THE FUNDING FRAMEWORK

Methodology and User Guide 2

The Operational Budget

10 October 2015

CONTENTS

INTRODUCTION

The Funding Framework has three components of, namely:

- The Funding Formula, which is a mechanism for determining operational funds, Government Subsidy and, when necessary and deemed effective, performance and competitive funds

- The Investment Model, which addresses the need for additional facilities, given what exists and what enrolment in relevant programmes is expected, and

- The Tuition Fees Model, which addresses the principal issues surrounding tuition fees, namely –
  - o   what portion of such costs should be borne by students
  - o   the extent to which such costs should reflect differential programme costs, levels of study, and students' residential status

This manual is focusing on to the presentation of the Methodology and the User Guide for the estimation of the Operational Costs and the Government Subsidy within the Funding Formula.

1	THE OPERATIONAL COSTS MAIN PARAMETERS

1.2	THE COST PER STANDARDISED CREDIT UNIT

For the calculation of the Operational Funds, the driver will be the volume of courses taught by the HEIs. This volume will be exactly measured, for each student, by the number of subjects and the number of credit units attached in which he/she is registered. Hence, the basic unit for Operational Funds' calculations is the credit unit.

The use of the credit unit needs the estimation of the cost for that unit. This cost is different for each subject, depending on the field of learning and the offering mode. A subject in engineering is obviously more expensive than a subject in language or law. Therefore, the cost per credit unit is different and the basic unit cost should be weighted differently, according to the field of learning and the offering mode as described herein below.

1.2	THE WEIGHTING OF THE FIELDS OF LEARNING

Table I.1 below presents the weightings for the twelve National Qualification Framework's fields of learning. A specific methodology has been used to estimate these weightings.[1]

The table below shows, as an example, that the field of learning "Business, Commerce and Management Studies " has the lowest unit cost per credit and is assigned the basic weight equal to 1. The field of learning "Manufacturing, Technology, and Engineering" has a weight equal to 2. This means that, for a given offering type, a credit unit has a cost of 100% higher in this field compared to a credit unit in the basic field (reference field, i.e. "Business, Commerce and Management Studies and Law ").

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[1] The methodology is presented in Annex.

These weightings are to be updated yearly by the Operational Funds Committee at the NCHE, according to any relevant consideration.

Table I.1 - Weighting by Field of learning

Field of Learning	Weight
1.Agriculture and Nature Conservation	2
2.Business, Commerce and Management Studies	1
3.Communication Studies and Language	1
4. Culture and the Arts	1
5.Education, Training and Development	1
6. Manufacturing, Engineering and Technology	2
7. Human and Social Studies	1
8. Law, Military Science and Security	1
9. Health Sciences and Social Services	1.5
10. Physical, Mathematical and Computer Sciences	2
11. Physical Planning and Construction	2
12. Services and Life Sciences	1.5

1.2	THE WEIGHTING OF THE OFFERING TYPES

The costs are also different according to the offering type. For Part Time (PT) students, the workload seems to be the same as for Full Time (FT) students. If PT students are registered for a given number of subjects only, this will be taken into account because the formula is based on the subjects for which a student is registered.

For distance students, the practice in many countries is to give a 0.5 weight for distance offerings below and up to Honours level, as compared to contact (on-

campus) offerings. At Master's and Doctoral levels, there is no differentiation in weighting. The argument to substantiate this practice is that students enrolled for distance-mode offerings do not have access to the entire supporting academic, administrative, health and sport facilities and services that are available for contact students. The institutions do not support this cost for distance students. One of the counter arguments to this practice is that it is costly to offer a high-quality service to distance students. In some cases, special facilities are erected or rented for these students to ensure some direct teaching. In addition, there are costs involved in providing library material to these students.

In Namibia, the majority of public HEIs are located in Windhoek. There is a definite need for distance tuition for thousands of potential HE students living in far-out regions of Namibia. In order to encourage universities to offer distance tuition and then widen the access to HE, it is proposed that distance training receives at least a weighting equal to 0.7. Lower funding for distance training will, at this stage of HE development in Namibia, be counter-productive. This approach can be revised at any moment by the NCHE FF/HEMIS Committee, once distance offerings have grown significantly and a proper costing study has been conducted.

The Table below shows that the "Contact" (FT and PT) offering type is assigned the basic weight equal to 1, while the "Distance" offering type has a weight equal to 0.7; which means that, for a given field of learning, a credit unit has a cost 30% lower for "Distance" offering type compared to a credit unit in the basic one (reference type) (i.e. "Full Time").

Table I.2 – Weighting by offering type

OFFERING TYPE		WEIGHT
1	Contact (Full Time and Part time)	1
3	Distance	0.7
4	Research: Honours and Master's	1.5
5	Research: PhDs	2

For students who are preparing their Thesis (Bachelor's, Honours, Master's and Ph.D.), a number of credits is assigned to the research component, each year. This involves costs for the institutions. Two specific offering types are added to cater for the research component of the academic costs: the "Research: Honours & Master's" and the "Research: PhDs".

- The weighting for a credit unit for the "Research: Honours & Master's" is – given the field of learning – equal to 1.5;
- The weighting for a credit unit for the "Research: PhDs" is – given the field of learning – equal to 2. This means that –for a given field of learning – a credit unit has a cost of 100% higher for the "Research: PhDs" offering type compared to a credit unit in the basic offering type (reference type) (i.e. " Full Time").

All the students registered are included in the calculations, regardless of their citizenship and their sources of funding, except for some purposes, such as equity adjustment process, where only Namibian students are considered.

1.3	THE ECONOMIES OF SCALE COSTS

Each funding formula involves a way to deal with the issue of Economies of Scale. The *economies of scale costs* are added to the calculated Operational Costs on account of the following:

- A minimal number of personnel and infrastructure is needed before any student could enrol at any HEI. They cover these unavoidable (necessary) fixed costs.
- The cost per student is usually much higher in relatively small HEIs or remote campuses of a given HEI than in larger institutions. In order to offer some diversity in academic programmes, all with a well-balanced choice of academic modules in each year of the programme, small institutions are usually faced with many small class groups. Small student-to-lecturer ratios lead to high unit costs. The additional cost students help to alleviate this problem of lack of economy of scale.

The *economies of scale* generate additional costs. These costs are applied only to students registered in HEIs and/or remote campuses with less than 1,000 students. For these students, the cost of a credit unit shall be increased by 40%. This percentage was estimated by comparing costs in large campuses with costs in the campus with less than 1,000 students. Students enrolled in distance offering type have a weight of 70% and are converted into contact equivalent students.

2.	**PREPARING THE OPERATIONAL BUDGET: UPDATING THE FF PARAMETERS**

The preparation of the Budget Proposal for the public HEIs is made through the Funding Framework. The main input of the FF is constituted by the databases that are provided yearly by the HEIs. One other important input are the Parameters of the FF.

The FF parameters are two folds: the Global parameters; and the Specific Parameters.

The Global Parameters are those that apply to all Public HEIs for the indicated year; and the Specific Parameters are those that apply to each individual HEI. The last are provided by the each HEI within their Medium Term Plan and Budget.

The Global Parameters are classified under of three categories:

I.   Those that need to be updated each year:

The only parameter that needs to be updated each year is the Cost per SCU (CSCU, called Basic Unit Cost in the HEMIS).

II.   Those that are to be updated only if needed.

The parameters that are to be updated if needed are:
- The weightings of the fields of learning;
- The weightings of the offering types;
- The additional cost linked to the economies of scale.

III.   Those that need to be updated according to policy decisions regarding Performance Funds.

The parameters that need to be updated according to policy decisions are those related to Optional funds (Performance Funds).

Reasons to update the weightings may be for example major change in national objectives and the timeframe since the weights of the Fields of Learning and the Offering Type were determined.

The CSCU affects the general level of all the estimated financial data: the operational costs, and the Government subsidy. First, there is a need to make a distinction between the determination of the CSCU for a given year (Which becomes the **base year**) and the Updating of this Cost each year based on the evolution of the cost drivers in the Public HEIs, using a specific index. The last determination of the CSCU has been made for the year 2012, which is actually the base year. For the purpose of the estimation of 2016 budget proposal, this cost will be updated using the specific methodology described in the following sections.

Figure 2.1 - The Operational Budgeting Estimation Process

Computing the Higher Education Cost Adjustment Index using NSA Consumer Price Index (CPI).

Updating the Cost per Standardised Credit Units for year T (CSCU)

Computing Estimated Operational Costs (EOC) for year T

Computing Government Subsidy for year T

Each year, before using the FF, the system must be updated with the new values of the main parameters of the Framework.

Based on the approved MTPBs, the Funding Formula allows for the determination of the Operational costs and the Government subsidy. The Government subsidy is determined by the difference between the needs of the HEI for operational costs (estimated Operational Costs) and their own resources (Tuition Fees).

The estimations are calculated using two sets of parameters:
   - The Global parameters, and

- The Specific Parameters.

The Global Parameters are those which apply to all Public HEIs. They are classified under of three categories:
- Those that need to be updated each year;
- Those that are to be updated only if needed.
- Those that need to be updated according to political decisions regarding Performance Funds.

The only parameter that needs to be updated each year is the Cost per Standardised Credit Unit (or Basic Unit Cost).
The parameters that are to be updated if needed are:
- The weightings of the fields of learning;
- The weightings of the offering types;
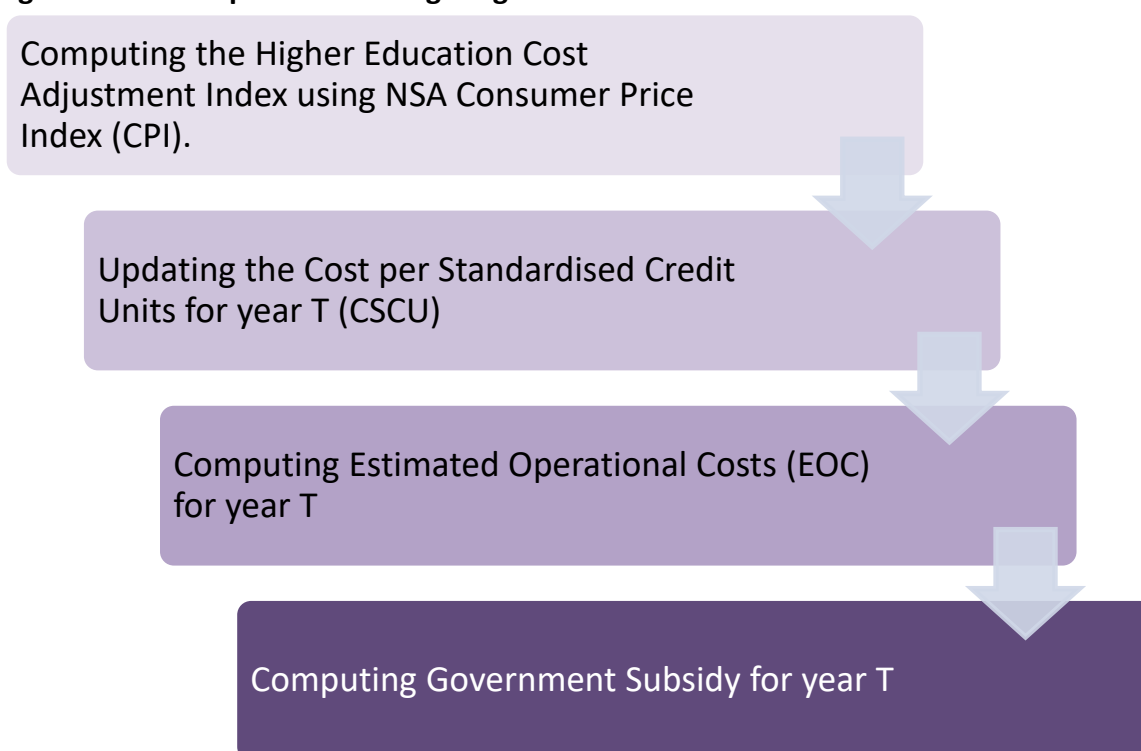- The additional cost linked to the economies of scale.

The parameters that need to be updated according to political decisions are those related to Performance Funds, which are optional funds.

The Cost per Standardised Credit Unit affects the general level of all the estimated financial data: the operational costs, and the Government subsidy. First, there is a need to make a distinction between the Estimation of the Cost per Standardised Credit Unit for the **base year** and the updating of this cost each year based on the evolution of the cost drivers in the Public Higher Education Institutions, using a specific index: the Higher Education Cost Adjustment Index (HECAI). The last estimation of the Cost per Standardised Credit Unit was made for the year **2012**, which **is actually the base year** (The methodology is presented in Annex 2). For the purpose of the estimation of 2016/17 budget proposal, this cost is updated using a specific index: The Higher Education Cost Adjustment Index (HECAI).

2.1	HOW TO UPDATE THE BASIC UNIT COST (OR COST PER STANDARDISED CREDIT UNIT)

The Cost per SCU has been estimated to be equal to 248.8 NAD in 2012 (See Annex 1). For the calculation of the operational costs in 2016-2017, this cost must be updated taking in account the increase of the cost of delivery in HEIs.

The Higher Education Cost Adjustment Index (HECAI) is used for updating the CSCU (See Annex 3, for a description of the construction of the HECAI).

