of inflation on pensions-in-payment, it is recommended to adjust pensions-in-payment every year, either at the beginning of the financial year or calendar year. Any revaluation of pensions-in-payment should be applied only if the NSSF has earned an adequate rate of return on its assets and faces a surplus of income over the expenditure. Otherwise a strain could be caused to the NSSF. The rate of revaluation should be related to the actual rate of return experienced by the fund and the rate of escalation of insurable earnings.

The recommended contribution rate has been determined on the basis of actuarial calculations where it has been assumed that the long-term average rate of return on the assets of the NSSF would exceed the average rate of increase of insurable earnings by 1 percentage point and the average rate of increase of the pensions would be 80 per cent of the rate of increase of insurable earnings.

If the “gap” between the rate of return on the fund and the rate of increase of insurable earnings decreases and/or the rate of increase of pensions are higher than the assumed rate, then this contribution rate might not be adequate to ensure the financial viability of the pension scheme over a period of 20 years. On the other hand, if a wider “gap” is experienced, it may be possible to grant special pension increases but only after an actuarial evaluation of the financial implications has been completed. Strictly speaking, the “gap” should exceed 1 percentage point in order to ensure that no strain is caused as a result of any pension revaluation.

For these reasons, imposing the following conditions on the revalorisation basis is necessary to safeguard the financial viability of the NSSF:

- The average rate of return on the fund during the preceding financial year should exceed both the rate of increase of the average monthly insurable earnings of the NSSF and the rate of inflation in the preceding financial year; and
- The rate of increase of the pensions should be limited to 80 per cent of the rate of increase of the average monthly insurable earnings of the NSSF or the rate of inflation – whichever is lower.

8.2 Increasing the funeral benefit

Under a social insurance pension scheme, the amount payable as a funeral benefit is normally not related to the amount of the contribution paid by the deceased member. This means the amount of the funeral benefit is the same for all categories of members. The amount payable should be an amount adequate to meet the cost of a reasonable funeral. It is recommended that the amount payable as a funeral benefit as at the date of valuation be Tsh. 300,000 and this should be same for all the members. The ILO recommends revision of this amount every year as and when pensions-in-payment are revised. The formula that has been recommended for adjustment of the pensions may be adopted for this purpose.

8.3 Raising public awareness concerning maternity benefits

According to the data supplied by the NSSF, the number of maternity benefit claims paid during the preceding two years is far below the number of claims expected according to the prevailing fertility rates. Hence it would appear that the membership is either not fully aware of this benefit or is not making use of the benefit due to certain employment conditions.

According to past experience of the NSSF, the maternity benefits paid in a year amount to about 0.12 per cent of insurable earnings. The Representatives of the NSSF believe the number of claims made will increase in the future as the NSSF becomes more mature and more public awareness is created with respect to this class of benefit. It is therefore recommended to maintain the contribution rate at 0.75 per cent of insurable earnings to finance this maternity benefit, along with the initial reserve referred to in Section 7.3. This contribution rate should be reviewed in the course of the next actuarial valuation.

8.4 Paying pensions instead of lump sums

It is recommended to pay pensions to survivors of pensioners per ILO Convention No. 102, instead of lump sums as at present. This has very limited financial implications as the GAP only increases from 13.2 to 13.4 per cent of insurable earnings, whilst it greatly improves people's lives.

8.5 Improving retirement and invalidity grants

It is recommended to ensure the basis to determine the level of the retirement and invalidity grant be linked to account for a basis that is at least equivalent to the minimum pension. At present they are solely determined on the basis of the theoretical accumulated pension without ensuring it is at least equal to the minimum pension. This benefit improvement would provide significantly better protection to those concerned at a very low global cost to the NSSF: the additional cost of this benefit improvement in terms of the GAP amounts to less than 0.01 percentage-point of insurable earnings.

8.6 Improving the minimum pension

At present, the level of the minimum pension is Tsh. 24,000, representing 80 per cent of the minimum wage. The Government decides on the level of the minimum wage sometimes taking into consideration economic as well as other factors such that the minimum wage is not determined through a systematic and empirical approach. As a result, the minimum pension may not be adequate and sufficiently related to the development of insurable earnings. It is recommended instead to link it to a set percentage of NSSF average insurable earnings, e.g. 50 per cent so the minimum pension would be increased nearly two-fold to Tsh. 50,391.

