

**NATIONAL STRATEGY FOR THE
DEVELOPMENT OF HIGHER EDUCATION
IN YEMEN**

Ministry of Higher Education and Scientific Research

2005

TABLE OF CONTENTS

EXECUTIVE SUMMARY	3
PART I: INTRODUCTION	8
Objective of the Study	8
Methodology	8
Definition and scope.....	10
Economic environment.....	12
PART 2: THE HIGHER EDUCATION LANDSCAPE	14
A: MAIN FEATURES AND ISSUES	14
B: SWOT ANALYSIS	46
C: SUMMARY OF MAIN ISSUES	51
PART 3: VISION AND MISSION	58
PART 4: ANALYSIS, OBJECTIVES AND ACTIONS	62
KEY STRATEGIC OBJECTIVE 1	62
KEY STRATEGIC OBJECTIVE 2	76
KEY STRATEGIC OBJECTIVE 3	81
KEY STRATEGIC OBJECTIVE 4	95
PART 5: IMPLEMENTATION AND RESOURCE IMPLICATIONS	112
Appendix 1 – Bibliography.....	115
Appendix 2 - List of workshop attendees.....	116
Appendix 3 - List of those with whom meetings held	117
Appendix 4 - Universities and colleges to which visits made	118
Appendix 5 – Snapshot of the Yemeni economy	119
Appendix 6 – Educational and strategic context.....	131
Appendix 7 – List of public universities, with student numbers, by college	142
Appendix 8 – List of private universities, with student numbers, by faculty	150
Appendix 9 – Physical resources at the Engineering College of Sana’a University.....	151
Appendix 10 - Mainstreaming gender in the national strategy.....	158
Appendix 11 – Glossary and list of abbreviations	164

Executive Summary

Yemen needs a dynamic, efficient and high quality higher education system. Its natural resources are not as extensive as many of its neighbours', and it will depend on the exploitation of its human resources if it is to develop into a successful 21st century economy and society. Its universities will be central to this. Moreover, the number of secondary school graduates will increase by possibly four or five times in the next two decades, and the higher education system will need to expand to meet this additional demand.

The Yemeni Government's vision is of a higher education system that will lead the nation's development – economically, culturally, morally and socially. It should offer students the education they need to enter the employment market as highly qualified manpower, while developing them as individuals and citizens. It should conduct research that will be of value to Yemeni industry and society, and it should put its resources to the service of the Yemeni people more generally. To do all this successfully Yemen's higher education system is in urgent need of renewal and updating. At present it suffers from a number of weaknesses.

Most striking, the outputs of the higher education system do not correspond to the inputs. The resources from which it benefits – while low in absolute terms – are not out of line with other countries in the Arab world – and indeed are higher than many other countries at a similar stage of development. In terms of GDP devoted to higher education, Yemen comes out relatively well. But a constant complaint is that students are inappropriately taught and there is very high unemployment among graduates.¹ That is doubly wasteful. It wastes the resources that have been invested, and it also means that Yemen is not benefiting from the highly qualified manpower that it has.

¹ It needs to be noted, though, that with regard to graduate unemployment there are both supply and demand factors at play. Improving the quality and relevance of tertiary education programs alone will not be sufficient to solve the problem of graduate unemployment. Rapid demographic growth and the absence of effective job creation policies play their part too.

Yet even on the input side, staff:student ratios are very unfavourable, leading to a poor pedagogy and outcomes. Moreover despite apparently significant increases in the investment budget for higher education, much of the plant and equipment is very poor and quite inappropriate to teach the professionals of the 21st century. It is clear that resources are being allocated and used sub-optimally. More resources will be required both for recurrent expenditure and capital investment (in particular the renewal of laboratories, libraries, equipment and other facilities). And these additional resources will need to be provided both by the Government, by students themselves and by universities' own efforts. But it is essential that the money that is available – however much that is – should be spent well. This will require a review of the programs for which it is provided and changes in the method of distribution, as well as greater efficiency in the way it is spent by universities themselves.

A key reason for this sub-optimal use of resources and disappointing outcomes is that the governance arrangements are unsatisfactory. Universities are severely constrained in the decisions they may take about the use of their funds. Moreover, the Government Ministry with ultimate control over universities is not the Ministry of Higher Education and Scientific Research, but the Ministry of Finance. Furthermore, there is no single or even coordinating responsibility for planning tertiary education. Several different ministries have related but uncoordinated responsibilities for the different institutions that provide tertiary education. This leads to waste and it means that decisions about the development of the system as a whole are made in an unplanned way.

A fundamental strategic aim for higher education in Yemen should be to improve the governance of the higher education system – between ministries and within universities – to ensure that decisions are taken at an appropriate level and in an appropriate place – to enable the best possible decisions to be taken for the development of individual institutions and the system as a whole. At national

level, and in due course, the responsibilities of the ministries need to be rationalized – possibly under an expanded Ministry of Education, or with the creation of a new Ministry of Tertiary Education. This may not be something that can be achieved in the short term, and in that case, and as an immediate priority, some coordinating mechanism is needed.

At university level, university leaders and individual members of staff need to feel empowered and committed, and universities' own governance needs to be reformed to make them more accountable and responsive to the needs of Yemeni society. Universities also need to ensure that they have the skills and knowledge necessary for effective self-management. As a first step, and as a pilot, two universities should be required to make proposals to the Ministry of Higher Education and Scientific Research for the reform of their management and governance. Subject to a successful pilot, this could provide a model for the rest of the sector. An important part of these pilots will be to enhance the capability of the staff within the institutions concerned, to develop the knowledge and skills needed to exercise autonomy.

Subject to this, the role and functions of the Government – and the Ministry of Higher Education and Scientific Research in particular - should be to oversee the strategic development of the sector and the regulation of the institutions within it. Universities should have day to day responsibility for running their own affairs within a strategic framework. This will include moving from line-item budgets to a block grant, and enabling universities to raise and keep their own funds.

The price of greater autonomy will be increased accountability, transparency and expectations of better outcomes – both for universities as a whole and for individual members of staff. In particular, the curriculum needs to be renewed and courses made more relevant – otherwise graduates of Yemen's universities will continue to suffer high unemployment and the economy will not benefit from the investment that is made in higher education. Staff need to be required to

review their courses regularly; and their commitment to their university – and their outside commitments – should be subject to regulation. And a rigorous Quality Assurance regime needs to be established both within and external to universities – to ensure the development of high quality.

At the same time the institutional structure of the system needs to be reviewed. At present Community Colleges and Technical Institutes account for a very small proportion of the student body. Considering that these institutions are relatively cheap (compared to universities) and that they provide courses of great relevance to the employment market, they should be developed substantially to form a sub-sector of professional higher education institutions, and a large part of the future growth should take place here. In addition, decisions are needed about the future purpose of each of the remote education colleges of the eight universities. And the private universities need to be encouraged to develop and expand in a way that is beneficial to the state. They need to be subject to rigorous quality and accreditation processes, but subject to this the country would benefit from the experience of a sector that has proved dynamic and which could potentially offer higher education to large numbers of students at no cost to the state.

Finally, there is little tradition of research or community service in Yemeni higher education. This is understandable, given the resource constraints and the lack of incentives for these activities. However, there would be benefit in the development of high quality research in topics which are of relevance to Yemen, and it is proposed that a National Research agency should be established and provided with a budget to encourage this.

This strategy begins by discussing the issues that arise in relation to the present situation. It goes on to develop a vision and mission for the development of higher education in Yemen, and then sets out the objectives and actions that will enable these to be achieved. All the actions proposed here should begin to be

implemented within two years. Most of those with the highest priority concern reform of governance and autonomy: without this, other reforms are unlikely to be effective. Other high priority actions concern investment and quality assurance.

In terms of their resource implications many of the recommendations can be implemented without additional cost – indeed some will save money. However, many others will have a significant cost to implement. Some -- like the proposal to respond to increasing student demand -- will in part be accommodated, as far as their recurrent costs are concerned, within normal GDP growth, so long as this matches or exceeds the growth in the population. However, this and other recommendations will require a significant injection of capital funds. Yet other proposals -- for example the proposal for systematic renewal of the laboratory and equipment infrastructure, as well as the proposal for improvements in the staff:student ratio -- will require continuing capital and recurrent investment.

By their nature, and because of the form of investment required, donor assistance is most likely to be forthcoming for limited investment in specific, self-contained, projects, and particularly projects of a capital nature. The present analysis, which has analyzed the current situation and identified specific needs, should help convince donors to give grants in support of the projects proposed. Beyond that, most of the cost of these proposals will fall to the public purse, and to income that universities can raise for themselves, including from student fees.

This strategy sets out the direction that the higher education system in Yemen needs to travel, and the objectives and the actions it needs to take. It needs to be followed by a comprehensive and detailed implementation plan that sets out the detailed steps, the timetable and the responsibilities for giving effect to this strategy.

PART I: INTRODUCTION

Objective of the Study

As with many other countries, Yemen is reviewing its institutions and structures, to ensure that they are fit for purpose in the 21st century, and in particular that these will serve the nation as it develops into a modern society and economy. A number of strategies have been developed in key areas of national life - a poverty alleviation strategy, a basic education strategy, a technical education strategy and a civil service strategy, among others - all underpinned by a national strategy, "Yemen's Strategic Vision 2025". Higher Education is a fundamental part of the infrastructure for national development and capacity building, and it is in this context that, supported by the World Bank, the Ministry of Higher Education and Scientific Research decided to prepare a strategy for the development of higher education in Yemen.

A strategy team was appointed, led by Professor Bahram Bekhradnia, Director of the Higher Education Policy Institute, Oxford UK, and including Dr Mohammed Abu-Bakr Mosen, Dr Ahmed Al-Shami and Dr Hamoud Al-Dafiry, steered by a Task Force Team (TFT) which was chaired by the Vice Minister for Higher Education and Scientific Research, Professor Mohammed Al-Mottahar, and directed initially by Dr Mohammed Al-Mekhlafy, and in the later stages by Dr Aziz Alhadi. This review was able to benefit from an earlier strategic study conducted by Professor Georges Verhaegen, and from the very considerable support provided to the Yemeni Government by a number of donor countries, in particular the Government of the Netherlands.

Methodology

This strategy has been developed following an iterative process, with drafts and conclusions passing repeatedly between the project team members and the TFT for discussion, and further discussion with other stakeholders. An initial high

level seminar was held in February 2005 at which senior World Bank officials were present. This was followed by a seminar in Sana'a in March 2005, which in particular focused on identifying the strengths and weaknesses of the current arrangements in Yemen. Further workshops were held in Sana'a in May and July 2005, where an initial draft strategy was presented and discussed with key stakeholders; further workshops were held in September and October 2005 with a wide range of senior stakeholders. A final invitation workshop was held in December 2005, prior to a conference in January 2006 where the final strategy was presented.

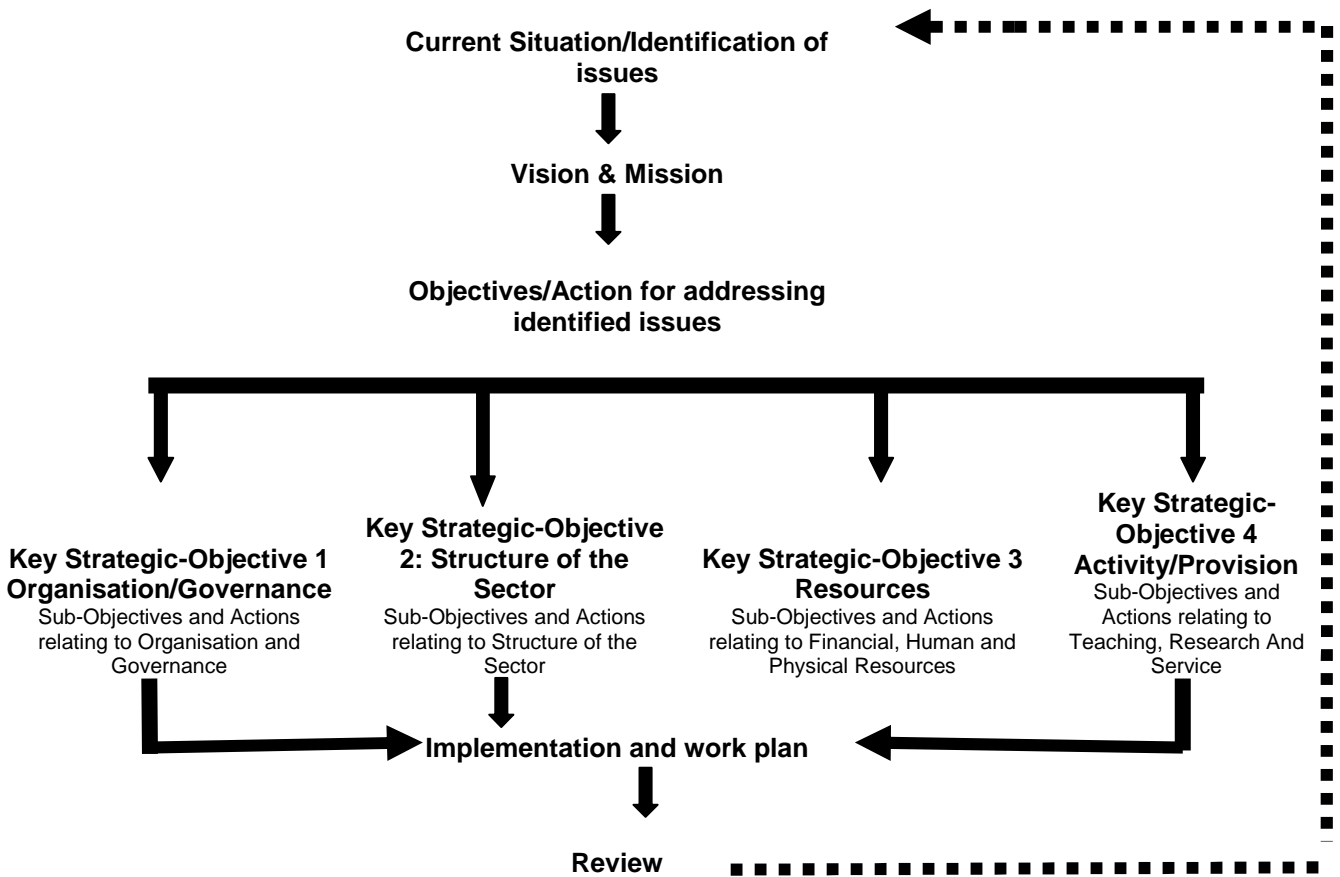
A substantial amount of literature has been reviewed, and a full bibliography is at Appendix 1. At Appendix 2 is a list of those attending the workshops and seminars. In addition, a large number of meetings were held with government officials, university leaders, business leaders and others, a list of whom is at Appendix 3. In-depth visits were made to more than 10 universities and colleges throughout the country, listed at Appendix 4. In addition to the national workshops, the local consultants held workshops in a number of individual public universities.

In conceptual terms, there are three distinct elements in this strategy:

- Description of the current situation, together with its strengths and weaknesses, and the problems and challenges facing higher education in Yemen
- Description of the aspiration for the higher education system in Yemen in the future (the vision and mission)
- Analysis of the actions needed to move from the current situation to implement the vision.

This phase of the development of the strategic plan will be followed by a more detailed phase, where a detailed work plan will need to be established to implement the strategy; and as with all strategies, implementation will need to be carefully monitored and the strategy reviewed in the light of that monitoring.

The following chart illustrates this in graphical form:



Definition and scope

Higher education broadly defined consists of formal university education (private and public) and post-secondary higher technical education. This strategy focuses mainly on universities (public and private), but universities exist in the context of

a number of providers of post-secondary education, and so reference is necessarily made to other higher education institutions in order to ensure that the strategy is comprehensive and coherent. Unless the context makes it clear otherwise, the terms “higher education”, “universities” and “tertiary education” are used interchangeably.

Although, as is discussed in the report, national ministerial responsibilities for institutions of higher education, widely defined, is split between different ministries, it does not make sense to construct a strategy for one type of institution of higher education while ignoring the others. Indeed, many countries are now embracing the concept of "tertiary" education, and even "life-long" education. It is assumed that Yemen should follow the definition of the United Nations Educational, Scientific and Cultural Organisation (UNESCO), which in its definition of “Tertiary Education” includes both

“programs that are largely theory-based and are intended to provide sufficient qualifications for gaining entry into advanced research programs and professions with high skill requirements” (ISCED 5A²) and

”programs that focus on practical, technical or occupational skills for direct entry into the labour market.” (ISCED 5B)

This is the approach adopted here. However, that, of course, has nothing to do with which Ministry has responsibility for the various institutions. That is another matter.

² ISCED is an abbreviation for “International Standard Classification of Education” levels, and is a system designed by UNESCO so that statistics on education can be compiled and presented on an internationally comparable basis

Economic environment

Yemen is one of the poorest countries in the Arab world, with a GDP of about \$550 per capita. In the mid-1990s the Yemeni economy witnessed strong growth due to the onset of oil production, but has been harmed by periodic declines in oil prices since. The Yemeni economy has been heavily reliant on oil revenues and the role of the state. GDP growth in 1996 was 7.4%, and 6.4% in 1997, declining to 4.9% in 2001 and 3.3% in 2003. In 2004 it increased slightly to 3.6 per cent.

Yemen is blessed with a wide range of natural resources. It has sufficient reserves of oil and gas to produce a steady income over the next 10 years, and a diversified agriculture sector, a long coastline (about 2500 kilometers) suitable for fishing, and opportunities for a substantial increase in earnings from tourism on the basis of its rich cultural heritage and spectacular natural beauty. Most important, Yemen has a hard-working and talented workforce which, supported by the development of the Aden Port and an associated free zone could form the basis of a dynamic small and medium scale manufacturing sector. All these sectors and others have growth potential if the Government would provide incentives to foster collaboration between the public and private sectors. Beyond this, a successful 21st century economy requires successful privatization, an effective regulatory climate and a functioning legal and judicial system. However, at present, efforts to diversify the economy have not been particularly successful, and until they are, the economic future for Yemen will be difficult to predict.

Currently, the labour force in Yemen, according to the World Fact Book, is 3.7 million (in 2003). About 11% are working in the Government sector and about 89% in the private sector. About 45% are working in agriculture and herding, about 11% in services, 10.5% in commerce, 8.5 per cent in construction and 3% in transportation and communication. The remaining 20 per cent or so are dispersed between other sectors. Unemployment stands at 14.8 per cent, but is thought to be particularly high among graduates. In 2004 over 31000 graduates

registered as applicants for a job with the Civil Service Ministry, and of these less than 2500 were accepted -- not all of the remaining will have been unemployed subsequently, but this suggests nevertheless substantial graduate unemployment.

The present rate of GDP growth is barely keeping pace with the growth in the population, and so per capita GDP growth is currently very small indeed. This, together with the Government's plan to reduce the proportion of GDP consumed by the public sector, makes growth in public spending on universities -- beyond GDP growth -- problematic, but it nevertheless suggests that some growth may be possible -- in absolute terms, if not relative to GDP. At Appendix 5 is a detailed snapshot of the Yemeni economy, produced by the Ministry of Planning and International Co-operation.

PART 2: THE HIGHER EDUCATION LANDSCAPE

A: MAIN FEATURES AND ISSUES

Appendix 6 sets out some key background information relating to the education sector in Yemen, and focuses in some detail on information relating to the higher education sector. Appendix 6 also describes the main strategic approaches that have been adopted by the Government of Yemen, and in particular the determination to use education to break out of the straitjacket of poverty and underdevelopment that have characterized Yemeni society in the past. The main educational priorities are to eradicate inequality and increase performance and quality at all levels, and this applies equally to higher education.

This section discusses the main features and issues concerning higher education in Yemen, taking the background set out in Appendix 6 as a starting point.

Legal framework

The legal framework for higher education in Yemen is based on Law no. 45 of 1992 for Education, Law no.(18) of 1995 for Public Universities, Law no. 13 of 2004 for Private Universities, Law no. 5 of 1996 for Community Colleges, Law no. 19 of 2003 for Scholarships, By-Law no, 137 of 2004 for the Ministry of Higher Education. There are in addition other laws, by-laws and regulations which are relevant to higher education and scientific research.

These Laws and By-Laws have given the Ministry of Higher Education And Scientific Research jurisdiction over all higher education institutions through coordinating, supervising and approving of all planning, policy formulation, programs, quality and ensuring that all institutions are in compliance with all Laws, By-Laws and Regulations in force in the area of higher education. They

also give the Ministry of Technical and Vocational Education similar responsibility for Community Colleges and Technical Institutes

National governance

In 1990 the Ministry of Higher Education and Scientific Research (MoHESR) was created, which had responsibility for universities until it was abolished in 1994, when responsibility for universities was absorbed by the Ministry of Education. The MoHESR was re-established in 2001. The community colleges³ and technical institutes are the responsibility of the Ministry of Technical and Vocational Education, also created in 2001. In addition, the Ministry of Finance plays a vital role - not only the role that is traditional in other countries of fixing the total budget of the sector, but actually deciding on the amount to be paid to individual universities, and exercising detailed control over their expenditure. Within each university, the Department of Financial Affairs is staffed by personnel from the Ministry of Finance, and is responsible for processing every single payment.

Above the Ministry of Higher Education and Scientific Research is the Supreme Council for Universities (SCU), chaired by the Prime Minister, and composed of 8 other Ministers (MoHESR (Vice-chair), Vice-Minister of MoHESR, Finance, Planning, Civil Service, Education, Technical and Vocational Training, Social Affairs), the 7 Rectors of the public universities, a deputy from the MoHESR, 1 representative of the private universities, 1 representative of the private sector, and 3 “scholars”. It meets very seldom, lacks a permanent secretariat, and has not played an effective role in the steering, development and reform of the higher education system.

³ Until 2004 the Community Colleges were the responsibility of the Ministry of Higher Education and Scientific Research, but from then they have been the responsibility of the Ministry of Technical and Vocational Education.

The current arrangements mean that higher education has a Ministry which can act as its champion, and which has developed knowledge and expertise specifically about the sector. However, the weaknesses are numerous. Because of the separation of responsibilities, there is no sense of tertiary education in Yemen as is increasingly common in other countries. The present details of ministerial "ownership" and responsibilities would be of secondary importance if there were planning and coordination between the sectors, but there is not. The reason that this will matter increasingly in future is that as the number of secondary school leavers increases, it will be neither possible nor appropriate to accommodate them all in universities. On the other hand, for the sake of the country and the students themselves, it will be necessary to give them some additional high-level skills and knowledge, and it may well be appropriate to do so in community colleges or technical institutes. Provision of post-secondary education needs to be planned as a whole.

As far as the Ministry of Higher Education and Scientific Research is concerned, the Ministry itself is clear that its role is not to exercise detailed control over universities but to exercise strategic guidance and to steer the sector. However, its terms of reference, remit and purpose are unclear to many, and it needs to clarify this. Nor does it yet have the skills available to it, or the internal structure, to play the expanded role that this strategy recommends. Whatever its role and remit, it needs to ensure that it has a highly knowledgeable and skilled cadre of staff, able to play a leadership role in the development of higher education. One detailed, but important, shortfall at present is in the information that is available to the Government on the basis of which to make policies. Basic information – for example the number of students by subject, gender, age, etc - is not available in a systematic way, nor is information about the number of staff by speciality, their ages, etc, nor information about university income and expenditure. This will need to be rectified in future, and data collected and analyzed systematically.

The role of the Ministry of Finance is unusual. It is anyway for consideration whether the sort of detailed control that is exercised over university finances is appropriate, but if it is judged to be so, then it is very unusual for that control to be exercised by a Ministry of Finance, when a Higher Education Ministry exists.

Institutional governance

Autonomy

In law, Yemeni universities are characterized as being wholly autonomous. Article 3 of the University Law states that “public universities are administratively, financially and academically independent”. Article 53 of the same law explains the financial resources of public universities, and Article 54 explains the financial systems which ensures the autonomy of universities. Nevertheless, as regards finance they are heavily constrained - they are given line item budgets by the Ministry of Finance, and there is a Ministry of Finance employee in each university (who in turn appoints a financial manager in each college) to ensure that they do not spend money designated for one budget item on another, unless it has prior approval from the Ministry of Finance. If universities have not spent the individual budgets at the year-end, they may not carry them forward to the next year, but must return them. This can be a serious issue. A study carried out for the World Bank in 2002 found that in five universities, out of a total budget of YR 258 million earmarked for the acquisition of new books in 1998, less than 50 per cent of the amount was used, and the rest was returned to the Ministry of Finance, making an already underfunded situation even worse⁴. In recent years about 10 per cent of the higher education budget has been returned to the Ministry of Finance in this way (and in some universities the figure is much higher). Moreover, if universities earn money of their own, although in some circumstances the Ministry of Finance may allow a university to keep it, that is not consistent or universal.

⁴ World Bank 2002 Op Cit, quoting Al-Mutami (2000) Background Report of Higher Education in Yemen.

The present unsatisfactory situation is not necessarily the fault of the Ministry of Finance. At present universities lack the capabilities to give the Government the confidence that they will budget and spend resources appropriately. On the other hand this is in part because of the close control to which they have been subjected. But in other countries even where this is so, if a Ministry of Higher Education exists, such responsibilities belong to that Ministry, not the Finance Ministry.