The rate of growth of the cost for 2012-2016 is a weighted average of the rate of growth of the two components considered:
- The rate of growth of the salaries
- The rate of growth of the Goods and Services purchased by the HEIs

Growth rate of Costs

=

75% Rate of growth of the Salaries Index

+

25% Rate of growth of the Specific Goods and Services Price Index

The table 2.1 gives the determination of the HECAI for the period 2016/17 to 2018/2019.

Table 2.1: estimation of the HECAI for the period 2016/17 to 2018/2019

	Inflation rate			Updated CSCU
	Salaries (CPI)	Goods & Services	HECAI	
Weight	0.75	0.25		
Year				
2012/13				248.8
2014/15	11.3%	10.4%	11.0%	276.3
2016/17	23.8%	22.0%	23.3%	306.8
2017/18	30.7%	28.3%	30.1%	323.8
2018/19	38.1%	35.0%	37.3%	341.6

The Cost per SCU has been estimated at 248.8 NA$ in 2012/13.

For projection purposes, assuming that the specific inflation rate for the HEIs – as measured by the HECAI – will remain at the same level for the period 2014-2016 to 2018/19 as 2012-2014.

The updated Cost per SCU for the year for the period will be as follows:

Table 2.2 Determination of the CSCU for the period 2016/17 to 2018/19

Year	HECAI rate		CSCU
2012/13			248.8
2014/15	11.1%	248.8 NA$ *(1.113) = 276.3 NA$.	276.3
2016/17	23.4%	248.8 NA$ *(1.233) = 306.9 NA$.	306.8
2017/18	30.20%	248.8 NA$ *(1.301) = 323.8 NA$.	323.8
2018/19	37.40%	248.8 NA$ *(1.373) = 341.6 NA$.	341.6

These costs will be used for the estimation of the budget allocation for the period.

2.2 WEIGHTS FOR FIELDS OF LEARNING

The twelve fields of learning are grouped in a reduced number of clustered fields of learning and assigned weights. The clustering and the weights are considered parameters.

Even if these weights are not generally variable in the short and medium terms, they may be subject to adjustment if new information (such as specific studies conducted by the NCHE) makes it necessary.

2.3 WEIGHTS FOR OFFERING TYPE

Even if the weights are not generally variable in the short and medium terms, it may be subjected to adjustment if new information (such as specific studies conducted by the NCHE) makes it necessary.

2.4 PROJECTION DATA AND PARAMETERS

While the parameters above are common to all HEIs, the projection data and parameters are specific to each HEI. They are necessary for projecting the estimated costs. Each HEI submits its own parameters. These values are to be agreed by the NCHE FF/HEMIS Committee.

The first input is the expected number of students for the Target Year (Year T). This number must be in conformity with the data included in the approved annual development plan of the HEI.

The Expected Rate of Growth of the number of credit units (standardized) between the year T-2 and the year T is equal it to the Expected Rate of Growth of students between the year T-2 and the year T. This solution is based on the assumption of the stability of the distribution of the students by fields of learning. This may introduce a minor bias in the estimations and may be used, unless additional specific information is considered.

2.5	THE ADDITIONAL COST FOR ECONOMY OF SCALE

The additional cost for Economy of Scale is estimated at 40%. This additional cost means that the unit cost per credit for a student registered at a remote campus (as defined above) is globally 40% higher than for a student registered at a non-remote campus.

Even if this parameter is not generally variable in the short and medium terms, it may be subject to adjustment if new information (such as specific studies conducted by the NCHE) makes it necessary.

3.	**COMPUTATION OF THE GOVERNMENT SUBSIDY**

The computation of the Government Subsidy is automatically processed using HEMIS. It can also be done "manually" using EXCEL. HEMIS is a "Black box" i.e. an automatic procedure that doesn't require neither a specific knowledge of the way the FF works, nor any technical mastery of statistical software or Excel, provided the user follows the procedure described in the user manual. When fed with the necessary data and parameters, it provides a rapid and secure way to estimate the Operational costs and the Government Subsidy.

A "manual" procedure is possible using Excel. This requires a good mastery of Excel worksheet as a database manager. The advantage is to allow to see how the FF works and allow for adaptation and changes.

You need to have the two main databases on Excel format:

- The HEI Students database for the year T-2; and
- The HEI Subjects database for the year T-2.

3.1 USING EXCEL FOR THE COMPUTATION OF THE GOVERNMENT SUBSIDY

3.1.1 Compute the Number of SCU for the year T-2.

The Database to be used is the Subjects Database.

The first step is to build a new variable. For each subject, one must calculate the total number of standardized credits attached to this subject. This number is equal to:

Total number of standardized credits for the Subject

=

Number of Credits of the Subject

X

Number of students registered to this subject

X

Weight of the Field of Learning of the Subject

X

Weight of the Offering Mode of the Subject

The total Number of Standardised Credit Units for the HEI at the Year T is the Sum over all the subjects in the Subjects database of the**Total number of standardized credits for each subject.**

3.1.2 Projection of the Number of SCU for the years T, T+1 and T+2.

The number of SCU is assumed to grow as the number of students. The table 3.1 shows the projection of the number of SCU:

Table 3.1 Projection of the Number of SCU

Parameter	2014	2015	2016	2017	2018
Number of Students	19,506	21,012	22,453	24,798	26,657
Expected Rate of Growth of the Number of Students		7.7%	6.9%	10.4%	7.5%
Number of SCU	**3,073,575**	3,310,876	3,537,936	3,907,439	4,200,363

3.1.3 Compute the Operational Costs.

The Operational Costs are simply calculated as indicated in the Formula Above.

Operational Costs

=

Number of SCU

X

Cost per SCU

Table 3.2 Operational Costs Estimation 2016/18

	2014	*2015*	*2016*	*2017*	*2018*
Cost per SCU	276.2	291.1	306.7	323.2	340.5
Number of SCU	**3,073,575**	3,310,876	3,537,936	3,907,439	4,200,363
Operational Costs	849,039,889	963,705,299	1,085,096,122	1,262,779,348	1,430,339,285

3.1.4 Compute the Economy of Scale Additional Costs

In order to compute the Economy of Scale Additional Costs, one need to compute the % of FTE students in remote campuses under 1000 students.

The Database to be used is the Students Database. Using the excel database functions (pivotal table) one can build the table 3.3:

Table 3.3 Students by Campus and Offering Type

	Remote Campuses				Non Remote Campuses				Grand Total
	Full Time	Part Time	Distance	Total	Full Time	Part Time	Distance	Total	
EENHANA CENTRE			177	177					177
GOBABIS CENTRE			84	84					84
HENTIES BAY RESEARCH CENTRE	49			49					49
HP CAMPUS	1399			1399					1399
KATIMA CAMPUS	530			530					530
KATIMA MUL CENTRE			188	188					188
KHOMASDAL CAMPUS					842			842	842
KHORIXAS CENTRE			35	35					35
NEUDAMM CAMPUS					164			164	164
OGONGO CAMPUS	265			265					265
ONGWEDIVA CAMPUS	264			264					264
OSHAKATI CAMPUS	501		926	1427					1427
OTJIWARONGO CENTRE			134	134					134
RUNDU CAMPUS	881			881					881
RUNDU CENTRE			348	348					348
SCHOOL OF MEDICINE					450			450	450
SOUTHERN CAMPUS	45		131	176					176
SWAKOPMUND CENTRE			172	172					172
TSUMEB CENTRE			134	134					134
WINDHOEK CAMPUS					9047	1316	1424	11787	11787
Grand Total	3934		2329	6263	10503	1316	1424	13243	19506

Source: UNAM Students Database

From this table one can estimate an important parameter that determines the amount of additional funds for Economy of Scale i.e. **the percentage of FTE number of student's in Remote Campuses under 1000 students.**
It is to be noted that:

- The threshold of 1000 students is calculated on the number of students regardless of the offering mode.
- The percentage of students in remote campuses is calculated after conversion of distance students to Full Time Equivalent number of students.
- For conversion needs, a distance student is considered as equivalent to 0.5 FT student. This conversion rate is different from, the one used for the weighting of the credits (0.7). The two weightings address different purposes.

The fact that a campus is remote (or not) is a geographical notion. To benefit of the Economy of scale additional funds a campus must be Remote <u>AND</u> have less than 1000 students. Thus, HP and Oshakati Campuses are remote campuses but have more than 1000 students (respectively 1399 and 1427) are not counted within the "remote campuses under 1000 students"). It is worth noted that the decision is made before converting students to FTE number of students.

Table 3.4 (calculated using the data in the Table3.3) allows for calculating the % of FTE students in remote campuses under 1000 students.

Table 3.4 Students By Campus

	FTE Number of students in Remote Campuses Under 1000 Students	FTE Number of students in Non-Remote Campuses or Remote Campuses over 1000 Students	Total
EENHANA CENTRE	89	0	89
GOBABIS CENTRE	42	0	42
HENTIES BAY RESEARCH CENTRE	49	0	49
HP CAMPUS		1399	1399
KATIMA CAMPUS	530	0	530
KATIMA MUL CENTRE	94	0	94
KHOMASDAL CAMPUS	0	842	842
KHORIXAS CENTRE	18	0	18
NEUDAMM CAMPUS	0	164	164
OGONGO CAMPUS	265	0	265
ONGWEDIVA CAMPUS	264	0	264
OSHAKATI CAMPUS		964	964
OTJIWARONGO CENTRE	67	0	67
RUNDU CAMPUS	881	0	881
RUNDU CENTRE	174	0	174
SCHOOL OF MEDICINE	0	450	450
SOUTHERN CAMPUS	111	0	111
SWAKOPMUND CENTRE	86	0	86
TSUMEB CENTRE	67	0	67
WINDHOEK CAMPUS	0	11075	11075
Grand Total	**2736**	**14894**	**17630**
% FTE Students	**15.52%**	**84.5%**	**100.0%**

Thus, 15.52% of the students (counted in FTE) are in remote campuses.

The Additional Economy of Scale Funds consist in 40% added to the Operational costs applied only to the students in Remote Campuses under 1000 students. Thus, they are calculated as follows:

Additional Economy of Scale Funds

=

Estimated Operational Costs

X

% of FTE Students in Remote Campuses under 1000

X

40%

The Total Operational Costs are calculated as The Sum of the Operational Costs and the Additional Costs for Economy of Scale:

Total Operational Costs

=

Operational Costs

+

Additional Costs for Economy of Scale

3.1.5 Projection of the Total Amount of Tuition Fees for the years T, T+1 and T+2, and Computation of the Government Subsidy.

The Total Amount of Tuition Fees have two sources of growth:
- The growth of the number of students; and
- The growth of the TF per student.

The rate of growth of the TF per student is a core parameter of the Funding Formula. An increase of this rate will translate into an increase of the total amount of TF and an equivalent decrease of the estimated Government Subsidy. In the same time it will affect negatively the affordability of and harm the access to higher education, particularly for the neediest candidates, unless adequate students' financial assistance scheme exists.

The reference rate of growth for TF per student is the HECAI index, the same used to update the Cost per Standardised Credit Unit (CSCU). But this being an important policy decision, any other rate of growth can be adopted. The decision depending upon policy impact: the equilibrium of the Government budget and the affordability of HE to the population.

Tuition Fees For the year T

=

Tuition Fees For the year T-2

X

(1+Rate of growth of the students between the year T-2 and the year T)

X

(1+Rate of growth of the TF per student between the year T-2 and the year T)

The results are given in Table 3.5:

Table 3.5 Projection of the Number of SCU

Parameter	2014	2015	2016	2017	2018
Number of Students 2014	19,506	21,012	22,453	24,798	26,657
Expected Rate of Growth of the Number of Students		7.7%	6.9%	10.4%	7.5%
Annual Expected Rate of Growth of fees per Student		5.4%	5.4%	5.4%	5.4%
Tuition Fees (NAD)	**313,727,000**	356,198,167	401,180,001	467,005,682	529,123,917

The Estimated Government Subsidy is equal to the difference between Total Operational Costs and the Tuition Fees

<div style="border: 1px solid black; padding: 1em; text-align: center;">

Estimated Government Subsidy

=

Total Operational Costs

-

Tuition Fees

</div>

The Table 3.6 summarises the main steps described above.