The financial implications of setting the minimum pension equal to 50 per cent of the average insurable earnings of the NSSF imply the GAP would increase from 13.2 per cent to 15.2 per cent of insurable earnings, i.e. 2 percentage-points. This is largely explained by the significant actual difference between NSSF average insurable earnings estimated at Tsh. 100,782 monthly and the present minimum wage of Tsh. 30,000. In the near future, this would not necessarily cause undue financial burden in view of the limited number of pensions granted at this stage.

A formal legal basis to determine the minimum pension should be studied further and reflected in the legislation and practice of the NSSF.

8.7 Special lump sums if not qualifying for a pension

In order to prevent anti-selection being exercised against the NSSF, special lump sums payable in case of non-qualification for a pension should be set in relation to the average of the last 12 months of insurable earnings on which contributions have been paid instead of basing the lump sum on only the last month's insurable earnings.

8.8 Early and late retirement provisions

The pension scheme permits members to avail of early retirement benefits within five years of the normal retirement age of 60 years, provided they have made at least 180 monthly contributions to the pension scheme. When such a member avails of retirement pension benefits at an age lower than the normal retirement age of 60 years, the fund is affected in two ways:

- The total amount of contributions received for financing of the benefits would be less than what could have been collected from that person up to the age of 60 years; and
- The pension is now required to be paid to him for a longer period than the period for which the pension would have been paid had he retired at the age of 60 years.

On such occasions, in order to be fair to the other members and also for maintenance of the financial stability of the pension scheme, it is necessary to reduce the amount of the pension payable as per the normal formula. The actuarial computations indicate that a reduction of 0.5 per cent is required for each completed month by which the actual retirement age is below the normal retirement age of 60.

In case of late retirement, the total amount of contributions received by the NSSF will be higher and the expected period over which pensions will be paid will be shorter. Hence, it is reasonable to increase their pensions. The actuarial computations indicate that a reasonable increase would be 0.6 per cent for each completed month that the actual retirement age is above the age of 60 years.

8.9 Transitional grandfather provisions for ex-NPF members

Transitional provisions have been recommended in the previous actuarial study in order to enable the older members of the then NPF (then aged between 45 years and 59 years), who are expected to retire within the first 15 years of the implementation of the pension scheme, to qualify for the minimum pension of 30 per cent of insurable earnings on retirement at the age of 60, even if they have not contributed for 180 months but have contributed for the lower specified number of months. If this facility is extended to those members (aged between 45 and 59) who had joined the pension scheme after 1 July 1998, it would become an open-ended liability to the scheme. It is recommended that this provision should not be extended to members who joined after 1 July 1998 nor to those retiring early.

It is recommended that a member with less than 180 monthly contributions, but with the stipulated lower number of contributions, should receive a pension equal to 30 per cent of insurable earnings on retirement at the age of 60 years, subject to fulfilment of all of the following conditions:

- The member should have been a member of the former NPF on 30 June 1998 and should have become a member of the pension scheme on 1 July 1998 – that is at the inception;
- The member should have been aged between 45 years and 59 years as at 1 July 1998. This means as at the date of valuation, the member should be aged between 49 years and 63 years;
- The member should not have withdrawn even a part of the NPF balance after 30 June 1998;
- The members should convert the NPF balance into pension credits on reaching the retirement age of 60 years.

8.10 Reducing benefit schedules following contribution withdrawals

The National Social Security Policy Document expects the NSSF to allow the partial withdrawal of up to 25 per cent of a member's contributions to the NSSF in case of unemployment. For members who choose to partially withdraw their contributions, a reduced scale of benefits must be provided thereafter whilst requiring they continue to pay their full contribution to the NSSF over the remainder of their active insured life.

The ILO strongly discourages such practice as it erodes the income replacement objective of the new pension scheme of the NSSF. A proper unemployment benefit scheme would be more appropriate and likely less costly. There should also be concomitant facilities to provide job-search assistance and re-training services in addition to providing income replacement in case of unemployment.

Nonetheless, as it appears that the current practice allowing partial contribution withdrawals will continue, the following considerations are presented to the NSSF.