It is indeed true that the autonomy of universities is heavily constrained because of the close control exercised over their financial affairs. This may be necessary because of the limited capabilities of universities, but it is regrettable, and steps should be taken to overcome the reasons for this. As regards other aspects of autonomy, universities have and exercise their own control over things like staff appointments, curriculum and so on, though they must obtain the approval of the Ministry of Higher Education and Scientific Research to establish new colleges.

Governance

In terms of governance, the supreme decision-making body of universities is essentially controlled by academics, with little or no external membership. Rectors and Vice-Rectors are appointed by the President, and Deans by the Prime Minister (both in his capacity as Prime Minister and as Chairman of the Supreme Council for Universities). The appointments processes are not particularly transparent, nor the criteria for the success of the appointees, and in as far as they are accountable, they are not accountable to the university but to others. This in turn may influence the appointment and promotion of Deans and Departmental Chairs within the university.

The disadvantages of the present arrangements are numerous. First, the degree of detailed control that is at present exerted over the expenditure of universities

leads to a lack of flexibility and slow decision-making. It also means that university leaders do not make decisions needed for the efficient running of their university, although they often have the power to do so. Even the limited autonomy that they have is not used. On the other hand, the expertise and skills required to exercise greater autonomy are lacking and will need to be available in universities if they are to exercise greater autonomy as will measures to ensure full accountability for all aspects of the university's performance – financial, pedagogic, quality, as well as administrative.

To have the academic body, and in reality only the senior management, as the supreme authority falls well short of international best practice, and runs the risk of decisions being taken in the interests of the "producers". Because there is no external input into the governance of the university, there is a widespread feeling that they have become insular and unconnected with the outside world and its needs.

Structure

The present structure of the higher education system in Yemen is somewhat complex, having arisen in a more or less unplanned way.

The eight public universities are multi-college institutions, ranging in size from over 77,000 at Sana'a to over 6800 at Hadramout. In age they range from the oldest – Sana'a and Aden which were created in 1970 - to the most recent which were offshoots of Sana'a university, and created in the past 10 years or so. All the universities cover most academic territory, and there is no planning, rationalization or even coordination attempted. On the other hand, all are of a reasonable size (and three would be regarded as large universities by most standards), and in principle there is no reason why they should not be able to support a wide range of subjects. The public universities, their colleges, and their student numbers are listed at Appendix 7.

All these universities have one or more education colleges that are detached from the main campus. Some of these have over the past few years been expanded by adding more colleges, and designated separate universities.

Because these education colleges are often in remote locations they help to widen the opportunities for participating in higher education to people who might not be able or willing to travel, and this is of particular benefit to females. Being predominantly colleges of education, they once supplied a much-needed stream of teachers for local communities who might not otherwise have been able to attract them. However, the need for such a large number of teachers has now greatly reduced.

The quality of some of the remote branches is thought to be less good than that of their parent universities. In particular, in some of the remote locations, it can be very difficult to get staff of a calibre that a university requires. This has led to proposals on the part of some universities to make some of their remote branches, into independent lower-level colleges – a proposal that Governates may be understandably nervous of, fearing for the supply of teachers to their area. But there is widespread agreement that these colleges and branches provide much needed higher education opportunities for the rural population, and widespread support for their continuation in some form, even if their roles and functions change.

The non-university institutions (community colleges and technical institutes) provide post-school education, though at a level below bachelors degree. They are not within the remit of the Ministry of Higher Education Scientific Research, though they offer what would in much of the rest of the world be regarded as tertiary level education. In addition there are a number of other non-university institutions, often established by a Ministry, which offer higher education of a

generally specialist nature, which could be regarded as tertiary education. In 2002-03 these⁵ provided for 16,500 students.

As far as the technical and vocational institutions run by the Ministry of Technical Education and Vocational Training are concerned, these provide three types of training as follows:

Type of institution	Years of duration	Qualification required.	Type of certificate gained
Vocational training centers.	2 or 3	9th grade Certificate	Vocational Training Certificate
Technical institutes	2	Secondary school	Technical Diploma
Community Colleges	3	Secondary + admission exam.	Diploma.

The colleges and institutes offer a limited number of programs of a generally vocational and technical nature, and, at least as far as the Community Colleges are concerned, their students appear to be able to secure employment. A Tracer Study conducted in September 2004 of the first 100 graduates of the two community colleges financed by a World Bank project (ESIP Project ID P005911) indicates graduate employment rates of about 80%; and employers were reported to be highly satisfied with the skills of the community college graduates. The project has clearly confirmed the need for and viability of this type of post-secondary program, geared primarily to the private sector.

⁵ The institutions concerned are the following: The Centers of the Special Needs and Blinds, The High Institute for Sport Education, The National Institute for Administrative Science, The High Institute for Direction and Guidance (Sharia'a Sciences) , The High Juridical Institute, The High Institute for Health Science, Taiz 22 May Private Community Colleges, 187 M, The 22 May Higher Institute for Health Science (Taiz City and Ibb City), High Academic Institute for Health Science (Sana'a City, Taiz City and Al-Hodiedah), Al-Wahda High Institute for Health Science, Yemeni and German Institute for Technical

For this reason, some of the colleges are in strong demand among school leavers, attracting some who would be well qualified to attend university. However, some care is needed in interpreting these facts - the numbers are very small (2000 in the community colleges, and similar numbers in the technical institutes in 2004-05), and it might be a different story if numbers were much greater. And in some at least staff: student ratios are much more favorable than in universities (in part because their staff are less well-qualified, and therefore cheaper to employ). In 2004-05 there were 140 staff in Community Colleges for 2000 students

It needs to be noted that the future of community colleges as institutions that offer higher technical education is uncertain. There have been suggestions that the Ministry of Technical and Vocational Education may downgrade the qualifications that Community Colleges offer to two-year diplomas. That would be a pity for Yemen: as will be apparent later in this document, these could play a valuable role in the development of the higher education sector, and at present Yemen is almost entirely lacking a higher technical, or professional, sub sector. It should also be noted, however, that the downgrading of community colleges would in some respects only represent a logical development of the official attitudes that exist already to community colleges. At present, the Government recognises the three year community college diploma as equivalent only to the two year diplomas of vocational institutes.

Among the weaknesses of non-university institutions are concerns that are expressed about their quality (though there is no objective information about this). In terms of staff: student ratios they are generally better than universities, but some of their facilities and equipment may not be (though the community college in Sana'a is extremely well provided).

The development of private universities in Yemen is relatively recent, with the first established only in 1991. Now there are nine, which differ considerably one

from the other, ranging in size from over 4,000 to less than 650, and have very different reputations. Although there are more private universities than public, they cater for only 17,000 or so students between them, which represents about 10 per cent of the student population - and so they play only a modest role in meeting Yemen's needs for higher education, but it is a potentially important one and one that could certainly grow. At Appendix 8 is a list of the Private Universities, with the number of students by Faculty and gender.

Private universities charge tuition fees, and although they originated as not-for-profit organisations, that is no longer the case, and they attract investment and may generate profits.

Private universities increase the amount of higher education available in the country at no – or relatively little – cost to the state; and bring private investment into higher education. Because they are independent, private universities can be flexible and innovative; and also because they can charge, they should in principle be able to make good provision for their students, though one concern about private universities is that they do not do so.

The disadvantages of the private universities include the fact that they have a reputation for variable quality - the best are as good as any university in Yemen, but others have a poor reputation. In some cases, the facilities and infrastructure they provide are quite inadequate for a university; and because until recently there has been no effective accreditation system, there has been no effective control over the quality of what they have provided. The majority were established before issue of the Law on Yemeni Universities, which gave the Supreme Council for Universities the authority to issue licenses for private universities and established their rules. Therefore, they were operating without licensing from the Government and they did not meet any legal criteria. For example, several private universities are housed in rented premises that are unfit for a university campus. And some private universities, which had been in

existence no longer than five years, started offering postgraduate programs in spite of serious resource constraints.

In 1999, the Government issued a law on private universities, colleges and institutes to govern their structure, administration and operations, but this law was only enacted in 2005. However, in May 2005 the Government required all medical schools of private universities (except one) to be closed, together with all remote branches. At the same time, it gave notice to private universities that they would have to meet minimum criteria for accreditation over the next 1-7 years. So, there are signs that the Government is beginning to recognize the need to pay regard to private universities, but as yet has not developed a strategic framework for doing so. However, the IDA-funded HEP programme includes a pilot component to establish a Quality Assurance and Accreditation Agency, and this will be a step on the way to providing assurance about the quality of private universities in Yemen.

Also, private universities rely on the public sector for their staff, which is not necessarily a disadvantage for the universities concerned (indeed, because of the small proportion of directly employed staff they are able to be more flexible and responsive to the market than traditional universities), but it raises questions about the extent to which the public sector may be subsidizing the private sector. A final concern is that because the motivating driver for many of those involved with private universities is to make money, this will distort their decisions and actions.

An important challenge for the future will be to try and maintain or improve the quality of private universities while greatly increasing their scope and reach, to enable them to play a more important role in Yemen's system.

Financial Resources

Expenditure

The rising share of public spending accounted for by education (at all levels) reflects the Government's commitment to this. Chart 1 shows that Government expenditures on education grew from 5.1 per cent of GDP in 1996 to 6.8 per cent in 2004⁶. This is high compared with most Arab and lower-income countries. The education sector also increased its share of total government expenditure from 16.0 per cent in 1996 to 17.7 per cent in 2000, 20.7 per cent in 2002 and 21.2 per cent (estimated) in 2005.

Chart 1

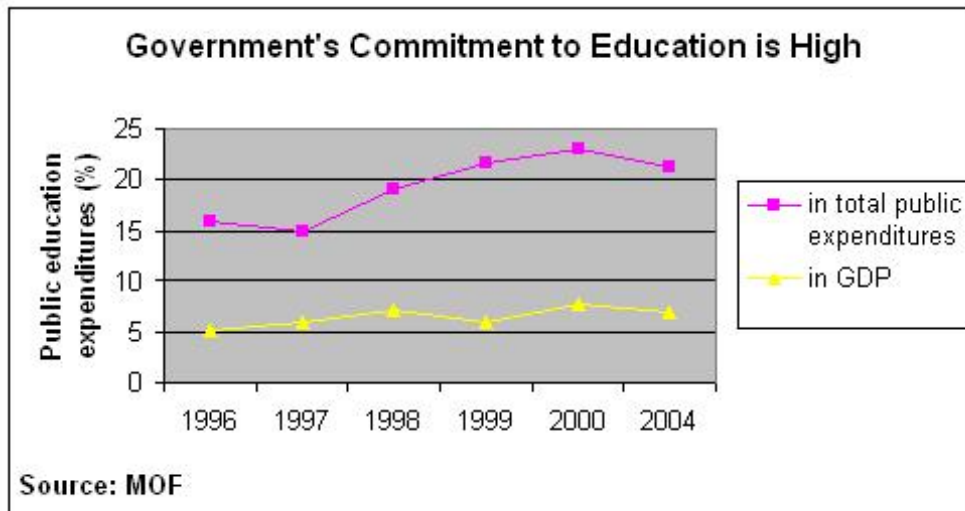


Table 2 below shows the very rapid recent increase in education expenditure, and within education expenditure, the increasing share taken by higher education.

⁶ NB The figures given in this section relate to the most recent year for which data are readily available at the time of writing, which differ according to the statistic being considered.

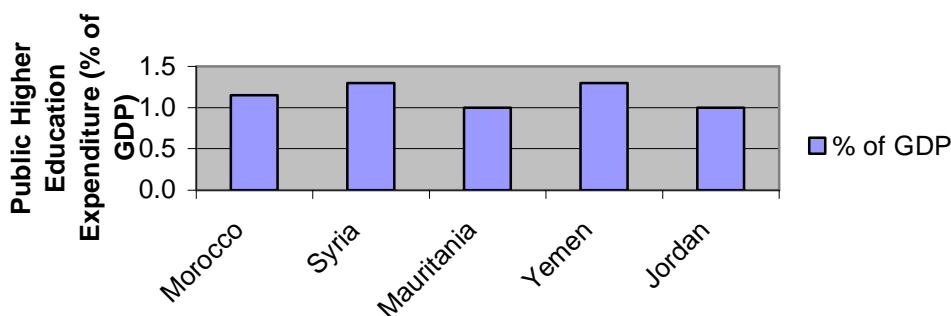
**Table 2 Indicators of growth of higher education funding from 2002-2005
(YR millions)**

Description	2002	2003	2004	2005
The allocation of finance for education sector	122907	133284	162714	177125
For higher education	19471	22459	29708	32012
<i>Higher education as % of all education budget</i>	<i>15.8</i>	<i>16.9</i>	<i>18.3</i>	<i>18.1</i>
<i>Higher education as % of general education</i>	<i>19.3</i>	<i>21.1</i>	<i>23.5</i>	<i>23.4</i>
<i>Higher education as % of state budget</i>	<i>3.3</i>	<i>2.9</i>	<i>3.9</i>	<i>3.8</i>

As far as public expenditure on higher education is concerned, this represented 1.2 per cent of GDP in 2004-05, higher than the average for lower income countries, and at a level similar to that of most Arab countries. Chart 3 below illustrates this in relation to four comparator countries. Yemen's recent increase in spending reflects the expansion of public universities. In 2000, the Government also started budget allocations to the community colleges, which still account for only a small part of total expenditure on higher education (0.3 per cent in 2000 and 1.9 per cent in 2003).

Chart 3

**Yemen's Public Expenditure on Higher Education
is High Compared to Other Countries**



Sources: ECSWA, UNESCO UIS 1999 and
Yemen MOF

Nevertheless, whatever the level of expenditure relative to GDP and relative to other countries, the fact is that there is a strong body of opinion that funding remains insufficient partly because the funding that is available is inefficiently used. In part this is for structural reasons discussed below (like the uses to which the funds are put) but in part also it is because of the sub-standard quality of some of the administrators – and, worse, because of the suspicion of a degree of corruption.

Table 4 below breaks down higher education spending between recurrent and capital expenditure and within recurrent expenditure it shows the breakdown between various heads.

Table 4: Indicators of higher education spending for the years 2001-2005 (YR millions)

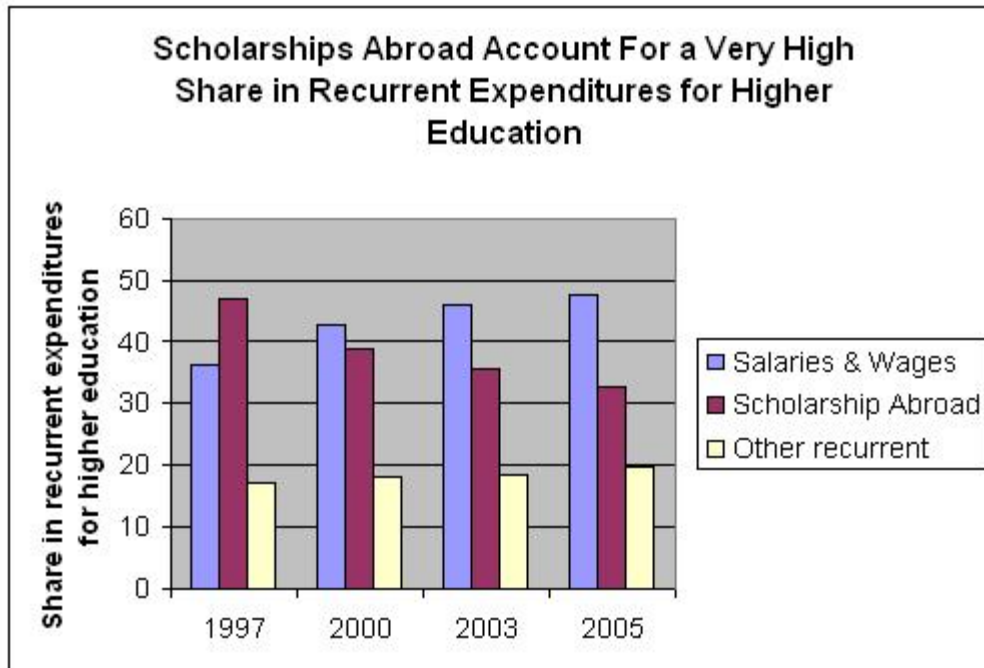
Description	2001	2002	2003	2004	2005
Recurrent spending on higher education	9728	16141	17971	21375	22956
<i>Recurrent spending as % of total higher education expenditure</i>	<i>73.1%</i>	<i>82.9%</i>	<i>80.1%</i>	<i>71.9%</i>	<i>71.7%</i>
Overseas scholarships	1445	5893	6165	6808	7214
<i>Overseas scholarships as % of total recurrent spending</i>	<i>14.9%</i>	<i>36.5%</i>	<i>34.3%</i>	<i>31.9%</i>	<i>31.4%</i>
Wages/salaries	5877	6506	8509	10361	11347
<i>Wages/salaries as % of total recurrent spending</i>	<i>60.4%</i>	<i>40.3%</i>	<i>47.3%</i>	<i>48.5%</i>	<i>49.4%</i>
Cultural activities (external conferences)	352	417	563	693	669
<i>Cultural activities as % of total recurrent spending</i>	<i>3.6%</i>	<i>5.6%</i>	<i>3.1%</i>	<i>3.2%</i>	<i>2.9%</i>
Capital spending	3591	3330	4488	8333	9056
<i>Capital spending as % of total recurrent spending</i>	<i>26.9%</i>	<i>17.1%</i>	<i>19.9%</i>	<i>28.1%</i>	<i>28.1</i>

Chart 5 shows the breakdown of recurrent university expenditure, and demonstrates that

- Total recurrent spending per public higher education student amounts to about \$1525.

- Salary costs are gradually increasing their share of total recurrent expenditures (from 34 per cent in 1997 to 49.4 per cent in the 2005 budget).
- Scholarships abroad account for a very high share of recurrent spending (34.3 per cent in the 2003 budget, though this has reduced to 31.4 per cent of the 2005 budget).
- This leaves a relatively small share of the recurrent budget for operations, and a particularly small amount for maintenance (1.4 per cent of the 2005 budget).

Chart 5



Salaries

The average monthly university teacher's remuneration⁷ is high relative to other professionals in Yemen, though low in comparison to other countries. It ranges from YR 29,000 for an instructor to YR 150,000 (including housing allowance) for a professor. At that level, the average annual remuneration for a professor is estimated at US\$9,326, i.e., about 17 times GDP per capita. Salary increases are based on seniority, and there is no evaluation system for workloads or quality of teaching and academic products.

Overseas scholarships.

The total expenditures on scholarships abroad from all public sources (MoHESR, universities and colleges and other ministries) increased by nearly 3-fold from YR 2.6 billion in 1997 to YR 7.2 billion in 2004-05. In 2004-05, about 5,300 students were funded by MoHESR scholarships abroad (74 per cent for undergraduate programs and 26 per cent for postgraduate study).

Whatever the level of funding – and particularly where resources are scarce – it is important to ensure that the money that is available is used as well as possible. The overseas scholarship scheme has been singled out for particular criticism because, at YR 7.2 billion, it accounts for such a high proportion of the higher education budget, and there is a heavy opportunity cost associated with maintaining this scheme as it is. It is far from clear that as it stands this expenditure confers as much benefit to the country as a whole, and to the higher education in particular, as it should and as a different use of that money would.

⁷ The Government agreed in May 2005 to increase salaries by around 40 per cent beyond the figures shown here)

Investment Expenditure

The trend and breakdown of investment/capital expenditures show three key facts:

- Investment has grown dramatically in the last few years, from YR 3.3 billion in 2002-03 to YR 6.5 billion in 2005-06.⁸
- This growth was largely funded from domestic budgetary resources, with the share of foreign contributions at 15 per cent, with one or two exceptional years; and
- Investment expenditure was mostly for establishment of new universities and colleges.

Unit cost.

Yemen's unit cost per student (defined here as the public recurrent expenditure, excluding scholarships abroad, per public university student) is estimated at YR 79,682 or US\$875 in 2004, around 159 per cent of GDP per capita.⁹ The percentage of per capita GDP is a measure that takes better account of the relative economic positions of different countries than simply looking at per capita expenditure – and in these terms, at 159 per cent, Yemen, again, performs relatively well compared to others.

The unit cost has grown very rapidly in recent years, having been around two thirds of this level in real terms between 1996 and 2000. The unit cost varies significantly between public universities, and in two (Hadramout and Aden),

⁸ The budget figure for 2005-06 is YR 8.5. However, based on past budget:expenditure ratios, the likely expenditure figure will be nearer YR 6.5 billion.

⁹ GDP per capita was \$550 in 2004.

lower student:staff ratios contribute to particularly high unit costs (relative to the others). The student:staff ratios might also differentiate the unit costs significantly between Arts and Science students¹⁰. A rough estimate of unit costs for private universities shows that most of them have unit costs similar to the public universities.

International comparison shows that low-income countries are likely to have a higher unit cost in relation to GDP per capita than middle-income countries and that Yemen's unit costs match this pattern¹¹.

So within universities there are very low student:staff ratios, and yet a very high proportion of running costs are devoted to staff salaries. This is a real problem, since it means that staff numbers in universities are inadequate, and at the same time there is insufficient to spend on other facilities: a recent World Bank study found on average only two books per student in libraries, which compares to an average in developing countries of up to 10, and to more than 100 in OECD countries.

There is no doubt that Yemen devotes a substantial amount of GDP to higher education and that, relatively speaking, the unit of funding per student is also high. All this raises the question of whether the money that is available is being used well, and that is considered below. One problem that arises precisely because of the present relatively high proportion of the public purse devoted to higher education, is that it will be very hard to secure increases in future – but increases will certainly be needed unless either quality is to be sacrificed or numbers are to be severely curtailed.

¹⁰ For example, student: staff ratios averaged 96:1 for arts and 15:1 for sciences in Sana'a University in 1998-99. Assuming that this difference affects the salary share of total recurrent expenditures (70 per cent), the unit cost for sciences would be four times as much as the unit cost for arts.

¹¹ World Bank World Development Indicators, 2005. This shows that the average per capita spend on tertiary education as a proportion of GDP was 169 per cent in low income countries and 50 per cent in the Middle East and North Africa region.

Other income

It is not known how much in total universities earn for themselves - beyond what they receive from the state - but the amount is thought to be low, and the point is repeatedly made that the incentives for them to earn income are weak: indeed in many cases what is earned has to be returned to the Ministry of Finance, and there is certainly no universal system to regulate and promote the pursuit of additional revenue. In particular, there is no student tuition fee payable (this is in fact banned by the Constitution, and it would take a constitutional change to allow this), though the law does now allow a system of parallel fees, whereby a proportion of students who would not normally be admitted to a particular subject (usually medicine or engineering) can be admitted with lower grades, but paying a fee. It is thought that a general system of student fees would be difficult to introduce, since many if not most students would not be able to afford a significant fee and there are no easy mechanisms available at the moment for making loans available to students to pay fees. The private institutions, of course, charge fees, and these can be quite substantial (for example, the University of Science and Technology charges medical and dentistry students an average of \$3800 per year) but because these represent such a small fraction of the total student population, this does not contribute much to the proportion of GDP devoted to higher education. Nor may universities borrow money for investment, though even if they could, they lack the skills and abilities necessary for managing this.

Allocation method

Recurrent grants are allocated based largely on the previous year's budget, modified following negotiations with the Ministry of Finance. There is no performance or competitive aspect to the allocation.

There are few advantages in the present method of making allocations to universities. It is true that it allows stability, but this is at the expense of continuing disparities, anomalies and inefficiencies. There is little transparency, and no rational basis, for the differences between the funding of institutions. For example, Taiz University has per capita funding of under YR 50,000 per year, while Hadramout University has per capita funding of over YR 185,000. The Yemeni Government has recognised the unsatisfactory nature of the present arrangements, and with World Bank support has proposed a study to reform the system for resource allocation.

Human resources

Yemeni universities employ approximately 2650 fully tenured academic staff, usually holding PhD's, plus a further 1750 teaching assistants, generally with Masters degrees as their highest qualification. These figures imply a student:staff ratio of 50:1 plus, which is extremely high, and has deteriorated substantially in recent years. This undoubtedly has an impact on quality, but also, as is discussed below, on the style of teaching and learning, which is adversely affected.

Other than the University of Science and Technology the private universities generally do not employ their own staff.

The public community colleges employ 140 teaching staff between them. Because of the nature and level of their provision, these staff hold lower level qualifications than university staff. Similarly, the staff employed by the remote education colleges of the universities tend to have lower-level qualifications than those elsewhere.

A significant number of non-Yemenis are employed in Yemen's public universities, especially in science and technology subjects, and are generally

paid more than their Yemeni counterparts. There is common agreement that without these overseas staff, it would in the past have been impossible to provide staff with appropriate qualifications to teach these subjects.

The pay of a university professor is equivalent to around \$9326 per year, which is low by international standards (as well as the standards of other countries in the region), but high in Yemeni terms (only judges earn more among public employees). As a consequence it is common for university staff to have one or more jobs in addition to their university position. Perhaps for this reason, but also because of the high prestige in which university staff are still held in Yemeni society, there is high demand for university positions.

