

Federal Republic of Nigeria

Report to the Government

Actuarial assessment of NSITF- accrued liabilities under the new Pension Scheme

**International Financial and Actuarial Service (ILO/FACTS)
Social Security Department
Social Protection Sector
International Labour Organization Geneva
June 2006**

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Nigeria: Report to the Government – Actuarial assessment of NSITF accrued liabilities under the new Pension Scheme

ILO/TF/Nigeria/R.19

Geneva, International Labour Office, 2006

ISBN 92-2-118964-3 & 978-92-2-118964-0 (print)

ISBN 92-2-118965-1 & 978-92-2-118965-7 (web pdf)

ILO pub, pension scheme, actuarial valuation, social security financing, Nigeria

ILO Cataloguing in Publication Data

First published 2006

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Executive summary

Background

The Government of Nigeria adopted a Pension Reform Act on 25 June 2004 introducing a defined contribution scheme (DC) to replace the Nigeria Social Insurance and Trust Fund (NSITF) that operated under a defined benefit approach (DB). NSITF was preceded by the National Provident Fund (NPF), which operated between 1961 and 1994. The Reform foresaw transitional arrangements for existing pensioners and new arrangements for existing and future contributors. The estimation of existing liabilities under the NSITF was mandated to the ILO who agreed to undertake such calculations to help preserve as much as possible the accrued rights of NSITF members. This was done in spite of ILO doubts as to the effectiveness of improvements brought about by this pension reform.

Although the ILO favours in principle the DB approach of the NSITF, which will be terminated, it notes a number of limitations under the former scheme that could not be circumvented given the short lifespan of that scheme, and so it is difficult to assess its past performance. One notes however the following limitations:

- The level of personal coverage was low considering the scheme was in existence for ten years.
- Administrative costs were relatively high.
- Only a few benefits have been awarded.
- The combination of an initial low contribution rate and a low ceiling on insurable earnings together with a high minimum pension resulted in the NSITF not accumulating significant amounts of reserves to cover all accrued rights.

The ILO notes that the insufficient level of NSITF reserves to meet the accrued rights of its members and pensioners is normally acceptable under a DB approach given the short lifespan of the scheme, and according to social insurance principles the termination of a public scheme would normally not be foreseeable and even if foreseen the scheme should in any case benefit from a financial guarantee from the State. This is different to the situation of private pension schemes that would normally be fully funded at any point in time.

In the ILO's opinion, the transitional arrangements for existing NSITF members – who will be covered by the new system – present limitations of which the principal ones are:

- The accrued rights of NSITF members who are to be covered by the new system are insufficiently recognized such that members who are near retirement will not have the potential to accrue a sufficient amount of DC funds to obtain a decent pension under the new system. Past contributions to NSITF are barely recognized. Therefore, it is the opinion of the ILO that a generation of contributors will be penalized and will receive low pensions that most likely will be inadequate to ensure a decent standard of living in retirement.
- The minimum pension guarantee to existing pensioners under the NSITF at the set level of 80% of the National Minimum Wage should be maintained and ensured until the death of the last pensioner.

Methodology

This Report presents the actuarial assessment of the accrued financial liability of the NSITF according to three groups of insured persons:

- Liability one (**L1**): Pension rights of all existing pensioners under the NSITF until the death of the last pensioner so as to determine the amount to be set aside from existing reserves, or to be covered by other Government funds, to redeem the future pension liabilities of all existing pensioners in line with the Pension Reform Act which states "... no pensioner shall be deprived of his/her benefit as a result of the new Act ...".
- Liability two (**L2**): Pension rights of members under the NSITF who are expected to retire within three years from 1 July 2004. As these members are excluded from participation in the new DC scheme, the amount to be set aside from existing reserves or other Government funds represents the pension liabilities until the death of the last pensioner among this group.
- Liability three (**L3**): Liability of members under the NSITF who will now be covered by the new DC scheme and who should each receive an individual lump sum, which will be set aside from existing reserves or other Government funds and which will be credited to their individual Retirement Savings Accounts.

Liabilities are estimated on the basis of actuarial present-value calculations applied to the data provided by the NSITF. The main actuarial assumptions needed relate to mortality, interest rates and benefit indexation. Educated estimates are necessary to identify the number of affected persons in each of the above three categories.

Accrued rights

There are different options for acknowledging accrued rights when a major change in a pension system takes place. For NSITF members, the law states that only past contributions to the NSITF together with any attributable income shall be credited to their individual Retirement Savings Accounts.

In fact, the NSITF was designed as a scaled-premium system and was far from maturity. Contributions paid were not equivalent to accrued rights. Therefore, to fully recognize accrued rights, it would be necessary to credit to the individual Retirement Savings Accounts more than only past contributions plus any attributable income.

The Government's attention may also be drawn to Social Security (Minimum Standards) Convention No. 102 (1952), which requires that a minimum old-age pension of 40 per cent of the former earnings of the beneficiary be paid after 30 years of contributions. In addition, the Convention requires that a reduced pension be paid at retirement age when the beneficiary has fulfilled a qualifying period of 15 years of contributions. According to generally accepted social security principles promoted by the ILO, beneficiaries who have been contributing under the old legislation and have acquired pension rights may not be deprived of these rights because of reform; in such situation, the Government has to adopt transitional measures in order to protect these pension rights.

Initial database and assumptions

The NSITF must assume responsibility for the statistical information provided for the calculations undertaken by the ILO. In view of the deficiencies in the data received, the ILO had to develop its own estimates using a conservative approach, and it stresses the resulting degree of uncertainty in the results that must be resolved through additional conservatism in setting assumptions.

More specifically, under *L1*, despite efforts made by the NSITF to provide accurate data, it is possible that the stock of current pensioners may not be complete according to the statistics provided.

The assessment of liabilities under *L2* requires very crude assumptions to be made with respect to the number of persons due to retire over the next three years. Over time, the observed high turnover rate of NSITF contributors from active to inactive status implies the difficulty in following specific cohorts of NSITF members/contributors from one year to another. It becomes a quite significant task to assess the number of those who will apply for a benefit, those who will qualify for a pension and those who will only be entitled to a grant. While keeping in mind the high degree of uncertainty in the assumption made by the ILO for *L2*, it was assumed that 18,194 persons will retire during the next three years, out of which 3,639 will receive a pension and 14,555 will be paid a grant.

Under *L3*, it is also expected that some former contributing members to the NSITF will not formally seek recognition of their accrued rights under the new DC scheme due to lack of knowledge of procedures and despite NSITF efforts to inform these members of them. This may be particularly relevant for inactive members who accumulated credits in the past for short periods. The ILO estimate of the number of such cases is conservatively set at a low level.

The formula used for *L3* calculates the present-value of the amount that will be necessary at the date of retirement to provide an annuity equal to the pro rata projected pension accumulated under the former provisions, i.e. under the supposition that a person would have remained insured up to retirement age under the NSITF.

As an alternative, *L3* is also assessed as the accumulated contributions received by the NSITF from 1994 to 2004 plus interest income for each year. The rate of interest used to calculate the interest income is the yearly rate of return on NSITF investments. This is the minimum that should be credited to the individual Retirement Savings Accounts.

The actuarial present values calculated as of 31 December 2004 for *L1* and *L2* include a 5 per cent margin for administration costs.

The key economic and demographic assumptions used for the baseline calculations of the NSITF actuarial present values include:

Assumptions	
Indexation of pensions	0 % per annum
Rate of return earned on reserves	3 % per annum
Life expectancy at 60, both men and women (2005)	17.1 years

Actuarial results

Table ES1 provides the assessment of NSITF liabilities, which amounts to 252,475 million Nairas. Given the high level of uncertainty in assessing the *L2* liabilities related to the number of persons expected to retire over the coming three years, an estimate of the average liability per person is provided.

Table ES1. Baseline actuarial present value calculations of NSITF liabilities as of 31 December 2004

	Beneficiaries/ members concerned	Liability	Average liability per person	Liability (Alternative calculation)	Average liability per person (Alternative calculation)
	(No. persons)	(Millions of Nairas)	(Nairas)	(Millions of Nairas)	(Nairas)
L1	6,444	3,308	513,000	3,308	513,000
L2	14,555 / 3,639	3,163	695,000	3,163	695,000
L1 + L2	10,083	6,471	579,000	6,471	579,000
L3	-	246,004	139,000	52,724	30,000
Total		252,475		59,195	

The liabilities provided in Table ES1 were calculated in the first quarter of 2006. Table ES2 compares the year-end 2005 estimated liabilities with the assets of the NSITF and estimates the net situation. It is assumed for 2005 that revenues from the assets are totally used to pay for NSITF administration costs and benefits. This might be too conservative and revenues from the assets might be higher. The “deficit” would therefore be lower. The diminution of the liabilities of *L1* and *L2* reflects the payments of benefits made in 2005. Total net assets of NSITF stands at 40,653 million Nairas as of 31 December 2004. Liabilities are thus more important than assets and the “deficit” is estimated at 211,821 million Nairas.

Table ES2 Net position of the NSITF as of 31 December 2005 (millions of Nairas)

			Base	Alternative calculation
Total assets as of 31/12.2004	Plus	+	40,653	40,653
Liability as of 31/12.2004	Minus	-	252,475	59,195
Net situation as of 31/12.2004	Deficit	-	211,821	18,542
+ Investment from the assets	Plus	+	XXX	XXX
- Administration costs	Minus	-	XXX	XXX
- Diminution of L1	Plus	+	325	325
- Diminution of L2	Plus	+	510	510
Net situation as of 31/12.2005	Deficit		210,986	17,707
L1			2,983	2,983
L2			2,653	2,653
L1 + L2			5,636	5,636

It is therefore most likely that the NSITF alone will not be able to meet the full amount of the liabilities arising as a result of provision of the new Act.