- It is not clear how the status of “unemployed” is defined to permit the partial withdrawal of up to 25 per cent of past NSSF contributions. Such a definition should be clearly determined whilst taking account of the available mechanisms to assess individual cases and the cost of administration involved;
- It is understood that the limit imposed on withdrawals of up to 25 per cent of past contributions paid includes all amounts up to the 20 per cent of insurable earnings paid on a regular basis. This implies that the limit on the amount that can be withdrawn is equivalent to the accumulated value of 5 per cent of insurable earnings paid over one's insured employment (i.e. 25 per cent of 20 per cent of insurable earnings);
- It is not clear whether accumulated interest is payable. One should assume no interest accumulation is taken into account;
- It is not clear how the actual withdrawal limit is calculated in practice using individual records. It should refer to only to the actual contributions paid and recorded by the NSSF;
- It is not clear whether the employers' share of the contribution payment is included in principle in the allowance for partial withdrawal of contributions accumulated. This is a critical policy issue that should be discussed;

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- As a matter of equity across NSSF members and to ensure the financial sustainability of the pension scheme, it is recommended that unemployed NSSF members qualifying and requesting a partial withdrawal of their contributions should receive a lower scale of benefits as per the “Reduced Alternative Scheme” described in Appendix II. This assumes such members do not convert their former NPF account balances into pension credits, where appropriate;
 - The required financing to support the reduced schedule of benefits under the “Reduced Alternative Scheme” can be determined on the basis of the scaled premium approach for a period of equilibrium of not less than 20 years. The required contribution rate to be allocated to the pension scheme account is estimated at 7.0 per cent of insurable earnings, including the loading of 3 per cent for administrative expenses. Depending on the number and profile of the members electing to withdraw their contributions, an increase in the recommended overall normal contribution rate allocated towards the NSSF pensions scheme of 12.0 per cent of insurable earnings may be required in future;
 - In practice, a member who withdraws 25 per cent of his or her NSSF contributions and who starts contributing again at the full legally required contribution rate when re-employed at a later stage, will be receiving a reduced benefit scale as per the “Reduced Alternative Scheme”. However, the NSSF could accept at a later stage that the remainder of the 25 per cent of the contributions collected at the full rate after the re-employment (and after the payment of the withdrawal) could be refunded if unemployed again or at the time of claiming a retirement or invalidity benefit. In any case, the unclaimed withdrawal of the remainder of the 25 per cent of contributions paid after claiming the prior partial withdrawal should be payable at the time of reaching retirement to those members having withdrawn contributions at least once during their career (being however penalized by a reduced scale of pension benefits applicable);
 - Alternatively, a temporary special savings account scheme may be established using the excess of the contributions collected at the rate of 20 per cent of insurable earnings above the recommended contribution rate of 12.75 per cent for the pensions scheme and the maternity benefits scheme. This is not the recommended approach as it would not require the reduction of the benefit schedules and, hence, would not send signal that it is inappropriate to withdraw contributions under a social insurance system;
 - No more than one partial withdrawal of contributions should be allowed every five years so as to avoid unduly high administration expenses as at present.

8.11 Penalty for early withdrawal of NPF balances

In order to reduce the administrative expenses relating to refunds and also to discourage people from withdrawing the NPF balance before reaching the age of 55 years, it is recommended that a penalty be imposed when a member applies for withdrawal of the balance in the NPF account before reaching the age of 55 years. The penalty may be in the form of a reduction of the gross NPF balance by 0.2 per cent for each month that the person’s age is below the age of 55 years.

8.12 Validation or no validation of ex-NPF account balances

The status quo projections presented in this report took into account the full validation of ex-NPF account balances.

In the event where ex-NPF account balances are not converted into NSSF pension credits, the so-called “validation” process, the long-term cost of the pension scheme would be reduced: the GAP would reduce from 13.2 per cent to 10.5 per cent of insurable earnings in the event where all former NPF members would elect not to convert their NPF accounts.

8.13 Introducing an employment injury benefits branch

The information necessary to estimate the contribution rate required to finance these benefits was not available and the officers of the NSSF advised that the required information could not be collected within a reasonable time frame. Hence (based on the experience of other countries) the ILO recommends that initially the contribution rate be fixed at 1 per cent of insurable earnings. This rate should be reviewed after examining the experience of the NSSF after two years of introducing this branch of benefits.

It may be recommended to finance employment injury benefits using the financing approach of “assessment of constituent capitals”.