There is nothing in itself wrong with staff having private incomes - that is common in most countries. It is the apparent lack of transparency and accountability that gives rise to a problem. It is clear that some staff regard their university post as a secondary interest, while they undertake other roles, often requiring no less commitment. It is also clear that these arrangements are often not to the benefit of students, and there are cases reported where staff are regularly absent even from the lectures which they are committed to give. Some regularization and control of the outside interests of staff appears essential.

It is apparent that a university career remains an attractive and prestigious profession, and so should be capable of drawing in some of the most able people in Yemen. Indeed, the fact that so many ministers and senior public servants are drawn from among university faculty tends to suggest that that is so. On the other hand, the many weaknesses of the present situation with regard to staffing will be apparent from the above description of the present arrangements. Although high quality people are usually appointed, there is a widespread view that the hiring system is not always 'meritocratic', and that in some cases some of the best candidates get passed over in favour of less-qualified, but better connected people.

Moreover, when appointed, current arrangements do not command the full commitment of staff, and there is no systematic process of updating and renewal, which means that universities and their students are not always well served by their staff. However, it is true that current salaries may not be attractive (although they are relatively high by Yemeni standards), and the ability to undertake external work may be necessary in order to maintain the attraction of the profession. At any rate, if a university career ceases to be attractive to the very best graduates – and if faculty members are recruited who are not the very best – then this will be to the great detriment of Yemeni society.

Of course it is not just salaries that make a career attractive – the working conditions and environment are extremely important too. Here there is a real problem. Few faculty have their own offices – or even a shared office; they lack communications facilities and access to the work of their colleagues overseas, and so on. A high quality university requires a sense of community and a common culture, and the physical environment in which faculty work is not conducive to these.

Despite what is said above about the continuing attractiveness of the profession in general, universities do appear to have difficulty recruiting appropriate staff in engineering and scientific disciplines and in English. Indeed, the availability (or rather unavailability) of staff is said to be one of the main limits on the capacity for growth in these subjects.

Physical Resources

The annual university investment budget of the Government, at YR 8.5 billion in 2005, represents 38 per cent of the recurrent budget, which is very high. Certainly, there is substantial new building. Indeed, the availability of resources for new building contrasts to some extent with provision for equipment and to

improve existing capacity - for example for things like staff development or for library books. As far as investment in equipment is concerned, there is concern that one of the reasons for the inadequacy of what is available is that inappropriate purchases are often made, owing to the lack of appropriate specification and in some cases outright corruption. And the main reason for the relatively low numbers of students in science and engineering is not so much the absence of candidates as the lack of laboratories and equipment, as well as staff to teach the students.

Visits made in the course of this study revealed that much of the equipment that is in use in Yemen's universities is old, and has not been renewed for many years. It is quite inappropriate for preparing students for employment in the modern world. On the basis of this survey, it has to be concluded that a very substantial investment will be required to bring the facilities of Yemen's universities up-to-date, and an important recommendation in this review is to conduct a thorough study of the equipment needs of Yemen's universities. As an example of the needs of engineering colleges, at Appendix 8 is a detailed review of the physical facilities of the College of Engineering in Sana'a. It is clear that considerable investment will be required to bring these to an acceptable state.

One particular weakness in the current arrangements - not related to universities only but to the Yemeni infrastructure more generally - concerns the absence of a high-speed communications network. Without adequate investment in computers and communications, universities will be unable to maximise the potential of Information and Communications Technology both for teaching and for research. Most university and non-university institutions are not well provided internally with computers and local area networks - and even those that are encounter serious problems as soon as these attempt to contact the outside world or to work with each other.

The Government of Yemen clearly understands this and has conducted a review of the status of ICT in Yemeni HE. This demonstrated that the current situation was haphazard and wasteful with parallel efforts leading to less than optimal results, or even failure. For this reason the MoHESR decided first to strengthen the capacity of higher education institutes (HEIs) to plan for ICT growth before rushing into specific ICT projects. This initiative resulted in the national ICT policy and the subsequent national master plan for ICT in HE in Yemen followed by institutional-specific master plans for the phased implementation of ICT in the sector, developed with assistance from consultants from Universities in the Netherlands and Tanzania. The Government's Higher Education Project plans the creation of the Yemen Foundation for Information Technology to lead the development and use of ICT in Yemen's universities and colleges. The development of a high-speed data communications infrastructure is an important part of the master plan, as are the development of an E-Library and E-Learning.

Student Numbers

Student Numbers in Yemeni universities have been increasing steadily and now represent approximately 13 per cent of the 19-23-year-old population. This statistic needs to be considered in the context of a relatively small proportion (relative to other countries) of the population attending secondary school, so in these terms this represents quite a reasonable situation. On the other hand, only 27 per cent of the 190,000 or so high school graduates - about 40,000 - are admitted to university - implying a very substantial number of disappointed young people. The number of students has declined in recent years as universities have become more selective in their entry. Numbers in fact grew very substantially during the 1990s, increasing more than five times - from 35,000 to 176,000 in 2002-03. However, since 2001 the Government has set a pass rate of 70 per cent in the secondary school graduation examination as the threshold for university entry in an effort to reduce the number of students in social sciences and humanities disciplines, which are popular, but where employment

prospects are poor. In disciplines like medicine, sciences, computing, languages and engineering universities already operate entrance examinations which has enabled them to be highly selective in their entry - this selectivity to a lesser extent now applies to other students.

Although community college and technical institutes are available to absorb some of the students who are unable to gain entry to university, they take only very small numbers. Even adding to these the 16,000 who attend private universities, it is apparent that very large numbers of young people who leave school and might have aspired to tertiary education are unable to find places.

The apparently selective nature of entry to higher education might be regarded as a strength - ensuring a degree of quality. On the other hand, there is nevertheless concern about the quality of some of the intake into Yemen's universities, which is coupled with an absence of facilities to accommodate those who may not be of a high enough standard to attend university. This problem will become increasingly acute as more and more students pass through the secondary school system, and put increasing pressure on the tertiary education system. On the other hand, recently (and gradually) universities have begun to implement systems to pre-qualify and competitively select students – necessitated due to the sheer number of applicants.

A major problem with the current arrangements is the lack of diversity. Although there are non-university institutions, the very great majority of students in tertiary education in Yemen attend multi-college universities in one way or another. An important priority for the future will be to increase the diversity of institutions, catering for the increasing and increasingly diverse range of young (and perhaps not so young) people who will demand tertiary education.

Equity

The main equity questions that arise in higher education in Yemen concern gender and the urban/rural divide. Only about 26 per cent of the university population are girls, and the proportion of the urban population with university education is more than seven times greater than that of the rural population. Even those women who attend higher education are, other than in medicine and dentistry where their representation is strong, predominantly represented in the lower prestige and less economically valuable subjects of education, social sciences and humanities.

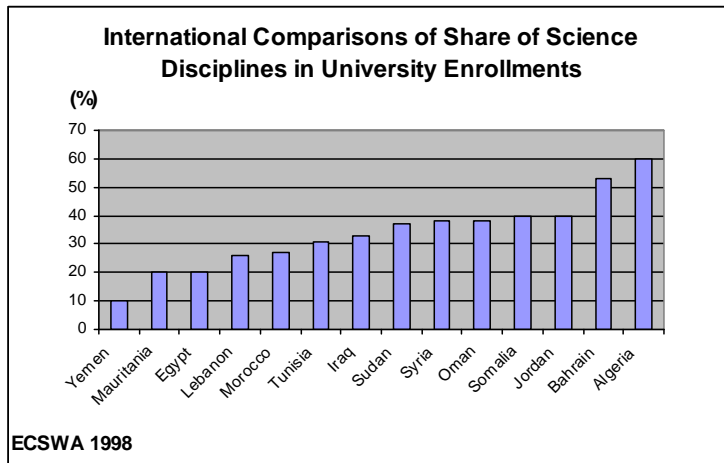
The UNESCO Millennium Development Goals require a 1:1 ratio of female to male tertiary education enrolment by 2015, whereas in Yemen at present the ratio is less than 1:2.8. Nevertheless there is clearly a very significant political desire to increase the participation of women and rural populations, and this features prominently within the “Poverty Reduction Strategy” and “Yemen's Strategic Vision 2025”. A further strength is the existence of the remote education colleges of universities, which, although referred to elsewhere as a problem, do help to ensure that those who might find it impossible to travel for higher education have some form of higher education available nearby.

The main weaknesses have been elaborated above. One specific problem is that students who complete non-university programs have no established and accepted route to continue their studies in university, which discriminates against the rural population who may attend a local institution. However, the main problem impeding greater equity in higher education is not particularly a higher education issue but a more general one concerning society and society's values. Nevertheless, it is up to higher education to do what it can to address the question.

Subject mix and outcomes

As in other countries, Yemen has a particular difficulty apparently in producing sufficient graduates in science, engineering and mathematics, and universities are dominated by social science and humanities students. Only about 13 per cent of students at present study science, engineering and technology. On the other hand, as has been mentioned above, this is in part not a result of the lack of student demand, but the inability of universities to accept more students because of the lack of capacity - both physical capacity and staffing. Although there is a belief in Yemen (that was voiced at the workshop organised by the Ministry of Higher Education and Scientific Research in March) that there is a general preference - both in universities and in society as a whole as well as among applicants - for theoretical subjects as opposed to applied subjects, it may be that the current balance between the sciences and the social sciences and humanities arises not from a lack of student demand but of capacity. That this is so is indicated by the very high pass marks demanded by universities (who have their own examinations in engineering, medicine and some other subjects), as well as the apparently high demand for places in community colleges. Although other countries share Yemen's problem with regard to the output of scientific and technically educated graduates, Chart 6 below indicates that the problem is more acute in Yemen than elsewhere. Moreover, whereas most other Arab countries have a high number of students attending technical institutes, there is a very high ratio of university to non-university tertiary education students in Yemen.

Chart 6



One specific issue with regard to subject balance is that the very large number of education colleges has a distorting effect, with the result that something over 40 per cent of all students are studying to become teachers (although it needs to be noted that in some cases graduates of education colleges have been able to secure work outside teaching). The conclusion has to be that although undoubtedly the country will continue to need a large - and growing - number of teachers, the numbers being trained are far in excess of what will be needed.

There is considerable anecdotal evidence that there is a high rate of unemployment among graduates from universities, but data about this have been hard to obtain. To get a meaningful picture it would be necessary to obtain unemployment data that differentiate between the subjects studied.

Despite the absence of accurate and detailed data the fact that the civil service hires less than 10 per cent of those who apply, and is only now recruiting those who graduated in 1995 in humanities and law - as well as reports from business leaders - suggests either that universities are not producing graduates that the labour market wants or alternatively that the labour market has not developed the point where it can absorb the graduates, or both. What is important to note is that it is not only a question of universities producing the wrong graduates but

also to do with the state of development of the labour market and the economy more generally. Whatever the reason, the problem remains, and whereas in a country like Jordan which also produces far more graduates than its own economy can absorb, the surplus go abroad where they readily find employment, that appears not to be so for Yemen. That may be a reflection of the subjects that students study (in Jordan there is a far higher proportion of students in engineering and technical subjects), or it may reflect the perceived quality of the education they have received.

One approach that has been absent in Yemeni universities is to prepare graduates - as well as those who graduated previously but find themselves unemployed - for careers other than those for which their undergraduate training has prepared them. Such conversion programs - which elsewhere are generally of three months to one year duration at postgraduate level - are almost wholly unavailable in the Yemeni higher education system. Similarly, there is no tradition of preparation for entrepreneurship and self-employment, and graduates generally leave Yemeni universities without the skills necessary for this.

Pedagogy

There is a tradition in Yemeni universities of lecturers lecturing and students "receiving" information that they are fed by the lecturer. This is exacerbated by the widespread use of detailed course notes and materials - often out of date and inappropriate. While it is true that the paucity of books and materials as well as the very high student: staff ratios may make other pedagogic approaches difficult, this spoon feeding of teaching is a long way from the requirements of the 21st century for students to learn in a way that enables them to acquire deep understanding and the ability to keep learning and developing their understanding throughout their lives.

There appear to be no systematic processes for the review of curricula, nor for the involvement of the outside world - industry in particular - in developing curricula to ensure that what students learn is appropriate and relevant. So it seems that many programs have not been modified for many years - certainly they are not developed systematically - and that students are not only taught inappropriately but that what they learn may not be up-to-date and appropriate. This is not particularly surprising in view of the lack of incentives for staff to review programs, and the predominance of outside interests for many staff.

The four-year first degree programme is not in itself a particular issue (increasingly other countries are standardizing on a four-year first degree programme) but there are concerns about whether students have a sufficient base in key subjects - the English and Arabic languages, IT and mathematics, for example - to be able to progress satisfactorily through the four years. In particular, in the medical sciences and engineering subjects, given that so much of what students study is in English, it is essential that they have a good grasp of the English language, which many do not.

As has been mentioned already, there is no tradition of universities offering programs for postgraduates in order to update and train them for professions and careers, and no incentive and therefore little provision in continuing education for the wider population.

Quality

Although individual universities may have internal processes for assuring quality, these are by no means widespread or systematic, and there is no national quality assurance process. Consequently, there are no incentives for universities or the staff within them to ensure high quality and standards in what they provide.

As damaging as the absence of quality assurance processes is the absence of any accreditation process. This means that private universities are able to operate without evaluation of their ability to make appropriate higher education provision, and even though there is now a formal process before private universities can be created, this does not include a full evaluation of the quality of their inputs or processes.

There are examples of good practice in quality assurance in Yemen - the private University Science and Technology has a quality assurance process that includes the evaluation of each professor twice each year, including a student survey of their performance - but if more systematic and widespread quality assurance processes were available, then undoubtedly some of the problems noted above with regard to quality, relevance and commitment might be addressed.

The Government has recognized the unsatisfactory nature of the present arrangements , and has recently, with World Bank support, let a contract for technical assistance to a consortium led by the UK NARIC organization, to help develop quality systems in Yemeni universities.

Research

Research is seriously underdeveloped in Yemen's universities. There is an absence of research culture; resources and facilities (laboratories and libraries, but also technical staff and journals) are inadequate; and there appears little encouragement or motivation for staff to engage in research.

There is little money, public or private, specifically provided for research in universities, and the research that is done tends to be self-motivated - as a prerequisite for promotion for individual staff - rather than as part of an institution-wide or national strategy. There is no national body that takes an overview of

research, and there is no knowledge of how much research is undertaken and in what topics. The result is that the research that is carried out is uncoordinated and is not systematic. It does need to be borne in mind that research - even in a developing higher education system - is important, both to inform teaching and to solve local problems. But to be most effective, the resources devoted to research need to be coordinated and planned.

One particular issue is the very small number of postgraduate students in Yemen's universities. In the University of Sana'a, for example, only 600 out of 87,000 students are postgraduates, and in the country as a whole only around 1500. There is considerable scope for the development of research both to improve the university system and to serve the nation.

Service

One of the functions of universities everywhere is to provide services to their local community and society more widely, and to put their knowledge, skills and facilities at the disposal of the wider population. Although that may occur in universities in Yemen, there is no systematic information about this, and very little indication that much of this takes place except to the extent that university professors undertake consultancy assignments for personal gain. That is a pity. Universities are populated by some of the most talented and knowledgeable people in the country, and a country that is developing urgently needs to make use of all the resources at its disposal. Part of the problem, of course, is that the staff have other commitments - both professional to the university and personal - and there are no incentives either for the staff or the university to undertake public service. This is undoubtedly an area that needs further development and the Government might consider whether it can incentivise some greater commitment by universities to the public service.

B: SWOT ANALYSIS¹²

Drawing on the above discussion of the issues, this section provides an assessment and analysis of the internal and external environments of institutions of higher education and scientific research, and an analysis of strengths, weaknesses, opportunities and threats.

Strengths

- § Higher education and scientific research has a Ministry which can act as its champion, and which has developed knowledge and expertise specifically about the sector.
- § The Ministry has been given full legal authorities. Reviewing Law No(18) of 1995, amended in 2000 for education and by-law No.137 of 2004 for the Ministry of Higher Education and Scientific Research and other relevant laws and by-laws have given MoHESR jurisdiction over all higher education institutions through supervising, coordinating and approving planning, policy formulation and ensuring that all higher education institutions are in compliance with laws, by-laws and regulations in force in the area of higher education.
- § The leadership of higher education and scientific research has realized the importance of the changes that are required and supports efforts towards higher education reform and shows a strong desire for improvement and development.
- § In general, public universities have a well educated teaching staff, who may contribute to the development and improvement of higher education and scientific research.
- § Public universities in general have available a minimum level of infrastructure like modern buildings, teaching aids, and experienced

¹² Note: This SWOT analysis was produced by Professor Ahmad Al-Shami of Sana'a university, and a consultant to the project.

academic and support staff who are able to participate in local and international forums and activities in different languages

§ Public Universities have institutionalized staff and student representation at all levels within universities.

Weaknesses

- Antiquated legislation, traditional management systems, complex procedures, poor coordination and centralization of decision making.
- The structure and capabilities of the MoHESR are inadequate for the function they ought to be performing.
- Absence of transparency and accountability in most higher education institutions.
- Absence of strategic planning. Most components of the higher education system do not have explicit values, vision, mission and strategic objectives.
- Limited financial resources. Universities are dependent on the government for about 70 per cent of their total spending on wages and scholarship abroad.
- A lack of financial autonomy. Higher education institutions' budgets are determined through negotiations with the Ministry of Finance and expenses are controlled by financial directors who are posted by the Ministry of Finance to all public higher education institutions to approve any payments made.
- Limited physical resources. Most public as well as private universities lack adequate libraries, teaching aids, laboratories, equipment and communications networks. In particular this limits the enrollments in scientific and engineering fields.
- Absence of a systematic approach to quality assurance, constraining the development of teaching and administrative staff with regard to capacity building.

- Lack of facilities for student social services such as: counseling of incoming students and careers guidance.
- Inadequate research culture. Currently, most research is conducted for personal promotion and has no bearing on the needs of economic development of the country.
- Academic activities do not comply with recent socio–economic trends. Most programs have not been reviewed and modified for many years.
- Imbalance between higher education outcomes and society’s needs and labour market demand.
- Sluggish responsiveness to community services. Universities as institutions are perceived to be absent from issues of national importance.
- Isolation from the outside world. Few universities have recognition and link arrangements with Arab or other foreign universities.
- Inadequate relationships with the private sector and industry. The private sector is remote from higher education planning, policies and decision making.
- Internal as well as external inefficiencies.
- Absence of an effective national regulatory framework for accreditation of programs and degrees.
- Recruitment and selection of teaching staff and their assistants are not transparent and do not comply with academic criteria.
- Absence of a collaborative culture between teaching staff and administrators.
- Absence of a culture of personalized interactions between teaching staff and students.
- Declining academic standards.
- Abnormally poor teaching staff:student ratio

Opportunities

- Political will and government commitment. Several times and on different occasions the political leadership and the Government have announced their desire and support for changes in respect of education development.
- Macro–economic, financial and administrative reform undertaken by the Government in cooperation with international agencies, and donors.
- Modern development in the field of information technology in the country, which may give higher education institutions opportunities to develop the education process and improve scientific research.
- Political desire and public support to increase women’s participation and enrollments and to decrease the gap between urban and rural enrollments.
- Internationalization of activities, especially regionally, including recruitment of international students.
- Use of distance education in flexible learning and parallel education to increase access.
- The development of higher education and scientific research strategy which will provide a continuous improvement mechanism for higher education institutions.

Threats

- High population growth of almost 3.02 per annum will lead the population to double by 2020, with a much greater increase in the young population.
- Unlikely that the Government will be able to increase the higher education budget sufficiently in the future, which will limit the scope of future growth and development.
- Free university education within the context of the increasing trend of privatization.

- Experienced teaching staff leaving for greener pastures.
- Resistance to any efforts for change and development.
- Unlikely that the support of international agencies, and donors will continue for long period of time.
- Uncompetitive salaries and compensation for teaching staff which will reduce loyalty and encourage emigration to Arab and other foreign countries.

C: SUMMARY OF MAIN ISSUES

The fundamental problem with the Yemeni higher education system is that it makes provision of variable quality whose relevance is often open to question. The funding situation is already tight, student:staff ratios are very high, and the resources that are provided are not optimally used - and with the prospect of substantially increased demand, together with uncertain economic prospects, it is unclear what the future holds in store. In detail, the main issues to have arisen are summarized below.

Governance

1. The division of responsibility for postsecondary education between ministries means that there is no sense of tertiary education in Yemen, and no effective planning.
2. The terms of reference, remit and purpose of the Ministry of Higher Education and Scientific Research are unclear to many in the sector.
3. The role of the Ministry of Finance, in particular the detailed control over the expenditure of individual universities, is unusual, and leads to sub-optimal outcomes.
4. The autonomy of universities is heavily constrained because of close control exercised over their financial affairs, leading to a lack of flexibility and slow decision making. However this close control itself is due to a lack of capacity on the part of many institutions to make good decisions on the use of resources.

5. Even the limited autonomy that university leaders have is not well used. They do not make the decisions needed for the efficient running of their university, although they often have the power to do so.
6. On the other hand, the expertise and skills required for institutions to exercise greater autonomy are lacking, and the governance arrangements inappropriate for full autonomy.
7. In particular, because there is no external input into the governance of universities, they have become insular and unconnected with the outside world and its needs, as well as lacking in transparency and accountability for decisions within the university
8. There is a lack of information and data on the basis on which to make national or institutional policy.

Institutional diversification

9. The number of education colleges, and in particular remote colleges, means that there is far too much teacher education, though it is recognised that these colleges provide a needed route into higher education for many students in rural communities, and girls in particular.
10. The quality of the remote branches is thought to be less good than that of their parent universities.
11. The non-University institutions are under-developed and under-provided
12. There are concerns about the variable quality of the non-University institutions.

13. There has in the past been inadequate quality control and accreditation in relation to the private universities, nor any vision of the role they might play in the development of higher education in Yemen.

Resources

Financial resources

14. Despite the relatively high proportion of public funding devoted to higher education at present, the funding available to universities to meet their running costs is severely constrained.

15. The very high proportion of university running costs devoted to staff salaries does not prevent an extremely unfavourable staff: student ratio.

16. There is no universal or comprehensive system to regulate and encourage universities to earn private income. In some cases they need to return anything they earn to the Ministry of Finance.

17. In particular, no tuition fees are paid by the majority of students, removing one potentially valuable source of additional income.

18. Universities may not borrow money for investment, but even if they could they lack the skills and abilities necessary to manage this.

19. The overseas scholarship scheme accounts for a very high proportion of the higher education budget, and it is far from clear that this money is well spent.

20. There is little transparency, and no rational basis, for the present allocation of funds between universities.

Staff resources

21. The present student:staff ratio, at 50+:1, is extremely high, and impacts on pedagogic methods and quality.
22. The extent of the outside commitments of staff is unregulated and lacking in transparency and accountability, and serves to diminish the extent of the commitment that they have to their university teaching and research.

Physical resources

23. Compared to new building, relatively little is spent on equipment, and, as a result of inappropriate specification or even outright corruption, much of the equipment that is available is obsolete and inadequate for its purpose.
24. One of the main reasons for the relatively low number of students in science and engineering is the lack of physical resources.
25. The absence of a high speed communications network hampers the development of education and research in the higher education sector.

Teaching, research and service

Student numbers

26. Despite the apparently selective nature of entry to higher education there nevertheless remains concern about the quality and abilities of some of those admitted, although recently (and gradually) universities have begun to pre-qualify and competitively select students.

27. The lack of institutional diversity means that there is an absence of facilities to accommodate those who might not be of high enough standard to attend university, but have nevertheless graduated from secondary education.

Equity

28. Only about 25 per cent of the university population are girls, and relatively few students from rural areas attend university.

29. There is no qualifications network or credit transfer system, which means that students completing programs in other institutions are often unable to continue their studies in university.

Subject mix

30. As in other countries, Yemen has a particular difficulty producing sufficient graduates in science, engineering and mathematics, and universities are dominated by social science and humanities students. This probably results not only from a lack of student demand, but of supply as well.

31. The very large number of education colleges results in something like 40 per cent of all students studying to become teachers, although in some cases such graduates have been able to secure other work.

32. There is considerable anecdotal evidence about a high rate of unemployment among graduates, arising from an inappropriate mix of subjects studied.

Pedagogy

33. The present pedagogic approaches, which arise partly from the unfavourable staff:student ratios and the absence of facilities, mean that the way students are taught is a long way from the requirements of the 21st century.
34. There appear to be no systematic processes for curriculum review nor for the involvement of the outside world in developing curricula.
35. There is a concern about whether students have a sufficient base in key subjects to ensure progress through the four years of their programme.

Quality

36. There are no national quality assurance processes, and consequently no incentives for universities or their staff to ensure high-quality.
37. Nor has there been any effective accreditation process, which means in particular that the private universities have been able to operate unconstrained.

Research

38. There is little money, public or private, specifically provided for research, nor any strategic approach to encourage appropriate research - at either national or institutional level.