Recommendations

The ILO recommends that the NSITF recognize the following liabilities:

- For *L1*, 2,983 million Nairas.
- For *L2*, 2,653 million Nairas.
- For *L3*, 246,004 million Nairas of which the remaining assets of the NSITF can cover 35,017 million Nairas.

According to generally accepted social insurance financing principles, it is the responsibility of the State to cover the deficit.

In view of the uncertainty, especially under *L2*, it is recommended that the assessment presented in this report be revised in 2007 or early 2008, i.e. when two-thirds or the totality of the time window for *L2* will be over. The ILO is ready within the frame of this current project to come to the NSITF to undertake the revision.

The funds allocated for *L1* and *L2* should be merged into one fund and invested in secure, preferably quoted, fixed-income instruments such as government bonds. The expected cash flows are presented in Graph 3.7 in Section 3.2.3.

In summary, following this assessment and according to generally accepted social insurance financing principles, it is the responsibility of the State to guarantee the payment of pensions until the death of the last pensioner, should the funds allocated for this purpose not be sufficient.

Further issues

Survivors' benefits

The assessment presented in the report assumed that the calculation of the survivors' benefits would continue to follow NSITF practice, i.e. a lump sum is paid only when pensioners have received a pension for less than five years and the value of the payment that the survivors receive is the value of the pension for the time until 60 monthly payments have been made.

Indexation of pension

Even if the NSITF provisions do not explicitly require pensions to be indexed, many pensions were adjusted to the minimum pension, either at the time of award or when the minimum pension was increased. In 2004 more than 90 per cent of pensioners were receiving the minimum pension, which is equal to 80 per cent of the minimum wage, over which the NSITF has no control. Therefore, it needs to be mentioned that a significant increase in the minimum wage would significantly increase the liabilities of the NSITF.

Abbreviations and acronyms

DB	Defined benefit
DC	Defined contribution
ILO	International Labour Office/Organization
ILO/FACTS	International Financial and Actuarial Service
N	Naira
NPF	National Provident Fund
NSIFT	Nigeria Social Insurance and Trust Fund
PAYG	Pay-as-you-go

Currency and exchange rate

1 Nigerian Naira is equal to US\$0,0078 as of 31 March 2006

1. Introduction

The Nigeria Social Insurance and Trust Fund (NSITF) requested the ILO to establish the liabilities of the current pensions scheme so as to enable the transition to the new scheme, as provided in the new Pension Reform Act. This new Act replaces the former defined benefits (DB) scheme into a defined contribution (DC) scheme, under which each member will contribute into an individual Retirement Savings Account. The ILO agreed to estimate the actuarial liabilities of current pensioners of the NSITF and of members who will retire within the next three years, as they are exempted from the new Act, and the lump-sum balance creditable to the individual Retirement Savings Accounts of the remaining NSITF members. This will make possible the change from the current pension scheme to the new one. The purpose of the project is to assist the management of the NSITF in this procedure.

The Director General of the ILO appointed Mr. Florian Léger, Social Security Actuary from the Social Security Department of the ILO, to undertake this assignment. Mr. Léger visited Nigeria in March and October 2005 to gather the necessary data; he also had discussions with NSITF management and staff. Actuarial support was provided by Mr. Charles Crevier and statistical support by Mr. José Tossa. Ms. Anne Drouin, Coordinator of the International Financial and Actuarial Service (ILO FACTS) of the ILO reviewed the results of this actuarial assessment.

Throughout the project, the team benefited from the support of the ILO area office in Abuja.

This Report presents the results of the actuarial assessment. In Section 2, a short review of NSITF operations is undertaken and data and assumptions are presented. Section 3 presents the results of the assessment. The annex to this report further describes NSITF provisions.

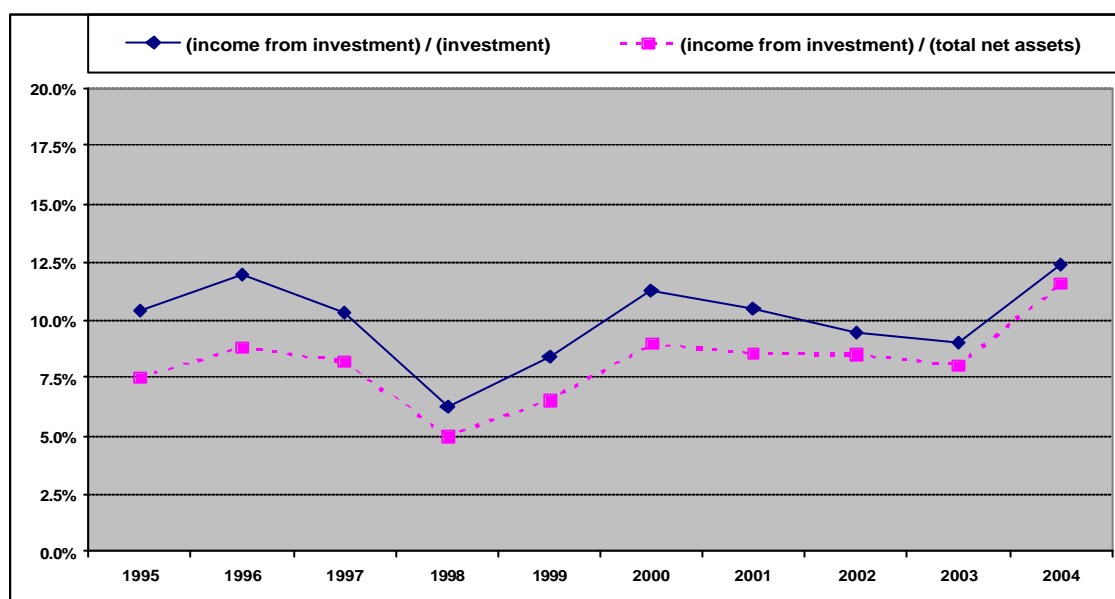
The ILO Director-General wishes to express his sincere appreciations to Mr Joe Okoli, Chairman of the NSTIF Board, and to Mr. Ahmed Rufai, Managing Director, and to all staff of the NSITF for the assistance they provided to the project.

2. Review of operations of the NSITF, Database and Assumptions

2.1. Review of past NSITF developments

The NSITF started its operation in 1994. This section presents a short review of the period between 1994 and 2004. Graph 2.1 depicts the evolution of rates of return of the NSITF. Rates of return on investment have almost always been above 7.5 per cent per year but the rates of return on assets, which takes into account assets not invested, are lower and almost always between 5 per cent and 10 per cent. The gap between the two rates is decreasing which means that a bigger proportion of assets would be invested.

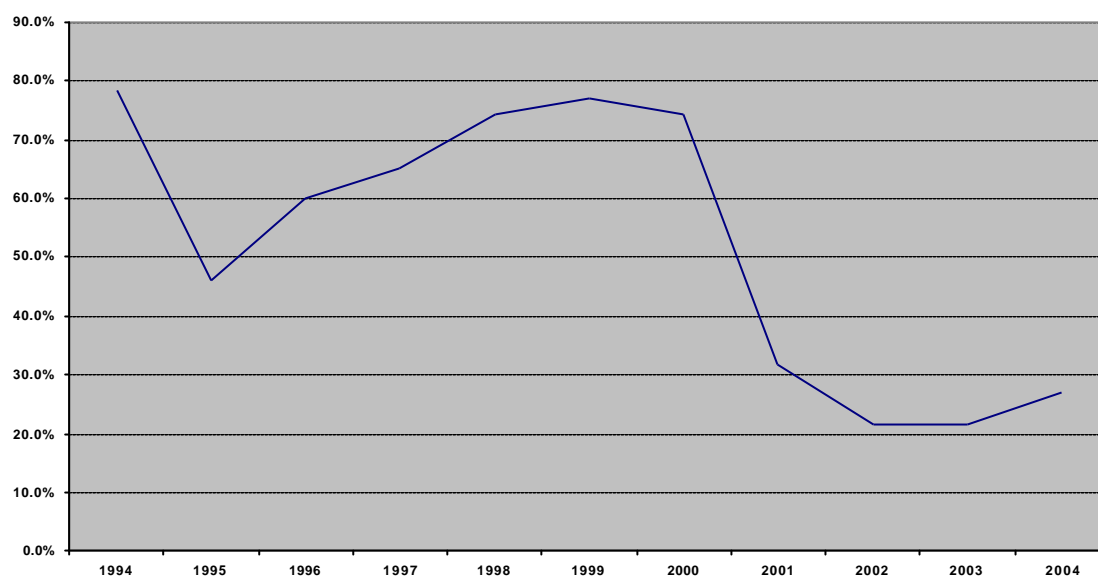
Graph 2.1. Historical nominal rates of return of the NSITF, 1996-2004



Graph 2.2 shows the administration costs as a percentage of contributions. The decrease in administrative expenditure as a total of contributions in 2001-2002 is due to the increase of the contributions following the increase of the ceiling and of the contributions rates. Absolute figures did not decrease, as it can be seen from Table 2.1.

Table 2.1 presents the development of revenues and expenditures from the inception of the NSITF until 31 December 2004, as well as the resulting assets. Main indicators of social security schemes, such as pay-as-you-go (PAYG) cost rates, funding ratios and rates of return are also shown in the table.

Graph 2.2. Administrative expenditure as a percentage of contributions, 1994-2004



Graph 2.3 compares the PAYG cost rates with the contribution rate and shows that it has always been higher than total PAYG cost rates, which allowed to accrue a significant reserve.