According to the financing system using the assessment of constituent capitals, the contribution rate is determined such that the income from contributions during any given year is equal to the present capital value, i.e. the actuarial present value, of pensions and other benefits arising in that year. A technical reserve usually accumulates so that it is in principle equal to the capital value of all pensions then in payment.

This approach enables the maintenance of a relatively stable contribution rate – as opposed to the situation under a pay-as-you-go pure assessment system. The nature of the employment injury risks is different from that giving rise to non-employment related normal retirement and invalidity benefits. The occurrence of the risk is often instantaneous, except in the case of employment-related diseases which can develop sometime after exposure. From an economic point of view, the labour related costs associated with a specific production period should be imputed to that same period.

A separate account should be set up for the employment injury benefits scheme to ensure that financial autonomy is preserved (see Section 7.3).

Appendix I. Salient features of the pension scheme

Table AI.1 Salient features of the pension scheme

Retirement Benefits	
Normal retirement age	: 60 years
Eligibility for retirement pension	: Should have paid not less than 180 monthly contributions
Retirement pension formula	: For the first 180 monthly contributions paid, 30 per cent of the monthly earnings, and for every 12 months additional contributions 1.5 per cent of the average monthly earnings (AME) where AME is calculated over the best five years in the last ten years prior to pensionable age
Minimum retirement pension	: 80 per cent of minimum wage
Maximum retirement pension	: 67.5 per cent of AME
Special lump sum payable if not qualifying for pension	: $(LMC) \times (\text{number of months contributed})$ where LMC = last monthly contribution
Retirement grant	: 24 times the monthly pension amount based on the member's actual earnings
Invalidity benefits	
Eligibility for invalidity pension	: Should have made 180 monthly contributions or at least 36 monthly contributions, of which 12 or more were paid in the period of 36 months preceding invalidity
Invalidity pension formula	: 30 per cent of AME, supplemented by 1 per cent of AME for every 12 months of pension contributions in addition to 180 monthly contributions Plus 1 per cent of AME for every 12 months between whichever is the later of the pensionable age and (a) The date of entitlement to invalidity pension, or (b) The date of completion of 180 months of contributory employment
Minimum invalidity pension	: 80 per cent of minimum wage
Maximum invalidity pension	: 67.5 per cent of AME
Special lump sum if not qualifying for pension	: $(LMC) \times \text{number of months contributed}$
Invalidity grant	: 24 times the monthly pension amount based on the member's actual earnings
Survivors' benefits if insured was active	
Eligibility in reference to deceased insured member	: (a) Would have been entitled to an invalidity pension if she or he had been an invalid at the time of death. (b) Had attained pensionable age and would have been entitled to retirement pension had he made a claim to such pension
Benefits payable	: To those who qualify for a pension, pay the higher of the pension in (a) and (b) above To those who do not qualify for pension, pay the lump sum equal to $(LMC) \times \text{number of months contributed}$
Persons to whom survivors' benefits payable and proportion of benefit payable)	: • 40 per cent of pension to widow/widower and 60 per cent divided amongst dependent children up to age 18; • No widow/widower: Pay 100 per cent to dependent children • No widow/widower, No dependent child: Pay 100 per cent to parents; • If widow/widower is under the age of 45 and does not have children under age of 15: Pay the pension for 2 years.

Survivors' benefit if insured was a pensioner

Benefit payable : Lump sum equal to 12 times the monthly amount of retirement or invalidity pension

Funeral grant

Amount paid : Varies according to the last monthly contribution paid by the deceased as shown below

<i>Funeral grant</i>	<i>Monthly contribution</i>
Tsh. 75,000	- Below Tsh. 15,000
Tsh. 150,000	- Tsh. 15,000 - 40,000
Tsh. 200,000	- Tsh. 40,001 - 80,000
Tsh. 250,000	- Tsh. 80,001 - 120,000
Tsh. 300,000	- Tsh. Over 120,000

Transitional grandfather provisions : Members of the NPF who became members of the pension scheme with effect from 1 July 1998 could qualify for the minimum pension when they retire at the age of 60 years if they have the stipulated lower periods of contributions (ranging from 45 months to 135 months), provided the balance in the NPF account is converted into pension credits.