Service

39. Although one of the functions of universities is to provide services to their local community and society more widely, putting their knowledge, skills and facilities at the disposal of the wider population, there is no evidence that much of this takes place in Yemen's universities, except to the extent that university professors undertake consultancy assignments for personal gain.

PART 3: VISION AND MISSION¹³

It is important to understand that a vision, mission and strategy are not so much concerned with solving immediate problems as with shaping the future of the system in a proactive way. With that in mind, the Vision of the Ministry of Higher Education and Scientific Research is

“To create a higher education system characterized by quality, broad participation, multiple and open routes vertically and horizontally, that is effective and efficient and delivers quality programs, shows excellence in teaching, learning, research and service to society, and enhances Yemen's quality of life.”

This vision gives rise to the following statement of the mission of the Ministry of Higher Education and Scientific Research

- l To expand access to universities and other higher education institutions, particularly in the age group (19-23) from the current 13% to 16% during the third five-year plan and to reach 35% by the year 2025.*
- l To improve the quality of the graduates of universities and other higher education institutions with particular emphasis on acquiring breadth and depth of knowledge, problem-solving skills, critical and creative thinking, communication skills in both Arabic and English, lifelong learning, IT skills, and proactive participation in achieving their personal and national aspirations.*
- l To develop and strengthen the policy-making, planning, coordination, and monitoring capabilities of the Ministry of Higher Education and Scientific Research to supervise and guide the continuous development of higher education institutions in the Republic of Yemen.*

¹³ Produced by Dr Mohamed Al-Mottahar, Vice-Minister for Higher Education and Scientific Research.

- l *To develop universities and other higher education institutions vertically and horizontally, initiate or open new disciplines, and diversify programs that meet local, national, and regional labor market needs.*
- l *To improve the effectiveness and efficiency of higher education institutions to enable them to rationalize the use of the available resources, and enhance the added-value of higher education.*
- l *To prepare future faculty members (junior teaching staff) to meet the quality improvement and expansion needs of Yemeni universities in leading or prestigious universities to ensure the quality of teaching, learning, and research and competitiveness in Yemeni universities according to international standards in the age of globalization.*
- l *To implement the current design of the national and institutional ICT high-speed network and provide all its infrastructure needs as well as its human resources needs for all universities and other higher education institutions to enable them to keep up with international developments in the areas of teaching, learning, research, governance, and service, including distance and electronic learning.*
- l *To establish the national academic accreditation and quality assurance councils to assess and evaluate all universities and other higher education institutions, and ensure the quality and excellence of both public and private institutions according to international standards.*
- l *To enhance the institutional capacity of higher education institutions to govern, and provide high quality programs on permanent bases so as to meet the sustainable development needs of the country, and to keep up with the accelerating developments in higher education at the international level.*
- l *To provide the necessary resources for the universities' and other higher education institutions' infrastructure to enable them to provide access to teaching, learning, and scientific research according to the current and the future needs of the society.*

- | *To restructure universities and other higher education institutions to promote diversification of programs and institutions, and reduce unnecessary duplications in accordance with the higher education sector vision, and with the country's developmental needs.*
- | *To diversify the sources of funding of all universities and other higher education institutions, including private institutions, and encourage them to increase their self-supporting funds, and involve the private sector in funding and developing them.*
- | *To build and enhance the institutionalization of a democratic culture in universities and other higher education institutions to strengthen national unity, and to participate in building a unified democratic Yemen, that stands on the Islamic creed, and its higher values of justice, good, equality, and tolerance.*
- | *To strengthen coordination and collaboration between and within universities and other higher education institutions to maximize the integration at the sector level, and to enhance its added –value to society as a whole.*
- | *To develop a well-rounded and integrated personality in students that is strongly linked to Yemeni society and its Arabic-Islamic culture, which is able to meet positively the challenges of globalization in the twenty-first century.*
- | *To institutionalize strong university-based research in the country that tackles the country's developmental needs, and lays the basis for productive partnership between universities, government, and the private sector in accelerating the development of the country in the various fields.*

This vision and mission, in the context of the analysis of the current environment and issues set out in Part 2, gives rise to the following Key Strategic Objectives, which will underpin and provide the structure of the specific sub-objectives and actions of the strategy discussed in the next section.

Key Strategic Objective 1: Governance

Ensure that at both national and institutional level arrangements are such as to ensure that the HE system is governed and regulated in such a way as to optimise decision making and the development of the system.

Key Strategic Objective 2: Institutional diversification

Ensure that Higher Education in Yemen develops in a diverse way, with increasing diversity of institutions to meet increasingly diverse needs.

Key Strategic Objective 3: Resources

Ensure that sufficient resources are provided to enable a high quality system, and that such resources are optimally deployed.

Key Strategic Objective 4: Teaching, Research and Service

Ensure that appropriate levels of teaching, research and service take place, of the highest possible quality, to meet the needs of Yemen and its people.

PART 4: ANALYSIS, OBJECTIVES AND ACTIONS

This section takes the issues identified in Part 2 and the vision and mission articulated in Part 3, and discusses the measures that are needed to achieve the vision. The actions proposed are for the transformation of the higher education system over 10 years. However, the programme needs to begin to be implemented straight away, with some actions to be begun immediately and all within two years.

KEY STRATEGIC OBJECTIVE 1: Ensure that at both national and institutional level arrangements are such as to ensure that the HE system is governed and regulated in such a way as to optimise decision making and the development of the system¹⁴

National governance

Ministerial responsibilities

The present distribution of responsibilities between ministries is not conducive to good planning or decision taking, either for the development of tertiary education in general nor for the conduct and planning of universities in particular.

Responsibility is divided between several ministries, with no coordinating mechanisms, which means that decisions are taken about one segment of the system without knowledge or reference to what is going on in the rest. For example, with the considerable growth in the number of young people expected to leave secondary school over the coming years, decisions are required about how this demand should be satisfied, and the way that it should be distributed between universities, community colleges and other forms of technical and other

¹⁴ Note: the Yemeni government has recognized the need to improve the management of the higher education system and the institutions within it. With the support of the World Bank it has let a contract for technical assistance from the University of Maastricht, whose output will include the development of strategic planning capacity in the system.

post-secondary education. At present these decisions are fragmented between the Ministry of Higher Education and Scientific Research, the Ministry of Education and the Ministry of Technical and Vocational Education, with the Ministry of Finance also playing a major role. Moreover, decisions are taken by one ministry without reference to the plans and decisions of others.

Ideally, this situation should be rationalized, and in the longer term the merging of the three different ministries into one Ministry of Education with directorates for basic education, vocational and technical training, higher professional education and universities should be strived for to obtain more efficiency and effectiveness in the education sector. In the short-term, alternatives are proposed here to help align the different higher education programs under the various Ministries.

Supreme Council of Higher Education

There already exists a Supreme Council of Universities where the Ministers and Vice Ministers of the three Education Ministries meet with the Ministers of Planning, Labor and Social Affairs, Civil Service and Insurance and Finance. However, this Council is largely obsolete and gathers once a year. **The mandate and role of this Council and its composition should be reviewed (as well as its name, since the Council will not only cover Universities but also Higher Professional Education, and In-service Teacher Training) in order to establish a forum of the three Education Ministries¹⁵, together with the Finance and Planning Ministries, with the following tasks:**

- Alignment of development plans for the higher education sector
- Analyzing the implications of the development and implementation of higher education sector programs in one Ministry for the other two Ministries and giving advice on the consequences

¹⁵ The Diploma Programs run by the Ministries of Health, Telecommunication, Justice, etc will be represented by the Ministry of Technical Education and Vocational Training.

- Preparation of agreed development and implementation programs for decision-making by the Cabinet, and by Parliament, as appropriate.

Ministry of Finance

The role of the Ministry of Finance in the tertiary education system in Yemen is probably unique in the world. This is understandable, given the history of the development of ministerial responsibilities, where until recently there was no Ministry for higher education, but it means that at the Government level some of the most important decisions about universities and the development of the university system are taken without being underpinned by knowledge of and expertise in higher education, and are taken on grounds other than educational grounds.

The present arrangements also mean that, with its detailed control over the budgets and expenditure of universities – particularly in the way that it controls their expenditure - the Government in general, and the Ministry of Finance in particular, exercises far too much detailed control and gets involved in too much detail. The lack of an education planning expert within the education department of the Ministry of Finance is hampering decision-making on the budget proposals of the universities.

The role of the Ministry of Finance in future should be to set the total budget for higher education across the country, and to pass accountability for this budget to whatever Ministries are responsible for higher education which in turn should then allocate the money between universities and colleges, monitor their expenditure, and so on, on behalf of the Government according to agreed arrangements.

Ministry of Higher Education and Scientific Research

As has been noted already, the Ministry of Higher Education and Scientific Research needs to be clear about its mission and purpose, and to communicate this clearly to the higher education sector. It needs to be quite clear that its mission is not to exercise detailed control over the activities and decisions of universities and that will increasingly be the case as universities establish greater autonomy.

Instead, the purposes of the Ministry should be:

- To provide leadership and guidance to the sector
- To provide and implement a regulatory framework for the sector as a whole
- To monitor the quality of provision and accredit programs (or rather to ensure that monitoring and accreditation take place)
- To allocate to universities the resources that the Government makes available for universities according to agreed arrangements
- To help institutions in the sector form international links
- To ensure coordination across the sector

More generally, the function of the Ministry should be to plan for the development of the sector as a whole, but in a way that is consistent with a high degree of university autonomy. It should identify the issues that need policy development at a high level, and the general direction that the sector should travel in, and then it should enable the institutions to implement its policies. The Ministry should also consider its organization and create an appropriate structure of directorates to enable it to fulfill its role.

Among the most important immediate functions of the Ministry should be to monitor and ensure implementation of this strategy, and to keep it up to

date, looking forward up to 20 years. In particular, it will need to review the legislative framework and propose whatever modification of the legislation (Laws and Bye-Laws) are needed to provide for the structural changes proposed here.

At present the Ministry lacks some of the capacity that it needs in order to carry out these functions. **It is essential that the Ministry looks urgently at its internal resources and seeks to develop and acquire some of the capacity that it needs**, for example, in educational planning, economics, finance and management, monitoring and evaluation as well as policy development and analysis, statistical analysis, IT and audit. It will not be able credibly to carry out its responsibilities unless it can demonstrate - both within the Government and to the universities, as well as more widely - that it possesses the skills and abilities that it needs to carry out these functions.

One particular and substantial area of weakness at the moment is the lack of information on the basis of which national policy - or even institutional policy - can be developed. There are data, but often they are not systematically collected and analyzed, and that means that the development of strategies and policies is badly deficient – and it probably means that the policies and strategies themselves are deficient too. **An important priority for the future will be to develop a comprehensive management information system** for the Ministry which will include the development of a data collection and analysis mechanism. In the next section it is recommended that management information systems are developed for universities and that will provide the opportunity to develop a comprehensive, nationwide, system that will meet the needs of the Ministry as well as of universities¹⁶. **When available this MIS should be available to inform the discussions and decisions not only of the Ministry, but also of**

¹⁶ It is noted that the Netherlands Nuffic/NPT Programme is about to start a programme for Strengthening the MoHESR for the years 2005 – 2008 through technical assistance and equipment.

the Supreme Council as well as the Council of Universities proposed below.

Centre for the Development of Higher Education

The Ministry of Higher Education and Scientific Research should establish a Centre for the Development of Higher Education, either as a Directorate within the Ministry or as an external agency, which should function as a ‘Think Tank’ concerned with all aspects of higher education, supporting and providing advice and services direct to universities and their staff. Its focus would include governance, learning and teaching, and other aspects of pedagogy. Given the diversity of its functions, it should have only a small core staff, bringing in specialists as required, for specific functions.

Council of Universities

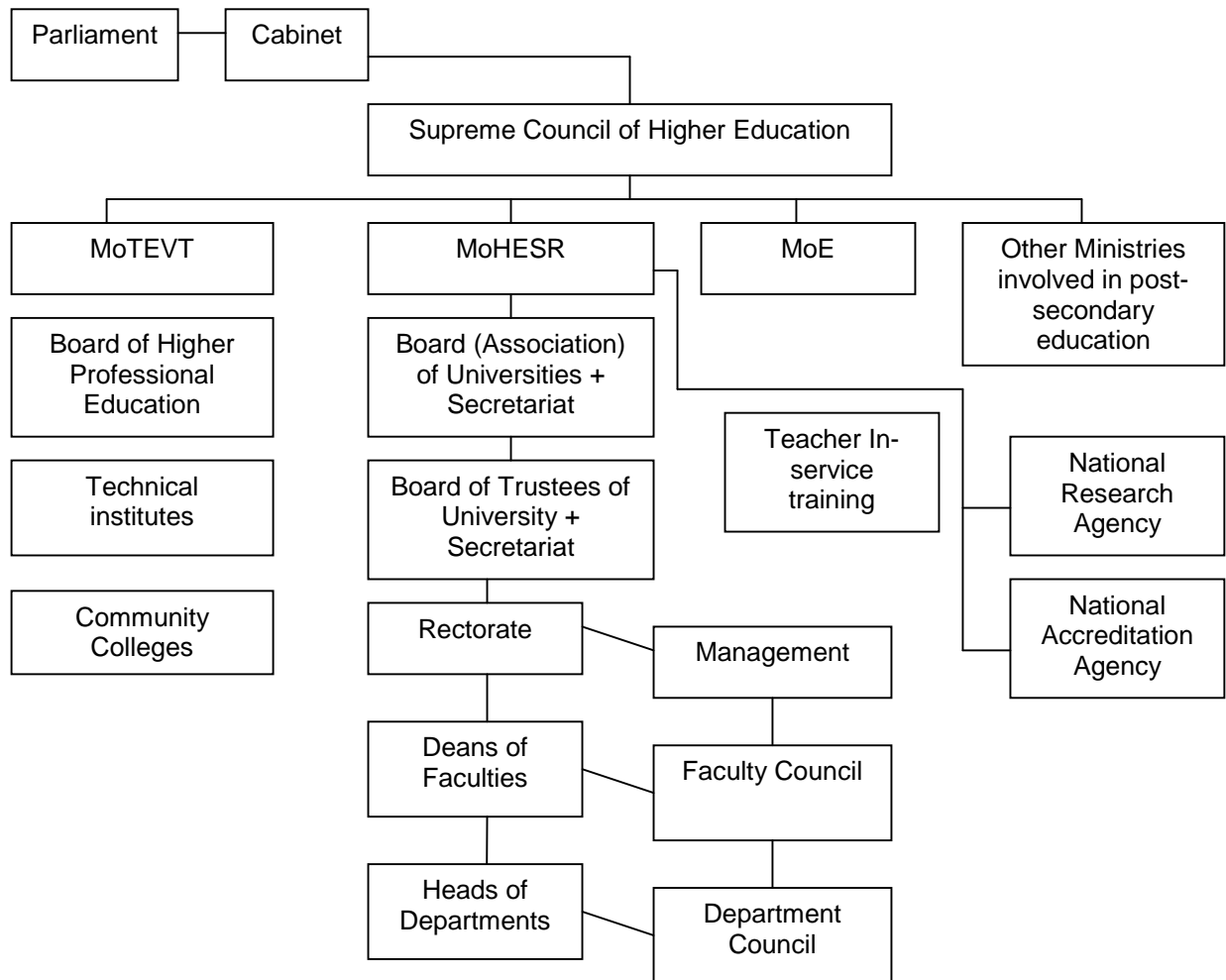
At the moment universities negotiate individually with the Ministry of Finance on their respective budgets. The Ministry of Higher Education is not involved in this process and only receives the outcome of the negotiations through the Ministry of Finance. **The future transfer of budget accountability to the MoHESR will require a Council of Universities, analogous to the future Council of Higher Professional Education in the Technical Education and Vocational Training sector, to act as counterpart on behalf of all public universities in negotiations with the MoHESR** on the overall budget and on higher education planning, along with policy on the overall admission of new students, the introduction of new study programs and fellowships. This Council will need to be served by a high-ranking General Secretary.

Discussions with Yemeni stakeholders show that the establishment of this body is necessary and that the mandate, role, composition and job descriptions of the members as well as the role and functions of the Secretariat should be

developed in the medium term, but that its implementation should be shifted to the longer-term and that lessons should be drawn first from the experiences of the Council of Higher Professional Education.

Under Key Strategic Objective 4, proposals are made for the creation of a National Research Agency and national Quality Assurance and Accreditation Agencies. If these structural changes are implemented, then the national structure for the governance of higher education in Yemen will look as follows:

Proposed Governance Structure



Institutional governance

It is said that universities in Yemen enjoy a high degree of autonomy - other than autonomy over finance. In principle, it is a good thing to have autonomous universities, since by and large those close to the ground are able to make better decisions about the running of their institutions than those at the centre.

Moreover universities should serve the nation outside the political context and ought not to be subject to political control. However, in order for autonomy to be

effective and to work in favour of the nation, the right conditions are needed within which to exercise that autonomy, and in many respects those conditions do not yet exist in Yemen. In particular, the key areas where the conditions need to be addressed include:

- Governance
- Accountability
- Capacity

To extend the autonomy of universities would in principle be to the benefit of all concerned, but before autonomy can be extended, conditions need to be improved in these respects.

Governance

At present, there is a lack of clarity about where ultimate responsibility for a university lies. Their leaders are subject to political appointment, and in as far as universities have Boards of Governors, these are dominated by faculty staff, which means that - particularly if autonomy increases - universities will be run by staff very much for their own benefit. That is unsatisfactory, and increasingly around the world good practice requires that **universities should have as their ultimate source of authority a Board of Trustees** - who include members of the academic community, but where these do not represent a majority. Members are drawn also from local business, local authorities and other stakeholders.

At present, Rectors and Vice rectors are appointed by the President and Prime Minister. Again, increasingly good practice around the world requires that **the Board of the university should have responsibility for appointing senior officers, including the Rector, following open competition**. It is absolutely essential that the best possible people for the job are appointed to these – and indeed all positions with a university. Transparent selection criteria, with

published job descriptions and person specifications, should be employed to ensure this. Running a university - particularly a University of the size of some of those in Yemen - is a very major management undertaking, and should be entrusted only to the most able managers and leaders. The governance arrangements would then resemble those of an enterprise or business, with the chief executive and senior executives responsible for their actions and performance to a Board made up substantially of non-executives.

Accountability

If universities are to be given increased autonomy, then the price of this must be a high degree of accountability. This is not only because universities receive a large amount of public funding. More generally, universities are a precious resource and are a part of the infrastructure of a country, and stakeholders more widely need to be satisfied that universities are doing the job that they are entrusted to do as well as is possible.

Dimensions of accountability include accountability for:

- Finance (for which audit is needed)
- The employment of staff (appointments need to be made in a transparent way, and contracts are needed and need to be enforced). Laws and by-laws need to be reviewed and revised to allow organizations to hire and fire staff based on qualifications and needs
- Stakeholder information (auditable data need to be published about important aspects of the university)
- Quality (society needs to be satisfied about the quality of what universities do).

Proposals are made about a number of these matters elsewhere in this strategy document.

Strategic development

Universities should be responsible for defining their own missions and strategies. But they should be answerable to the Ministry for this, **and the Ministry should require all universities to undertake a strategic planning process, and to submit for approval realistic business plans emanating from the strategic plans.** The contract for Technical Assistance recently let to the University of Maastricht with World Bank support will provide a basis for the development of capacity in the system to develop a strategic approach. These strategies should be subject to regular review. This is important, particularly if universities are to have greater autonomy - they must know where they want to go and how to get there. But they will need help in developing their strategic plans, and so will the Ministry to analyze and evaluate them. As part of the capacity building process external assistance should be sought for this. In the capacity building process priority should be given to educational planning, finance and management as well to strategy development and analysis.

Although it will be for each university to determine its own mission, each should do this in the light of the vision and mission enunciated by this strategy for the development of higher education for the country as a whole. Universities and colleges should be beacons and examples to the rest of society and should embody the values which ought to underpin the country's development – honesty, truth, transparency and objectivity. **In order to promote transparency in decision-making and to strengthen communication both from top-down and from bottom-up a review of the present organization and management structures is needed.** The introduction of the proposed Management Information System will be a major tool in this process.

Capacity

Universities are complex enterprises, and the skills required to run them successfully are many and various. **Particularly if universities are to exercise greater autonomy, then they must ensure that they possess the skills needed to run such a complex enterprise.** They will need to have experts in matters such as finance, audit, human resources and estates. Until they do, and until the Government can be satisfied about this, then it is unsafe to grant universities greater autonomy.

It is not, of course, simply a question of appointing new members of staff. The staff who are in place need training to enable them to exercise wider responsibilities. Later in this strategy, proposals are made for the training of administrative staff and faculty, at all levels. But in particular, senior management training is required for institutional leaders - not just prior to appointment, but when they are in post - and **senior management training is something that the Ministry should facilitate.**

Management information systems

It is not possible to run a modern enterprise without excellent management information, and universities are no exception. The Government has a master plan for the development of Communications and Information Technology, whose implementation will greatly assist universities, and its implementation should be achieved as soon as possible. In particular, an urgent requirement is to **ensure that all universities have suitable management information systems, and the people to run them**, to ensure that senior management has the information it needs in order to make decisions and run the enterprise. This will not be easy. One approach might be to use the private sector, and **the Ministry should consider whether to negotiate a comprehensive contract with a computer firm** which would include hardware, software and staff development.

Next steps towards greater autonomy

When these conditions are in place – when accountability measures exist, when universities have the capacity to exercise autonomy, and when they are undertaking strategic reviews as a matter of course - then, but not before, can the Ministry can confidently offer greater autonomy, including financial autonomy, to universities. Universities should then be able to decide on how they spend the money that they receive from the Government, which should be provided in the form of a block grant. They should be able to carry over unspent resources from one year to the next and to borrow money for investment. Under these circumstances they should be allowed to decide what programs to run and which to close down, to appoint their own senior staff, and so on.

Moving to a fully autonomous university system is not something that can be undertaken lightly or quickly. The risks are great, but the rewards are greater still. Handled properly, this could be the trigger that ensures that the Yemeni higher education system develops into a high-quality and effective system that serves the country well. It is suggested that Yemen follows a pattern that was followed in Indonesia, with World Bank support. There, four universities were selected for a pilot autonomy scheme. They were required to make proposals to the Government covering all aspects of the issues that have been discussed in this section - governance structures, accountability and transparency processes, capacity building, and so on. Their proposals were subject to scrutiny by World Bank experts, and approval by the Government. Then, over a five-year period the university's proposals were introduced and greater autonomy gradually granted, until by the end of the five-year period there was full autonomy. That pilot was then extended to embrace other universities.

It is suggested that the Indonesian model would be a good one for Yemen, and if so, then the first step would be to **invite the universities of Sana'a and Aden to make comprehensive proposals for internal reform that could lead to greater autonomy.**

KEY STRATEGIC OBJECTIVE 2: Ensure that Higher Education in Yemen develops in a diverse way, with increasing diversity of institutions to meet increasingly diverse needs

In the past, when relatively small numbers of students went to higher education, institutions tended to be similar, in the knowledge that the students for whom they were providing were similar. That will not be so in future, as more and more young people - and sometimes not so young - demand higher education. It will be essential for higher education in Yemen to develop in a diverse way, with an increasing diversity of institutions, to meet an increasingly diverse need.

Universities

Some of Yemen's universities are very large, and none are very small. In general, none are too small to be multi-college institutions across the range of disciplines. Nevertheless, there are some programs with very small numbers of students, and **it would make sense if there was an assessment and review of such programs, leading to a rationalization of provision which would enable scarce resources to be concentrated on the relatively small number of students.** This review should lead to the creation of medium and long-term plans for rationalization, and one of the functions of the reconstituted Supreme Council of universities should be to advise the Ministry about such rationalization.

In the face of the greatly increased demand for higher education that is anticipated, it is inevitable that there will need to be some growth in the capacity of universities, but in general, and for the most part, it should not be on universities that further growth is concentrated. Much of the demand that is going to come through will be from young people who may not be as well prepared for university as was the case in the past, and in any case it is arguable whether the country will be best served by very many more students going to university rather than some other form of higher education. That is why greater diversity is required.

University branches

There are a large number of remote branches of universities - generally education colleges - and some sort of rationalization of these is required. Indeed, a number of these have already in the past converted to independent universities.

It seems almost certain that the large number of teachers that these outposts will train if they continue along their present paths will be far too many for Yemen's needs. However, **some increase in teacher numbers will be required, and this should be carefully planned. The Ministry of Higher Education and Scientific Research should undertake this planning, together with the Ministry of Education, advised by the reconstituted Supreme Council.** Informed by those plans, **the majority of the remote branches ought to be transformed into community colleges or technical institutes, independent of their parent universities. An expert committee should be established, reporting to the Ministry of Higher Education and Scientific Research, to make recommendations about this,** on a case-by-case basis, informed by evidence about the continuing needs for teacher education. The expert committee should be invited to make recommendations for one or two initial such transfers, which could be treated as a pilot for a more general programme, if successful.