Table 3.6 Budget Estimation

	2014	**2015**	**2016**	**2017**	**2018**
Cost per SCU	276.2	291.1	306.7	323.2	340.5
Number of SCU	3,073,575	3,310,876	3,537,936	3,907,439	4,200,363
OC	849,039,889	963,705,299	1,085,096,122	1,262,779,348	1,430,339,285
Additional Economy of Scale	52,696,869	59,813,740	67,348,035	78,376,197	88,776,043
Total Estimated OC	901,736,758	1,023,519,039	1,152,444,156	1,341,155,545	1,519,115,328
Tuition Fees	313,727,000	356,198,167	401,180,001	467,005,682	529,123,917
Estimated Government Subsidy	588,009,758	667,320,873	751,264,156	874,149,862	989,991,411

3.2 USING HEMIS FOR THE COMPUTATION OF THE GOVERNMENT SUBSIDY

After authentication, each user, despite his role, will be redirected to the following page which lists the functionalities he can access:
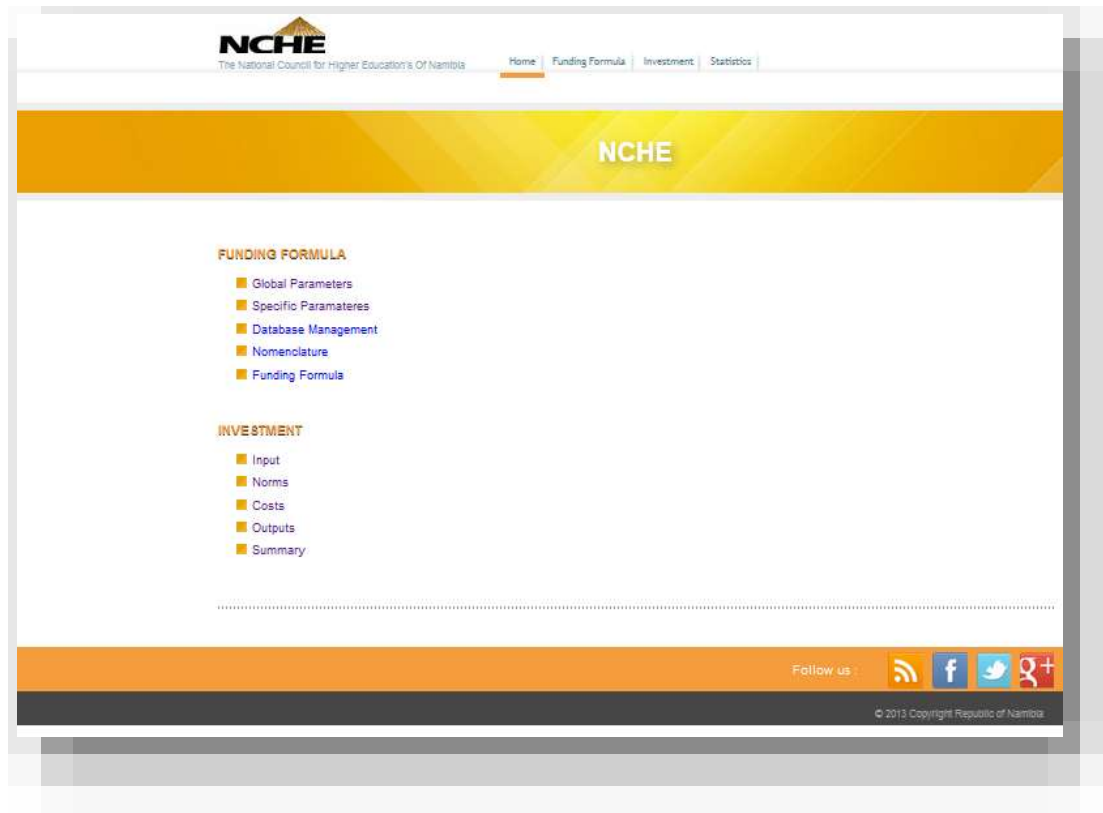
The functionalities are grouped in two categories:

- Funding formula
  - Global parameters
  - Specific parameters
  - Database management
  - Nomenclature
  - Funding formula
- Investment
  - Input
  - Norms
  - Costs
  - Outputs
  - Summary

3.2.1 Global parameters

This functionality is only accessible for NCHE and Administrator user.

It allows the NCHE to manipulate the global parameters of the system. The values of those parameters are stored in the database by year so the user can always check the history of the previous year.

The "Save" button is only activated only if the chosen academic year corresponds to the current year.

The global parameters are:

- Basic unit cost
- Fields of learning weights
- Offering types weights
- ADDITIONAL COST FOR ECONOMY OF SCALE (%)
- WEIGHTING FOR THE EQUITY FACTOR
- WEIGHTING FOR THE ADEQUACY FACTOR
- WEIGHTING FOR THE INTERNAL EFFICIENCY FACTOR
- WEIGHTING FOR THE EXTERNAL EFFICIENCY FACTOR
- WEIGHT FOR RESEARCH OUTCOME FUNDS

FIELDS OF LEARNING WEIGHTS

Label	Value
Agriculture and Nature Conservation	2.0
Business Commerce and Management Studies	1.0
Communication Studies and Language	1.0
Culture and the Arts	1.0
Education Training and Development	1.0
Manufacturing Engineering and Technology	2.0
Human and Social Studies	1.0
Law Military Science and Security	1.0
Health Sciences and Social Services	1.5
Physical Mathematical and Computer Sciences	2.0
Physical Planning and Construction	2.0
Services and Life Sciences	1.5

OFFERING TYPES WEIGHTS

Label	Value
Contact	1.0
Distance	0.7
Research Honours and Masters	1.5
Research PhD	2.0

PARAMETERS LIST

Label	Value
ADDITIONAL COST FOR ECONOMY OF SCALE (%)	
WEIGHTING FOR THE EQUITY FACTOR	
WEIGHTING FOR THE ADEQUACY FACTOR	
WEIGHTING FOR THE INTERNAL EFFICIENCY FACTOR	
WEIGHTING FOR THE EXTERNAL EFFICIENCY FACTOR	
WEIGHT FOR RESEARCH OUTCOME FUNDS	

If the value entered is not null so the Premium by Type of Research Outcome will be displayed. It contains the following features:

- o Articles in accredited research Journals 1
- o Articles in accredited research Journals 2
- o Scholarly books
- o Proceedings
- o Technical Reports

o Registered patents involving quality research

The labels of these parameters are administrated in the Nomenclature functionality.

If the user put an error notification will be shown to tell him to verify the entered value as illustrated in following picture:
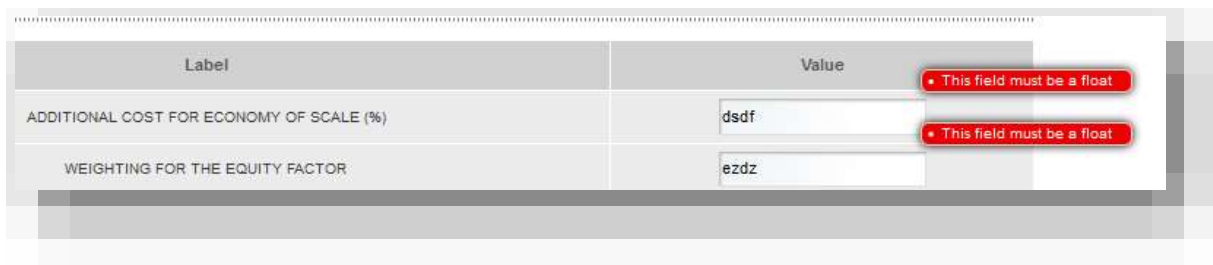
When all values are entered the user has to submit by clicking on "Save" button. After that, if all values are put correctly, a success notification will be displayed as below:
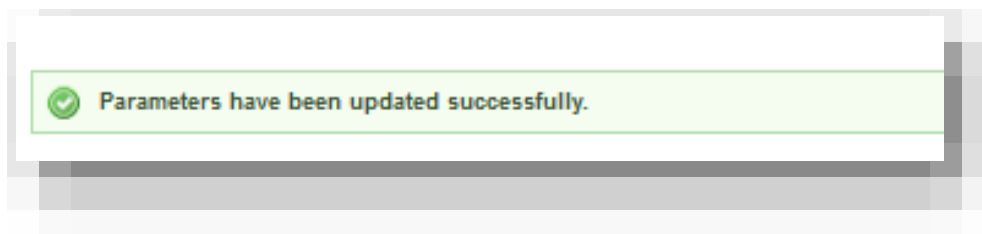
3.2.2 Specific parameters

This feature is designed to manage parameters related to each HEI.

If the user connected has the NCHE role so he will have a select field containing the list of available HEIs, so he can choose one of them and then click on "Search" button to see values saved for this HEI.
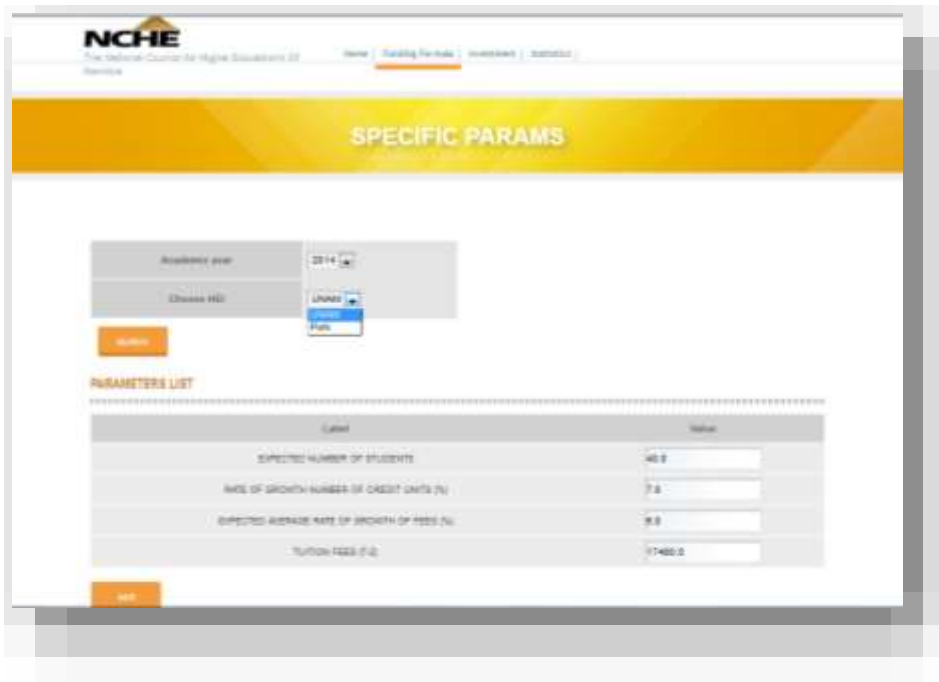
Otherwise if the connected user has the HEI role, so the system will automatically identify which HEI is connected and all values displayed are specific to this HEI. In that case only the Academic year filter will be available as shown in this figure:

The list of the specific parameters is:

- EXPECTED NUMBER OF STUDENTS
- RATE OF GROWTH NUMBER OF CREDIT UNITS (%)
- EXPECTED AVERAGE RATE OF GROWTH OF FEES (%)
- TUITION FEES (T-2)

When all the inputs and parameters are updated the HEMIS produces for each HEI the estimation of the outputs that may be summarised in the table 3.7:

Table 3.7 Estimated Costs and Subsidy for the Year T

Costs	Value
MAIN INPUTS AND PARAMETERS	
Unit Cost	
Number of Students	
Number of Standardised Credits	
MAIN OUTPUTS	
Estimated Operational Costs	
Additional Economy of Scale Costs	
Expected Income	
Estimated Government Subsidy	
Optional Performance Funds	
Total Estimated Government Grant for Recurrent Expenses	
APPROVED CAPITAL FUNDS	
TOTAL GOVERNMENT FUNDING	

The Funding Formula is a Support tool for decision. It provides an objective input for the process leading to a final decision about public HEIs funding.