Graph 2.3. Development of Pay-as-you-go cost rates and of contributions rate, 1994-2004

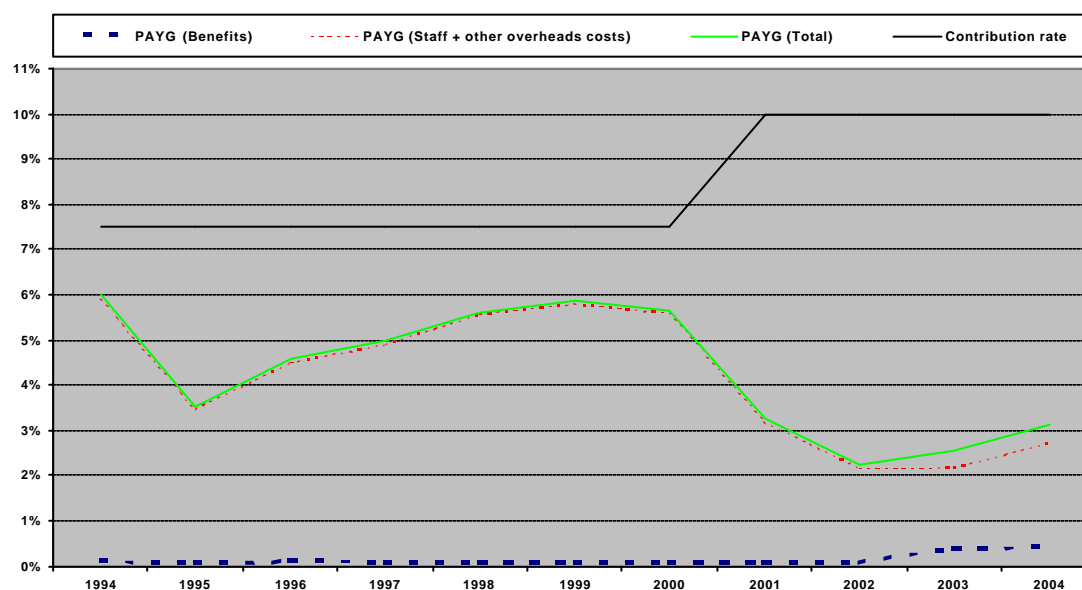


Table 2.1. NSITF financial summary from 1994 to 2004

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
REVENUE	108,107	860,803	1,383,195	1,499,669	1,432,431	1,595,843	2,155,817	6,706,773	10,291,239	12,711,988	15,488,987
Contributions	108,107	679,598	1,018,626	1,112,640	1,183,423	1,262,367	1,613,707	5,596,636	8,482,945	10,193,905	10,804,705
Investment and other income		181,205	364,569	387,029	249,008	333,476	542,110	1,110,137	1,808,294	2,518,083	4,687,040
EXPENDITURE	235,335	318,476	622,757	737,456	887,029	984,128	1,218,866	1,816,521	1,890,942	2,593,149	2,767,044
Benefits paid	4070	4,804	12,957	12,087	9,144	10,081	18,473	33,198	68,938	393,783	440,594
Staff costs	N/A	138,067	233,324	214,887	270,832	581,569	851,933	1,164,022	1,345,258	1,589,689	1,354,348
Other overhead costs	231,265	175,605	376,476	510,482	607,053	392,478	348,460	619,301	476,746	609,677	972,102
ANNUAL SURPLUS (DEFICIT)	59,495	542,327	760,438	762,213	545,402	611,715	936,951	4,890,252	8,400,297	10,118,839	12,721,943
RESERVE (END OF YEAR)	1,423,319	2,419,843	3,180,279	3,942,492	4,487,893	5,099,608	6,035,599	12,984,483	21,279,021	31,397,860	44,141,791
Investments	1,423,319	1,745,913	3,049,586	3,754,089	3,992,205	3,976,488	4,806,254	10,601,191	19,201,516	27,907,227	38,295,238
Other assets	N/A	673,930	1,083,836	968,716	1,003,772	1,123,120	1,229,345	2,383,292	2,077,505	3,490,633	5,846,553
PAYG (Expenditure) (%)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.4
PAYG (Administration costs) (%)	5.9	3.5	4.5	4.9	5.6	5.8	5.6	3.2	2.1	2.2	2.2
PAYG (Total) (%)	8.0	4.7	6.1	6.6	7.5	7.8	7.6	3.2	2.2	2.5	2.6
Administration costs to contributions (%)	78.4	46.2	59.9	65.2	74.2	77.2	74.4	31.9	21.5	21.6	21.5
Rate of return on investment (%)		10.4	12.0	10.3	6.2	8.4	11.3	10.5	9.4	9.0	12.4
Rate of return on total assets (%)		7.5	8.8	8.2	5.0	6.5	9.0	8.5	8.5	8.0	11.5
Funding ratio (reserve over expenditure)	6.0	7.6	5.1	5.3	5.1	5.2	5.0	7.1	11.3	12.1	16.0

2.2. Database

2.2.1 Data collection

The NSITF set up a special team under the supervision of the NSITF Actuarial Department to work on the data collection required for this present actuarial assessment. Data collection started in autumn 2004.

A preliminary set of data, which included data on every beneficiary by type of benefit and year of award from 1998 to 2003, was first delivered. Each Branch Office sent its data¹ and as each did not necessarily have computers, the data entry was done as best as possible, but most of the time not in Excel, so that the data had to be carefully formatted, checked and consolidated, which required a significant amount of work and yet did not ensure the data was complete and correct. A second set of data on beneficiaries was provided when the actuary visited the NSITF in March 2005. It was then observed that the data on beneficiaries (which were complete up to end of 2004) might still need to be updated but had improved.

During that visit, the actuary pointed out that the data relating to contributors were not as complete as needed, although he had seen the on-going work at the data capture in the Abuja Centre. A huge effort was being made by the ICT Department to recapture on an Oracle-based software all data on contributions made by every member. The database on insured members presented many lacunae, with empty fields on age, wage and gender. But the database on contributions is pretty good and records each contribution (monthly) by employee number.

However, it is difficult to get a global picture because if the database was very detailed, it was not complete, even at the time of the second visit of the actuary at the end of October 2005. Most of that visit was spent with consultants responsible for databases, to design and extract tables.

In the end, it was estimated that about 80 per cent of contributions are recorded in the database. Finally, updated databases on number of members expected to retire within three years and on members aged 60 years and above were sent to the ILO in February 2006.

2.2.2. NSITF Members

2.2.2.1. Contributors under NSITF

This section presents data extracted from the different NSITF databases. Table 2.2 summarizes gross outputs from the database on contributions. It indicates how many monthly contributions have been made to NSITF each year and the corresponding amount of contributions as well as the number of members who made at least one contribution in the year. These direct outputs from the database are computed to present the development of the average yearly contribution, the average contributory earnings and the density factor.

¹ There are 36 NSITF Branch Offices.

Table 2.2. Gross outputs from NSITF database on contributions, 1994-2004

Year	Number of monthly contributions	Amount of contributions (N)	Number of members who made at least one contribution	Average yearly contribution (N)	Average yearly contributory earnings (N)	Density
	(1)	(2)	(3)	(4) = (2) / (3)	(5) = (4) / CR ^x	(6) = (3) / (1)
1994	1,676,510	256,302,832	304,844	841	11,210	5.50
1995	3,861,247	596,079,404	385,341	1,547	20,625	10.02
1996	4,248,773	797,456,057	425,576	1,874	24,984	9.98
1997	4,540,942	822,425,396	453,673	1,813	24,171	10.01
1998	4,689,583	913,072,611	473,657	1,928	25,703	9.90
1999	4,752,513	1,011,522,775	478,132	2,116	28,208	9.94
2000	4,632,328	1,425,668,715	470,278	3,032	40,421	9.85
2001	4,600,316	5,691,759,234	627,737	9,067	90,671	7.33
2002	4,770,484	7,304,520,259	517,516	14,115	141,146	9.22
2003	4,951,095	9,038,479,372	628,871	14,373	143,725	7.87
2004	2,593,736	5,410,397,758	526,251	10,281	102,810	4.93

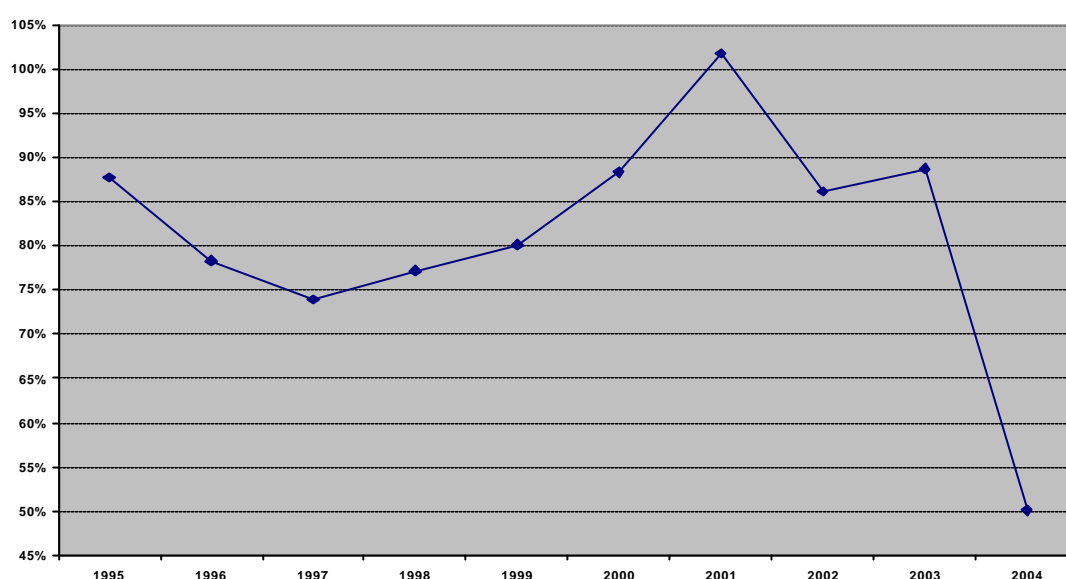
^x CR= contribution rate (7.5% from 1994 to 2000 and 10% from 2001 to 2004).

Monthly ceiling on insurable wages was N 4,400 from 1994 to 2000 and N 44,000 from 1/1.2001.