There is one most important consideration that needs to be taken into account as the future of the remote branches is considered. They play a very valuable role in widening participation in higher education and ensuring that young people who might not otherwise have been able to attend university - particularly girls who may not be able to travel to the cities to attend university - have been able to have some former higher education. To ensure that this benefit is not lost and that this reform does not damage equity in participation in higher education, it will

be important to **establish some sort of articulation arrangements between the newly-formed colleges on the one hand and universities on the other**, to ensure that students who have the ability can attend the new colleges for two years or perhaps three and then transfer to the university to complete a degree.

Non-university institutions

The non-university tertiary sector is surprisingly small. As numbers of students increase, **a great deal of the future growth will need to be concentrated on the community colleges and technical institutes**, which have a number of advantages:

- They are much more economical than universities - in part because they provide shorter qualifications, but also because the staff that they employ are cheaper and easier to recruit
- Many provide technical and vocational programs which are more appropriate to the needs of society and the economy more generally.

Indeed, this policy is explicitly stated in the Yemen 2025 Vision strategy, which envisages the expansion of Technical Institutes and Community Colleges to 105,000 students by 2025. There would be merit in considering growing these institutions by even more into a sub-sector of higher professional institutions, some of which may have a specialist orientation (e.g. health, administration, technology or agriculture).

Having said that, there are a number of words of caution that are needed. Although it is true that these colleges so far have been generally successful and their graduates appear to be in demand, that may be in part because of the small size of that sector. It does not follow that when they are scaled up and more numerous the same will apply. More generally, care will be needed with the

quality of these colleges, where experience has been mixed in the past. Some undoubtedly have provided education of a high-quality, but others may not have done so, and it is important that the quality assurance and accreditation regimes that are recommended below apply rigorously to these colleges in future as well.

More generally, careful planning will be needed – in particular involving coordination between the MoHESR and the MoTEVT - to create a sub-sector of professional higher education institutions, that is at a level below universities, but which is coherent and offers the prospect of relevant and valued qualifications in their own right, as well as allowing the prospect of students to transfer to university if that is appropriate. If this strategy is implemented, then it will mean that a wide range of qualifications are available to Yemeni students, from the certificate of Technical Institutes to Diplomas of Community Colleges, and BSc/BA, Masters and PhD in universities.

Private institutions

Private institutions - both universities and non-university institutions - should play an increasingly important role in Yemen and the development of its tertiary education system, and there should be incentives to encourage their establishment and growth. They have a number of advantages:

- First, because they are not subject to official control, they can be responsive to the market and market needs, and can experiment with new methods of delivery
- Second, because they operate with little or no Government subsidy, they are both a means of extending higher education at little or no cost to the Government, and a means of bringing private investment - both from the students and from the providers - into the national higher education system. For that reason, encouragement should be given to these institutions to develop

and expand, and to investors to invest in private universities and colleges.

Against this, care will be needed to ensure that private higher education does not just become a means of making money for entrepreneurial investors - **a rigorous accreditation and quality assurance system should help** guard against that. Those mechanism should also help guard against the second concern, that because of financial considerations such institutions may compromise on quality. In a competitive environment, where reputations are important in attracting students, that should be a minor risk, particularly if good and independent information about the private colleges and universities is made public.

So the Government should take a dual approach. It should encourage the development of private institutions, and should consider incentives for this – such as tax incentives and perhaps offering scholarships for poor students to attend them. But at the same time it should rigorously assure their quality.

In order to regularize the position of private universities some legislative changes will be needed, to ensure that the universities that have been established are recognised in law, and that future institutions are authorized legally.

More generally, and in view of the advantages enjoyed by the private universities, bridges should be built between these institutions and public universities to exploit these benefits for the more general public good. The Government will need to adopt a strategic approach to the development and role of private higher education within the overall higher education system.

KEY STRATEGIC OBJECTIVE 3: Ensure that sufficient resources are provided to enable a high quality system, and that such resources are optimally deployed

Financial resources

Sources of funding

There is a real problem that Yemen faces concerning the total amount of resources provided for higher education. Based on a comparison with other countries, Yemen already appears to invest in higher education at a rate relative to its income that would be regarded as quite reasonable in most of the world. And as a developing country, there are many other calls on public expenditure, not least for schools, which will be demanding an increasing amount as the population grows, as the poverty reduction strategy takes effect and as girls attend school in increasing numbers.

Nevertheless, despite the current relatively favorable investment from the public purse, many universities are not well provided for in an absolute sense and many have substantial needs for further investment, even now. Huge new demands can be foreseen as increasing numbers of pupils advance through the secondary education system and as some of the other national strategies come to fruition.

There is no magic source of funds available. There are only three possible routes for funding:

- The State (that is to say taxpayers)
- Students themselves, paying a fee; and
- Entrepreneurial activity on the part of universities themselves.

There is a fourth possible source, primarily for capital resources, and that is international donors.

Public grant

It is essential that the State regards higher education as an important investment which will help secure its future prosperity, and continues to invest increasing amounts to ensure a high-quality higher education system for an increasing number of students. It is an inevitable fact, nevertheless, that the State will be unable to provide alone what is needed on the scale that will be required, and that in Yemen as elsewhere public investment will represent a declining proportion of the total income of higher education institutions.

Student fees

There are two ways in which students can pay for their education: by attending private institutions, and by paying fees at public institutions. The development of private institutions has already been discussed above, and should be encouraged. **But it is inevitable in due course that students will have to pay to attend public institutions too.** If they do not, then it will be impossible for the state to provide the resources needed to maintain a high-quality higher education system on the scale that will be required. The higher education system will descend into a spiral of decline. This is difficult both politically and socially, but it is in the interests of the country that the issue should be faced. It is important also that if a student fee regime is introduced it should not be introduced in a way that makes it impossible for students from poor backgrounds to attend university or college. To ensure that that does not happen **arrangements will be needed to pay grants to students from poor families and also to ensure that loans are available which will enable students to pay the fee**, and subsequently repay the loans to the Government when they work. These are very technical issues, but have been faced by many other countries around the world, and if

Yemen decides to go along this road, it should **set up a technical advisory committee, drawing on experience from around the world, to put in place arrangements that are appropriate for Yemen, initially at a modest level.**

This review ought to consider all aspects of financial arrangements, and should regard student fees in this broader context.

Entrepreneurial activity and other sources of funds

At present, there appears to be little activity on the part of universities themselves to raise money for their own purposes. This may be in part because the law does not incentivise such behaviour, in some cases requiring universities to return to the Ministry of Finance any private money that they earn. However, universities around the world – even those universities that are quite modest in terms of their core activities - have discovered that it is possible to gain substantial earnings from their own activities – and within Yemen institutions such as the University of Science and Technology and Sana'a Community College provide examples of this. Such earnings might be from commercial activity on the part of universities, or through raising funds from endowments and donations.

If universities could be confident that any money earned would be entirely for their own benefit, then that itself would almost certainly be sufficient encouragement for them to engage in such activity. **The law should be reviewed, and if necessary changed, to make it clear that institutions may keep self-generated resources.** Moreover, if the Government felt that positive incentives were needed to encourage this, it could withhold part of the overall higher education budget in order to **provide some sort of matched funding for universities that raised additional resources of their own** - it need not be matched funding, even a 10 per cent supplement might provide sufficient incentive to make a difference. And **in order to encourage donors, the Government should consider providing tax incentives for donations to higher education institutions.**

Use of funds

Where funding is tight it becomes even more important that the funds that are available are spent as well as possible. It is also important that there should be confidence that these funds are being well spent and are not being in any way wasted or put to improper use. The accountability and transparency proposals should help in this regard.

The budget for providing scholarships for students to attend overseas universities, which takes up over 30 per cent of the total higher education budget, does not look like a good use of scarce resources. Originally, when the scheme was introduced, it may have been quite rational - because the higher education infrastructure in Yemen was underdeveloped and facilities nonexistent there for students in sufficient numbers. That is no longer the case. There is still a rationale for providing scholarships to some students to travel abroad for their higher education, but in much smaller numbers, and much more selectively provided. Now, it would make more sense to **provide a much smaller number of scholarships for only the very best students to go abroad, selected on the most rigorous and objective academic criteria - perhaps for postgraduate students only and in key disciplines** - to ensure that Yemen continues to have a small cadre of the most gifted and able people educated to the highest levels, able to play a leadership role in universities, and society more generally. If this approach is taken then clear and transparent criteria are needed to ensure that these scholarships go only to the very best students. But beyond that, **it would be a more effective use of resources if the budget were redeployed, partly to enable more poor students to attend higher education through internal scholarships, but also to build up the quality of higher education within Yemen** – both teaching and research. The President of Yemen himself has recently said that this present scheme needs to be overhauled, and that is undoubtedly the case.

Method for allocating funds to universities

Governments around the world are moving away from basing the funding of universities on historic patterns and negotiations -- which in Yemen has led to some quite inexplicable anomalies and differences between institutions, where some appear to receive very much more per student than others, for reasons that are not apparent. **Funding elsewhere is increasingly based on transparent formulae which incorporate measures of performance and competition.**

South Africa and Jordan are good examples of such developments. The problem with the current method in Yemen is that it is neither transparent nor rational, and does not provide a good basis for giving more money to one university and less to another, as occurs at present.

When Governments introduce formula and performance-based funding methods, they do so to meet different needs and in the light of different circumstances, which vary from country to country. In general the formulae are based to some extent on the number of students recruited and their different characteristics, but the characteristics that can be taken into account might vary greatly. In some cases, in order to avoid the incentive for universities to recruit unrealistic -- and sometimes fictitious -- numbers of students, the formula is based on the number of graduates produced, not student numbers, and this might be more appropriate in Yemen. A formula might include obvious features like the subject studied, but can include other features, for example whether the students are rich or poor, or their gender (incentives could be provided for the recruitment of female students).

The features of a formula can also vary according to what behaviours the Government wishes to encourage. It has already been suggested above, for example, that if the Government wished to encourage entrepreneurial behaviour it could introduce an element into its funding formula to reward success in this respect or (when quality assurance measures are in place) to reward high quality

provision. It is proposed that **the Government should establish an expert group, drawing on the best international experience, to consider this question and to recommend a formula-based funding arrangement appropriate to Yemen.**

If these recommendations, and particularly those that have been made about autonomy, are agreed, then the Government will no longer **provide universities with line item budgets, but with a block grant which universities will be free to spend as they wish**, subject to audit by the Ministry that the money has been properly spent. Universities will be free to carry forward any money that they have not spent at the year-end and to build up reserves, and so on.

If these reforms are implemented, then there is no suggestion that money will not still remain tight. Nevertheless, these will increase the amount of resources available to higher education in Yemen, and they should ensure that the money that is available is better spent than at present, and so will provide a sounder basis for the future.

Human resources

Staff are the most important resource of universities, and it is essential that the staff that universities employ are of the highest quality and play the fullest possible role in ensuring that universities fulfill their mission to provide education, conduct research and provide community service.

Numbers

Despite the relatively high gross domestic product devoted to higher education, which compares reasonably with other countries, faculty staff:student ratios are very poor indeed. This is a puzzle, but probably means that salaries are relatively high in Yemen - in relation to the wealth of the country. If so this is a

cause of real difficulties: whatever the objective facts, staff - some of whom have recently been on strike - clearly do not regard themselves as well paid, despite the fact that they are among the best paid public employees. And unhappy staff will not give of their best. **A review should be established to identify the reasons for the unfavourable student:staff ratios, and how this might be addressed.**

In Yemen university employees are linked to the civil service system, which leads to a number of anomalies. For example in 2005 a number of university professors were sent retirement notices because, although they were not even 60 years old, they had served as civil servants for the requisite number of years and so were due for retirement. What may be appropriate for the civil service is clearly not appropriate in a university environment and **consideration should be given to creating terms and conditions of service for university staff, separate from the civil service.**

It is essential that faculty staff:student ratios are improved. If they are not, then it will be very difficult to provide the high-quality higher education system that is sought. One way of achieving this will be if a higher proportion of students over time attend non-university institutions, where staff are much cheaper to provide.

If, as is proposed elsewhere in this report and as has been urged by a number of commentators, the number of students in science, engineering and technology is to increase greatly, then **the number of faculty staff in science, engineering and technology subjects must also increase.** Indeed, there is a strong case to be made that the reason why there are not more students at present is that universities lack the capacity - both faculty staff and facilities - to provide for them.

Renewal

It is essential if universities are to make high-quality provision that their faculty staff keep themselves up-to-date in their subjects and keep their programs up-to-date too, renew their curriculum and ensure that students are provided with up-to-date course notes. At present there seems little incentive for faculty staff to do so and certainly there is no requirement that they should. All staff need to undertake the scholarship needed to keep up to date with their subject. This is part of the profession of a university academic and staff should make time as a matter of course to do this. However, research (in the sense of creating new knowledge) is different, and is discussed below.

More generally, the commitment of faculty staff is a matter of concern, and as the price of greater autonomy **universities should be required to introduce regular appraisals of their faculty staff**: such appraisals should include an assessment of the extent to which they are maintaining the currency of their knowledge and the currency of their programs. Such considerations should also play a part in decisions about pay and promotion. It goes without saying that universities must ensure that facilities are available to staff, such as journal subscriptions, to enable them to update themselves, and should also concern themselves more generally with building the capacity of their staff.. Staff also need to be able to keep in touch with their colleagues overseas, and, although it is expensive, **some budget should be available to allow staff to attend overseas conferences.**

Staff contracts

Staff need to be held to account for their activities. This includes not only activities in the classroom, about which proposals have been made above. It also includes their more general commitment to the university and the extent of their outside commitments. As has been said above, there is nothing wrong with

faculty staff having some external commitments, but there needs to be transparency about this and limits set. **Either the Government should set out guidelines and universities should reflect these in their contracts with faculty staff, or universities themselves should each set their own rules about staff activity outside their universities and enforce them.** But either way, enforcement is necessary as is accountability on the part of faculty staff. There is good practice available from other countries and other university systems. For example, a professor might be permitted to spend one day each week on personal activities. Whatever the precise arrangements, **accountability and transparency need to be introduced into the relationship between universities and their faculty, and a greater level of commitment secured on the part of faculty.**

As has already been said, Universities need to be agreeable places to work, in order to attract and retain staff, and in order to secure their commitment to the university. Universities ought not just to be places where staff come to work and then go away -- but communities to which they feel committed and where they want to spend their time together with their colleagues and students. An aspiration should be that **all departments should have offices for staff, with secretarial support, internet connections,** and so on. Also, it is important that staff should feel that they are being treated equitably, and **their workloads -- in particular their teaching loads -- should be fairly distributed, on some sort of formulaic basis.** This ought to be left to universities themselves to decide, but the principle should be universal.

Administrative staff

Given the complexity of universities as organisations, it is essential that the staff who run them are up-to-date in their skills and knowledge and motivated and able to perform at the highest level. Universities need to be dynamic, and this strategy is a strategy for change and reform. **Universities need to ensure that they appoint the appropriate administrative staff, but also that they make**

available appropriate training, to ensure that staff are up-to-date and able to do the job as well as it is possible to do.

Physical resources

The physical environment of universities varies greatly. Some of the new universities either have already moved into brand-new campuses or are in the process of doing so. And others have ambitious building programs. In the meanwhile, much of the physical infrastructure elsewhere is old, despite apparently substantial and growing recent investment. In particular, the equipment available to many universities -- especially engineering departments -- is very poor and in some cases quite inadequate for university level study.

There are particular problems on three fronts, which will need to be addressed:

- Equipment, libraries and other facilities, particularly for science, engineering and technology
- The growth that is anticipated over the next 20 years, which will undoubtedly require substantial further capacity
- The Information and Communications technology infrastructure.

Equipment, libraries and other facilities

There is a strong suggestion that the main reason why there are not more students in science, engineering and technology subjects is not because of lack of demand, but because of the lack of capacity on the part of universities to meet the demand. This capacity includes faculty staff, but most importantly includes buildings, laboratories, equipment and other physical resources. If the number of science, engineering and technology students is to increase - and it should - then this needs be preceded by **a significant investment in the physical infrastructure** necessary to enable this. That is not to say that investment in

other physical resources is not also needed. Libraries, language laboratories and other facilities also need to be brought up-to-date, but the most pressing need is in respect of science, engineering and technology, where the existing plant and equipment need to be brought up-to-date, and additional facilities provided. This is urgent, and donors in particular need to understand that there is no prospect of a high-quality higher education sector developing in Yemen if students do not have available to them plant and equipment that is up to date and relevant. **A phased and costed programme is required to bring the current learning and teaching environment (including laboratories, equipment and libraries) up to date in all universities.**

Growth

The next section predicts that demand for tertiary education will increase at least four or five fold in the next two decades. Much of this demand will need to be met, and in that case the present capacity of universities will be wholly inadequate. **A substantial investment programme will be required to accommodate increasing demand**, and the Government needs to begin to plan for this and to ensure that the resources are available - whether from public sources or by universities borrowing in order to meet their physical needs. If Sana'a Community College, with a capacity of 2000 students, cost \$10,000,000 then that gives an idea of the size of the programme that will be needed to increase the capacity of the tertiary education system. In addition, it is important as far as possible to make more intensive use of buildings at present available. This is undoubtedly possible, and perhaps to quite large extent, but it will require **detailed investigation, on site-by-site basis, to establish what can be achieved and how. That should be one of the functions of the newly-formed Council of Universities to arrange.**

Information and Communications technology

A high priority for investment will be the installation in each university of a high-speed network, and a national network that will enable universities to communicate with each other and with the outside world. This will be important both to ensure that students can be taught appropriately, but also for economic reasons, to enable libraries, data and other resources to be shared and data to be acquired economically. Such a network would also enable cooperative teaching between universities, and it will enable scarce faculty staff and other resources to be shared, thus making the most of the facilities and resources that are available. The Government has recognized this and the development of a high-speed data communications infrastructure is an important part of the master plan, as are the development of an E-Library and E-Learning. **The Government should ensure implementation of the ICT master plan in all respects, including the development of high speed data communications, and E-Library and E-Learning facilities.**

In order to promote the introduction and effective utilization of ICT in higher education, it is proposed to establish a Yemeni Foundation for Information Technology in Higher Education. The Netherlands-funded NPT/NFP programme has agreed in principle to support this development.

The development of a high-speed network linking higher education institutions with each other and with the wider world also opens the possibility of introducing distance education for selected subjects where local expertise is insufficient. The market in tele-supported distance education has developed considerably over the past few years, both from the point of view of fields of study and from that of geographic dissemination. For example, complete degrees in computer science and computer engineering are currently available in English in Africa, Europe and Asia. Such **distance learning programs should be seriously investigated**, as they require a much lower intensity of faculty staff resources than conventional

programs. **Distance learning elements and modules can be attached to existing programs. However, the Government should also consider establishing a model Open University, or a central programme available to all universities.**

Sources for investment funding

At present funds for investment come almost exclusively from the Government. However, in principle there should be other sources of funds available to universities, and if in due course they are granted financial autonomy, **it should be possible for them to build up reserves - by saving unspent grant from year-to-year; and it should also be possible for them to borrow money commercially, which they would repay from their annual recurrent grant.** However, a lot of changes will need to take place - outlined in the discussion on university autonomy - before the conditions are right to enable these developments.

Investment for quality

Other governments - Indonesia, and Bulgaria, for example with the support of the World Bank - have introduced investment programs whereby universities can bid competitively against each other for limited funds for specific investment, aimed to increase capacity and improve quality. Such **competitive allocation programs - where institutions have to state and commit to the anticipated outcomes - can be a valuable means of targeting scarce resources and at the same time improving quality.** Such a scheme should be introduced in Yemen initially on modest scale and with clearly articulated aims. If successful, then it can be extended and can form the basis for a more widespread allocation of investment resources. Indeed, in due course such a process -- where funds

are allocated on the basis of demonstrable need -- might provide a rational alternative to the present arrangements, whose rationale is at best unclear.

KEY STRATEGIC OBJECTIVE 4: Ensure that appropriate levels of teaching, research and service take place, of the highest possible quality, to meet the needs of Yemen and its people

Teaching

Student numbers

Although low compared to other Arab countries, compared more generally with other countries at a similar stage of development, it appears that the percentage of the age-group going into higher education in Yemen is not low. This is somewhat surprising, in view of the fact that it has one of the lowest school participation rates in the world. Nevertheless, there are regular tales of unemployment among graduates, and concerns about whether the current level of graduate output is excessive.

This is a very difficult issue. In many ways, Yemen has few choices other than to maintain and expand its higher education system. Oil stocks are limited, and the scope for exploiting other natural resources is untested. What it does have is an intelligent and able population, and this is what it needs to exploit if it is to succeed. It needs to aspire to become a knowledge economy, and to exploit its human resources to the full.

However, care is needed in traveling down this road. The development of a knowledge economy is not something that it is possible for the higher education system alone - or even the education system more generally - to achieve. Other conditions are essential if a knowledge economy is to be achieved. For example, the fiscal and investment conditions have to be right. A country's financial and physical infrastructure has to be in place. Most importantly, the private sector needs to be willing to invest in knowledge based activity and innovation. Without these conditions, simply increasing the number of graduates will achieve nothing.

On the other hand, a country cannot become a knowledge economy without higher education. Higher education - and the production of larger numbers of highly qualified people - is a necessary though insufficient, condition for the development of a knowledge economy.

Quite apart from whether expansion of higher education is needed for the development of a knowledge economy, there will be huge pressure for growth in the future. And, as has been seen in other countries, where there is pressure for growth it is very difficult to resist that pressure. The reason why there will be pressure is that it is apparent that the best jobs go to graduates - so even though going to university does not guarantee a good job, it is a necessary condition for a good job. So a young person who aspires to a good job will need to go to university, even though they may know that there is a strong likelihood that they will leave university and be unemployed. That in itself will provide a dynamic for growth in demand. If to that dynamic is added the Government's poverty reduction strategy, equality for girls and the expected tripling of the young population in the next 20 years, this will give rise to at least four or five times the level of output from secondary schools - and so demand for higher education - than is experienced at present. Recent projections from the Ministry of Education show growth in the output of secondary education graduates of 2.5 times present levels. However, these projections show a static percentage of the male population graduating from secondary education which seems at odds with the Poverty Alleviation Strategy. So, **The Government should carry out a detailed assessment of likely future growth in student demand, but, based on the factors described above, the system should be planning for well over one million students within 20 years or so.**

Increased demand on this scale will be very hard for the country to accommodate, but it will also be very hard to resist. Yemen's experience is likely to be similar to that of other countries, where the political difficulty of refusing to provide education to large numbers of well-qualified young people has been

enormous. To meet the increased demand in a way which is affordable will require imagination and flexibility. Many of those coming into higher education will not be suitable for university, but will need to be provided with different programs that are non-academic, and shorter than the conventional degree. **The entrance exam, which universities use to select for entry to some courses will need to be extended to all subjects and the criteria for admission made rigorous and transparent. There will need to be a diversification of routes, with increased numbers provided for in community colleges and technical institutes**, and mechanisms will be needed to enable the most able of those students to transfer to university for a degree programme if that should be appropriate. As has been said above, **increasing diversity of students will require increasing diversity of institutions to meet the needs of those students.**

Widening participation

Part of the pressure for increased places will come from the results of the poverty reduction strategy, and the drive to extend lower-level education to increasing numbers of girls. The basic education and poverty reduction strategies, as well as the Millennium Development Goals, envisage that 50 per cent of those going to school should be girls, and this will increase the number of girls able to go into higher education. Other countries - including countries in the Arab world - have found that in due course girls will demand higher education at the same rate as boys, and there is no reason why in due course that will not apply to Yemen as well. But in order to accelerate this process and in order to break down the cultural barriers, **the Government should conduct a cultural awareness campaign for parents, particularly in rural areas, to encourage their daughters to attend university.**

On the theme of cultural awareness, the Netherlands Government funded women's centre has recommended **the development of a course in gender-**

awareness, with the requirement that all students should take at least one course. Such a development would go some way to create a more balanced awareness on the part of Yemen's future leaders, and is recommended.

In order to encourage even more girls to come into higher education, it will be important where possible to maintain branches of universities outside the main cities, and **local councils at district level and charitable societies should be encouraged to provide both scholarships, and more particularly accommodation, that will encourage girls to come to university.**

Although the measures described here would have an impact on gender inequality in higher education, a more holistic and comprehensive approach is needed that will impact not just student demand, but the whole way in which universities are organized and managed, their curriculum and their ethos. Changes are needed to make policymaking and governance more gender-aware and the curriculum more gender sensitive. At Appendix 10 is a commentary by Dr Carin Vijfhuizen of the Women Research and Training Center, Aden University, on gender-related aspects of this strategy, with proposals for addressing gender issues in higher education. If the Yemeni higher education system is serious about addressing the question of gender imbalance, and if it is to take the lead in addressing gender inequality in Yemeni society, it should consider these proposals very carefully. **Each university should, as a first step, create a gender awareness committee, chaired by a senior vice-rector, to consider questions of gender sensitivity, awareness and equity and to make recommendations about how to address them within the university.**

One of the greatest disparities in Yemeni society – no less than the overall disparity between males and females – concerns the rural population, whose participation at all levels of education is very much lower than the urban population. One of the reasons for this, as far as higher education is concerned, is the lack of facilities in rural areas and the difficulty of making adequate

provision for students located outside the main towns and cities. One aim of the national HE Strategy – and one result of a number of the recommendations – will be to provide the necessary facilities and incentives that will expand access for rural males and females to all public programs – through programme diversification, E-Learning, the restructuring of remote colleges, etc.