The process leading to a final Budget Proposal is described below:

```
┌──────────────┐
│ Preparator   │
│ y Step:      │
│ Updating     │
│ Global       │
│ parameter    │
│ s (CSCU)     │
└──────────────┘
      │
┌──────────────┐     ┌─────────────────────────────────────────────────────┐
│ Assessmen    │     │ •The preliminary results are discussed with each HEI │
│ t of the     │     │   separately.                                         │
│ MTPBs        │     │ •A report is prepared and transmitted to the FF/HEMIS │
│              │     │   Committee                                           │
└──────────────┘     └─────────────────────────────────────────────────────┘
      │
┌──────────────┐     ┌─────────────────────────────────────────────────────┐
│ The          │     │ •The HEIs are informed about the Resolution of the FF/HEMIS │
│ Committ      │     │   Committee                                           │
│ ee           │     └─────────────────────────────────────────────────────┘
│ Approval     │
│ of the       │
│ MTPBs        │
└──────────────┘
┌──────────────┐     ┌─────────────────────────────────────────────────────┐
│ Estimati     │     │ •The HEIs are informed about the Budget Estimation outcomes │
│ on of        │     └─────────────────────────────────────────────────────┘
│ the          │
│ Budget       │
│ Proposa      │
│ l            │
└──────────────┘
┌──────────────┐     ┌─────────────────────────────────────────────────────┐
│ The          │     │ •The HEIs are informed about the Resolution of the FF/HEMIS │
│ Committee    │     │   Committee                                           │
│ Approval     │     └─────────────────────────────────────────────────────┘
│ of the       │
│ Budget       │
│ Proposal     │
└──────────────┘
┌──────────────┐
│ Submissio    │
│ n of the     │
│ Budget       │
│ Proposal     │
│ to the       │
│ Council      │
└──────────────┘
┌──────────────┐     ┌─────────────────────────────────────────────────────┐
│ The          │     │ •The HEIs are informed about the Resolution of the Council │
│ Council      │     └─────────────────────────────────────────────────────┘
│ Approval     │
│ of the       │
│ Budget       │
│ Proposal     │
└──────────────┘
┌──────────────┐
│ Submissio    │
│ n            │
│ of the       │
│ Budget       │
│ Proposal     │
│ to the       │
│ MHETI        │
└──────────────┘
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ANNEX 1: ESTIMATING AND UPDATING THE WEIGHTINGS

A1.1.	INTRODUCTION

Most of the Funding Formulas are enrolment-based, which means that the driver of the formula (or the cost unit) is the number of students.[2]

One of the big issues that policy makers must resolve, when using enrolment-based formula systems, is how to define what course load constitutes full-time status and how to differentiate between full-time and part-time students. There is great variety in how countries address these questions although in almost all cases full time students, however defined, are given a different weight than part-time students in calculating per student costs, student/faculty ratios, and other measures. Another common convention is to convert part-time students to full-time equivalency based on their course load.

Another issue is the question of whether to differentiate costs by field and level of study is an important consideration regardless of what type of cost per student calculation is used. For example, should undergraduate costs per student be calculated separately from graduate student costs? Should distinctions be made between relatively low cost fields in the humanities and education and typically higher cost fields in the sciences and engineering? Most governments do make such distinctions in their allocation systems but in a wide variety of ways. One approach is to 'band' certain fields of study into cost categories, 'x' cost for a humanities student and a larger 'y' cost for an engineering student. These bands can become quite numerous. At one time the UK had a matrix of 44 cells in its cost per student formula, although that structure has been simplified under more recent reforms. Australia has recently announced that it will move to an allocation system in which fixed sums per

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[2] Jamil Salmi and Arthur M. Hauptman, INNOVATIONSIN TERTIARY EDUCATION FINANCING: A COMPARATIVE EVALUATION OF ALLOCATION MECHANISMS, World Bank September 2006. P10.

student will be used in eight subject groupings, and that the number of students to be funded in each group will also be set, representing a step forward in control.

Another key issue in developing enrolment-based allocation systems is whether the number of students that will be funded is capped. Most countries do limit the number of students they will fund principally through a planning process as a means for controlling budgetary exposure. A few countries have a more demand-driven funding system in which funding caps are not imposed and all qualified students are funded albeit often it at lower per student spending levels than would apply under a capped system. New Zealand is perhaps the most prominent example of such a demand-driven funding system, although budgetary realities are leading to reconsideration of these open-ended arrangements.

Most funding formulas now are based on some measure of the number of students enrolled at a point in time multiplied by a cost per student calculation. The cost per student figures are typically calculated retrospectively for an obvious reason – institutions should not be funded on the basis of the costs they think they will incur–and are based on one of several enrolment figures as shown below:

1. Actual costs per student– The most traditional form of formula funding occurs when allocations to institutions are based on actual costs per student as reported by the institution. Most states in the US use actual costs per student in their funding formulas; many countries also seek to use actual costs in calculating their institutional allocations.

2. Average costs per student–In this approach, which constitutes an alternative to using actual costs per student at each institution, allocations to institutions are based on system- wide average costs per student, usually calculated from aggregate statistics on spending and enrolments.

3. Normative costs per student–Under this approach, optimal staff/student ratios and other standardized efficiency measures are used to calculate what

costs per student *ought* to be, rather than what they are on an actual or average basis.

4. Thus, formulas using normative costs have the potential for improving efficiency by tying how much institutions will be paid for their expenses to a more efficiency-based standard. Among industrial countries, England is one of the main countries where normative costs have become part of the funding formula calculation.

5. Often at the urging of the World Bank, normative costs have recently been introduced into funding formulas in a number of developing and transition countries as well, for example in Bulgaria, Hungary and the Czech Republic.

6. <u>Benchmarking</u>–One form of normative costs used in some countries is one in which the cost figures and structure are pegged to a 'benchmark' institution or set of institutions. A number of states in the US, for example Kentucky, use the cost structures of comparable institutions in other states to help establish the costs per student in their funding formulas.

The question of whether to differentiate costs by field and level of study is also an important consideration regardless of what type of cost per student calculation is used. For example, should undergraduate costs per student be calculated separately from graduate student costs? Should distinctions be made between relatively low cost fields in the humanities and education and typically higher cost fields in the sciences and engineering? Most governments do make such distinctions in their allocation systems but in a wide variety of ways. One approach is to 'band' certain fields of study into cost categories, 'x' cost for a humanities student and a larger 'y' cost for an engineering student. These bands can become quite numerous. AtonetimetheUKhadamatrixof44cellsinits cost per student formula, although that structure has been simplified under more recent reforms. Australia has recently announced that it will move to an allocations system in which fixed sums per student will be used in eight subject groupings, and that the number of students to be funded in each group will also be set, representing a step forward in control.

The Namibia FF is not enrolment driven formula; it is indirectly. The driver being the *number of credits*, given the link between the number of credits and the number of students the two ways are similar, without being strictly equivalent. Taking the credit as unit, in place of the student, the FF has the advantage to solve the issue of the conversion of the Part-time students to Full Time Equivalent ones; each student being counted for only for the subjects in which he is registered, and the number of credits related to these subjects.

Assuming as it is widely accepted that costs must be differentiated by Field of Learning, the other vantage of a credit based formula, is that a cost per credit (or per subject) translates more reliably the cost than a cost per student. Each student is a "basket" of subjects, each subject pertaining to a specific filed of learning, and consequently having a different cost. A student in Business or Economics have courses of economics, language, and also mathematics and IT. Thus, having a weighting that is related to the field of learning of each subject makes more sense than having a weighting related to the field of learning of the student (i.e. the field of learning of the qualification in which he/she is registered).

It was a big Challenge to come with weightings. The option was made by the Technical Committee to base these weightings on the observed differences that exist between the different fields of learning on the cost side. The main issue is that the financial data of the public HEIs –namely UNAM and PoN- doesn't allow to split the costs according the fields of learning. For Polytechnic, the financial data is not useful because the budget of a given department covers expenses of the students of the department and students of other departments. While examining the expenses by student, it was found huge discrepancies in the cost per student between comparable departments (as example: departments in the same School). The data by department wasn't useful for estimating costs per credit by field of learning. The Financial database of UNAM was used. The following section describes the methodology for estimating the cost by credit

for each field of learning. The methodology certainly suffers from many shortcomings but it is the best that can be done with existing data. The end

result is at least an approach that is not very far from reality.

A1.2.	ESTIMATING THE WEIGHTS FOR THE FIELDS OF LEARNING

From the UNAM financial database one can extract the important table 1 giving the expenses attributed "directly" to the departments.

Table A1.1. UNAM. Expenses by Department 2011

Department	Expenses
ACC. & AUDITING & INCOME TAX	9,718,412
AGRICULTURAL ECONOMICS	4,129,124
ANATOMY	2,465,370