While remaining low in comparison to the total Nigerian labour force and even to its total membership, the number of members who contributed to the scheme each year (the “active” contributors) has roughly doubled between 1994 and 2003. The decrease observed in 2004 is mostly due to the delayed entry of contributions in the database. The average contribution is linked to the development of wages and of the contribution rates and ceiling. The increase of contribution rates and of the ceiling in 2001 implied that average contribution tripled while average density decreased that year probably as a result of the high number of contributors. In 2002, average contribution further increased by more than 50 percent with about half of the increase attributed to the improvement of density.

The figures on contributions were compared with figures from the audited financial statements. Graph 2.4 shows the ratio of contributions extracted from the database (Column 2 of Table 2.2) with the contributions from the audited statements. The ratio evolved over the year but most of the time was around 80 per cent, except in 2004 due to the delay in completing the database, as already mentioned. The overall ratio amounts to 79 per cent and this ratio was applied to the different databases to complete the missing data.

Graph 2.4. Development of ratio of contributions from the database with contributions from the financial statements, 1995-2004.



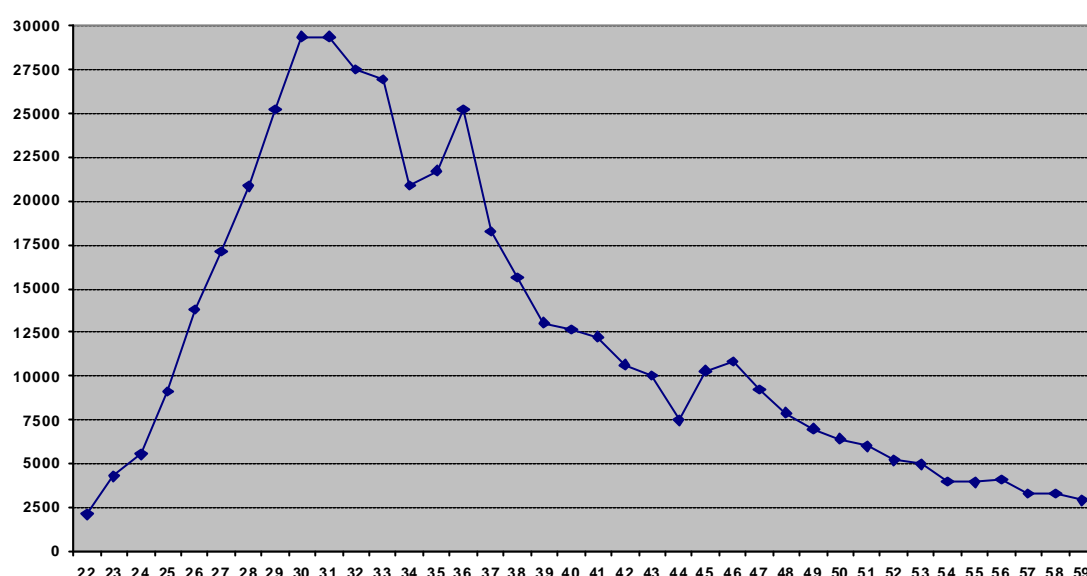
Again extracted from the database on contributions, Table 2.3 desegregates the NSITF members by number of years in which at least one contribution was made. It can be seen that most of the NSITF members only contributed for a few years (but not necessarily for a full year in each year), as 70 per cent paid contributions in four years or less. Only a small proportion of NSITF members are regularly contributing.

Table 2.3. NSITF members per number of years in which at least one contribution was made

Number of year	Number of members	Percentage	Cumulative number	Cumulative percentage
1	299,813	22	299,813	22
2	304,687	22	604,500	44
3	207,323	15	811,823	58
4	166,022	12	977,845	70
5	95,675	7	1,073,520	77
6	74,449	5	1,147,969	83
7	60,462	4	1,208,431	87
8	54,149	4	1,262,580	91
9	36,751	3	1,299,331	94
10	32,494	2	1,331,825	96
11	40,379	3	1,372,204	99
N/A	16,657	1	1,388,861	100

Out of the estimated 1,800,000 members that contributed to the NSITF since 1994, the information on the date of birth is available for only about half a million, i.e. about 28 per cent. Nevertheless, this was considered to be sufficient to assume that this is representative of the total NSITF members. Graph 2.5, indicates that the NSITF members are quite young, the majority of them being less than forty.

Graph 2.5. Age distribution in 2005 of NSITF members whose year of birth is known



2.2.1.2. Members who will retire within 3 years (L2)

According to article 8 of the Act, employees who have three or less years to retire are exempted from the scheme. This was interpreted as being NSITF members who reach 60 years of age between 1/7/2004 and 30/06/2007. The NSITF Actuarial Department was finally able to collect data on those members who were members born between 1/7/1944 and 30/06/1947. Table 2.4 shows their number by year of birth and gender. It has to be kept in mind that these members were extracted from a database that represents about 28 per cent of the total NSITF contributors and that therefore the total number of concerned persons is likely to be around 19,000.

Table 2.4. Number of members who will retire within 3 years, by year of birth and gender

	Males	Females	Total
Extracted from database			
1/7 - 31/12.1944	510	18	528
1945	1,928	89	2,017
1946	1,613	85	1,698
1/1 - 30/06.1947	1,063	39	1,102
Total	5,114	231	5,345
Overall estimate			
1/7 - 31/12.1944	1,821	64	1,886
1945	6,886	318	7,204
1946	5,761	304	6,064
1/1 - 30/06.1947	3,796	139	3,936
Total	18,264	825	19,089

However, not all of these members will qualify for a retirement (or transitional basic) pension as the minimum number of monthly contributions to receive a pension for members born in July 1944 is 90 and increases to 116.25 for members born in June 1947. It is difficult to estimate how many of these members will actually qualify for a pension. Even if statistics on their number of monthly contributions under NSITF are available as presented in Table 2.5, it is not known how many monthly contributions would be recognized by NPF. Credit months from the NPF are converted by dividing the NPF balance as at 30/6/1994 with the first month's contribution under NSITF. It is understood,

however, that following the very small contributions paid under the NPF scheme, this would hardly be more than one or two years.

The grey cells in Table 2.5 show the members who meet the retirement conditions.² They represent about 14 per cent of the 1944 cohort, 10 per cent of the 1945 cohort, 7 per cent of the 1946 cohort and only 3 per cent of the 1947 cohort. The yellow cells represent members for whom it is assumed that retirement conditions would be met if contributions continued to be paid until retirement age. The black cells represent additional members for whom qualification is assumed once their NPF contributions are taken into account.

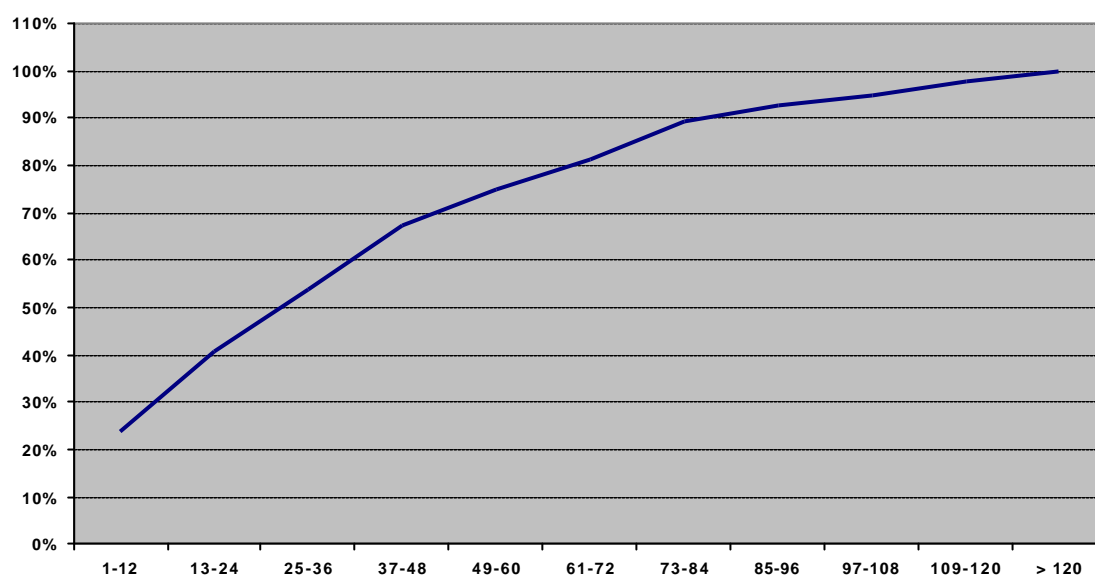
Table 2.5. Number and distribution of members who will retire within 3 years, by year of birth and number of NSITF monthly contributions

Date of birth		1-12	13-24	25-36	37-48	49-60	61-72	73-84	85-96	97-108	109-120	> 120	Total
Extracted from database													
1/7 - 31/12.1944	No	89	82	70	78	41	48	47	16	15	20	22	528
	%	17	16	13	15	8	9	9	3	3	4	4	100
1945	No	450	328	268	267	173	123	142	77	52	73	64	2,017
	%	22	16	13	13	9	6	7	4	3	4	3	100
1946	No	354	274	226	226	137	95	135	76	57	58	60	1,698
	%	21	16	13	13	8	6	8	4	3	3	4	100
1/1 - 30/06.1947	No	231	217	147	138	96	57	76	46	24	41	29	1,102
	%	21	20	13	13	9	5	7	4	2	4	3	100
Overall estimate													
1/7 - 31/12.1944	No	318	293	250	279	146	171	168	57	54	71	79	1,886
	%	61	57	46	54	29	32	32	11	11	14	14	361
1945	No	1,607	1,171	957	954	618	439	507	275	186	261	229	7,204
	%	79	57	46	46	32	21	25	14	11	14	11	357
1946	No	1,264	979	807	807	489	339	482	271	204	207	214	6,064
	%	75	57	46	46	29	21	29	14	11	11	14	354
1/1 - 30/06.1947	No	825	775	525	493	343	204	271	164	86	146	104	3,936
	%	75	71	46	46	32	18	25	14	7	14	11	361

Altogether, it was decided to conservatively assume that 20 per cent of these members (i.e. about 4,000 persons) would qualify for a pension and that 80 per cent would only receive a grant. This proportion is in line with recent experience. Graph 2.6 shows the cumulative distribution of *L2* members by number of monthly contributions. This means that we have assumed that members who at valuation date have more than 72 monthly contributions under NSITF will qualify for a pension.