Appendix II. Salient features of the proposed “Reduced Alternative Scheme” applicable to unemployed NSSF members partially withdrawing contributions

Table All.1 Salient features of the proposed “Reduced Alternative Scheme”

Reduced retirement benefits	
Normal retirement age	: 60
Retirement pension formula	: For 180 monthly contributions – 21 per cent of average monthly earnings and for every 12 months additional contributions (1.05 per cent) of the average monthly earnings (AME)
Minimum retirement pension	: As per ILO recommendation in Section 8
Maximum retirement pension	: 47.25 per cent of AME
Special lump sum if not qualifying for a pension	: $(0.7) \text{ (LMC)} \times (\text{number of months contributed})$ where LMC = last monthly contribution
Retirement grant	: Nil
Reduced invalidity benefits	
Qualifying conditions	: Should have made 180 contributions; or at least 36 monthly contributions have been paid of which 12 or more were paid in the period of 36 months preceding invalidity
Invalidity pension formula	: 21 per cent of AME supplemented by 0.7 per cent of AME for every 12 months of contributions in excess of 180 Plus 0.7 per cent of AME for every 12 months between whichever is the later of the pensionable age and • The date of entitlement to invalidity pension, or • The date of completion of 180 months contributory employment
Minimum invalidity pension	: As per ILO recommendation in Section 8
Maximum invalidity pension	: 47.25 per cent of AME
Special lump sums if not qualifying for a pension	: $(0.7) \text{ (LMC)} \times \text{number of months contributed}$
Invalidity grant	: Nil
Survivors' benefits	
Eligibility	: (a) Would have been entitled to an invalidity pension if she or he had been an invalid at the time of death (b) Had attained pensionable age and would have been entitled to retirement pension had he or she made a claim to such pension
Benefits payable if deceased was an active insured	: • Pension equal to the higher of (a) or (b) above – same basis of division as in the case of the existing scheme • To those who do not qualify for pension – lump sum equal to $(0.7) \text{ (LMC)} \times \text{number of months contributed}$
Benefits payable to survivors of a pensioner	: As per ILO recommendation in Section 8
Funeral grant	: 100 per cent of the amount payable under the existing scheme

Appendix III. Some theoretical concepts on social insurance pensions and financial schemes

AIII.1 Pure assessment – pay-as-you-go system

Under this financial system, the contribution rate during a given period, for example one year (annual assessment) or a few years, is determined in such a manner that income from contributions during the period will just cover the expenditure of the scheme during the same period, with a small margin to permit the constitution of a contingency reserve. This is the system usually applied to finance short-term benefits such as sickness and maternity cash benefits. Annual benefit expenditure is expected to remain at a relatively constant level once the scheme has attained a certain maturity (i.e. insured persons have become sufficiently familiar with the scheme), unless the benefit provisions themselves have been changed. The contingency reserve enables coverage of unexpected expenditure due to temporary fluctuations of the risk factors involved. The reserve should, therefore, be maintained in a sufficiently liquid form so that it can be readily resorted to when necessary.

If a pure assessment system were applied to new pension scheme, it would involve frequent revision of the contribution rate. The annual expenditure under a new pension scheme would begin at a comparatively low level and increase continuously over a long period. This is because there will be an increasing number of surviving pensioners. Another reason for escalating annual expenditure is that each new group of pensioners will be drawing higher rates of pension due to longer insurance periods compared to the previous generations of pensioners.

Pure assessment is not appropriate for a new pension system. For a mature scheme, however, this financial system could be adopted.

AIII.2 General average premium system

A general average premium (GAP) system provides for a theoretically constant rate of contribution ensuring financial equilibrium *ad infinitum*. At any time, the present values of all probable future contribution income plus accumulated reserves should be equal to the present value of all probable future outlays, both in respect to the initial population and future entrants. The contribution rate determined under this system would be relatively high and would lead to formation of high reserves.

Though theoretically constant, the contribution rate is likely, in practice, to be revised at periodic actuarial reviews.

If this system were applied to a new pension scheme from the start, the rate of contribution would be relatively high and this may cause an undue burden on the economy and on the contributing parties.

AIII.3 Scaled premium system

It is possible to devise many intermediate systems of finance between the basically unfunded (pay-as-you-go) pure assessment system and the fully funded GAP system.

The following factors frequently lead to the adoption of an intermediate system of finance:

- The contribution rate must not be excessive (with respect to the capacities of the members and the economy in general);
- The initial and any subsequent contribution rates established under the system of finance applied to the scheme should remain relatively stable for reasonable periods of time. Increases in the contribution rate should be gradual, particularly when they are not accompanied by an improvement in benefits.