ANIMAL SCIENCE	6,505,261
BIOLOGICAL SCIENCES	11,179,948
CENTRE FOR EXTERNAL STUDIES	25,807,866
CHEMISTRY AND BIOCHEMISTRY	10,289,866
COMM. MEDICINE	1,895,659
COMMUNITY HEALTH NURSING SCIEN	1,080
COMPUTER SCIENCE	7,144,498
CROP SCIENCE	5,453,209
CURR., INSTR. & ASSES. STUDIES	6,559,587
DEAN: AGRI. & NAT. RESOURCES	3,281,442
DEAN: EDUCATION	4,305,297
DEAN: FACULTY OF LAW	7,716,032
DEAN: HUMANITIES & SOCIAL SCI.	1,380,275
DEAN: MEDICAL SCHOOL	3,438,999
DEAN: SCHOOL OF NUR & P HEALTH	2,024,141
DEAN: SCIENCE	1,202,046
DEAN:ECONOMIC & MANAGMENT SCI.	2,101,445
DIRECTOR: LANGUAGE CENTRE	8,820,300
ECONOMICS	5,614,084
EDUC. PSYCHOLOGY & INCL EDUC.	4,719,006
EDUCATIONAL FOUND & MANAGEMENT	4,658,043
ENGINEERING AND TECHNOLOGY	12,301,142
FOOD SCIENCE & TECHNOLOGY	3,459,390
FOUNDATION PROGRAMME	2,205,848
GEOGRAPHY, HIST. & ENVIRONM ST	5,649,984
GEOLOGY	4,245,021
HUMAN SCIENCE	8,558,791
INFORMATION STUDIES	4,313,005
LANGUAGE & LITERATURE STUDIES	8,856,161
LOWER PRIMARY EDUCATION	1,414,766
MANAGEMENT SCIENCE	4,662,768
MATHEMATICS	6,588,606
MATHS, SCIENCE & SPORTS EDUC.	6,134,227
MICROBIOLOGY	232,826
MINING & METALLURGY	3,336,203
NURSING SCIENCE	21,332,150
PARAMEDICAL SERVICES	1,592,018
PERFORMING & VISUAL ARTS	5,901,786

Table A1.1. UNAM. Expenses by Department 2011

Department	Expenses
PHARMACY	611,714
PHYSICS	6,234,914
PHYSIOLOGICAL CHEMISTRY	1,904,265
POLI. & ADMIN. STUDIES	6,353,789
PRIVATE & PROCEDURAL LAW	520,015
PSYCHIATRIC NURSING SCIENCE	85,509
PSYCHIATRY & BEHAVIOURIAL SCIE	673,795
PUBLIC LAW AND JURIS PRUDENCE	7,264
REGISTRAR	1,861,452
SOC SCIENCE & COMM. EDU	1,907,085
SOCIOLOGY	3,200,440
STATISTICS & POPULATION STUDIE	4,585,926
UNIVERSITY CENTRES	246,982
Total	**269,388,829**

It is to be noted that the "attributed expenses" are only 269 million. The remaining expenses may not be attributable to specific departments and covers all the departments. It constitutes the overhead expenses that should be distributed between all the departments according to the number of credits.

From the Subjects Database one construct the table 2 giving the number of credits by Department and by Field of Learning.

Table A1.2. UNAM 2011. Number of credits by Department and by Field of Learning

Department	Agriculture and Nature Conservation	Business, Commerce and Management Studies	Communication Studies and Language	Culture and the Arts	Education, Training and Development	Health Sciences and Social Services	Human and Social Studies	Law, Military Science and Security	Manufacturing, Engineering and Technology	Physical Planning and Construction	Physical, Mathematical and Computer Sciences	Services and Life Sciences	Total
ACC. & AUDITING & INCOME TAX	0	190520	0	0	0	0	0	22592	0	0	26608	0	239720
ADULT & NON-FORMAL EDUCATION	0	656	0	0	35164	0	0	0	0	0	0	0	35820
AGRICULTURAL ECONOMICS	0	12164	0	0	0	0	672	0	0	0	0	0	12836
ANATOMY	0	0	0	0	0	0	0	0	0	0	3904	0	3904
ANIMAL SCIENCE	12604	0	0	0	0	0	0	0	0	0	0	0	12604
BIOLOGICAL SCIENCES	0	120	0	0	0	0	0	120	0	0	55106	368	55714
CENTRE FOR EXTERNAL STUDIES	0	167420	155592	1056	114324	85372	54296	15440	0	48	85180	0	678728
CHEMISTRY AND BIOCHEMISTRY	0	0	0	0	0	0	0	0	0	0	42928	0	42928
COMM. MEDICINE	0	0	0	0	0	7152	0	0	0	0	1248	0	8400
COMMERCIAL LAW	0	64	0	0	0	0	0	33208	0	0	0	0	33272
COMMUNITY HEALTH NURSING SCIEN	0	0	0	0	0	21904	1380	0	0	0	0	0	23284

Table A1.2. UNAM 2011. Number of credits by Department and by Field of Learning

Department	Agriculture and Nature Conservation	Business, Commerce and Management Studies	Communication Studies and Language	Culture and the Arts	Education, Training and Development	Health Sciences and Social Services	Human and Social Studies	Law, Military Science and Security	Manufacturing, Engineering and Technology	Physical Planning and Construction	Physical, Mathematical and Computer Sciences	Services and Life Sciences	Total
COMPUTER SCIENCE	0	0	0	0	0	0	0	0	0	0	59752	0	59752
CROP SCIENCE	8720	0	0	0	0	0	0	0	0	0	0	0	8720
CURR., INSTR. & ASSES. STUDIES	0	0	35392	0	93320	0	0	0	0	0	0	0	128712
DEAN: AGRI. & NAT. RESOURCES	4944	0	0	0	0	0	0	0	0	0	0	0	4944
DEAN: EDUCATION	0	0	1048	0	32024	0	0	0	0	0	0	0	33072
DEAN: FACULTY OF LAW	0	0	0	0	0	0	0	192	0	0	0	0	192
DEAN: HUMANITIES & SOCIAL SCI.	0	0	0	0	0	0	4236	0	0	0	0	0	4236
DEAN: MEDICAL SCHOOL	0	0	0	0	0	832	0	0	0	0	0	0	832
DEAN: SCHOOL OF NUR & P HEALTH	0	0	0	0	0	41328	0	0	0	0	0	0	41328
DEAN: SCIENCE	0	0	0	0	0	0	0	0	0	0	864	0	864
DEAN:ECONOMIC & MANAGMENT SCI.	0	168	0	0	0	0	0	0	0	0	0	0	168

Table A1.2. UNAM 2011. Number of credits by Department and by Field of Learning

Department	Agriculture and Nature Conservation	Business, Commerce and Management Studies	Communication Studies and Language	Culture and the Arts	Education, Training and Development	Health Sciences and Social Services	Human and Social Studies	Law, Military Science and Security	Manufacturing, Engineering and Technology	Physical Planning and Construction	Physical, Mathematical and Computer Sciences	Services and Life Sciences	Total
DIRECTOR: LANGUAGE CENTRE	0	0	904	0	0	0	0	0	0	0	0	0	904
EARLY CHILDHOOD & LOWER PRIM	0	0	0	0	420	0	0	0	0	0	0	0	420
ECONOMICS	0	72336	0	0	0	0	0	0	0	0	4400	0	76736
EDUC LANGUAGES, HUMAN. & COMM	0	0	184	0	0	0	0	0	0	0	0	0	184
EDUC. PSYCHOLOGY & INCL EDUC.	0	0	2208	0	28346	0	928	0	0	0	0	0	31482
EDUCATIONAL FOUND & MANAGEMENT	0	0	264	0	40664	0	0	0	0	0	0	0	40928
ENGINEERING AND TECHNOLOGY	0	256	0	0	0	0	0	0	23440	688	2984	0	27368
FISHERIES & AQUATIC SCIENCE	3004	588	0	0	0	0	0	0	0	0	0	0	3592
FOOD SCIENCE & TECHNOLOGY	1972	0	0	0	0	0	0	0	0	0	0	0	1972

Table A1.2. UNAM 2011. Number of credits by Department and by Field of Learning

Department	Agriculture and Nature Conservation	Business, Commerce and Management Studies	Communication Studies and Language	Culture and the Arts	Education, Training and Development	Health Sciences and Social Services	Human and Social Studies	Law, Military Science and Security	Manufacturing, Engineering and Technology	Physical Planning and Construction	Physical, Mathematical and Computer Sciences	Services and Life Sciences	Total
GEOGRAPHY, HIST. & ENVIRONMST	1584	1456	0	0	0	0	19182	0	0	0	12248	6436	40906
GEOLOGY	0	0	0	0	0	0	0	0	0	0	17572	0	17572
HUMAN SCIENCE	0	0	0	0	0	0	92672	0	0	0	0	0	92672
INFORMATION STUDIES	0	0	58176	0	0	0	0	0	0	0	0	0	58176
INTEGRATED ENVIRONMENTAL SC.	8032	308	0	0	0	0	0	0	0	0	0	0	8340
INTERNAL MEDICINE	0	0	0	0	0	896	0	0	0	0	0	0	896
LANGUAGE & LITERATURE STUDIES	0	0	225104	0	0	0	0	0	0	0	0	0	225104
LOWER PRIMARY EDUCATION	0	0	9152	0	3360	0	0	0	0	0	4448	0	16960
MANAGEMENT SCIENCE	0	129792	0	0	0	0	0	216	0	0	3128	0	133136
MATHEMATICS	0	0	0	0	0	0	0	0	0	0	62676	0	62676
MATHS, SCIENCE & SPORTS EDUC.	8896	0	0	1480	86616	0	2096	0	0	0	0	0	99088
MICROBIOLOGY	0	0	0	0	0	0	0	0	0	0	1792	0	1792

Table A1.2. UNAM 2011. Number of credits by Department and by Field of Learning

Department	Agriculture and Nature Conservation	Business, Commerce and Management Studies	Communication Studies and Language	Culture and the Arts	Education, Training and Development	Health Sciences and Social Services	Human and Social Studies	Law, Military Science and Security	Manufacturing, Engineering and Technology	Physical Planning and Construction	Physical, Mathematical and Computer Sciences	Services and Life Sciences	Total
MIDWIFERY SCIENCE	0	0	0	0	0	12304	0	0	0	0	0	0	12304
MINING & METALLURGY	0	0	0	0	0	0	0	0	32	0	0	0	32
NURSING EDUC., MAN. & ETHOS	0	0	0	0	0	11392	0	0	0	0	0	0	11392
NURSING SCIENCE	0	0	0	0	0	31296	64	0	0	0	0	0	31360
PARAMEDICAL SERVICES	0	0	0	0	0	2560	9984	0	0	0	5536	0	18080
PATHOLOGY	0	0	0	0	0	800	0	0	0	0	0	0	800
PERFORMING & VISUAL ARTS	0	0	0	17424	0	0	0	0	0	0	0	0	17424
PHYSICS	0	0	0	0	0	0	0	0	0	0	24534	0	24534
PHYSIOLOGICAL CHEMISTRY	0	0	0	0	0	0	0	0	0	0	8704	0	8704
POLI. & ADMIN. STUDIES	0	33976	0	0	0	0	1376	1200	0	0	1680	0	38232
PRIVATE & PROCEDURAL LAW	0	0	0	0	0	0	0	34512	0	0	0	0	34512
PSYCHIATRIC NURSING SCIENCE	0	0	0	0	0	4880	0	0	0	0	0	0	4880

Table A1.2. UNAM 2011. Number of credits by Department and by Field of Learning

Department	Agriculture and Nature Conservation	Business, Commerce and Management Studies	Communication Studies and Language	Culture and the Arts	Education, Training and Development	Health Sciences and Social Services	Human and Social Studies	Law, Military Science and Security	Manufacturing, Engineering and Technology	Physical Planning and Construction	Physical, Mathematical and Computer Sciences	Services and Life Sciences	Total
PSYCHIATRY & BEHAVIOURIAL SCIE	0	0	0	0	0	0	2096	0	0	0	0	0	2096
PUBLIC LAW AND JURIS PRUDENCE	0	0	0	0	0	0	0	47392	0	0	0	0	47392
SCIENTIFIC FOUNDATIONS OF NURS	0	0	0	0	0	0	0	0	0	0	17872	0	17872
SOC SCIENCE & COMM. EDU	0	0	30816	0	38056	0	0	0	0	0	0	0	68872
SOCIOLOGY	0	0	0	0	0	0	48210	0	0	0	0	0	48210
STATISTICS	0	240	0	0	0	0	0	0	0	0	28284	0	28524
UNIVERSITY CENTRES	0	0	4640	0	0	0	0	0	0	0	16336	0	20976
Total	**49756**	**610064**	**523480**	**19960**	**472294**	**220716**	**237192**	**154872**	**23472**	**736**	**487784**	**6804**	**2807130**

Table A**1.**3 gives the structure of the number of credits by Field of Learning for Each department.

Table A1.3. UNAM 2011. Structure of the Number of credits by Department and by Field of Learning

Department	Agriculture and Nature Conservation	Business, Commerce and Management Studies	Communication Studies and Language	Culture and the Arts	Education, Training and Development	Health Sciences and Social Services	Human and Social Studies	Law, Military Science and Security	Manufacturing, Engineering and Technology	Physical Planning and Construction	Physical, Mathematical and Computer Sciences	Services and Life Sciences	Total
ACC. & AUDITING & INCOME TAX	0%	76%	0%	0%	0%	0%	0%	10%	0%	0%	15%	0%	100%
ADULT & NON-FORMAL EDUCATION	0%	2%	0%	0%	98%	0%	0%	0%	0%	0%	0%	0%	100%
AGRICULTURAL ECONOMICS	0%	94%	0%	0%	0%	0%	6%	0%	0%	0%	0%	0%	100%
ANATOMY	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	100%
ANIMAL SCIENCE	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
BIOLOGICAL SCIENCES	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	99%	1%	100%
CENTRE FOR EXTERNAL STUDIES	0%	22%	21%	0%	16%	16%	8%	2%	0%	0%	15%	0%	100%
CHEMISTRY AND BIOCHEMISTRY	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	100%
COMM. MEDICINE	0%	0%	0%	0%	0%	86%	0%	0%	0%	0%	14%	0%	100%
COMMERCIAL LAW	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	100%
COMMUNITY HEALTH NURSING SCIEN	0%	0%	0%	0%	0%	95%	5%	0%	0%	0%	0%	0%	100%
COMPUTER SCIENCE	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	100%
CROP SCIENCE	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
CURR., INSTR. & ASSES. STUDIES	0%	0%	27%	0%	73%	0%	0%	0%	0%	0%	0%	0%	100%
DEAN: AGRI. & NAT. RESOURCES	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
DEAN: EDUCATION	0%	0%	3%	0%	97%	0%	0%	0%	0%	0%	0%	0%	100%
DEAN: FACULTY OF LAW	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	100%
DEAN: HUMANITIES & SOCIAL SCI.	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	100%
DEAN: MEDICAL SCHOOL	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	100%
DEAN: SCHOOL OF NUR & P HEALTH	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	100%
DEAN: SCIENCE	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	100%
DEAN:ECONOMIC & MANAGMENT SCI.	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
DIRECTOR: LANGUAGE CENTRE	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
EARLY CHILDHOOD & LOWER PRIM	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	100%
ECONOMICS	0%	92%	0%	0%	0%	0%	0%	0%	0%	0%	8%	0%	100%
EDUC LANGUAGES, HUMAN. & COMM	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%