² This is a proxy as the requirement also depends on the month of birth and not only on the year.

Graph 2.6. Cumulative distribution of members who will retire within 3 years, by number of monthly contributions



2.2.1.3. Member 60 years of age and over (*L1*)

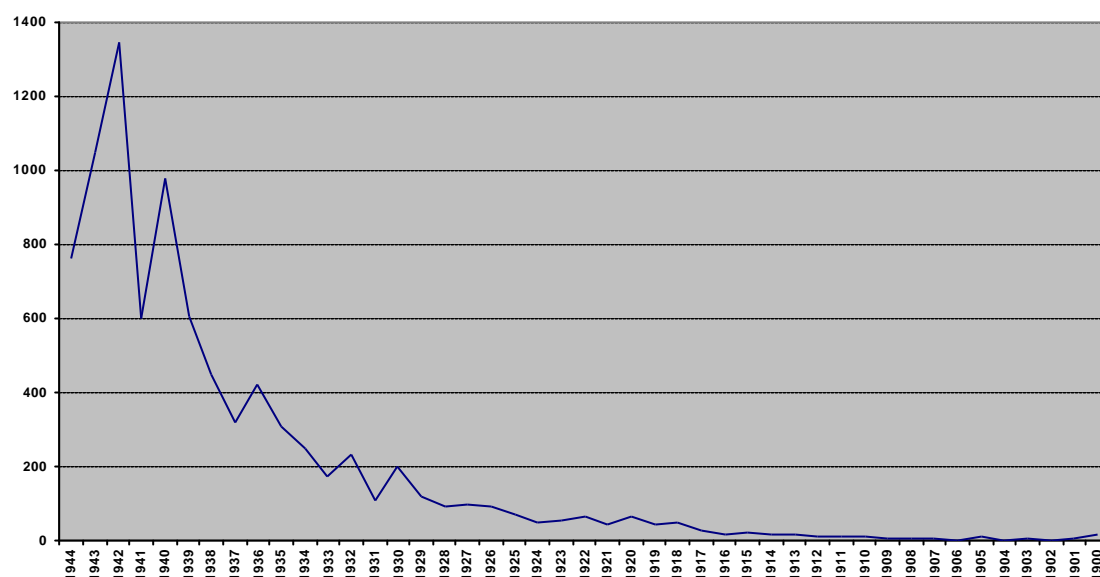
When the Pension Reform Act came into force on 1 July 2004, some NSITF members had already reached retirement age (i.e. 60 years of age) but had not claimed an NSITF benefit. There can be many reasons why a claim for a benefit is not made. Some of these members might still be working; others might not know that they are entitled to an NSITF benefit. According to the database, some of these members are already very old and will probably never make a claim. Graph 2.7 shows the distribution of those members by year of birth. For the estimation of the liability, it was assumed that no member aged more than 75 at commencement of the Pension Reform Act would make a claim. Only the members born between 1930 and 1944 might. Their numbers are shown in Table 2.6.

Table 2.6. Number of members 60 years of age and over, by year of birth

Year of birth	Males	Females	Total
Extracted from database			
1930	196	4	200
1931	107	3	110
1932	226	5	231
1933	165	7	172
1934	238	9	247
1935	303	6	309
1936	411	10	421
1937	314	5	319
1938	438	9	447
1939	587	20	607
1940	949	28	977
1941	580	20	600
1942	1,291	52	1,343
1943	1,008	41	1,049
01/01 - 30/06.1944	727	34	761
Total	7,540	253	7,793
Overall estimate			
1930	700	14	714
1931	382	11	393
1932	807	18	825
1933	589	25	614
1934	850	32	882
1935	1,082	21	1,104
1936	1,468	36	1,504
1937	1,121	18	1,139
1938	1,564	32	1,596
1939	2,096	71	2,168
1940	3,389	100	3,489
1941	2,071	71	2,143
1942	4,611	186	4,796
1943	3,600	146	3,746
01/01 - 30/06.1944	2,596	121	2,718
Total	26,929	904	27,832

Members born after 1930 total 7,793 out of a total of 9,376. Again, it has to be kept in mind that these figures were extracted from a database that represents only about 28 per cent of all contributors, so the total number of concerned persons is likely to be about 28,000 members.

Graph 2.7. Number of members who have not made a benefit claim, by year of birth



The distribution of the 7,793 members by number of monthly contributions is shown in Table 2.7. The grey cells represent the members who meet the retirement conditions. The black cells represent the additional members for whom it was assumed that they would qualify once their NPF contributions were taken into account. No further contribution between valuation date and retirement date can be assumed for that group. In total, 2,315 members, i.e. about 30 per cent, would meet the eligibility conditions for a pension. It was therefore decided to conservatively assume that 30 per cent of that category of member would qualify for a pension if they claim a benefit and that 70 per cent would only receive a grant. However, it is expected that not all those members will claim a benefit (see Section 2.3.1.3 on assumptions).

Table 2.7. Number of members 60 years of age and over, by year of birth and number of NSITF monthly contributions

	1-12	13-24	25-36	37-48	49-60	61-72	73-84	85-96	97-108	109-120	> 120	Total from grey and black cells
Extracted from database												
1930	63	41	25	14	15	4	22	5	6	2	3	96
1931	42	27	10	10	5	7	6	2	0	0	1	41
1932	64	49	31	28	10	10	11	10	9	8	1	118
1933	52	32	20	24	9	7	9	5	4	6	4	88
1934	69	54	28	30	19	14	12	5	4	8	4	124
1935	97	54	29	40	15	17	27	15	6	3	6	158
1936	118	80	56	57	35	16	30	11	6	7	5	223
1937	75	64	40	39	23	19	20	15	8	8	8	180
1938	109	84	64	66	35	29	22	14	9	7	8	254
1939	156	90	67	91	38	39	44	28	15	20	19	294
1940	243	156	130	125	67	62	80	36	25	25	28	448
1941	122	100	93	91	46	52	41	15	12	14	14	194
1942	300	224	187	162	124	81	112	39	40	45	29	470
1943	226	155	145	163	75	73	107	36	18	24	27	285
01/01 -30/06.1944	143	123	97	98	72	53	71	36	18	24	26	175
Total												3,148
Overall estimate												
1930	225	146	89	50	54	14	79	18	21	7	11	343
1931	150	96	36	36	18	25	21	7	-	-	4	146
1932	229	175	111	100	36	36	39	36	32	29	4	421
1933	186	114	71	86	32	25	32	18	14	21	14	314
1934	246	193	100	107	68	50	43	18	14	29	14	443
1935	346	193	104	143	54	61	96	54	21	11	21	564
1936	421	286	200	204	125	57	107	39	21	25	18	796
1937	268	229	143	139	82	68	71	54	29	29	29	643
1938	389	300	229	236	125	104	79	50	32	25	29	907
1939	557	321	239	325	136	139	157	100	54	71	68	1,050
1940	868	557	464	446	239	221	286	129	89	89	100	1,600
1941	436	357	332	325	164	186	146	54	43	50	50	693
1942	1,071	800	668	579	443	289	400	139	143	161	104	1,679
1943	807	554	518	582	268	261	382	129	64	86	96	1,018
01/01 -30/06.1944	511	439	346	350	257	189	254	129	64	86	93	625
Total												11,243

2.2.3. Current pensioners

2.2.3.1. Retirement pensions

Data on number and average amount of retirement pensions (including all types of old-age pensions) being paid as of 31 December 2004 are given by age group and gender in Table 2.8. In total, 4,167 pensions were in payment. Table 2.9 shows their distribution by year of award and indicates how many of them are currently receiving the minimum pension.

It can be seen that more than 96 per cent of the pensioners are in receipt of the minimum monthly pension of N 4,400. As a result, the average monthly pension is N 4,512 for all pensioners.

Table 2.8. Retirement pensions-in-payment by age group and gender as of 31/12/2004

Age	Males		Females		Total	
	Number	Average monthly pension (Naira)	Number	Average monthly pension (Naira)	Number	Average monthly pension (Naira)
50-54	3	4,781	3	6,562	6	5,686
55-59	40	4,627	1	4,400	41	4,621
60-64	1,397	4,573	80	4,476	1,477	4,568
65-69	1,769	4,490	65	4,523	1,835	4,491
70-74	578	4,439	14	4,400	592	4,438
75-79	148	4,475	5	4,400	153	4,472
80-84	42	4,400	1	4,400	43	4,400
85-89	9	4,400	-	-	9	4,400
90+	11	4,400	-	-	11	4,400
Total	3,997	4,511	170	4,523	4,167	4,512

Table 2.9. Retirement pensions by year of award and amount

Year	Number of pensioners	Number who currently receive minimum pension	Percentage who currently receive minimum pension	Average pension (Nairas)
Before 1999	26	24	92%	4,481
1999	112	112	100%	4,400
2000	364	364	100%	4,400
2001	566	565	100%	4,401
2002	796	792	99%	4,422
2003	1431	1398	98%	4,456
2004	872	753	86%	4,822
Total	4167	4008	96%	4,512

2.2.3.2. Invalidity pensions

Data on number and average amount of invalidity pensions being paid as of 31 December 2004 are given by age group and gender in Table 2.10. In total, 236 pensions were in payment. The average invalidity pension is N 4,675, an amount close to the minimum pension and slightly over the average old-age pension.