So the numbers coming through secondary education are likely to rise substantially, and we need to plan for a large increase in demand. We need to plan to meet that demand flexibly while recognising the diversity of that demand and of the approaches needed to meet it. But it is not only numbers that are an issue: what students do at university is important, and there are two issues in this regard:

- What students choose to study and
- The relevance of the curricula that are provided for them.

Subject mix

It is often said that in Yemen there is a general preference for theoretical study over practical and applied study; and there are undoubtedly too many student who study programs which are not in demand, and not sufficient who study subjects that are in demand. **The Government should strengthen and widen access to programs which have been shown to meet societal and labour market needs, and encourage students to pursue such programs.**

On the other hand, as has been said above, the reason for the relatively low numbers of students in science, engineering and technology is almost certainly as much to do with capacity as demand ; but in as far as it is a demand issue, it is probably also to do with the labour market. If the labour market were demanding students with degrees in science, engineering and technology, and if

universities would make places available, then very probably students would come forward to study these subjects.

In the absence of good information about labour market and employment needs, then students and universities are operating in the dark about what subjects to supply and to study. Far better information is required than is available at present, and **it is essential that the Government sets in place mechanisms in future to advise students and universities about the likely future needs of the labour market, and that universities establish offices of careers guidance and support for students.** The Government should also **conduct tracer studies which will establish which universities and which courses are most successful in securing employment for their students:** this will enable both students and institutions to base their decisions on more knowledge than is available at present.

However, even in the absence of such information, it is probably safe substantially to increase provision in science, engineering and technology subjects, as has been suggested above, because the output of such students is very low at present, and whereas there is high unemployment among graduates generally, that does not appear to be the case in these subjects. And even if it turned out that in due course more science, engineering and technology graduates were produced than the economy could absorb, that need not matter. That is the case in other countries, for example Jordan, where the surplus graduates find ready employment abroad, and whose remittances of foreign exchange earnings back home bring far greater benefit to the economy than the cost of their education.

One of the main reasons for the lack of students in computer science, natural sciences and mathematics is that so many students emerge from the secondary school system ill-prepared to continue with these subjects at higher education level. **There is need for coordination of the syllabuses between the Ministry**

of Higher Education and Scientific Research and the Ministry of Education. There would also be advantage in the development of preparatory programs in these subjects to bridge the gap between secondary school graduates' knowledge and university requirements. Such programs might take a number of forms (e.g. E-Learning and subject packages), and could usefully be taken during the year between school and university..

Pedagogy

There are serious problems with many of the programs in universities, and in the way that they are taught. Undoubtedly, the best are as good as most in the world, but there are far too many that are not of the best. One problem is that because of the very high student:faculty staff ratio the method of teaching has to be old-fashioned and didactic - professors professing and students taking notes. This is far from good practice in the 21st century, and does not enable students to build up the skills that they need for operating in a modern knowledge economy. It is difficult if resources are inadequate, but **it is essential that universities and faculty review their pedagogic methods to ensure that they are consistent with current good practice. In particular there would appear to be considerable scope for the development of a greater degree self study on the part of students, especially in science and engineering disciplines where resources are in short supply. This will become increasingly possible if the communications network and internet access are improved.**

As important - perhaps even more important - is that the curriculum and programs are kept up-to-date, and that new disciplines and programs are created in universities to reflect changes in the wider world. There appears to be no systematic process for keeping programs current and up-to-date, and again, although the best are, far too many are not. Building on the HEP development programme, **the Ministry should require all universities - and universities**

should in turn should require all departments and colleges - to review every programme, and for that purpose to establish a review committee that includes outsiders including outsiders from industry, to ensure that the curriculum is up-to-date and relevant, and this process should be carried out every five or six years. The Ministry should **set up a national committee to whom universities should report** on the steps that they have taken and on the progress that they have made on programme by programme basis. **Some part of the Ministry's grant should be made subject to satisfactory progress in this respect.**

To help them with pedagogic and programme development, the new Yemeni Centre for the Development of Higher Education should concern itself with curriculum and professional development programs. In addition, universities would benefit from strong links with universities outside the country, to expose them to developing good practice elsewhere, and the development of pedagogic practice should be one of the explicit objectives of the "Twinning Project" which is under way with World Bank support. Something else that universities should consider while reviewing their courses is whether they might make use of open courseware provided free of charge by other universities such as the Massachusetts Institute of Technology.

In order to increase the likelihood of relevant curricula, where possible a period of work experience should be built into programs, integrated into the academic structure of the programme. This will require the cooperation of industry and public employers to achieve, and that is another reason for involving employers in the review of curricula.

The first degree in Yemen lasts four years, which is consistent with an increasing trend around the world. There are concerns, however, about whether these four years are optimally used, and **a pattern that should be considered by the curriculum committees that have being proposed above is for a common**

first year which will act as a foundation year. The students would study basic skills, such as English, computing and perhaps mathematics, along with the Arabic language, in order to provide a solid basis for the more specific and academic study in the following three years. That is not something that can be prescribed in this strategy, but it is at least something that is worth considering by those who are reviewing the curriculum.

Similarly, **it should be considered by those reviewing the curricula of teacher education programs whether the majority of the four years should be devoted to developing subject knowledge, but that pedagogic knowledge and teaching experience should be concentrated into the final year of a programme.**

Given the huge increase in graduate output likely over the next two decades, and the uncertainty about whether the labour market will be able to accommodate them, there may be a far greater emphasis on entrepreneurialism and self-employment than in the past. However, that tradition does not exist at present, and students are not provided with any relevant education in the course of their university careers. It would be overloading the curriculum too much to try and incorporate such features into all programs, but **universities should consider whether they might run short modules in aspects of entrepreneurialism for postgraduates**, for which fees would be paid; and also whether more generally they should **run postgraduate programs specifically to prepare students for specific careers for which their original programme may not have prepared them.** This is something that increasingly happens overseas and has proved extremely popular among students and employers.

Finally, a great emphasis in this strategy has been placed on the development of flexible structures and routes into and through higher education. Such flexibility depends on students being able to start programs in one place and complete them elsewhere. To enable and ease this, credit accumulation and transfer

systems have been developed elsewhere in the world, and these would be a great help in Yemen in the future. These can take many forms - for example individual institutions agreeing bilaterally to accredit each other's programs - whereas in some countries far more ambitious schemes are in place that are far more comprehensive. It goes well beyond the scope of this strategy to recommend a particular approach, but certainly **the Government, with the advice of the new Council of Universities, should investigate how to give credit to students who begin a programme in one institution and then transfer to another, and perhaps require universities to introduce credit schemes and attach credit points to all programs.** Universities themselves should be more active in reaching out to students who may not match the traditional pattern, and should consider how to make more provision for part-time students, in particular by offering courses in the evening.

Quality

The Yemeni higher education system needs to introduce both internal and external processes to assure quality. In part, this is to give confidence to stakeholders and students about their education, but primarily it is to improve what universities do.

External systems

Two functions are required. First, **a system is needed to accredit programs and institutions.** This is particularly important if the private sector is to expand to the extent that has been proposed here. This process will be carried out by an accreditation body that may be part of the Ministry or may be independent, and will apply criteria that may be set out by the Ministry or which it determines itself. This process essentially looks at inputs and compliance with minimum requirements.

The second requirement is for a quality assurance body to review the quality of what actually goes on institutions. This could be carried out by the same body that carries out accreditation or by a separate body, and again it could be part of the Ministry or it could be independent. The purpose of quality assurance is in part to reassure the public, including students, about the quality of what is provided, but in part it is also to improve quality. Therefore, whereas the accreditation process might lead to sanctions - the refusal of accreditation and therefore the right to offer programs - that should not be the case in respect of quality assurance. The practice of quality assurance in higher education has developed substantially over the last two decades, and there is now a considerable body of experience to draw on, including in the Arab world. It is suggested that **the Government should seek the assistance of an international body to set up such a system.** The technical assistance currently being provided by the consortium led by the UK NARIC organization, which is advising on the development of quality systems in Yemeni universities, should consider this as part of their advice.

Internal systems

In part to help universities face the external requirements, but more particularly to help them to improve their own provision, **each university that does not have one already ought to set up a quality assurance section**, whose role is to monitor and help enhance quality in their university and in the various colleges and departments. For this they will need to establish indicators and benchmarks, as well as development programs for faculty and other staff, to help them develop modern pedagogic approaches.

Quality ultimately depends on individual members of faculty staff, and suggestions have been made above for requiring faculty staff to keep themselves updated, to update their programs and so on. That should provide a significant boost to the quality of higher education provision in Yemen.

Public information

A valuable instrument in ensuring and assuring quality is **the publication of data that compare the performance of universities in various respects**. It is true that only limited data are at present available in Yemen, and an important recommendation in this strategy is that data collection should be improved. That will enable data - for example about employment, non-completion and faculty staff:student ratios - to be published and to enable the performance of universities to be compared.

In addition, the quality assurance agency that has been recommended above ought to **consider requiring universities to conduct student satisfaction surveys** of the kind that are run in a number of other countries, which will enable the views of students about their programs to be assessed, published and compared. There is no doubt that the publication of comparative data is an important psychological stimulant to everybody to do better.

Postgraduate students

This review has said very little about postgraduate students, and that is in part a reflection of the very small number of such students in Yemen's universities. If the quality of Yemen's higher education system is to improve, this situation will need to change, and there will need to be more postgraduate students. As a first step, **all universities should create a 'graduate school', with a vice-rector responsible for graduate study and research.**

Research

It was mentioned earlier in this analysis that university research in Yemen is under-developed. In part this is because of a lack of research culture, but also

because of a lack of facilities and infrastructure for research. Universities lack laboratories, libraries, journals and technical staff. Yet research is a cornerstone of a university's functions, and it is important both because appropriate research will contribute to Yemen's agenda for innovation and renewal and also because a research culture contributes to the overall ethos and quality of a university.

However, where resources are scarce they need to be carefully deployed, and resources for this type of research in Yemen are very scarce indeed. What is needed is a better strategic approach, both within institutions and at national level. Not everybody will be able to do research¹⁷ - resources are too scarce for that, and in any case not everybody would do it well. Research resources need to be targeted where the best results can be secured for the money invested, and where the results are likely to be of maximum benefit to the country. In order to achieve this action is needed on a number of fronts.

- First, an assessment needs to be conducted university by university, to establish the current extent and quality of research activity in Yemen
- Second, a budget needs to be created by the MoHESR explicitly for research, either by earmarking part of the existing higher education budget or, preferably, with additional resources
- Third a National Research agency (NRA) is needed with a focus exclusively on research, which would develop a strategic approach to the development of university research and which would allocate Government resources for research in pursuit of this strategic approach. The NRA is described in more details below
- Fourth, the infrastructure for research (including laboratories, libraries and technicians) needs to be radically, but selectively, improved

¹⁷ It should be noted that research here is taken to mean work which advances the frontiers of knowledge. This is distinct from scholarship –which is sometimes also referred to as ‘research’, which is concerned with keeping up with the research that has been done in a subject and applying it. That is a different matter, and as discussed above, it is the duty of all faculty to engage in this.

- Finally the research culture needs to be developed, both among individual faculty and their leaders.

National strategy

A National Research Agency (NRA) should be established, whose task will be to fund the research infrastructure, to fund research projects of importance to the country and to fund large research groups.

The NRA could be a division of the Ministry of Higher Education and Scientific Research, or it could be an external agency reporting to the Minister of Higher Education and Scientific Research. The latter would have the benefit of being able to draw on experts, and its focus would be exclusively on research; on the other hand some people would see it as an additional element in the bureaucracy of higher education. Either way, the NRA should be able to call on senior academics who have a good research record and who have spent some time abroad. Alongside the public university members there should be some representation from private universities and a number from business and industry as well as from civil society. The Vice-Minister should chair the NRA and the Ministry should assume its secretariat.

The NRA should advise the Minister on all aspects of national research policy; but its main task will be to set up committees in all fields, particularly those that require significant resources and equipment. The NRA's focus should in particular be on areas that will contribute to economic growth and society's needs, and the presence of external members from industry and civil society should help to achieve this focus. If society – and the Government – see that the research done in universities is relevant and beneficial to Yemen's development, then they will be more inclined to support it in the future.

Part of the funds provided by the Government for research should be deployed by the NRA to support the research infrastructure, and part to fund research projects, and the NRA should be responsible for calling for proposals and deciding on the allocation of these funds. It should also be responsible for providing funds in response to applications to attend conferences.

Above all, these resources for research will need to be selectively allocated. Research resources are scarce and only those research projects of the highest quality and which are likely to be of benefit to Yemen, its society and its economy can be supported. In part that requires scientific judgments, but in part it also requires political and policy judgments. There will need to be discussions between the NRA and the Government about the priorities and programs to be supported.

Institutional strategy

Part of the block grant budgets which universities receive in the future should be reserved as seed money for initiating new research projects and sustaining existing ones, and part for selectively improving the research infrastructure. It will be for discussion whether it should be university policy alone which steers the funding of these projects or whether the Government should play a part.

Because of the presence of external stakeholders on the universities' Boards of Trustees, and the existence of the NRA to steer national funds into national priorities, the presumption should be in favour of local discretion.

In order to steer university research **each university should set up a small research administration unit**, headed by the vice-Rector who has responsibility for research among his duties, and the unit's responsibilities should include seeking out possible research contracts with the private sector. For this purpose it should identify and publicize the research skills of faculty members. Another

important function of the research administration unit will be to use the sums it has available to enable faculty members to attend international conferences. As with the NRA, these institutional funds should be highly selectively – and strategically – allocated, and each university should develop a research plan for the development (and concentration) of research in the university.

As with pedagogic development, one outcome of the proposed initiative in twinning should be to provide a limited number of staff with the opportunity to develop research contacts with their counterparts in the twinned universities; and it should be the responsibility of the university research administration unit to promote these.

Service

Although traditionally universities are said to have three main functions - research, teaching and service - in Yemen, as in other countries, service is a poor third and is badly understood and underdeveloped. Nevertheless, universities represent a substantial resource - both a physical resource but more particularly an intellectual resource - and these resources ought to be put to the service of Yemeni society to a far greater extent than at present.

Universities and their staff should be at the head of societal developments, assisting the Government and society more generally to develop and reform. In particular, universities train the leaders of tomorrow. They should extend this to providing services to today's leaders. More generally, they should pay more attention to the way they and their staff can provide service to society. Moreover, putting the resources of universities at the disposal of the wider society can bring substantial benefits - including financial benefits - to the universities themselves. **The Government should consider how it can use its funding to incentivise universities to provide service to the wider community and to industry -**

particularly as the funding method is developed. Any investment in this respect is like to pay for itself many times over.

PART 5: IMPLEMENTATION AND RESOURCE IMPLICATIONS

Much of this strategy can be implemented without major changes in structures or legislation -- in many cases only changes in practice are required within the existing framework. But other proposed actions require a change in the law, or significant structural changes. Similarly, many of the changes proposed have no resource implications, and some will actually save money. However, many others will have a significant cost to implement.

Although considerable expenditure is required to bring current provision to a satisfactory state, the most significant cost will arise as a result of the need to expand the system in response to the increasing student demand that is anticipated. To a limited extent, this growth will be accommodated, as far as its recurrent costs are concerned, within normal GDP growth, but because such a large growth in student numbers is predicted within the next 20 years, considerably more will be required, particularly within the next decade..

Considerable work will be needed to create a reliable economic model to anticipate student number growth and the cost implications, and **the Government should work to produce such a model, and a plan for the future financing of tertiary education.** As a first step, and in order to provide an idea of the level of resources that might be required, the following table shows calculations that lead to the conclusion that if between now and 2010 student numbers grow in line with GDP, there will be no recurrent funding shortfall. However, in the decade beyond that, if demand increases more rapidly as the Poverty Reduction and other strategies bear fruit, then there will be shortfall of \$616 million. In the final five years to 2025 there will be a cumulative shortfall of \$1.6 billion. The assumptions underlying this are set out in the footnote to the table. The assumptions include that funding per student will be maintained, that GDP growth will be 5 per cent per annum, and that the funds provided by the Government will rise in line with GDP. If that is so, then up to \$145 million per

year will need to be secured by universities from other sources by 2020, or – and this would be bad for the universities – the unit of funding per capita would need to reduce.

Table 7: Projection of requirement for recurrent funds¹⁸

	Number of students in public institutions	Recurrent funds required (\$ millions)	Funds available on 5% GDP growth (\$ millions)	Shortfall (\$ millions)
2004	164,000	250	250	
2005	172,200	263	263	0
2006	180,810	276	276	0
2007	189,851	290	289	0
2008	199,343	304	304	0
2009	209,310	319	319	0
2010	219,776	335	335	0
2011	235,160	359	352	7
2012	251,621	384	369	14
2013	269,235	411	388	23
2014	288,081	439	407	32
2015	308,247	470	428	42
2016	332,907	508	449	59
2017	359,539	548	471	77
2018	388,302	592	495	97
2019	419,366	640	520	120
2020	452,916	691	546	145
2021	502,736	767	573	194
2022	558,037	851	602	249
2023	619,421	945	632	313
2024	687,558	1,049	663	385
2025	763,189	1,164	696	467

In addition to the recurrent cost implications, student number growth, as well as a number of other recommendations, will require a significant injection of capital funds. Yet other proposals -- for example the proposal for systematic renewal of the laboratory and equipment infrastructure, as well as the proposal for

¹⁸ The assumptions underlying this projection are: Student demand increases, initially by 5 % per year and then more rapidly, to 1 million by 2025, and will be met; the proportion of the demand met by private institutions increases from the present 9 per cent to 25 per cent by 2020; per capita funding is maintained in real terms; there is 5 per cent economic growth each year, and recurrent funding provided by the Government increase in step. These are only illustrative assumptions for the purpose of giving an idea of the way student numbers could possibly grow. However, these assumptions are all considered realistic, and in line with other Government strategies and policies.

improvements in the staff:student ratio -- will require continuing capital and recurrent investment.

By their nature, and because of the form of investment required, donor assistance is most likely to be forthcoming for limited investment in specific, self-contained, projects, and particularly projects of a capital nature. The present analysis, which has analyzed the current situation and identified specific needs, should help convince donors to give grants in support of the projects proposed. Beyond that, most of the cost of these proposals will fall to the public purse, and to income that universities can raise for themselves, including from student fees.

This strategy will need to be followed by an implementation plan, in which the Government identifies in detail the specific steps required to implement each of the recommendations, taking into account the conditions, dependencies and implications set out in this strategy. This implementation plan will need to specify the individuals and groups who will have specific responsibilities for each of the actions, what committees need to be formed, and so on. **Ideally the Government will appoint a project manager** with specific responsibility for ensuring that the necessary actions are taken forward in a timely way. Such a person should report directly to the Minister or Vice-Minister, who should receive progress reports on a regular basis.

The strategy itself will need to be reviewed regularly not only to monitor progress, but also to assess whether it needs revision, in the light of changing circumstances. Such reviews should be part of the remit of a group that should be formed to oversee the three core areas of the Higher Education Development Project (Governance, Finance and Quality), and who would also oversee the work of the Project Manager.

Appendix 1

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Appendix 2

List of Workshop Attendees – To be completed

Appendix 3

List of those with whom meetings held

Mr. Ahmed Sofan. Vice Premier, and Minister of Planning and International Cooperation.
Dr. Abdelwahab Rawih. Minister of Higher Education.
Dr. Ali Mansoor Ben-sefa. Minister of Technical Education and Vocational Training.
Mr.Al-Soofi. Minister of Civil Service.
Mr. Mohamed Abdo Said. Member of the House of Representatives.
Dr. Mohamed M. Muttahar. Vice Minister of Higher Education.
Dr. Yahya Y. al-Mutawakel Acting Vice Minister. Ministry of Planning and International Cooperation.
Dr. Saleh Ali Bassurah. Rector – Sanaa University.
Dr. Abdulkarim Yehia Rasae. Rector- University of Aden.
Dr. Mohammed A. Al-Soofi. Rector- Taiz University.
Dr. Ahmed Omer Bamashmoos. Rector- Hadermout University.
Dr. Ahmed Shojaudin. Rector- Ibb University.
Dawood Al-Hidabi. Rector of the University of Science & Technology.
Sailan J. Al-Abidi. General Secretary of the Supreme Council for Educational Planning.
Saeed A. Gabali. Vice Rector- University of Aden.
Jamil Salmi. Education Sector Manager. World Bank. Washington, DC.
Mr. Ousmane Diagana World Bank Sanaa.
Takako Yuki. Operation Officer, Education Sector, Sanaa.
Ms. Rashida Ali Al-Hamdani. Chairperson, Women National Committee.
Mr. Mohammed M. Qaflah. Vice General Manager. Federation of Yemen Chambers of Commerce and Industry- Sana'a.

Appendix 4

Universities and colleges to which visits made – To be completed

**Snapshot of the Yemeni Economy by the Ministry of Planning and
International Co-operation.**

Economic Development in the Republic of Yemen

Gross Domestic Product

One of the pillars for reducing poverty is achieving sustainable economic growth. This is achieved through economic stability and development of potential sectors together with a healthy investment climate.

In order to raise income levels and create new employment opportunities, it is essential to continue implementation of the economic, financial and administrative reforms, and most specifically restructuring and strengthening local authorities. The PRS aims at raising GDP by an average of 4.7% per annum during 2003-2005, versus 6.3% for non-oil GDP.

During the report's period (2003-2004), GDP and non-oil GDP achieved average growth rates of 3.5% and 4.5%, respectively. They achieved growth rates of 3.3% and 4.5% during 2003, and 3.6% and 4.4% in 2004, respectively. Growth rates fell below targets for the said period by 1.2 and 1.8 percentage points respectively. Unfortunately, in presence of a current population growth of 3% to 3.5%, such GDP rates were unable to reduce poverty. Nevertheless, a modest 0.05% increase in per capita GDP was recorded during the period, below the strategy target of 1.2 to 1.7%.

The slow economic growth over the period (2001-2004) is attributed to a number of factors relating to public expenditure, credits and banking facilities, in addition to

Item	Average			Achievement			Target	
	2001	2002	Average	2003*	2004*	Average	2003	2004
GDP	4.9	4.7	4.8	3.3	3.6	3.5	3.7	5.3
Per capita GDP	1.4	1.5	1.4	0.1-	0.2	0.1	0.5	2.1

* Provisional

imbances in the structure of the domestic product, despite the financial and monetary reforms being undertaken since March 1995.

The national economy in Yemen relies heavily upon the agriculture and oil industries which are difficult to forecast or control due to their high sensitivity to natural and external factors. This makes the national economy vulnerable to sudden variations. Nevertheless, over the past few years, agriculture and manufacturing have been reasonably stable in general, and in their contribution to GDP. On the other hand, development of other potential sectors has been fluctuating. As a result, such sectors were

unable to reshape the GDP or expand the economy base. Furthermore, GDP growth was also impacted by the slow growth of the services sector that makes up around one-third of the total.

The low domestic savings and strong reliance on foreign financing, coupled with weak productivity and slow implementation of structural reforms, are contributing factors in the low national economy investments.

The average growth of the agriculture sector (excluding Qat) for 2003-2004 was estimated at 3.6%, with an average contribution of 20.6% to GDP. This followed the negative growth recorded during 2002 that was caused by dry seasons and negatively impacted rain fed agriculture.

Being one of the most affected sectors by poverty, the slow growth of the agriculture sector forms a serious threat to poverty reduction efforts.

Table (1.2): Real GDP According to Sectors

Item	Growth						Contribution to GDP			
	2001	2002	Average	2003	2004	Average	2001	2002	2003	2004
Crude Oil	1.6	1.0	1.3	3.4	1.6	2.5	15.3	14.8	13.8	13.2
Non-Oil GDP Of which	5.6	5.3	5.5	4.5	4.4	4.5	84.7	85.2	86.2	86.9
Agriculture, Forest, Fishing	6.05	-0.1	3.0	3.8	3.5	3.7	21.6	20.6	20.7	20.6
Manufacturing	4.9	7	6.0	4.5	4.1	4.3	10.1	10.3	10.4	10.5
Building & Construction	4.8	2.9	3.9	4.2	3.6	3.9	2.1	2.1	2.1	2.1
Trading, Hotels & Restaurants	4.8	12.1	8.5	5	5	5	8.5	9.1	9.2	9.3
Transportation & Storage	6.1	9.3	7.7	4.8	4.2	4.5	11.2	11.7	11.8	11.9
Financing, Insurance, Real estate & Business Services	6.5	3.6	5.1	4.6	2.3	3.5	8.9	8.8	8.9	8.8
Government Services	4.0	5.2	4.6	4.4	5.4	4.9	21.4	21.5	21.7	22.1

The agriculture sector in Yemen employs over 50% of the total workforce. Together with fishing, they represent the main source of food. In fact, the livelihood of about 74% of the rural population relies on that sector. Therefore, supporting the agriculture sector, shall not only raise related production and reduce shortage, it would also create new employment opportunities, decrease internal immigration and raise related exports.