Table A1.3. UNAM 2011. Structure of the Number of credits by Department and by Field of Learning

Department	Agriculture and Nature Conservation	Business, Commerce and Management Studies	Communication Studies and Language	Culture and the Arts	Education, Training and Development	Health Sciences and Social Services	Human and Social Studies	Law, Military Science and Security	Manufacturing, Engineering and Technology	Physical Planning and Construction	Physical, Mathematical and Computer Sciences	Services and Life Sciences	Total
EDUC. PSYCHOLOGY & INCL EDUC.	0%	0%	7%	0%	90%	0%	3%	0%	0%	0%	0%	0%	100%
EDUCATIONAL FOUND & MANAGEMENT	0%	0%	1%	0%	99%	0%	0%	0%	0%	0%	0%	0%	100%
ENGINEERING AND TECHNOLOGY	0%	0%	0%	0%	0%	0%	0%	0%	91%	2%	7%	0%	100%
FISHERIES & AQUATIC SCIENCE	91%	9%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
FOOD SCIENCE & TECHNOLOGY	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
GEOGRAPHY, HIST. & ENVIRONM ST	6%	3%	0%	0%	0%	0%	41%	0%	0%	0%	33%	18%	100%
GEOLOGY	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	100%
HUMAN SCIENCE	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	100%
INFORMATION STUDIES	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
INTEGRATED ENVIRONMENTAL SC.	98%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
INTERNAL MEDICINE	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	100%
LANGUAGE & LITERATURE STUDIES	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
LOWER PRIMARY EDUCATION	0%	0%	49%	0%	19%	0%	0%	0%	0%	0%	32%	0%	100%
MANAGEMENT SCIENCE	0%	97%	0%	0%	0%	0%	0%	0%	0%	0%	3%	0%	100%
MATHEMATICS	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	100%
MATHS, SCIENCE & SPORTS EDUC.	16%	0%	0%	2%	80%	0%	2%	0%	0%	0%	0%	0%	100%
MICROBIOLOGY	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	100%
MIDWIFERY SCIENCE	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	100%
MINING & METALLURGY	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%
NURSING EDUC., MAN. & ETHOS	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	100%
NURSING SCIENCE	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	100%
PARAMEDICAL SERVICES	0%	0%	0%	0%	0%	17%	49%	0%	0%	0%	34%	0%	100%
PATHOLOGY	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	100%
PERFORMING & VISUAL ARTS	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	100%
PHYSICS	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	100%
PHYSIOLOGICAL CHEMISTRY	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	100%
POLI. & ADMIN. STUDIES	0%	87%	0%	0%	0%	0%	4%	3%	0%	0%	6%	0%	100%
PRIVATE & PROCEDURAL LAW	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	100%

Table A1.3. UNAM 2011. Structure of the Number of credits by Department and by Field of Learning

Department	Agriculture and Nature Conservation	Business, Commerce and Management Studies	Communication Studies and Language	Culture and the Arts	Education, Training and Development	Health Sciences and Social Services	Human and Social Studies	Law, Military Science and Security	Manufacturing, Engineering and Technology	Physical Planning and Construction	Physical, Mathematical and Computer Sciences	Services and Life Sciences	Total
PSYCHIATRIC NURSING SCIENCE	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	100%
PSYCHIATRY & BEHAVIOURIAL SCIE	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	100%
PUBLIC LAW AND JURIS PRUDENCE	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	100%
SCIENTIFIC FOUNDATIONS OF NURS	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	100%
SOC SCIENCE & COMM. EDU	0%	0%	44%	0%	56%	0%	0%	0%	0%	0%	0%	0%	100%
SOCIOLOGY	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	100%
STATISTICS	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	99%	0%	100%
UNIVERSITY CENTRES	0%	0%	17%	0%	0%	0%	0%	0%	0%	0%	83%	0%	100%
Total	3%	19%	16%	1%	15%	10%	8%	5%	2%	0%	21%	0%	100%

The table A1.4 gives the example for the ACC. & AUDITING & INCOME TAX Department

Table A1.4. Budget of the ACC. & AUDITING & INCOME TAX Department

Field of Learning	% of Credits	Budget
Agriculture and Nature Conservation	0.0%	0
Business, Commerce and Management Studies	75.8%	7,364,523
Communication Studies and Language	0.0%	0
Culture and the Arts	0.0%	0
Education, Training and Development	0.0%	0
Health Sciences and Social Services	0.0%	0
Human and Social Studies	0.0%	0
Law, Military Science and Security	9.6%	937,553
Manufacturing, Engineering and Technology	0.0%	0
Physical Planning and Construction	0.0%	0
Physical, Mathematical and Computer Sciences	14.6%	1,416,336
Services and Life Sciences	0.0%	0
Total	**100.0%**	**9,718,412**

Doing this for all the departments and summing, we obtain the distribution of the total Budget by FoL as indicated in Table A1.5.

Table A1.5. Attributed Budget by Field of Learning

Field of Learning	Budget
Agriculture and Nature Conservation	20,060,010
Business, Commerce and Management Studies	34,450,811
Communication Studies and Language	31,152,213
Culture and the Arts	6,082,009
Education, Training and Development	28,073,122
Health Sciences and Social Services	32,951,478
Human and Social Studies	19,694,563
Law, Military Science and Security	9,976,952
Manufacturing, Engineering and Technology	14,469,127
Physical Planning and Construction	265,095
Physical, Mathematical and Computer Sciences	61,879,819
Services and Life Sciences	1,068,691
Total	**260,123,889**

We are now able to estimate the cost per credit for each Field of Learning.

Table A1.6 presents this estimation.

Table A1.6. Estimation of the Cost per Credit Unit for each Field of Learning

	Attributed BUDGET	%	NUMBER OF CREDITS	%	Attributed Cost per credit per FoL	Overheads per credit	Total cost per credit	Weighting (base 1 for Business…)
Agriculture and Nature Conservation	19468810	7,5%	49756	1,77%	391	89	480	3,2
Business, Commerce and Management Studies	35928725	13,8%	610064	21,73%	59	89	148	1,0
Communication Studies and Language	31878189	12,3%	523480	18,65%	61	89	150	1,0
Culture and the Arts	6033561	2,3%	19960	0,71%	302	89	391	2,6
Education, Training and Development	28844925	11,1%	472294	16,82%	61	89	150	1,0
Health Sciences and Social Services	31923890	12,3%	220716	7,86%	145	89	234	1,6
Human and Social Studies	20163724	7,8%	237192	8,45%	85	89	174	1,2
Law, Military Science and Security	9977367	3,8%	154872	5,52%	64	89	153	1,0
Manufacturing, Engineering and Technology	13871820	5,3%	23472	0,84%	591	89	680	4,6
Physical Planning and Construction	311062	0,1%	736	0,03%	423	89	512	3,5
Physical, Mathematical and Computer Sciences	60759024	23,4%	487784	17,38%	125	89	214	1,4
Services and Life Sciences	962793	0,4%	6804	0,24%	142	89	231	1,6
Total	260123889	100,0%	2807130	100%	93	89	182	1,2

For each Field of Learning, the Attributed Cost per credit is calculated dividing the Attributed Budget by the Number of Credits. The total costs per credit is the sum of the Attributed cost per credit and the overheads per credit. Finally the weight is calculated by dividing the estimated cost of the field of learning by the lowest cost per credit (equal to 148).

Thus, the lowest cost per credit is for the FoL "Business, Commerce and Management Studies » and the highest is for « Manufacturing, Engineering and Technology».

But some of the fields have a relative few number of credits: 0.03% for "Physical planning and construction", 0.24% for "Services and life sciences", 0.84% for "Manufacturing, Engineering and technology", 0.71% for Culture and the Arts" and 1.77% for "Agriculture and nature conservation". The low percentage makes the estimation not reliable for these fields. It was decided to group the 12 NQF Fields of learning into 4 broad categories:

1. Education and Language, Humanities, Arts

2. Business, Commerce and Management Studies and Law

3. Science, Technology, Engineering and Agriculture

4. Health and Life Sciences and Social Services

The Costs per Credit are recalculated, and the results are given in table A1.7:

Table A1.7. Estimation of the Costs per Credit and the weightings

	FoL Group 1	FoL Group 2	FoL Group 3	FoL Group 4	TOTAL
BUDGET	86920399	45906092	94410715	32886683	260123889
%	33.4%	17.6%	36.3%	12.6%	100.0%
NUMBER OF CREDITS	1252926	764936	561748	227520	2807130
Structure en%	44.63%	27.25%	20.01%	8.11%	100%
Cost per Standardised credit per FoL	69	60	168	145	93
Overheads	89	89	89	89	89
Total cost per credit	158	149	257	234	182
Weighting (base 1 for Business…)	**1.1**	**1.0**	**1.7**	**1.6**	

Final decision was to adopt the following weightings:

Table A1.8 - Weighting by field of learning

FIELDS OF LEARNING		WEIGHT
1	Education and Language, Humanities, Arts	1
2	Business, Commerce and Management Studies and Law	1
3	Science, Technology, Engineering and Agriculture	2
4	Health and Life Sciences and Social Services	1.5

A1.3.	ESTIMATING THE WEIGHTS FOR THE OFFERING TYPES

The academic burden is also different according to the offering type. For Part Time (PT) students, the workload seems to be the same as for Full Time (FT) students. If PT students are registered for a given number of subjects only, this will be taken into account because the formula is based on the subjects for which a student is registered.

For distance students, the practice in many countries is to give a 0.5 weight for distance offerings below and up to Honours level, as compared to contact (on-campus) offerings. At Master's and Doctoral levels, there is no differentiation in weighting. The argument to substantiate this practice is that students enrolled for distance-mode offerings do not have access to the entire supporting academic, administrative, health and sport facilities and services that are available for contact students. The institutions do not support this cost for distance students. One of the counter arguments to this practice is that it is costly to offer a high-quality service to distance students. In some cases, special facilities are erected or rented for these students to ensure some direct teaching. In addition, there are costs involved in providing library material to these students.

In Namibia, the majority of public HEIs are located in Windhoek. There is a definite need for distance tuition for thousands of potential HE students living

in far-out regions of Namibia. In order to encourage universities to offer distance tuition and then widen the access to HE, it is proposed that distance training receives at least a weighting equal to 0.7. Lower funding for distance training will, at this stage of HE development in Namibia, be counter-productive. This approach can be revised at any moment by the FF/HEMIS, once distance offerings have grown significantly and a proper costing study has been conducted.

The Table below shows that the "Contact" (FT and PT) offering type is assigned the basic weight equal to 1, while the "Distance" offering type has a weight equal to 0.7; which means that, for a given field of learning, a credit unit has a cost 30% lower for "Distance" offering type compared to a credit unit in the basic one (reference type) (i.e. "Full Time").

Table A1.9– Weighting by offering type

OFFERING TYPE		WEIGHT
1	Contact	1
3	Distance	0.7
4	Research: Honours and Masters	1.5
5	Research: PhDs	2

For students who are preparing their Thesis (Bachelor's, Honours, Master's and Ph.D.), a number of credits is assigned to the research component, each year. This involves costs for the institutions. Two specific offering types are added to cater for the research component of the academic costs: the "Research: Honours & Masters" and the "Research: PhDs".