Table 2.10. Invalidity pensions-in-payment by age group and gender as of 31/12/2004

Age	Males		Females		Total	
	Number	Average monthly pension (Naira)	Number	Average monthly pension (Naira)	Number	Average monthly pension (Naira)
- 40	16	4,427	3	11,480	15	4,897
40-44	21	4,400	2	14,970	23	5,319
45-49	30	4,540	2	4,400	32	4,531
50-54	39	4,470	3	5,458	42	4,541
55-59	52	4,548	10	4,400	62	4,524
60-64	32	4,400	1	4,400	33	4,400
65+	22	4,400	3	4,400	15	4,400
Total	212	4,497	24	6,252	236	4,675

2.3 Assumptions

2.3.1 Demographic assumptions

2.3.1.1 Assumption on Mortality

Mortality for the different groups of NSITF pensioners is assumed to be equal to 75 per cent of the mortality of the general Nigerian population as provided by the UN Population Division³. This percentage was chosen as a conservative estimate although no estimates are available. Table 2.11 shows the corresponding life expectancy at selected ages and dates.

Table 2.11. Life expectancy at selected ages and dates

Age/ year	Males	Females	Males	Females	Males	Females	Males	Females
	2005	2005	2010	2010	2015	2015	2020	2020
60	16.6	17.6	16.9	18.0	17.3	18.4	17.7	18.9
65	13.6	14.4	13.9	14.7	14.2	15.1	14.5	15.5
70	11.0	11.6	11.2	11.9	11.4	12.1	11.7	12.4
75	8.7	9.2	8.9	9.4	9.0	9.6	9.2	9.8
80	6.8	7.1	6.9	7.3	7.0	7.4	7.1	7.6
85	5.3	5.5	5.3	5.5	5.4	5.6	5.4	5.8
90	4.0	4.1	4.0	4.1	4.0	4.2	4.0	4.2
95	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
100	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5

2.3.1.2. Assumption on survivors

For the purpose of this actuarial assessment, it was assumed that every NSITF members has only one survivor.

³ *World Population Prospects, 2004 Revision Population Database*, UN Population Division New-York.

2.3.1.3. Retirement rates for *L1*

As explained in Section 2.2.1.3, it is difficult to assess how many of the NSITF members who are already 60 years of age and have not claimed a benefit will actually do so. It is even more difficult to anticipate when they will do it. The assumption adopted in this valuation is that 10 per cent of those members will make a claim each year during the three years following the adoption of the Pension Reform Act. That rate is applied whatever the age of the NSITF member. As a direct consequence of this assumption, only 30 per cent of those members will make a claim for a benefit. This can be seen as a low rate but there is no reason why those members, some of who have stopped contributing many years ago and have not yet made a claim, will do so in the future.

2.3.1.4. Retirement rates for *L2*

For people born between 30/06/1947 and 1/07/1994, it was assumed that all would retire at the age of 60 and make a claim.

2.3.1.5. Invalidity

It is assumed that no new invalidity pension will be awarded, even from the *L2* members who are exempted from the new scheme.

2.3.2 *Economic and financial assumptions*

2.3.2.1. Assumption on rate of return of investments

It was assumed that the rate of return earned on reserves would be 3 per cent. This rate is also used to discount the value of benefit payments and to calculate the present value of the liabilities of the NSITF.

2.3.2.2. Assumption on pension indexation

It was assumed that no indexation of pensions would take place.

Even if the NSITF provisions do not explicitly require pensions to be indexed, many pensions were adjusted to the minimum pension, either at the time of award or when the minimum pension was increased. In 2004 more than 90 per cent of pensioners were receiving the minimum pension, which is equal to 80 per cent of the minimum wage, over which the NSITF has no control. Therefore, it has to be mentioned that a significant increase in the minimum wage would significantly increase the liabilities of the NSITF.

2.3.2.3. Assumption wage development

This assumption is only used to calculate contributions made by members who will retire in the first three years as they are exempted from the new scheme, and it was assumed that no increase in their wage is foreseen.

2.3.2.4. Assumption on administration costs

The actuarial present values calculated as *L1* and *L2* include a 5 per cent margin for administration costs.

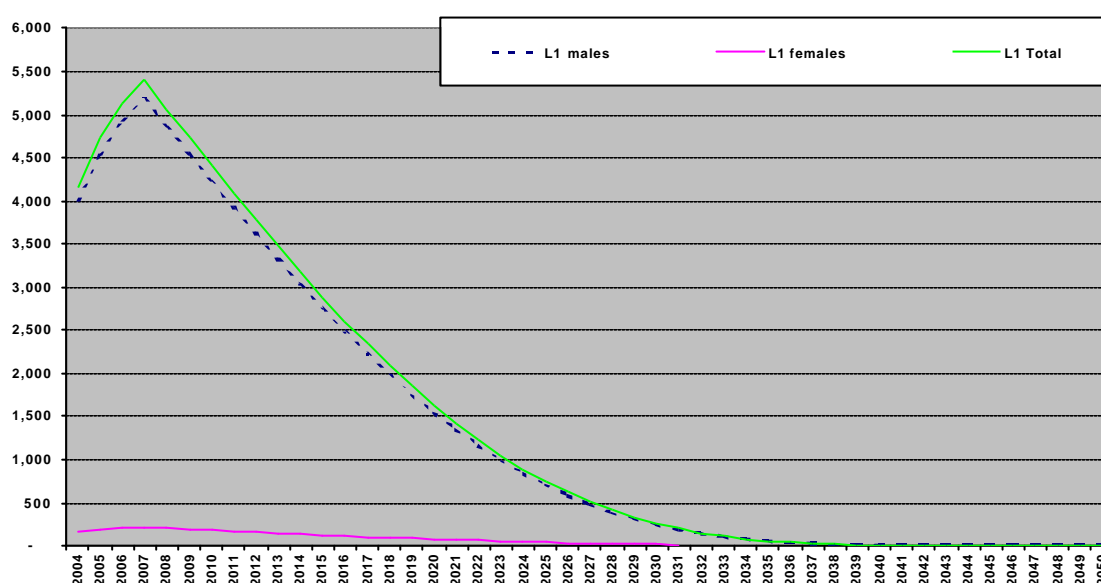
3. Results, baseline scenario

3.1. Demographic projections

3.1.1. Demographic projections of current pensioners (L1)

According to the assumptions presented in Section 2, the number of *L1* pensioners develops as shown in Graph 3.1. The increase at the beginning of the projection is due to the assumptions on insured persons who have reached retirement age without beforehand making a claim for their benefits. After 2007, the absolute number of pensioners starts to decline as there are no new pensions and, as the group becomes closed, exits are only due to death.

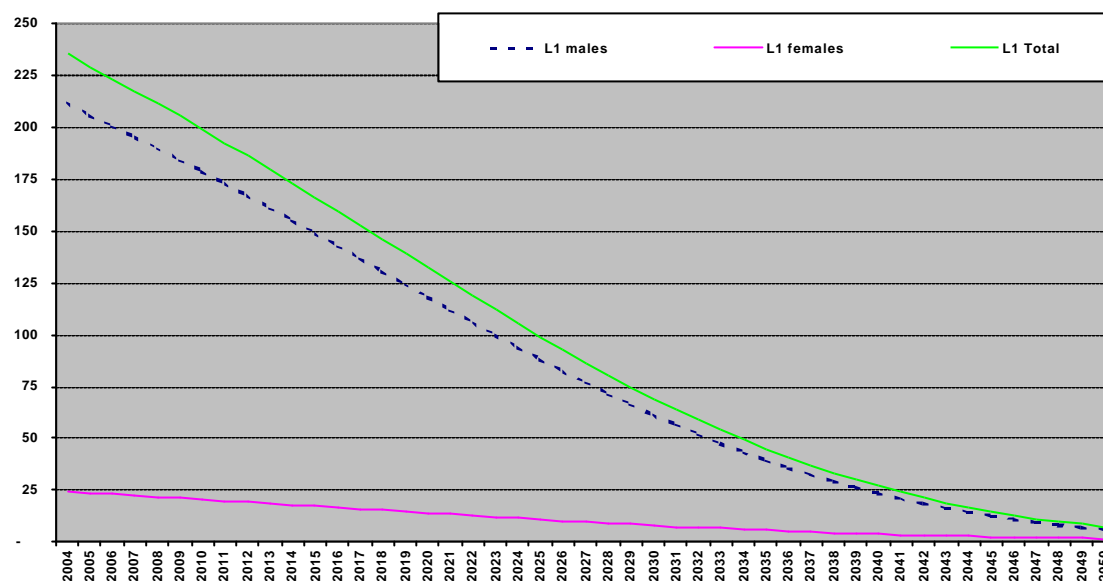
Graph 3.1. Development of number of retirement pensions (*L1*) by year



In 2005, 2006 and 2007 a total of 4,762 retirement grants are paid and over the period 2005-2011, 209 survivors grants are paid after which all remaining pensioners have received their pension for more than 60 months and no survivors grants are paid.

The development of invalidity pensions-in-payment is depicted in Graph 3.2.