The agriculture sector includes a number of factors within its internal structure that hamper its development and ability to positively contribute to economic development. Most important of such factors are the limited and scattered agriculture areas and usage of primitive and conventional production tools. In addition, the slow implementation of

the sector related strategies impedes its anticipated transformation. Moreover, dry seasons from year to another further restrain expanding rain fed production which is 72% of total cultivated land.

The government is currently considering exempting inputs to agriculture and fish production from customs, supporting small farmers by reducing irrigation schemes costs, increasing the production and sales of seedlings and engineered genealogy at reduced costs, expanding loans to farmers and fishermen, and establishing a unit for subsidizing exports and air freight.

The average contribution of the oil sector to GDP over the said two years stood at 31%, despite a decline of 3.4% & 1.6% respectively. The government's share of oil dropped from 96.2 million barrels (m/b) in 2002 to 95.9 m/b & 91.1 m/b respectively during the report period. Hence the government's share of oil exports fell to 63.2 m/b & 55.7 m/b respectively. On the other hand, international oil prices witnessed a sharp increase following the 2003 events in the region and the growing demand for oil during 2004. The price of oil jumped from \$24.6 per barrel in 2002 to \$27.95 and \$36.6 respectively, compared to \$20.4 projected by the strategy.

Oil production of 431 thousand b/day and 404 thousand b/day respectively during the report period fell below the PRS projections. It was expected to drop to 401 thousand and 390 thousand b/day respectively. This resulted from procedures adopted by the ministry of oil to control decline of oil production and preserve current levels. These efforts were coupled with marketing activities which resulted in the execution of production sharing agreements and other memoranda of understanding with oil companies to broaden exploration in Yemen. Production of crude oil is expected to reach 139 (m/b) during 2005, based on a reduced daily production to 381 thousand, which is close to the strategy projection (370 thousand).

The government shares of exports and domestic consumption are expected to range between 80 – 87.9 m/b, whilst oil revenues contribution to the budget are expected to reach \$2.5 billion (based on \$30.3 per barrel). Despite relative growth in domestic consumption of oil derivatives of 4.5% and 6% in 2003 and 2004 respectively, growth of petrol consumption dropped by 6% and 4% respectively. Consumption of kerosene, (Turban) and gas oil (Mazot) was similarly reduced.

On the other hand, consumption of diesel continued to grow over the two years at 11% per annum. Consumption increased from approximately 14 m/b in 2002 to 15.6 and 17.3 m/b during 2003 and 2004 respectively. This increase is mainly attributed to government's subsidy on diesel, which has compelled the government to take rapid and strict measures to combat outbound smuggling of diesel, in addition to implementing a number of administrative, economic and financial reforms aimed at a gradual increase of oil derivative prices over the next two years

Kerosene consumption has steadily dropped as a direct result of switching to household gas cylinders especially for cooking. Gas consumption continued to rise from 588

thousand tons in 2002 to over 674 thousand tons in 2003, of which 88% represent household consumption.

Although the oil sector plays a vital role in the national economy, the sector provides limited employment opportunities, especially to the poor. In 2004, the sector's workforce was estimated at 17,000 employees. The sector relies upon highly skilled and trained individuals, in addition to foreign expertise. Also, the sector enjoys a number of privileges and exemptions that reduces its dependence upon the local market for its provisions of goods and services.

In addition to crude oil, natural gas represents a very promising sector. Current production of gas stands at about 2.8 billion cubic feet per day; only 5% of which is utilised, whilst the rest is re-injected. Gas reserves are estimated at around 16 trillion cubic feet. Although a gas related agreement was executed in 1997 and renewed in 2002 for a further four years, production and exporting of gas have so far not been realized. The delay in implementation is supposedly attributed to saturation of international markets and unavailability of new export markets.

Other minerals, construction and manufacturing raw materials also form part of natural resources that can contribute to economic growth. In 2004, the ministry of industry & commerce, and the ministry of oil and mineral wealth submitted draft bills to develop the organisational, institutional and technical structure of the authority of geological survey and mineral wealth. They also included a proposal for establishing a 'mixed' mining company, and a marketing plan for promotion of minerals, industrial and construction materials, together with investment incentives for the sector. The ministry of oil and mineral wealth conducted a number of surveys and studies during 2003 and 2004, which included a survey of stone mines for construction in 2003, a detailed study on sand and soil in Hadhramout and Dammar in 2004. Promotion of investment opportunities was also undertaken via a number of exhibitions, including one on industrial and construction minerals and stones, in addition to an exhibition of metallic minerals and stones.

The non oil production sectors include fishing and manufacturing, which in addition to tourism represent the major sectors to achieve sustainable economic growth, as well as to diversify sources of income and create employment opportunities to reduce poverty.

Average growth of the manufacturing sector recorded a drop from 6% in 2001-2002 down to 4.3% in 2003-2004 with 1.9 percentage points below target. This was associated by a constant contribution to GDP during the two periods (10.2% compared to 10.4%), which indicate that the PRS targets were not met and that the sector's potential was not utilised to enact a change in the structure of the national economy, create job opportunities and reduce poverty. The manufacturing workforce in 2004 was estimated at 155 thousand people.

In 2003 the cabinet issued a decree in respect of drafting legal frameworks to implement and regulate the industrial zones, with comprehensive plans to promote the sector, in addition to updating the feasibility studies concerning the three zones. But, in order to

develop the manufacturing sector, significant efforts are required. Most important of which is improving the investment climate. Current efforts and financial incentives (customs & tax exemptions) have not yet achieved their investment goals. The sector also suffers from weak infrastructure, bureaucracy of government authorities, reliance upon imports, conservative family businesses and undeveloped banking facilities. Small manufacturing enterprises form 95% of the sector and face great difficulties in obtaining financing.

The government aims at strengthening forward and backward linkages between the different industries and with other sectors through appropriate customs and taxation policies, increasing the added value, and enhancing the role of the banking sector and its related investment activities. The government is also adopting various measures to encourage small enterprises and high employment based manufacturing, due to their suitability to the national economy and their role in reducing poverty.

Despite the rise in production and exports of fisheries, the fishing sector hardly constitutes 1% of GDP (0.6-0.8%), with declining growth rates during 2001-2003 (35% in 2001, 15.5% in 2002, 5.8% in 2003 and is estimated at 9.5% in 2004). It is estimated that conventional fishing constitutes about 90% of total production. Therefore, the sector requires significant support to utilise its potential that stems from 2,200 km of coastal lines that would provide great employment opportunities to the poor in coastal areas. Despite this great potential, the sector merely employs about 60 thousand. For these reasons, the government is currently reviewing all the laws, regulations and procedures that relate to this promising sector. In addition, it is working on reforming the sector and involving the private sector in enhancing fishing activities, trading and fish processing, enhancing resource management and protecting reserves through delegating responsibilities to local authorities.

Tourism related services witnessed some growth over the past two years. Hotels and restaurants achieved an average share of 0.9% of real GDP, as opposed to 0.8% in 2001-2002. The number of tourists recorded a sharp increase of 58% during 2003 and reached 154,000, of whom 60% from Arab and mainly GCC countries. This percentage continued to rise and is estimated at 77.3% during 2004. This is attributed to improved infrastructure services, implementation of security plans, promotion of tourism and investment, in addition to simplified immigration procedures at entry ports. It should also be noted that the rigid entry procedures adopted by some countries following September 11 encouraged Arab tourists to turn towards Arab destinations. Returns from tourism during 2003 amounted to 139 million dollars, an increase of 31% over 2002. The number of people employed by tourism also raised from 55 thousand in 2000 to 61 thousand in 2003. Tourism is considered to be a very promising sector in Yemen due to its ability to affect economic growth, provide significant employment opportunities and reduce poverty. Finally, tourism requires long-term and ambitious vision to achieve its potential and to play its anticipated role.

The contribution of the services sector during 2003-2004 averaged 31.4% of GDP, with an average growth rate of 5.5%. Personal and community services are expected to rise to

11.7% during 2004, whilst shares of other services are expected to remain relatively stable. On the other hand, real estate and construction services are expected to achieve negative growth of 2.3%.

The service sector accommodates a large workforce estimated in 2004 at around one million, constituting 23.5% of the total workforce. Hence, supporting the growth of this sector shall provide significant new opportunities and overall development of the economy.

The government acknowledges that accelerating economic growth is an economic and social necessity, and that it is under pressing obligations to implement any measures necessary to enhance the investment climate in order to raise comparative and competitive advantages. The government will not merely rely on the financial and other incentives provided by the investment law, because such incentives failed to attract the required investments. Development of infrastructure and governmental services, together with reducing bureaucracy will provide a better climate for the development and growth of the non-oil sectors. Therefore, the government aims at embracing economic and investment policies to support potential and promising sectors, such as fishing and tourism, in addition to producing natural gas for domestic consumption and exploring international export markets.

The government also continues to explore new strategic opportunities for projects in the fields of natural gas, minerals, fertilizers, manufacturing and transport, in addition to completing strategic coastal, mountain and desert roads.

Obstacles to Growth

The Yemeni economy is one of the most tenuous and vulnerable economies to shocks and external factors. The events experienced during 2001-2004 had a tangible impact upon the economy and related forecasts. Nevertheless, despite their importance, such factors may not always be blamed, and other internal factors hampering growth should also be addressed.

Failure of the promising non-oil sectors to achieve their role is attributed to their weak infrastructure and inappropriateness of the environment in which they operate. The administrative, economic and financial reforms have not made tangible enhancement to the production and service sectors, because they focussed upon stabilization of the financial and monetary aspects. The structural reforms were slow and hence negatively impacted improvement of the investment climate.

It should be noted that the economic, financial and administrative reform program faces serious challenges that call for serious and strict measures to be taken. This is apparent from the weak administration (privatisation), non clarity of vision (exporting natural gas), weak capacity of implementing projects (civil service) that hampers execution, and lack of focus and prioritisation (free zone/ accession to WTO).

These may be attributed to the time consuming nature of such reforms and the relatively poor driving force opposed by resistance to reform, in addition to existing obstacles that hamper implementation of other reforms. Nevertheless, the government endeavours to overcome such challenges and pursue the reform programs through integrated strategies and efforts, and enhancing the political will in this respect.

Consumption, Saving and Investment

In order to achieve reducing poverty, it is necessary to achieve high economic growth and general macro economic balance; in addition to adopting economic policies to enhance investment and mobilize resources. Average domestic consumption during 2003-2004 stood at 76.8% of total GDP, 3.3 percentage points below the average of the preceding two years, and 8.8 percentage points below target.

Private consumption uniformly declined from 65.7% in 2001 to 60.1% in 2004. On the other hand, average of total consumption stood relatively unchanged over the two periods, despite an increase to 16.1% in 2003 due to parliament elections and related expenditure. The steady decline in consumption denotes weak purchasing powers resulting from low real incomes in general and low wages and salaries in particular. This implies that food needs absorb the largest portion of incomes, which impedes poverty reduction efforts.

Table (1.3): Components of GDP According to Spending

Item	Actual		Achievement		Target	
	2001	2002	2003	2004	2003	2004
Total final Consumption	80.2	80.0	79.5	74.1	84.9	86.3
- Private	65.7	64.4	63.4	60.1	67.2	68.6
- Public	14.5	15.6	16.1	14.1	17.7	17.7
Total Investment	18.9	20.8	22.1	23.0	24.6	25.8
Domestic Consumption	99.2	100.8	101.6	97.2	109.5	112.1
Balance Of Goods & Services	0.8	0.8-	1.6-	2.8	9.5-	12.1-
Exports of Goods & Services	36.6	38.4	38.1	39.0	32.1	28.6
Imports of Goods & Services	35.8	39.1	39.7	36.2	41.6-	40.6-
Net Income Of Production Factors	6.5-	7.3-	8.5-	9.0-	5.4-	3.8-

The decline of total consumption resulted in raising average gross investment share to 22.5% of GDP for 2003-2004 compared to 19.9% for the preceding two years. Nevertheless total investments remained below targets by an average of 2.7 percentage points. Government investments formed the major part and represented 62.4% of GDP as an average for 2003-2004, and are expected to remain at this level during 2005. These figures do not vary significantly from previous years and hence raise concerns regarding the inability to raise investments to the required levels, and hence reduce poverty. This is

attributed to the economy and overall situation in Yemen. The investment climate seems unable to attract enough private domestic and foreign investments, in light of the distorted image of security in Yemen.

Aden Free Zone suffers from poor investment efforts and lack of a long-term vision to utilise its strategic geographic location. This further jeopardises investment opportunities. The third reason is low incomes which impact saving and investment. Hence, the government plans to enhance investment through a well thought plan based on the measures listed in the Policy Matrix.

Table (1.4): Indicators of Business Environment

Indicators	2002	2003	2004	Region's Average for 2004
1- Starting Up Activities				
- Number Of Procedures	-	13	12	10
- Number Of Working Days Required	95	96	63	39
- Cost Of Accomplishing Procedures (% of per capita income)	317	264	269	51
- Minimum Capital Required (% of per capita income)	2803	1717	1561	856
2- Registration Of Ownership				
- Number of Procedures	-	-	6	6
- Number Of Working Days Required	-	-	21	54
- Cost Of Registration (% of per capita assets)	-	-	3.9	6.8
3- Executing Contracts				
Number Of Procedures	-	27	37	38
Number Of Working Days Required	-	240	360	437
Cost (% of per capita income)	-	0.5	10.5	17.9
4- Liquidation Of Business				
Liquidation Time (years)	-	2.4	3	3.9
Liquidation Cost (% of Assets)	-	4	8	13

Investment Climate & Private Sector

The PRS aims at creating an attractive investment environment to local and international investments including that of Yemeni expatriates. The PRS also aims to enhance the involvement of the private sector, and strengthening its role in non-oil sectors to raise and sustain economic growth.

Investment and Business Climate

The reform program as well as other measures undertaken by the government contributed in enhancing investment opportunities in Yemen. The number of registered investment projects has been increasing since 2000. This was substantiated by a relative rise of investment indicators as published in international publications. During 2003-2004, the Investment Authority carried out a number of legislative and legal procedures to enhance the environment, of which is enactment of the Executive Bylaws of the Investment Law No (22) for 2002, the cabinet decree No (1/2003) in respect of providing more power to the Authority's branches in Ibb, Al Mahara and Hadhramout, in addition to simplifying registration procedures. As a result, registration now requires eight days in the main office and nine days in its branches. Also, obtaining commercial registration has been reduced to five days.

International reports also indicated relative progress in Yemen's CPIA prepared by the World Bank. The overall average stood at 3.6 points out of 6 for 2003 compared to 3.2 points in 2002. The overall assessment of 2003 exceeds the average of listed countries (3.5 points). Whilst macro economic indicators recorded a relative increase, public sector management, governance and structural policies recorded some decline. The 2004 overall assessment is expected to decline by 0.3 points, which emphasises the importance of continued economic, financial and administrative reforms.

The monthly International Country Risk guide for 2003 published by the Political Risk Services indicated that Yemen falls within moderate risk countries, with a recorded increase of one point to 67 points during the period between December 2002 and December 2003. This maintained Yemen at the 81 rank. The annual World Bank report on Doing Business also recorded a relative increase in 2004, particularly in comparison to the region's average. Indicators of economic freedom published by the Freedom House also recorded a rise to 3.7 in 2004.

Overall, the delay of implementing reforms and governance measures had a negative impact on the aspired progress of the investment climate. The role of the Investment Authority as the responsible agency for investment is still limited to following upon the registered investment projects, collecting statistics and supervising the extent of investors' compliance with the executed agreements. Also, the number of government agencies involved in investment activities and issuance of project licences also cause serious deficiency in the operation of the investment climate (General Investment Authority, Free Zones Authority, Tourism Promotion Council and General Authority for Island Development). It is necessary to reconsider the responsibilities and jurisdictions of the different bodies involved, with a view to simplify procedures and reduce time and enhance the role of the local authorities.

The investment climate suffers from a number of geographic and sector-based discrepancies. The industrial and service sectors occupy over 56% of licensed activities which are concentrated in limited areas. Their contribution to economic growth and employment opportunities is limited. Despite the relative improvement in the implementation of investment projects, such rates are still low.

The government is currently working with the private sector on developing a strategic plan to enhance the business and investment environments. It aims at providing more incentives than those provided by the Investment Law, accelerating Yemen's accession to the WTO, executing free trade agreements with the West, and encouraging privatisation, particularly in the fields of telecommunication and infrastructure.

In 2004, the government launched preparation efforts to convene a workshop that involves ministries and other government officials, business organisations and the private sector. The workshop is expected to be held during February 2005. It is planned to explore the challenges facing investment and to draw specific recommendations and scheduled procedures to enhance the business and investment climate in Yemen.

Private Sector Activities

The private sector's contribution to total investments during 1996-2000 averaged 42%. It is expected to average 39.7% during the period 2001-2004, compared to a target of 58% for the period 2001-2005. Statistics indicate a retreat in private sector investment compared to the levels achieved in the years preceding the implementation of the reform programs, because the business and investment climates have not developed sufficiently. About 338 investment projects were registered in 2003 and 362 projects in 2004 at a cost of 106 and 114 billion Rials respectively. The most important of such projects were the building of an oil refinery in Hadhramout, two cement factories in Lahj and Hadhramout, the Saudi German Hospital in Sana'a, and other factories and mills.

Law No (28) for 2003 on the Federation of Chambers of Commerce & Industry was enacted, and the administrative board of the federation was formed following long suspension of its activities. A Yemeni Businessmen and investors Council was also established. Also, a number of small businesses in the governorates of Taiz and Aden established professional associations to look after their interests.

Implementation of the Privatisation Program

The privatisation program aims at privatising 61 public enterprises by end of 2005. During 2003, 8 entities were privatised; 7 of which were auctioned and one was assigned to the Yemeni Economic Corporation to manage the government's share, as a first step towards reaching consensus with shareholders on a privatisation mechanism. By the end of 2003, 37 entities were fully privatised; 60% to the private sector, 40% to the Yemeni Economic Corporation and the Ministry of Defence. Only five entities continued production, whilst the majority were transformed to exercise other economic activities. Employees' salaries continued to form a liability on the treasury. Privatisation in 2004 declined, where out of 5 targeted public units, only Awsan Biscuits Corporation and Automatic Bakery in Mansoura was sold to a local investor. The Salt Company in Salif and Paint Company in Aden, were transformed to joint stock companies and shares were transferred to their employees. The Mareb Poultry Company and the General Potato Seeds Company in Dammar are presently being considered for optimum privatisation options.

In 2004, the Parliament issued a decision to merge public and mixed banks into a Bank of Development. This decision faces a number of challenges due to the nature of their activities, the objectives of their creation and financial liabilities. Other obstacles stand in the way of accomplishing the privatisation programs. Most notably, the liquidation committee takes 4-6 months and sometimes over a year to render decisions, lack of interested buyers, the geographically scattered nature of the assets and ownership related disputes.

The Effect of Economic Development on Poverty

The achieved economic growth fails to reduce poverty in presence of a 3.5% population growth. In order to reduce poverty, create job opportunities and reduce unemployment, economic growth is required to meet targets through supporting non-oil sectors and continuing to lower population growth.

In the absence of a recent household budget survey that will be carried out in 2005, it is difficult to have comparable and accurate poverty indicators. The World Bank estimated poverty levels through two mechanisms which reach similar results.¹⁹ The estimates indicated a slight drop in poverty during 1998-2003, from 41.8% to 40.1%. Although this trend is considered to be quite slow, reasonable improvement has taken place in minimising poverty gaps by 3%, indicating a drop of the distance to the poverty line and hence reducing inequality amongst the poor, in addition to reducing poverty severity by 3.5%.

The data also illustrated a tangible reduction in poverty levels amongst urban areas to 30.8% in 1998 versus

Item	Urban	Rural	Total	Percentage Change 1998-2003		
				Urban	Rural	Total
Food poverty	8.4	21.3	18.3	-16.0	7.0	3.3
Poverty Gap	0.4	1.0	0.9	-80.9	-80.7	-80.0
Severity of Poverty	0.1	0.1	0.1	-85.7	-95.0	-94.1
Absolute Poverty	21.1	45.7	40.1	-31.5	1.6	-4.1
Poverty Gap	1.1	2.7	2.3	-86.6	-81.6	-82.6
Severity of Poverty	0.1	0.3	0.2	-96.9	-95.5	-96.6

21-28% in 2003. On the other hand, poverty levels in rural areas did not change much from 45% to between 44% and 46% at best. It also indicated that the most poor benefited un-proportionally in both urban and rural areas. It shows that those who have been far from the poverty line moved closer to it (poverty severity indicator). The government

¹⁹ The first relied on a consumption function based on the 1998 household budget survey and applied to the 2003 health survey. Hence, personal spending was used to project poverty estimates. The second estimated poverty through a simulation model based on the 1998 household budget survey and assuming that personal spending increases at the rate of economic growth.

plans to provide more resources over the next few years for the social safety net to reduce poverty.

Labour & Unemployment

The economic growth, imbalances in the GDP structure and restrictive financial and monetary policies reflected upon the labour market. The number of labourers grew from 3,942 thousand in 2002 to 4,051 thousand in 2003 at 2.7% growth rate, and to 4,134 thousand in 2004 at around 2.1% growth rate. Both rates fall below the workforce growth estimated at 4% per annum. Moreover, they remain low considering the size of population and the low labour participation in economic development, particularly with regards to women estimated at 22.7%, which is the lowest amongst developing countries. The large growth in the workforce is not proportional to GDP growth, which reduces employment opportunities. It is estimated that unemployment has risen from 13.2% in 2002 to 14.8% in 2004.²⁰

The Yemeni labour market suffers from significant segmentation and closure, hence leading to disparity in wages amongst the different economic sectors and between males and females as well as between locals and expatriates. This situation exists despite the ambitious plans that accompanied implementation of the reform program. In 2003, the government workforce represented 10.9% of the total, showing that reducing public workforce will cause a rise in the non-formal sector that constitutes 60% of the total workforce. The non-formal sector controls agriculture and construction, and is the most important component of private sector activities that favours employing male labourers.

Providing employment opportunities remains as one of the major challenges facing the government. The industrial sector may not in the near future substitute the agriculture sector which accommodates about 52% of the total workforce and 89% of female workers. In order to raise employment opportunities, it is necessary to enhance the investment climate, develop the production sectors and support the economy through financial and monetary policies that accelerate growth. Economic policies should not be biased to local production at the expense of exports, or to capital-intensive projects at the expense of labour-intensive; in addition to directing skilled labour to neighbouring countries.

²⁰ Based on human resource balance approach.

Educational and Strategic Context²¹

Education sector – schools

The formal education system consists of nine years of compulsory basic education; three years of secondary education and two to six years of tertiary education. Non-formal education in technical and vocational centers is available for two, three and five years after basic education.

The education system expanded rapidly during the past three decades. Enrollments in basic education increased from less than 250,000 in 1970 to 3.9 million in 2004. Enrollments in secondary education reached 589,000 — almost 43 per cent of the age cohort. Despite the rapid expansion, the gross enrollment ratio (GER)²² for basic education, at 68.5 per cent, is among the lowest in the world. The expansion in education has barely kept up with the average annual growth rate of the school age cohort (3.6 per cent). Without reform, up to 3.7 million children aged 6 to 14 will lack a place in school in 2020. The "Yemen's Strategic Vision - 2025" strategy and the basic education strategy envisage reforms on a scale that will raise the enrolment rates in basic education to virtually 100 per cent by 2025.

The expansion in education has been uneven with large gender and urban/rural gaps. Yemen has one of the largest gender gaps in the world: about 38.7 per cent of students in basic education are girls, and in rural areas, only around 28 per cent of school age girls attend school. There are also large disparities between urban and rural areas. In rural areas where 70 per cent of the population

²¹ This section on the 'Education Sector Context' is very largely taken from a World Bank Report "Republic of Yemen: Higher Education Rationalization Study", produced in 2001, with the data updated where possible. Unless otherwise stated, figures in this Appendix are taken from that document, updated as appropriate.

²² The Gross Enrolment Ratio (GER) is the number of those enrolled in education as a proportion of the total relevant age group.

resides, the net enrollment rate for basic education is 57 per cent, compared to 85 per cent in urban areas. Given the low enrollment rates in basic education, the government's strategy for education gives highest priority to the expansion of basic education, especially targeting girls and rural areas.