The weighting for a credit unit for the "Research: Honours & Master's" is – given the field of learning – equal to 1.5. The weighting for a credit unit for the "Research: PhDs" is – given the field of learning – equal to 2. This means that –

for a given field of learning – a credit unit has a cost of 100% higher for the "Research: PhDs" offering type compared to a credit unit in the basic offering type (reference type) (i.e. " Full Time").

ANNEX 2: DETERMINATION OF THE CSCU FOR THE BASE YEAR 2012

The determination of the Cost per Standardised Credit Unit is determined by the process described in the diagram below.

Chart A2.1 Determination of the Cost per Standardised Credit Unit
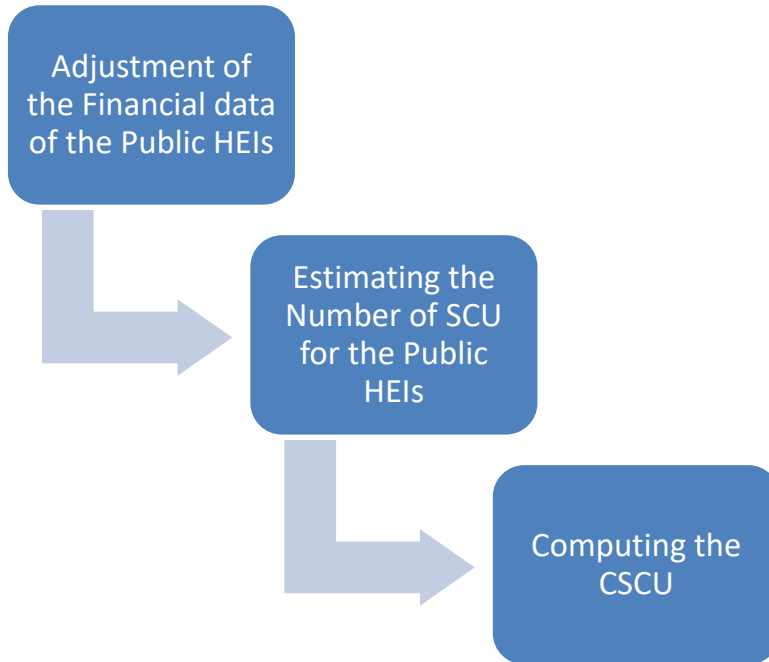
In the sectionA2.1 the methodology of the adjustment of the Operational Costs presented. The two other steps are expanded in the section 2 and 3.

A2.1	ADJUSTING THE OPERATIONAL COSTS FOR THE BASE YEAR

After simulation exercises (based on 2011 data), the FF was used to determine budget allocation for public HEIs for 2014. The reference year (Year T-2) was 2012. 2012 was then the "Base Year", and the financial data of this year was to be used to estimate the Cost per Standardised Credit Unit.

The evolution of financial data is very irregular and does not seem to be determined by clear criteria. Consequently, it was proposed to use adjusted

operational costs for 2012to cater for the irregular evolution of operational costs.

Tables A2.1 and A2.2 and Figures A2.1 and A2.2 show the evolution of UNAM's PoN's financial data.

UNAM's financial data show (TableA2.1 and figure A2.1) severe irregularity in its evolution. The operational costs which average rate of growth during the period was 27% per year, has increased 12% in 2010, 77% in 2011 and 9% inn 2012.

In regard to PoN, the data show a decrease of the operational costs (-5%) and a more important one for the Government subsidy (-27%) occurred in 2012. These decreases also appear to be in big contrast when compared to the evolution of the number of students (+ 4%).

Table A2.1 –UNAM's financial data (2007-2012)

	2007	2008	2009	2010	2011	2012	Average growth rate
Number of Students	8,378	8,361	10,101	12,496	16,332	16819	15%
Operational costs (NAD)	264,809,284	332,914,645	400,082,633	447,736,000	791,308,000	863,895,000	27%
Subsidy (NAD)	185,400,000	259,477,767	306,130,000	273,926,000	573,783,000	570,489,000	25%
Tuition fees (NAD)	53,475,119	55,336,773	78,705,975	108,489,000	161,124,000	187,336,000	28%
Annual rate of Growth UNAM							
	2007	**2008**	**2009**	**2010**	**2011**	**2012**	
Nr of Students		0%	21%	24%	31%	3%	
Operational costs		26%	20%	12%	77%	9%	
Subsidy		40%	18%	-11%	109%	-1%	
Tuition fees		3%	42%	38%	49%	16%	
Compared Growth UNAM (Index)							
	2007	**2008**	**2009**	**2010**	**2011**	**2012**	
Nr of Students	100	100	121	149	195	201	
Operational costs	100	126	151	169	299	326	
Subsidy	100	140	165	148	309	308	
Tuition fees	100	103	147	203	301	350	

Figure A2.1 – UNAM's Compared Evolution of Enrolment and Financial Data (2007-2012)
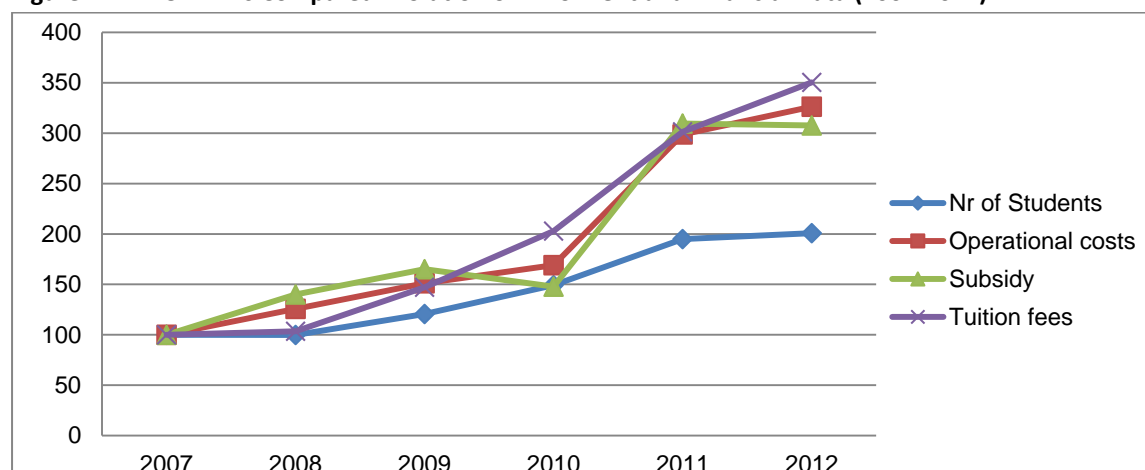
Table A2.2 –PoN's financial data (2007-2012)

	2007	2008	2009	2010	2011	2012	Average growth rate
Number of Students	8292	9410	10845	11531	12440	12965	9%
Operational costs (NAD)	167,321,178	217,900,555	261,831,983	330,913,799	406,454,890	384,891,658	18%
Subsidy (NAD)	80,201,000	106,891,000	146,891,000	153,523,000	222,538,000	163,000,720	15%
Tuition fees (NAD)	57,911,262	75,902,409	98,021,179	115,605,857	134,578,090	147,762,854	21%
Annual Growth Rate							
	2007	2008	2009	2010	2011	2012	
Number of Students		13%	15%	6%	8%	4%	
Operational costs (NAD)		30%	20%	26%	23%	-5%	
Subsidy (NAD)		33%	37%	5%	45%	-27%	
Tuition fees (NAD)		31%	29%	18%	16%	10%	
Compared Growth (Index)							
	2007	2008	2009	2010	2011	2012	
Number of Students	100	113	131	139	150	156	
Operational costs (NAD)	100	130	156	198	243	230	
Subsidy (NAD)	100	133	183	191	277	203	
Tuition fees (NAD)	100	131	169	200	232	255	

Figure A2.2 – PoN's Compared Evolution of Enrolment and Financial Data (2007-2012)
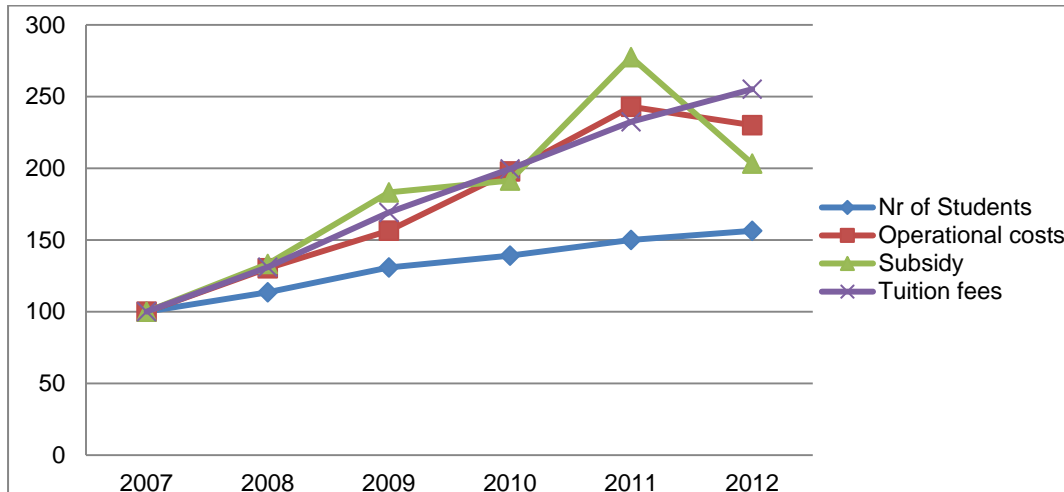
Consequently, it was necessary to adjust operational costs for 2012/2013 (which is the reference year for the estimation).

Regression analysis is used to make this adjustment. The number of students is used as predictor.

The table below gives the regression analysis for UNAM Data.

Dependent Variable: UNAM_Cost
Predictors: (Constant), UNAM_Students

	Coefficients	t	Sig.
(Constant)	-258,523,108	-2.9	0.043
UNAM_St	64,175	9.1	0.001

For the year 2012 (As example) The Adjusted cost is calculated as follows:

Adjusted OC= 64175 X Number of Students - 258,523,108 = 820,843,406

Table A2.3 and Figure A2.3 and A2.4 below compare the observed and adjusted operational costs for UNAM and PoN. They show that the adjusted operational costs for the base year (2012) are:

- Equal to 820 843 406 NAD instead of the observed amount, which is equal to 863 895 000 NAD for UNAM; and
- Equal to 400 860 403 NAD instead of the observed amount, which is equal to 384 891 658 NAD for PoN.

Table A2.3 –Observed and Adjusted Operational Costs

	Year	2007	2008	2009	2010	2011	2012
UNAM	**Number of Students**	8,378	8,361	10,101	12,496	16,332	16,819
	Observed OC	264,809,284	332,914,645	400,082,633	447,736,000	791,308,000	863,895,000
	Adjusted OC	279,138,623	278,047,641	389,712,885	543,413,033	789,589,973	820,843,406
PoN	**Number of Students**	8,292	9,410	10,845	11,531	12,440	12,965
	Observed OC	167,321,178	217,900,555	261,831,983	330,913,799	406,454,890	384,891,658
	Adjusted OC	159,427,125	217,189,248	291,329,363	326,771,954	373,735,971	400,860,403

Figure A2.3– UNAM's Observed and Adjusted Operational Costs
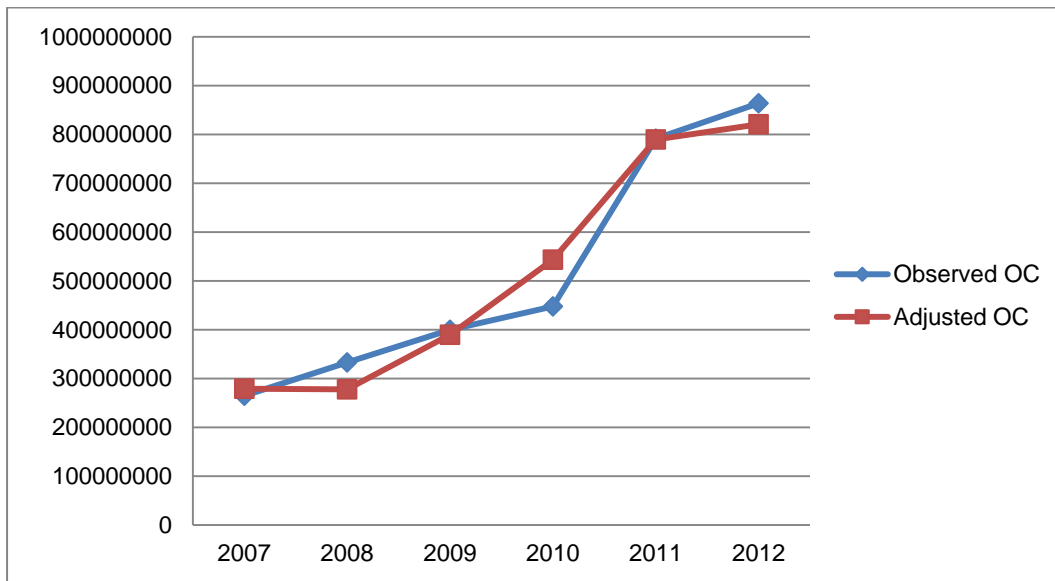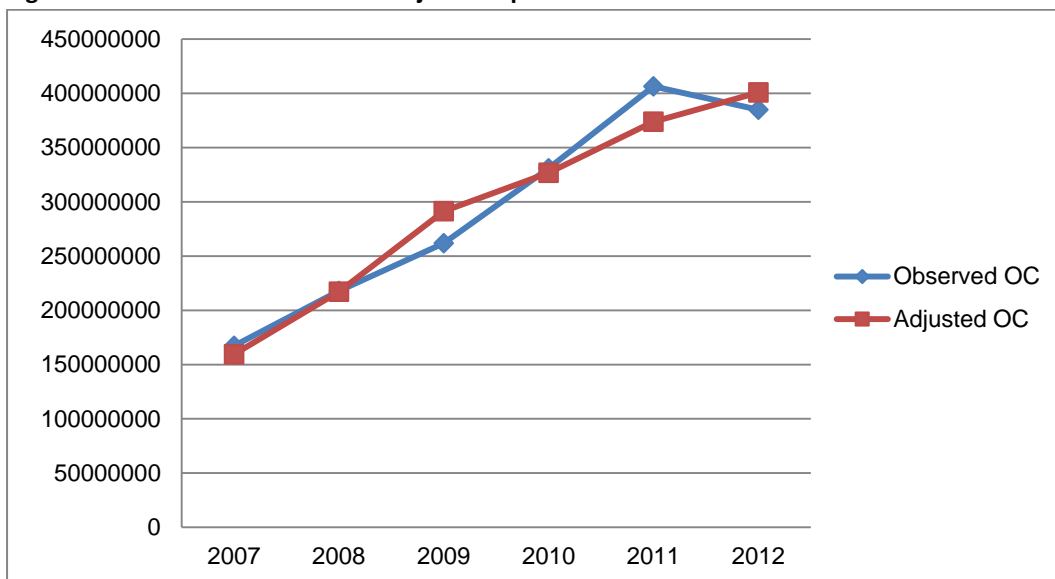

Figure A2.4 – PoN's Observed and Adjusted Operational Costs

Using the Subjects Database, one can compute the number of credits by field of learning and offering type. Tables A.4 and A.5 below present the 2012 Number of credits for UNAM and PoN.

Table A2.4 – UNAM's number of Credit Units per field of learning and offering Type (2012)

	FIELD OF LEARNING	OFFERING TYPE				TOTAL
		Contact	Dist.	Research: Masters	Research: PhDs	
1	Agriculture and Nature Conservation	47,752	0	1,328	144	**49,224**
2	Business, Commerce and Management Studies	302,256	226,858	7,288	528	**536,930**
3	Communication Studies and Language	275,480	100,892	1,536	0	**377,908**
4	Culture and the Arts	19,144	504	64	24	**19,736**
5	Education, Training and Development	317,190	102,984	0	216	**420,390**
6	Manufacturing, Engineering and Technology	30,408	0	744	24	**31,176**
7	Human and Social Studies	155,500	21,016	5,746	528	**182,790**
8	Law, Military Science and Security	109,794	27,134	96	48	**137,072**
9	Health Sciences and Social Services	131,824	44,064	1,776	120	**177,784**
10	Physical, Mathematical and Computer Sciences	349,262	41,008	4,634	240	**395,144**
11	Physical Planning and Construction	464	0	0	0	**464**
12	Services and Life Sciences	4,508	0	352	0	**4,860**
TOTAL		**1,743,582**	**564,460**	**23,564**	**1,872**	**2,333,478**

Table A2.5 – PoN's number of Credit Units per field of learning and offering type (2012)

	FIELD OF LEARNING	OFFERING TYPE				TOTAL
		Contact	Dist.	Research: Masters	Research: PhDs	
1	Agriculture and Nature Conservation	21,694	2,114	180		23,988
2	Business, Commerce and Management Studies	490,318	431,322	1,260		922,900
3	Communication Studies and Language	95,484	115,121	0		210,605
4	Culture and the Arts					0
5	Education, Training and Development	11,601	8,645	0		20,246
6	Manufacturing, Engineering and Technology	90,766	0	0		90,766
7	Human and Social Studies	1,496	24	0		1,520
8	Law, Military Science and Security	58,206	41,394	0		99,600
9	Health Sciences and Social Services	34,078	0	0		34,078
10	Physical, Mathematical and Computer Sciences	223,477	159,762	480		383,719
11	Physical Planning and Construction	58,664	1,078	0		59,742
12	Services and Life Sciences	15,862	7,728	0		23,590
	TOTAL	1,101,646	767,188	1,920	0	1,870,754

Table A2.6 and A2.7 below present the 2012 number of Standardized Credit Units for UNAM and PoN. The number of SCU is obtained by applying, for each field of learning and each offering type, the weight indicated in red ink in the table.

Table A2.6 – UNAM number of SCU per field of learning and offering type (2012)

	FIELD OF LEARNING	Weights	OFFERING TYPE				TOTAL
			Contact	Distance	Research: Masters	Research: PhDs	
			1	0.7	1.5	2	
1	Agriculture and Nature Conservation	2	95,504	0	100,064	100,064	100,064
2	Business, Commerce and Management Studies	1	302,256	158,801	473,045	473,045	473,045
3	Communication Studies and Language	1	275,480	70,624	348,408	348,408	348,408
4	Culture and the Arts	1	19,144	353	19,641	19,641	19,641
5	Education, Training and Development	1	317,190	72,089	389,711	389,711	389,711
6	Manufacturing, Engineering and Technology	2	60,816	0	63,144	63,144	63,144
7	Human and Social Studies	1	155,500	14,711	179,886	179,886	179,886
8	Law, Military Science and Security	1	109,794	18,994	129,028	129,028	129,028
9	Health Sciences and Social Services	1.5	197,736	46,267	248,359	248,359	248,359
10	Physical, Mathematical and Computer Sciences	2	698,524	57,411	770,797	770,797	770,797
11	Physical Planning and Construction	2	928	0	928	928	928
12	Services and Life Sciences	1.5	6,762	0	7,554	7,554	7,554
TOTAL			2,239,634	439,250	47,001	4,680	2,730,565

Table A2.7 – PoN number of SCU per field of learning and offering Type (2012)

	FIELD OF LEARNING	Weights	OFFERING TYPE				TOTAL
			Contact	Distance	Research: Masters	Research: PhDs	
			1	0.7	1.5	2	
1	Agriculture and Nature Conservation	2	43,388	2,960	540	0	46,888
2	Business, Commerce and Management Studies	1	490,318	301,925	1,890	0	794,133
3	Communication Studies and Language	1	95,484	80,585	0	0	176,069
4	Culture and the Arts	1	0	0	0	0	0
5	Education, Training and Development	1	11,601	6,052	0	0	17,653
6	Manufacturing, Engineering and Technology	2	181,532	0	0	0	181,532
7	Human and Social Studies	1	1,496	17	0	0	1,513
8	Law, Military Science and Security	1	58,206	28,976	0	0	87,182
9	Health Sciences and Social Services	1.5	51,117	0	0	0	51,117
10	Physical, Mathematical and Computer Sciences	2	446,954	223,667	1,440	0	672,061
11	Physical Planning and Construction	2	117,328	1,509	0	0	118,837
12	Services and Life Sciences	1.5	23,793	8,114	0	0	31,907
TOTAL			1,521,217	653,804	3,870	0	2,178,891

	A2.3.	DETERMINING THE COST PER SCU

The Cost per SCU for each HEI is calculated by dividing the operational costs (Adjusted) by the number of Standardised Credit Units. Table A2.8 below shows the calculation of the Average Cost per SCU.

Table A2.8 – 2012 Calculation of the Average Cost per SCU

	UNAM	PoN
Adjusted Operational Costs (NAD)	820,843,406	400,860,403
Number of SCU	2,730,565	2,178,891
Cost per Standardized Credit Unit (NAD)	301	184
Weighted Average Cost per SCU (NAD)*	248.8	

(*) The average is weighted by the Number of SCU for each HEI:
        248.8 = (301* 2,730,565 +184*2,178,891) / (2,730,565 + 2,178,891)

The Average Cost per SCU is equal to 248.8 NAD. This average is used as Cost per Standardized Credit for the base year 2012.

ANNEX 3: THE HIGHER EDUCATION COST ADJUSTMENT INDEX