Graph 3.2. Development of number of invalidity pensions (L1)

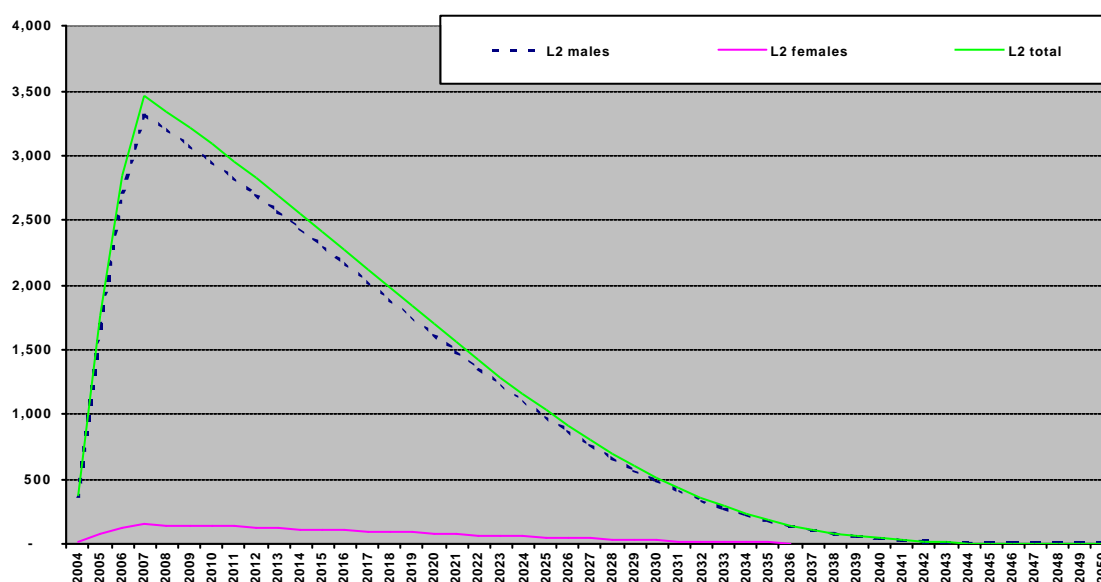


3.1.2. Demographic projections for insured persons who will retire within the next three years (L2)

For L2, it is assumed that new pensions will be awarded in 2004, 2005, 2006 and 2007 only. At that time, about 3,500 pensions will be in-payment, a number that will thereafter only decrease as no new pensions are awarded.

A total of about 14,500 retirement grants will be paid over the period 2004-2007 and 3,220 survivors grants will be paid over the period 2005-2011 after which all remaining pensioners will have received their pension for more than 60 months and no survivors grants will be paid.

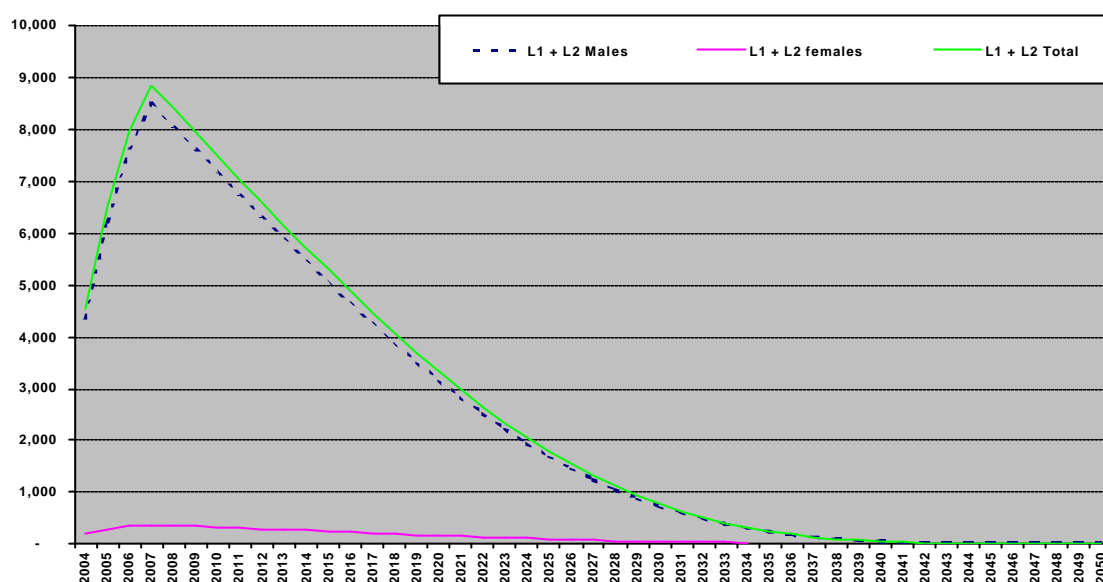
Graph 3.3. Development of number of retirement pensions (L2)



3.1.3. Demographic projections of L1 and L2

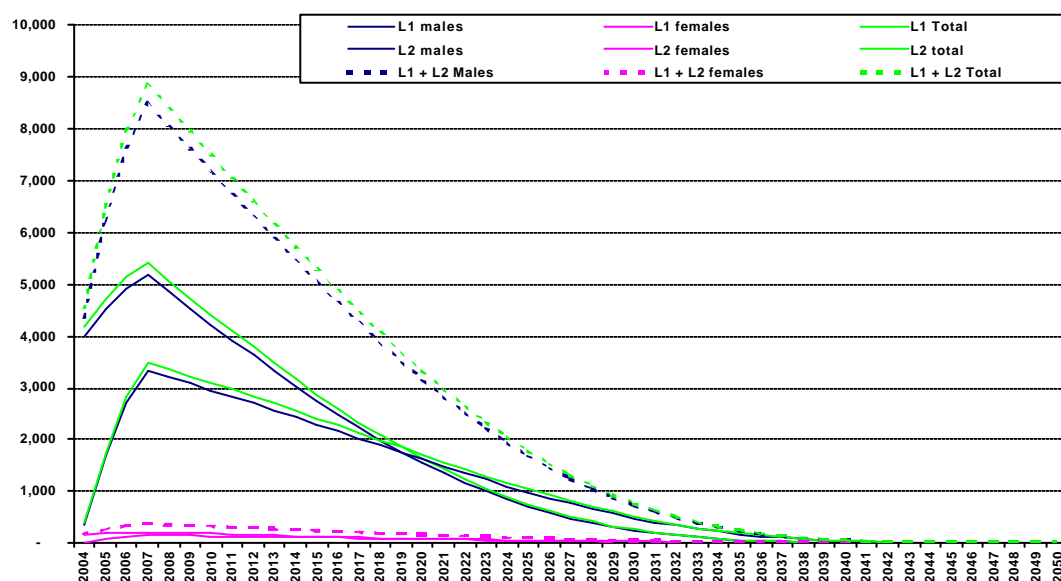
The consolidation of L1 and L2 shows unsurprisingly that the total number of pensioners under NSITF increases until about 2008 and then starts to decrease. Graph 3.4 illustrates that development.

Graph 3.4. Development of number of retirement pensions (*L1* and *L2*) by year



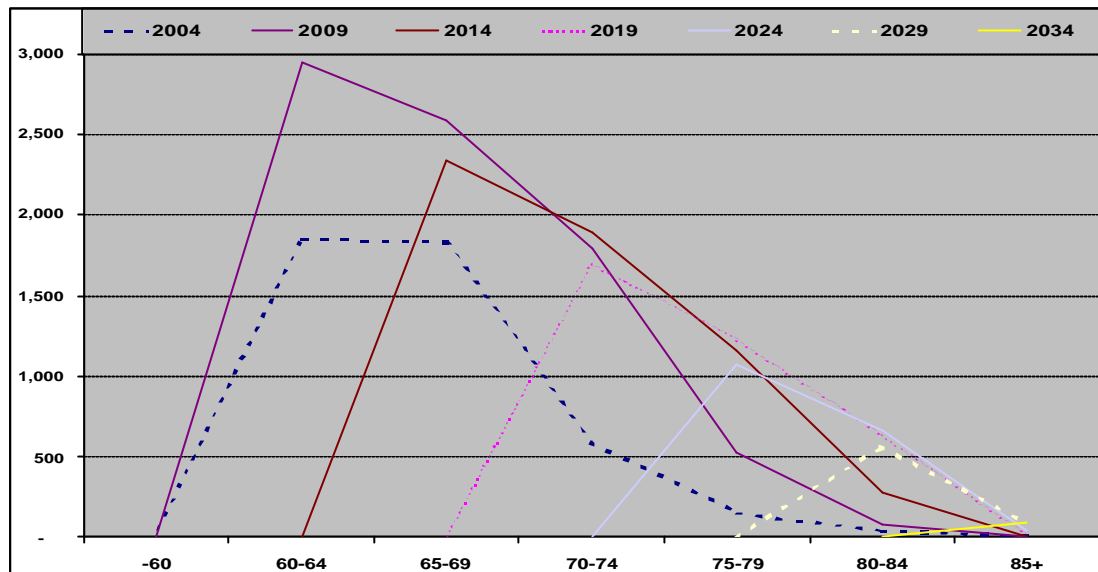
Graph 3.5 recapitulates Graphs 3.1, 3.3 and 3.4 into one graph in order to appreciate the relative size of the different groups.

Graph 3.5. Development of number of retirement pensions (*L1*, *L2* and *L1* and *L2*)



The age structure of retirement pensions is depicted in Graph 3.6 in 2004, 2009, 2014, 2019, 2024, 2029 and 2034.

Graph 3.6. Development of number of retirement pensions by age groups at different years (*L1 + L2*)



3.2. Calculations of liabilities

3.2.1. Liability for L1

Table 3.1 presents the actuarial liability for *L1* NSITF members, which amounts to a total of 3,307,035,257 Nairas as of 31 December 2004.

Table 3.1. Actuarial present value for *L1* (including 5 per cent for administration)

Item	Amount in Naira	Percentage
Retirement pensions	2,959,215,376	89
Survivors grants	21,894,560	1
Retirement grants	141,898,541	4
Invalidity pensions	184,026,780	6
Total	3,307,035,257	100

3.2.2. Liability for L2

Table 3.2 presents the actuarial liability for *L2* NSITF members, which amounts to a total of 3,163,019,087 Nairas as of 31 December 2004.