An example of an intermediate level of funding is the scaled premium system of finance. Under this system, a contribution rate is established so that during a specified period, which is known as the period of equilibrium, the contribution income and the interest income on the reserves of the scheme will in each year be adequate to meet the expenditure on benefits and administration in that year. In order to avoid a decrease in the reserves after the end of a period of equilibrium, the contribution rate must be revised prior to this and a new higher contribution rate applied during a new period of equilibrium. Thus the financial equilibrium would be assured for limited periods, such as 20 years, 15 years or 10 years, within each of which the contribution rate is supposed to remain stable. It would be subsequently increased by stages – 20, 15 or 10 years respectively. There would be moderate accumulation of funds, the amount of which depends on the length of the period of equilibrium. A short period of equilibrium would result in a low contribution rate, to be increased rather frequently, and would bring about a low degree of accumulation of funds, thus approaching the system of annual assessment. On the other hand, a long period of equilibrium would result in a relatively high initial contribution rate and a larger accumulation of funds, and consequently approaches the GAP system.

The scaled premium system is flexible, as it permits adaptation to changes in the conditions determining the financing of the scheme. It should be emphasized, however, that the system requires periodic increases of the contribution rate, which are not accompanied by benefit improvements. Although the contribution rate during the initial period of equilibrium will be lower than that under the GAP system, eventually a stage will be reached when it will exceed the contribution rate required under the latter system of finance.

Appendix IV. Table of individual factors for capital values of employment injury benefits

The individual capital values should be determined by multiplying the relevant individual factor corresponding to the age of the pension beneficiary at the time of the occurrence of the employment injury by the amount of the monthly pension. Pension beneficiaries include the insured person suffering an employment injury or its survivors, including the spouse and orphans.

Tables AIV.1 and AIV.2 provide such individual factors. They have been computed assuming an interest rate of 2 per cent per annum and mortality as per the demographic assumptions presented in Section 5 except in the case of orphans where no mortality is assumed to take place such that each orphan is expected to receive an orphan's pension until the age of 17.

Table AIV.1 Individual factors to calculate capital values for employment injury pensions to injury victims and to survivors of victims of employment injuries

Age of beneficiary	Individual factors	
	Males	Females
15	381	389
16	377	385
17	374	381
18	370	378
19	366	374
20	362	370
21	359	366
22	355	362
23	351	359
24	347	355
25	343	351
26	339	347
27	335	342
28	331	338
29	326	334
30	322	329
31	317	324
32	313	320
33	308	315
34	303	310
35	298	305
36	293	300
37	288	294
38	283	289
39	277	284
40	272	278

41	266	273
42	261	267
43	255	261
44	249	255
45	243	249
46	237	243
47	231	237
48	225	230
49	219	224
50	212	217
51	206	211
52	199	204
53	193	197
54	186	190
55	179	183
56	172	176
57	165	169
58	158	162
59	151	154
60	143	146

Table AIV.2 Individual factors to calculate capital values for employment injury pensions to surviving orphans

Age of orphan	Individual factors
0	184
1	175
2	166
3	157
4	148
5	139
6	129
7	120
8	110
9	100
10	90
11	79
12	69
13	58
14	47
15	35
16	24
17	12

Appendix V. List of principal contacts

Permanent Secretary Ministry of Labour	Mr. A. R. 1M. S. Rajabu
Director General of the NSSF	Mr. R. K. Dau
Deputy Director General of the NSSF	Ms. K. D. Bandawe
Director Operations of the NSSF	Mr. Y. M. Kidula
Director Finance of the NSSF	Mr. Morose
Former Chief Law Officer of the NSSF	Ms. Masake
Benefits Manager of the NSSF	Mr. Y. B. Mhamali
Manager (CRSM) of the NSSF	Mr. S. Millanzi
Director General of the PPF	Mr. N. M. Nsemwa
Chief Internal Auditor of the PSPF	Mr. M. T. Mshomba
Director General of the NHIF	Mr. E. D. Humba
Director General of the LAPF	Mr. A.J. Bura
Director General of the ZSSF	Mr. Abdul
Director of the ILO Office in Dar-es-Salaam	Mr. A. Ibrahim
Senior Programme Officer of ILO Office in Dar-es-Salaam	Ms.T. Smout
Representatives of the Employers Association	
Representatives of the Trade Unions	