One of the main issues related to costs in Higher Education is but their increase over time as underlying instructional costs increase due to rising wages, salaries, and other inflationary cost pressures peculiar to HE. Per-student costs of instruction in HE will tend to increase over time at a rate equal at least to the rate of increase of wages and salaries in the economy. Because revenues to cover the basic costs of instruction may be presumed to come either from tuitions or governmental (taxpayer) sources, the failure of the latter to increase at this same rate will require either additional fees, or a less-than-break-even increase in university expenditures, requiring some reductions in employment or expenditures, or some stop-gap revenue measures such as borrowing from reserves or carrying forward deficits.

The Cost per Standardised Credit Unit adjustments should be made in relation to the evolution of the costs of HE. But the evidence shows that these costs are mainly but not strictly driven by inflation.
The adjustment based on the evolution of costs requires to adequately measure the increase of costs in HE. This increase is generally estimated using a price index which makes possible valid comparisons of the price of goods and services across time.

A price index measures the effects of price change, as reflected by differences in the overall price level of a fixed group of items. In this section, we will describe a specific index to be used for the periodical adjustment of the general level of the Costs in HEIs.
The best known and most widely used price index is the Consumer Price Index (CPI)[3]. The CPI measures the change in the overall price level over time for a group (called a basket) of consumer goods and services (such as food, housing, clothing, education, and medical services).

However, there is no consensus on the use of the CPI to estimate the evolution of costs in HE. Some have argued that only higher education specific price index —not broad based price indices, as CPI— should be used for examining the rise

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[3] For Namibia, CPI is calculated and published by the Namibia Statistics Agency (NSA).

in HE costs over time because they are specially designed to accurately reflect the spending patterns of colleges and universities.

The main lesson from international experience[4] is that one must avoid using a "Self Referential Price Index" in the sense that it relies upon labour costs (faculty, administrative, and clerical salaries) which are "influenced by university policy decisions". This is a problem because if administrative salaries rise, then the Higher Education Cost rises. HEIs can give their employees huge salary increases, claim that higher education costs are soaring, and demand larger government subsidies as a consequence.

This self-referential problem potentially makes any decision about an index problematic and causes it to deviate from the standard approach that price indices follow. After all, if HEIs can determine and directly control the actual prices for staff salaries themselves (which are, in turn, used to calculate the rate of increase of their costs), then an index based on observed costs is not a good measure of the external prices facing those same institutions. In contrast, the CPI is a good measure of the prices consumers pay because consumers cannot change the prices of the goods and services they purchase.

Because of the self-referential issue, it is proposed to use an adapted index called the Higher Education Cost Adjustment Index (HECAI).

Based on financial statements of public HEIs in Namibia, the average structure of the expenditures is given in the table A2.1:

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[4] See "Tuition Fee Policy Study Report, MoE, MCA-N and CIDE. May 2014"

Table A3.1 - Typical Structure of the Cost of a HEI

Category	%	% From Goods and Services	Proposed Weightings
Salaries	**76%**		
01- Food and Non-Alcoholic Beverages	3%	11%	10%
04- Housing, Water, Electricity, Gas and Other Fuels	10%	43%	43%
07- Transport	3%	12%	12%
08- Communications	1%	2%	3%
09- Recreations and Culture	4%	19%	19%
12- Miscellaneous Goods and Services	3%	13%	13%
Goods And Services	**24%**	**100%**	**100%**
Total	**100%**		

Source: UNAM Financial statements.

These expenditures were presented according to the nomenclature of Namibia's CPI.

In regard to the above structure of the costs of a public HEI, the calculation of HECAI will depend on two components, both of which have separate indices:

- The first component, which measures changes in labour costs, is the Employment Cost Index (ECI) for management, professional, and related occupations. The estimated share of this component in the total cost is 75%.

- The second component, the Goods and Services Cost Index (GSCI) measures changes in the prices of goods and services purchased by HEIs. The estimated share of this component in the total cost is 25%.

Hereafter is presented the methodology to estimate the rate of growth of each component using the Consumer Price Index (CPI) as reference.

A3.1	THE SALARIES INDEX

Since CPI is generally used as reference to update the overall level of salaries in the public services, it is proposed to use this index for updating the salaries at public HEIs, regardless of the observed evolution of the salaries within the HEIs. This is the most effective way to avoid self-referencing adjustment of the costs and fees in HEIs. However, if there is any duly justified reason to adapt this rate of growth to the salaries in the HE Sector, this can be done after agreement

within the FF/HEMIS Committee at the NCHE. One example of these reasons could be the scarcity of qualified HE teachers that may cause higher increase of the wages in this category.

The tableA3.2 below gives the estimation of the inflation using the CPI.

Table A2.2: Namibia CPI by main groups (Dec.2012=100) (Average)

		FOOD AND NON-ALCOHOLIC BEVERAGES	ALCOHOLIC BEVERAGES AND TOBACCO	CLOTHING AND FOOTWEAR	HOUSING, WATER, ELECTRICITY, GAS AND OTHER FUELS	FURNISHINGS, HOUSEHOLD EQUIPMENT AND ROUTINE MAINTENANCE OF THE HOUSE	HEALTH	TRANSPORT	COMMUNICATIONS	RECREATION AND CULTURE	EDUCATION	HOTELS, CAFES AND RESTAURANTS	MISCELLANEOUS GOODS AND SERVICES	ALL ITEMS
	Weights	**16.45**	**12.59**	**3.05**	**28.36**	**5.47**	**2.01**	**14.28**	**3.81**	**3.55**	**3.65**	**1.39**	**5.39**	**100.0**
Year	Month													
2002	*An. Av*	47.6	43.6	80.4	59.4	61.7	72.1	50.8	79.4	64.9	54.0	48.6	69.9	54.5
2003	*An. Av*	52.0	45.8	84.5	63.5	66.0	76.5	54.5	81.2	66.4	59.7	52.6	71.4	58.4
2004	*An. Av*	52.5	49.9	84.7	67.5	66.7	78.6	57.2	83.2	67.2	67.5	55.7	74.2	60.8
2005	*An. Av*	53.2	53.7	82.7	68.8	68.6	78.5	60.9	83.8	68.7	69.4	58.7	72.8	62.2
2006	*An. Av*	56.6	57.5	82.0	70.2	69.7	77.2	65.4	84.3	70.4	74.2	62.0	77.8	65.3
2007	*An. Av*	63.4	61.8	84.9	71.7	72.5	87.2	69.1	85.5	73.0	78.9	66.0	79.1	69.6
2008	*An. Av*	74.0	68.3	85.4	68.3	79.0	111.6	78.3	89.8	80.5	83.9	73.6	83.1	75.9
2009	*An. Av*	81.8	76.7	94.1	78.5	88.1	91.4	82.8	95.1	86.8	87.1	81.5	91.8	83.0
2010	*An. Av*	84.4	84.5	96.9	85.3	89.9	92.1	87.4	96.1	88.9	91.5	87.9	94.8	87.1
2011	*An. Av*	88.5	89.9	98.0	91.8	91.4	96.7	91.9	97.4	91.8	95.6	91.9	97.1	91.5
2012	*An. Av*	96.5	97.7	98.5	97.2	96.8	100.0	98.4	98.1	98.7	100.0	96.4	99.5	97.6
2013	*An. Av*	102.8	106.2	102.0	102.2	102.7	103.1	103.6	100.3	103.0	104.0	105.0	101.3	103.1
2014	An. Av	111.3	113.2	105.5	105.5	107.5	105.3	111.1	99.8	108.9	112.4	111.2	105.7	108.6
Inflation 2012-2014		**15.3%**	**15.9%**	**7.0%**	**8.6%**	**11.0%**	**5.3%**	**12.8%**	**1.7%**	**10.3%**	**12.4%**	**15.3%**	**6.2%**	**11.3%**
Estimated inflation 2012-2016		**32.9%**	**34.2%**	**14.6%**	**17.9%**	**23.3%**	**10.8%**	**27.3%**	**3.4%**	**21.7%**	**26.4%**	**32.9%**	**12.8%**	**23.8%**

Using the CPI as reference to update the salaries in the HEIs shows that these are supposed to grow at a rate equal to 11.3% in from 2012 to 2014. The inflation between 2012 and 2016 is estimated assuming that the inflation will continue between 2014 and 2016 at the same rate than during the period 2012-2014.

A3.2	THE GOODS AND SERVICES INDEX

The table A3.3 shows the estimation of the growth of the price of goods and services specific for a HEI in Namibia. This estimation uses:
- The price index for each specific group as determined by the NSA.
- The specific weights of items. These weights are estimated using detailed financial statements of the public HEIs.

It shows that the HEIs specific inflation rate for goods and services during the period was equal to 10.5% between 2012 and 2014. The inflation between 2012 and 2016 is estimated assuming that the inflation will continue between 2014 and 2016 at the same rate than during the period 2012-2014.

Table A3.3: Estimation of the HEIs specific inflation rate for Goods and Services

Year	Month	FOOD AND NON-ALCOHOLIC BEVERAGES	HOUSING, WATER, ELECTRICITY, GAS AND OTHER FUELS	FURNISHINGS, HOUSEHOLD EQUIPMENT AND ROUTINE MAINTENANCE OF THE HOUSE	TRANSPORT	COMMUNICATIONS	RECREATION AND CULTURE	MISCELLANEOUS GOODS AND SERVICES	ALL ITEMS
	Weights	10.1 %	16.8 %	31.7 %	13.1 %	3.2 %	16.2 %	8.9 %	100 %
2002	An. Av	47.6	59.4	61.7	50.8	79.4	64.9	69.9	60.3
2003	An. Av	52.0	63.5	66.0	54.5	81.2	66.4	71.4	63.7
2004	An. Av	52.5	67.5	66.7	57.2	83.2	67.2	74.2	65.4
2005	An. Av	53.2	68.8	68.6	60.9	83.8	68.7	72.8	67.0
2006	An. Av	56.6	70.2	69.7	65.4	84.3	70.4	77.8	69.2
2007	An. Av	63.4	71.7	72.5	69.1	85.5	73.0	79.1	72.1
2008	An. Av	74.0	68.3	79.0	78.3	89.8	80.5	83.1	77.6
2009	An. Av	81.8	78.5	88.1	82.8	95.1	86.8	91.8	85.5
2010	An. Av	84.4	85.3	89.9	87.4	96.1	88.9	94.8	88.7
2011	An. Av	88.5	91.8	91.4	91.9	97.4	91.8	97.1	92.0
2012	An. Av	96.5	97.2	96.8	98.4	98.1	98.7	99.5	97.7
2013	An. Av	102.8	102.2	102.7	103.6	100.3	103.0	101.3	102.6
2014	An. Av	111.3	105.5	107.5	111.1	99.8	108.9	105.7	107.9
Inflation 2012-2014		15.3%	8.6%	11.0%	12.8%	1.7%	10.3%	6.2%	**10.5%**
Estimated inflation 2012-2016		32.9%	17.9%	23.3%	27.3%	3.4%	21.7%	12.8%	**22.0%**

The rate of growth of the cost for 2012-2016 is a weighted average of the rate of growth of the two components considered:
- The rate of growth of the salaries
- The rate of growth of the Goods and Services purchased by the HEIs

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Growth rate of Costs

=

75% Rate of growth of the Salaries Index

+

25% Rate of growth of the Specific Goods and Services Price Index

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The table A3.4 gives the determination of the HECAI for the period 2016/17 to 2018/2019.

Table A3.4: estimation of the HECAI for the period 2016/17 to 2018/2019

	Inflation rate			Updated CSCU
	Salaries (CPI)	Goods & Services	HECAI	
Weight	0.75	0.25		
Year				
2012/13				248.8
2014/15	11.3%	10.4%	11.0%	276.3
2016/17	23.8%	22.0%	23.3%	306.8
2017/18	30.7%	28.3%	30.1%	323.8
2018/19	38.1%	35.0%	37.3%	341.6

The Cost per SCU has been estimated to 248.8 NA$ in 2012/13.

For projection purposes, assuming that the specific inflation rate for the HEIs – as measured by the HECAI – will remain at the same level for the period 2014-2016 to 2018/19 as 2012-2014.

The updated Cost per SCU for the year for the period will be as follows:

Table A3.5 Determination of the CSCU for the period 2016/17 to 2018/19

Year	HECAI		
2012/13			**248.8**
2014/15	11.1%	248.8 NA$ *(1.113) = 276.3 NA$.	**276.3**
2016/17	23.4%	248.8 NA$ *(1.233) = 306.9 NA$.	**306.8**
2017/18	30.20%	248.8 NA$ *(1.301) = 323.8 NA$.	**323.8**
2018/19	37.40%	248.8 NA$ *(1.373) = 341.6 NA$.	**341.6**

These costs will be used for the estimation of the budget allocation for the period.