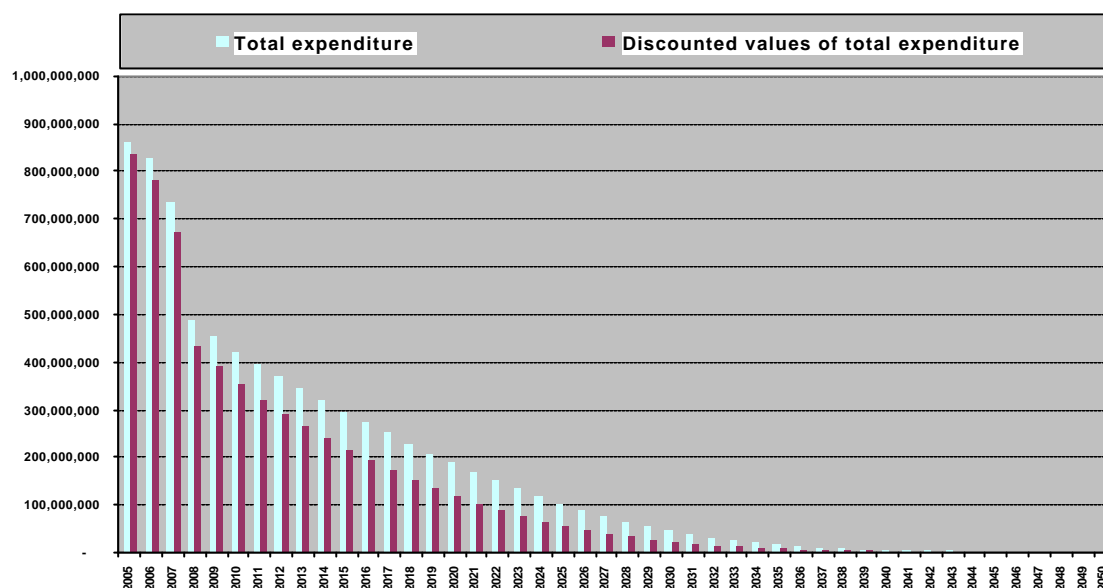
Table 3.2. Actuarial present value for *L2* (including 5 per cent for administration)

Item	Amount in Naira	Percentage
Retirement pensions	2,473,836,058	78
Survivors grants	299,327,338	9
Retirement grants	389,855,691	11
Total	3,163,019,087	100

3.2.3. Expected cash flows

Graph 3.7 pictures the evolution of cash flows for *L1* and *L2* and compares it to the present values of the cash flows over the next 45 years.

Graph 3.7. Development of the number of retirement pensions at different years (*L1* + *L2*)



3.2.4. Liability for L3

There are different options as to how accrued rights are acknowledged when a major change in a pension system is undertaken. In the case of NSITF members, the law says that only past contributions to the NSITF together with any attributable income shall be credited to their individual Retirement Savings Accounts.

In fact, the NSITF was designed as a scaled premium system and was far from maturity. Contributions paid were not equivalent to accrued rights. Therefore, to fully recognize accrued rights, it would be necessary to credit to the individual Retirement Savings Accounts more than only the past contributions together with any attributable income. This is what is done in the following section.

3.2.4.1. Liability based on accrued rights

Based on Tables 2.2 and 2.3, which show how many contributions NSITF members paid, an estimation of the pension accrued so far by members was made. As a simplified estimate, it was assumed that all NSITF members would receive the minimum pension.

The pension accrued at valuation date by NSITF members was calculated. For instance, a member with five years contributions would have already acquired the rights to receive half of the minimum pension.

As the distribution of the number of contributions by age of the members could not be reconciled, it was decided to calculate the liability based on the average NSITF member. The average NSITF member is 35 years old and will retire in 25 years. With a life expectancy of about 18 years, the annuity factor with a rate of interest of 3 per cent is about 15. The discount factor is 2.09 (1.03^{25}).

The average pension acquired so far is about N 1,648.

Therefore the total liability is estimated to be $1,684 \times 15 / 2.09 \times 1,736,076$ Nairas, which is equal to 246,004 millions Nairas.

3.2.4.2. Liability based on past contributions

In this section, *L3* is assessed as the accumulated contributions received by the NSITF from 1994 to 2004 plus interest income for each year. The rate of interest used to calculate the interest income is the yearly rate of return on NSITF investments. Results are presented in Table 3.3. The contributions of members of *L1* and *L2* were withdrawn from the total contribution. It has to be noted that data on contributions of members of *L1* and *L2* were provided late by the NSITF and could not be checked before finalizing this report.

Table 3.3. Actuarial present value for *L3* (in Naira 000)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Accumulated contributions	105,240	778,371	1,793,977	2,903,680	4,084,472	5,344,280	6,953,464	12,530,431	20,995,779	31,171,191	41,956,122
Accumulated contributions with interest	105,240	789,293	1,899,257	3,204,765	4,585,450	6,229,802	8,541,662	15,013,095	24,892,295	37,313,752	52,724,020
Difference	-	-	-	-	-	-	-	-	-	-	10,767,899
Rate of interest (%)		10.4	12.0	10.3	6.2	8.4	11.3	10.5	9.4	9.0	12.4

Annex 1 Main provisions of the NSITF scheme

A.1.1. General

The NSITF was established by Decree No. 73 of 1993 and came into force on 1 July 1994. It replaced the National Provident Fund (NPF) and had the responsibility of providing pensions to its members. It functioned under a partially funded system where a financial reserve was built-up at the beginning of the scheme when no benefits were payable. The first NSITF actuarial valuation of 31 December 1998 was undertaken at a time when only a few benefits had been paid.

Exactly ten years after its inception, the Pension Reform Act, 2004 was enacted. This new Act had the effect of transforming the former defined benefits scheme into a defined contribution scheme, under which each member will contribute to an individual Retirement Savings Account. Part VII of the Act provides for transitional provisions for the private sector, and section 42 for the transfer of pension fund assets from the NSITF.

A.1.2. Coverage

Since 1 July 2004, the NSITF has only been in charge of existing pensioners and of members who will retire within three years of that date.

A.1.3. Financing

July 1994 – December 2000

From July 1994 to December 2000, the insurable income on which contributions and benefits were based was basic salary (excluding allowances such as housing, transport, etc.), which was subject to a ceiling of 4,000 Nairas per month.

The contribution rate was: (%)

Employer	5.0;	Employee	2.5;	Total	7.5
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January 2001 to date

Since January 2001, insurable income comprises basic salary, housing allowance and transport allowance, subject to a monthly ceiling of 44,000 Nairas.

The contribution rate during this period has been: (%)

Employer	6.0;	Employee	3.5;	Total	10.0
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A.1.4. Old-age benefits

A.1.4.1. Retirement pension and gratuity

Eligibility:

- A member must have attained the age of 60 years or more.

- He/She must have retired from employment or shown to the satisfaction of the Fund that he/she is no longer employed in any work for which remuneration is equal to or exceeds the National Minimum Wage.
- Contributions must have been paid or credited in respect of the claimant for at least 120 months of insurable employment.

Entitlements:

Pension

- A qualified member shall be entitled to a periodic monthly payment (pension) for life from the date of application.
- Retirement pension is calculated on Average Insurable Income (A.I.I.) of the claimant during the best 36 months of contributions paid in the last 60 months preceding the month of retirement.
- Retirement pension is fixed at 30% of final average monthly earnings for the 120 months of insurable employment, and the percentage of retirement pension increases by 1.5% for every additional 12 months of contribution such that every month of contribution in excess of 120 months attracts an additional pension right of 0.125% subject to a ceiling of 65% of a claimant's Average Insurable Income.
- The minimum retirement pension shall be equivalent of 80% of the National Minimum Wage obtainable at any time.
- The maximum retirement pension shall be 65% of the average insurable income or 4 times the National Minimum Wage, which ever is lower.

Gratuity

A claimant who qualifies for a pension shall also be paid a gratuity (lump sum) equal to the value of 24 months' pension entitlement.

A.1.4.2. *Reduced pension and gratuity*

Members have the option of applying for a Reduced Pension from the age of 55, which is computed as a percentage of a full pension. The pension amount is reduced by 0.5% per month of the difference between the member's age at the time of application and age 60. To qualify for a Reduced Pension:

- A member must be 55 years old or above but below 60 years of age.
- A member must have a minimum contribution of 120 months in aggregate.
- A member who opts for a Reduced Pension shall not be eligible for a full pension when he/she attains the age of 60.

A.1.4.3. *Retirement grant*

- A member must have attained the age of 60 years or more.
- He/She must have retired from employment or have shown to the satisfaction of the Fund that he/she is no longer employed in any work for which remuneration is equal to or exceeds the National Minimum Wage.

- Contributions must have been paid or credited in respect of the claimant for less than 120 months but not less than 12 months of insurable employment.

The retirement grant amount is calculated as follow:

$$\text{Retirement grant} = \frac{\text{Lifetime average monthly} \times \text{Credit months}}{\text{Insurable income}} + 25\% \text{ of post 2000 contributions}$$

A.1.5 Survivors' benefits

A.1.5.1. Survivors' pension

Eligibility

A Survivors' pension is payable to dependant(s) upon the death of a member:

- who was receiving retirement or invalidity pension and had received it for a period of less than 60 months.
- who would have satisfied the eligibility conditions of either Retirement, Invalidity or Transitional Basic Pension by virtue of his/her contributions.
- who at the time of his/her death had paid a minimum of 120 months contributions, or paid a minimum of 36 months contributions with 12 months of the same paid within the preceding 36 months.

Benefit amount

This pension is in reality a lump sum and is equal to:

- the difference between the number of received pension payments and 60 multiplied by the monthly pension amount that the member was receiving in the case of a member who was already a pensioner.
- the monthly pension amount that the member would have received multiplied by 60 in the case of a member who was not yet a pensioner.

NB: The fact that the pension is not payable to the dependent if the member was receiving his/her pension for a period of more than 60 months is contradictory to the law that indicates that the dependant should receive a pension for all the time he/she remains a dependent of the survivor's pension for the necessities of life.

A.1.5.2. Survivors' grant

A Survivors' grant is payable to the dependant(s) of a member who had contributed for at least 12 months but failed to meet the qualifying conditions for the Survivor's pension. The computation of the Survivors' grant is the same as for the Retirement grant.