Education sector - higher education

Numbers

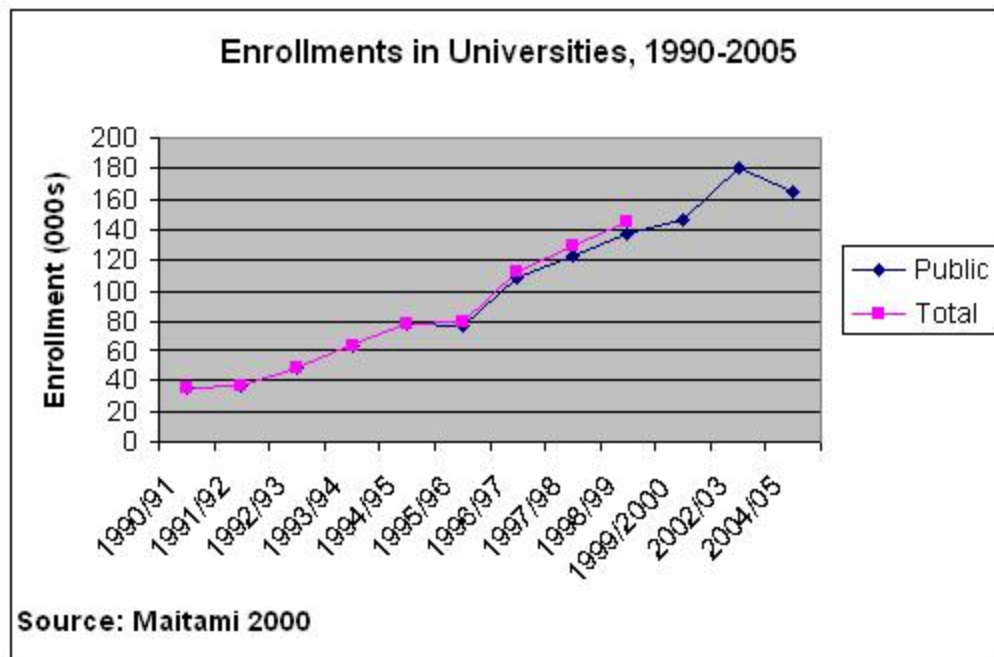
Higher education in Yemen consists of formal university education (4-6 years), technical training (2-3 years) and vocational training (2-3 years), in addition to the community colleges (3 years). While formal university education focuses on traditional academic fields, technical and vocational training provide more practical skills that are needed in the labour market. Teacher Institutes under the auspices of the Ministry of Education which trained future school teachers are now being converted to in-service training institutes. As for the community colleges, their objective is to offer lower cost, more practical and short term training to meet the market demand for middle level technical cadre in the various fields.

Formal public higher education in Yemen began with the establishment of the universities of Sana'a and Aden in 1970. In the 1990s, there was rapid expansion of higher education: two new public universities were established in 1994 and three in 1996. Colleges within public universities tripled in that period from 21 to 62, and there are now 84 colleges. Sana'a University also expanded their Education Colleges in five Governorates. Two community colleges were established in 2000, one in 2001 and one in 2004. In addition, there are now 59 technical and vocational institutes/centres. Until recently there were 27 teacher training institutes run by the Ministry of Education, but these no longer offer initial teacher training programs except in a very limited number of cases, and are devoted substantially to in-service training.

Private universities also expanded rapidly, beginning in 1993 with the establishment of the National College (later the University of Science). In 1994 alone, four new private universities were established, and by 1996, there were eight private universities with 60 colleges. Now there are nine.

As shown in Chart 8 below, the number of students enrolled in public universities increased more than five times from 35,000 in 1990-91 to 147,000 in 1999-2000, and 181,000 in 2002-03. Thereafter numbers stabilized and have now fallen back to 164,500 in 2004-05.

Chart 8

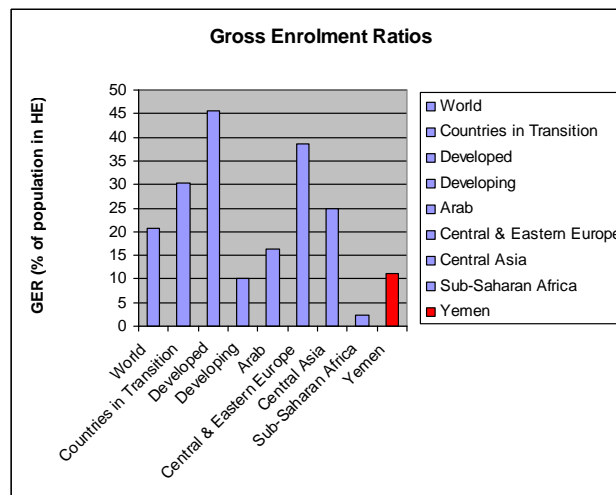


Female enrollments increased at an even faster pace, from 5,700 in 1990-91 to nearly 45,000 in 2004-05, increasing the share of women in total enrollment from 16 per cent in 1990-91 to 27 per cent in 2004-05. Enrollment in private universities also increased rapidly and currently constitutes about 10 per cent of total university enrollment. The number of students enrolled in technical institutes

more than doubled from 5,300 to 12,000 between 1990 and 2003, and there are in addition over 2,000 students enrolled in community colleges.

Higher education in Yemen expanded primarily to meet social demand, and to a lesser extent to meet the country's need for highly skilled personnel in various fields. With the expansion of basic and secondary education, there was increasing social demand for higher education. The Gross Enrollment Ratio (GER - the proportion of the 19-23 age group attending higher education) now stands at 13 per cent. This is lower than most Arab countries, but in line with those defined by UNESCO as 'Developing'.

Chart 9



UNESCO Global Monitoring Report 2005 (Rates are for 1999)

Access

Access to higher education has been uneven and raises serious equity concerns. There are no data about differences in economic status in the take-up of higher education in Yemen, and that is something about which further studies are needed. However, it is known that there are great gender and urban/rural disparities. In higher education, the GER for men is 19.7 per cent while for

women it is 6.8 per cent – a ratio of 2.9:1.²³ In the population at large, while two per cent of men have attended university, only 0.6 per cent of women have university education. The contrast is starker between urban and rural areas. While 3.8 per cent of the urban population have university education, only 0.5 per cent of the rural population do so. In fact, only 2.0 per cent of women and 2.8 per cent of the rural population ages 10 and above have reached secondary level.

²³ Gender disparities occur right through the education system. According to the National Strategy for the Development of Basic Education (page 44), the ratio of boys to girls enrolled in basic education is 1.64:1, which suggests greater inequality at higher levels of education.

Strategic environment

There are four main strategies relevant to the development of higher education in Yemen, which are summarized below.

The Poverty Reduction Strategy (PRS).

The Poverty Reduction Strategy aims to tackle the causes and the factors that determine the probability of falling into poverty in the Republic of Yemen. The time-frame of the strategy is 2003- 2005, and for the years 2006-2010 the poverty strategy will be consolidated in the next five-year plan.

The strategy has identified three sets of factors which lead to poverty:

- Decline in income and its association with the nature and extent of economic growth
- High population growth and the poor development of human resources and infrastructure
- Weak levels of social protection.

The PRS recognises that education and training are key drivers for economic development and social progress. Furthermore, basic education is considered essential not only for rural development and the agricultural sector, but is also a fundamental input in increasing productivity and industrialization.

Specific goals for basic, technical & vocational, and higher education:

- To raise the enrollment rate in basic education to 69.3% in 2005
- To reduce the gender and regional gaps and disparities
- To raise enrollment in vocational training and technical education
- To restructure higher education to keep pace with advances in science and technology.

The Main policies:

- To promote the enrollment of girls in education, especially in rural areas
- To expand basic education schooling in the early grades
- To increase enrollment in the vocational and technical institutions through the expansion of the technical institutes and vocational centers
- To modernize the existing institutes and centers
- To set up major technical institutes and vocational centers near to the main production areas
- To review university programs and curricula to keep pace with knowledge advancement and the specific needs of the labor market
- To reform the scholarship scheme, and limit the selection of candidates to scientific and technical fields that are not taught in Yemeni universities.

The Yemeni Government has adopted the Millennium Development Goals (MDG) prepared by the United Nations and other international organizations that aim to eradicate poverty and its symptoms by the year 2015. These closely bear on the PRS and include:

- To provide of the chance for all to enroll in basic education
- To empower women and remove the social gender gaps in basic education by 2005
- To enable women and remove the social gender gap in secondary education by 2005.

Strategic Development Plan of The Ministry of Technical Education and Vocational Training.

The enrolment of students in institutions run by the Ministry of Technical and Vocational Education has been increasing during the past few years. However, the overall enrollment at the technical institutes and vocational centers are still below the aspirations of the Government of Yemen.

There are several constrains on the growth of the system, such as the small number of Technical and Vocational institutions and obsolete tools and equipments as well as the need for staff development, new buildings, new teaching materials, effective management and capacity building.

At present only 0.4% of the total student population of the country are enrolled in the Technical and Vocational institutions. The Ministry of Technical Education and Vocational Training's Strategic Development Plan suggests accommodating 15% of basic education graduates by the year 2015

National Strategy of the Ministry of Education for the Development of Basic Education 2003-2015

The main objectives of the National Strategy for the Development of Basic Education suggest that by the end of the year 2015 almost 95% of children in the 6 – 14 age group should be enrolled in the basic education system and receive a high quality of education. In this regard, the number of students enrolled by 2015

will reach almost 8 million, and the number of classrooms and teachers required will be 183,000 and 250,000 respectively.

Other strategic objectives for the same period include:

- The increase of girls' enrollment from 46.7% to 90%
- Raising the enrollment rate of pupils from deprived groups to 70% of the relevant age group
- Reducing average dropouts from 8% to less than 1% and the average failure rate from 11.2% to 2%.

It is also expected that the enrollment rate in rural areas will be raised to 93% of the 6-14 year age group. At the same time there will be expansion in pre-school education to improve students' performance in basic education. By the end of 2015, 60% of those admitted to basic education should have received early education.

To ensure the quality of teaching in basic education, the strategy suggests that 90% of the teachers will be university graduates by the year 2015.

These objectives will be achieved through reforming the current basic education system to become more effective and more competent.

The reform will concentrate on the main issues that affect the quality and the quantity of basic education in Yemen, as follows:

- Teaching and guidance
- Curriculum and evaluation
- School administration
- Educational funding
- Decentralization
- Girls' education
- School buildings
- Community participation.

The percentage of expenditure on education currently amounts to 20% of the state general budget and 7% of the Gross Domestic Product (GDP). It is estimated that basic education expenditure consumes around 80% of the general education budget.

Yemen's Strategic Vision 2025.

Yemen's Strategic Vision 2025 lays out ambitious goals and objectives for Yemeni society to aspire to achieve in the coming quarter of a century. These include a number that are relevant to the National Strategy for Higher Education, particularly in the areas of human resource development.

One key element that influences the economic development of Yemen is the high rate of population growth. The strategic vision aims to gradually reduce the present rate of population growth to 2.1% which will lead to 33.6 million inhabitants by the year 2025.

Education represents an essential element in the economic and social development of the country. However, the present illiteracy rate represents one of the main challenges the country has to tackle. Therefore, the strategic vision essentially focuses on combating this phenomenon by means of educational programs which will lead finally to reducing the illiteracy rate of the population to

less than 10% by the year 2025. This is will not be achieved without compulsory basic education, increasing awareness of the importance of education, and limiting dropouts. The vision aims to reach a 95% enrolment rate of girls in basic education by the year 2025.

In face of the high population growth, and the high rate of unemployment in Yemeni society, special attention has to be given to broadening the base of technical education and vocational training. The strategic vision will strive to increase the number of students at the vocational centers to 120,000 students and the capacity of the technical institutes and community colleges to 105,000 students by the year 2025.

Higher education has been given special attention in the strategic vision 2025. Its aim is to ensure that graduates are transformed from job seekers to job generators. Therefore, universities have to be responsive to the needs of society and its social and economic development. Universities have to find means that will lead to increased numbers of students specialized in the applied sciences and encourage the establishment of technology incubators.

Appendix 7

Yemeni public universities, with student numbers, by college – 2004-05

University	Male	Female	Total
Sana'a University	60465	16638	77103
Aden University	14488	7944	22432
Taiz University	15563	9697	25260
Al-Hodeida University	7968	4751	12719
Thamar University	9323	2354	11677
Ibb University	6521	1985	8506
Hadramout University	5310	1525	6835
TOTAL	119638	44894	164532

Republic of Yemen
Aden University

Number of students Enrolled at Aden University during the year 2004-2005

College	Yemeni			Non Yemeni			Grand Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
College of Education-Aden	1626	1812	3438	5	6	11	1631	1818	3449
Administrative Sciences	2007	706	2713	3	1	4	2010	707	2717
College of Law	908	367	1275	1	0	1	909	367	1276
College of Arts	637	492	1129	2	2	4	639	494	1133
College of engineering	2070	664	2734	19	1	20	2089	665	2754
Petroleum and Mineral	449	0	449	0	0	0	449	0	449
Medicine and health sciences	724	773	1497	134	8	142	858	781	1639
College of Agriculture	146	49	195	1	0	1	147	49	196
College of Economics	530	474	1004	1	0	1	531	474	1005
Education (Saber)	1061	923	1984	0	0	0	1061	923	1984
Education(Dalie)	652	129	781	0	0	0	652	129	781
Education(Tor Al Baha)	468	146	614	0	0	0	468	146	614
Education(Shabwa)	740	8	748	0	0	0	740	8	748
Education (Yafie)	297	0	297	0	0	0	297	0	297
Education(Zongubar)	1039	1115	2154	0	0	0	1039	1115	2154
Education(Louder)	311	41	352	0	0	0	311	41	352
Education(Radfan)	612	186	798	0	0	0	612	186	798
Language Institute	45	41	86	0	0	0	45	41	86
TOTAL	14322	7926	22248	166	18	184	14488	7944	22432

Taiz University

Number of students Enrolled at Taiz University during the year 2004-2005

College	Yemeni			Non Yemeni			Grand Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
College of science	1132	1050	2182	9	6	15	1141	1056	2197
Administrative sciences	3802	756	4558	7	7	14	3809	763	4572
College of Education	4024	4269	8293	11	2	13	4035	4271	8306
College of Medicine	65	243	308	11	2	13	76	245	321
College of Arts	1517	1718	3235	5	9	14	1522	1727	3249
Edu.& Arts & Sci. at AL-Tourba	1437	1041	2478	0	0	0	1437	1041	2478
Engineering	277	111	388	2	2	4	279	113	392
College of Law	3258	477	3735	6	4	10	3264	481	3745
TOTAL	15512	9665	25177	51	32	83	15563	9697	25260

Al-Hodeidah University

Number of students Enrolled at Al- Hodeidah University during the year 2004-2005

College	Yemeni			Non Yemeni			Grand Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Education (Hodeidah)	1130	1639	2769	7	0	7	1137	1639	2776
Education (Zabeed)	1541	651	2192	0	0	0	1541	651	2192
Commerce & Economics	1681	611	2292	4	0	4	1685	611	2296
Shariea'a & Law	1300	170	1470	0	0	0	1300	170	1470
College of Arts	471	776	1247	5	1	6	476	777	1253
Marine sciences	187	103	290	6	0	6	193	103	296
Sport Education	286	0	286	0	0	0	286	0	286
Medicine	564	498	1062	10	8	18	574	506	1080
Fine Arts	142	91	233	0	0	0	142	91	233
Computer Science	626	200	826	8	3	11	634	203	837
TOTAL	7928	4739	12667	40	12	52	7968	4751	12719

Thamar University

Number of students Enrolled at Thamar University during the year 2004-2005

College	Yemeni			Non Yemeni			Grand Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Computer & info. Systems	445	35	480	3	1	4	448	36	484
Administrative sciences	596	46	642	2	1	3	598	47	645
Medicien and health sciences	306	86	338	135	23	158	399	109	373
Dentistry	214	69	283	29	19	48	243	88	331
Engineering and Dams	652	11	663	17	1	18	669	12	681
Agriculture & Veterinary	372	33	405	17	2	19	309	35	424
Applied Sciences	366	221	587	0	3	3	366	224	590
College of Arts and Languages	1498	435	1933	7	7	14	1505	442	1947
Education (Thamar)	3111	1119	4230	11	5	16	3122	1124	4246
Education & Science (Rada'a)	1128	204	1332	0	0	0	1128	204	1332
Education (AL Byda)	536	33	569	0	0	0	536	33	596
TOTAL	9224	2292	11516	221	62	283	9323	2354	11677

Ibb University

Number of students Enrolled at Ibb University during the year 2004-2005

College	Yemeni			Non Yemeni			Grand Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Education (Ibb)	1630	885	2515	1	0	1	1631	885	2516
Education (Al Naderah)	1535	154	1688	1	0	1	1536	154	1689
Science	739	359	1098	5	5	10	744	364	1108
Atrs	871	321	1192	6	2	8	877	323	1200
Commerce & Administrative sci.	1416	88	1504	1	0	1	1417	88	1505
Agriculture & vetrinary	148	30	178	0	2	2	148	32	180
Dentistry	150	139	289	18	0	18	168	139	307
TOTAL	6489	1976	8465	32	9	41	6521	1985	8506

Hadramout University

Number of students Enrolled at Hadramout University during the year 2004-2005

College	Yemeni			Non Yemeni			Grand Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Medicien and Health sience	218	168	386	18	9	27	236	177	413
Engeinering and Petrol	1109	136	1245	31	11	42	1140	147	1287
Enviro. Sci.& Marine Biology	346	39	385	2	0	2	348	39	387
Administrative sciences	899	201	1100	8	2	10	907	203	1110
Applied Sciences	342	11	343	0	0	0	342	11	353
Education (AL Mukalla)	1175	271	1446	29	19	48	1204	290	1494
Education (Sayoun)	719	91	810	0	5	5	719	96	815
Education for Girls	0	419	419	0	12	12	0	431	431
Education (Mahara)	335	99	434	16	20	36	351	119	470
Education(Socatra)	63	12	75	0	0	0	63	12	75
TOTAL	5206	1447	6653	104	78	182	5310	1525	6835

Republic of Yemen

Sana'a University

Number of students Enrolled at San'aa University during the year 2004-2005

College	Yemeni			Non Yemeni			Grand Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Medicine and health sciences	982	798	1780	156	76	232	1138	874	2012
Dentistry	133	313	446	14	15	29	147	328	475
Pharmacology	310	179	489	43	53	96	303	232	535
Science	1115	857	1972	31	25	56	1146	882	2028
Agriculture	64	116	180	9	6	15	651	122	773
Engineering	2092	180	2272	44	16	60	2136	196	2332
Commerce & Economics	10313	1304	11617	35	15	50	10348	1319	11667
Commerce(Khmer)	4989	157	5146	5	2	7	4994	159	5153
Shariea'a & Law	5721	311	6032	11	2	13	5732	313	6045
Arts	3442	3942	7384	27	37	64	3469	3979	7448
media	621	100	721	1	3	4	623	103	726
Languages	761	830	1591	5	14	19	766	844	1610
Education(Sana'a)	3098	4260	7358	10	21	31	3108	4281	7389
Education (Amran)	6019	597	6616	0	0	0	6019	597	6616
Education(Hajjah)	3769	629	4398	0	0	0	3769	629	4398
Education(Arhab)	4610	919	5529	0	0	0	4610	919	5529
Education(Mahweat)	2176	209	2385	0	0	0	2176	209	2385
Education(Abis)	856	267	1123	0	0	0	856	267	1123
Edu. & Arts&Sci.(Khawlan)	3242	120	3362	4	1	5	3246	121	3367
Edu.&Arts&Sci. (Sa'dah)	5227	260	5487	1	4	5	5228	264	5492
TOTAL	59540	16348	75888	396	290	686	60465	16638	77103

Appendix 8: – List of private universities, with student numbers, by faculty

University	Sci.& Technology Univ.			Al_Yemenia Univ.			AL_Watania Univ.			Applied & Social Sci. Univ.			Queen Arwa Univ.			Saba Univ.			AL_Ahquaf Univ.			Al_Eman Univ.			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	
Education	81	460	541	0	0	0	25	40	65	0	0	0	0	0	0	0	0	0	0	93	93	0	0	0	106	5	
Arts	456	286	742	0	0	0	497	134	631	129	116	245	24	46	70	0	0	0	0	0	0	0	0	0	1106	5	
Commerce & Adm.Sci.&Economics	624	196	820	442	58	500	260	21	281	581	185	766	272	66	338	286	23	309	239	0	239	0	0	0	2704	5	
Beautiful Arts	0	0	0	0	0	0	0	0	0	0	0	0	1	4	5	0	0	0	0	0	0	0	0	0	1		
Shariea'a & Law	181	17	198	579	50	629	348	13	361	135	54	189	49	5	54	9	2	11	205	0	205	773	61	834	2279	2	
Arts,Language & Edu.	0	0	0	342	163	505	0	0	0	0	0	0	0	0	0	61	45	106	0	0	0	0	0	0	403	2	
Media	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	109	51	160	109		
Al_Eman	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2241	807	3048	2241	8	
Humanitarian Sci.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	75	9	84	75		
Sub Total	1342	959	2301	1363	271	1634	1130	208	1338	845	355	1200	346	121	467	356	70	426	444	93	537	3198	928	4126	9024	3	
Medicien	739	395	1134	0	0	0	225	47	272	181	85	266	77	26	103	0	0	0	0	0	0	0	0	0	1222	5	
Dentistry	0	0	0	0	0	0	0	0	0	155	55	210	0	0	0	0	0	0	0	0	0	0	0	0	0	155	
Pharmacology	0	0	0	0	0	0	0	0	0	74	6	80	0	0	0	0	0	0	0	0	0	0	0	0	0	74	
Labortories	0	0	0	0	0	0	0	0	0	22	13	35	0	0	0	0	0	0	0	0	0	0	0	0	0	22	
Sci. & Engineering	720	96	816	242	62	304	135	27	162	289	17	306	44	10	54	74	3	77	102	0	102	0	0	0	1606	2	
Computer Sci.	0	0	0	0	0	0	0	0	0	0	0	0	179	4	183	0	0	0	0	0	0	0	0	0	179		
Computer Sci. & Info. System	0	0	0	0	0	0	0	0	0	0	0	0	67	17	84	426	43	469	0	0	0	0	0	0	493		
Sub Total	1459	491	1950	242	62	304	360	74	434	721	176	897	367	57	424	500	46	546	102	0	102	0	0	0	3751	9	
TOTAL	2801	1450	4251	1605	333	1938	1490	282	1772	1566	531	2097	713	178	891	856	116	972	546	93	639	3198	928	4126	12775	3	

Appendix 9

College of Engineering at Sana'a University

The College of Engineering was established in 1983 with the establishment of the Department of Civil Engineering. Then the Department of Electrical Engineering was established in 1984. In 1986 the Architectural Department was established and finally, in 1993 the Mechanical Engineering Department was established

Buildings

The four departments are now using the facilities of one department (Civil Engineering Department). However, there are drawings for the second phase of the college. But, unfortunately it has not been implemented. All the available buildings were built in 1983 and contain fourteen class rooms. Since 1983 there has been no investment in new buildings, except two large hall were built two years ago for the College of Engineering and the College of Education .

Laboratories

With the establishment of three more departments more labs are needed as well as other facilities. The existent labs are in very bad shapes. All labs need to be maintained and up graded. For example, all the surveying instruments are very old and only one new Total Station is available for all students. All machines need to be calibrated. One very amazing thing is that there are machines and instruments had not been used since they were brought to the college twenty one years ago. The college has a five years future master plan. Each department has its own plan for the coming five years. What ever the department need it is mentioned in the plan. One easily can conclude that the existent labs must be maintained and up graded and more new laboratories are required to accommodate more students coming to the college. For example, Mechanical Engineering Department has only two inadequate basic labs now. For the department to run sufficiently it requires more labs to bring it up to the international standards.

College Library

There are about six thousand and two hundred books in the library of the college. The books are in both Arabic and English and they are in different subjects. The current book student ratio is 2.5. I don't know what it is else where and what is the acceptable ratio.

Journals

For the time being, the college has no subscription to any scientific journal. This would make it very difficult for the postgraduate students and that is why students do not go for postgraduate studies in the college and prefer to go abroad. The college has issued an engineering journal and it was only published once and that was about two years ago.

Computers

Each department has one PC and a printer for administration proposes. For Civil Engineering Department there are about 7 PC for staff and students and none of them is connected to inter net. The computer center in the Electrical Department has about 85 PC and one PLC. In the center there is only one inter net line and one ISDN line for both the staff and the students. The number of PC is not adequate for the students in the college.

The college and the students

The college is conducting entering exams. For students having 80% or more high school score they are allowed to register themselves in the college. In recent years more students are coming to the college and because of the limiting facilities only small number are getting accepted. For example, year 2004-2005 the registered students were about 1300 and the number accepted was only about 345 for all four departments. For year 2003-2004 the registered students were about 1700 and the number accepted was only about 450.

Sources of income

- 1) College budget from Sana'a University
- 2) College share from engineering consultancy and materials testing fees about 30%
- 3) College share from students registration fees 60%
- 4) All the money collected from students with parallel registration has to go to first to an account under the control of the administration of the students affair section. This is also happened for all university colleges. The money raised then distributed between all the colleges according to their needs and this will have a lot of papers work.

Ministry of Higher Education and Scientific Research
National Strategy For Higher Education In Yemen Republic
Sana'a University - College of Engineering
April / 2005

The Lab in different department in the college of Engineering

Lab			Department
Surveying	Soil Mechanics	Construction Material	Civil Eng.
Hydraulic	Sewage Eng.	Asfalt	
Comunication	Electronics	Basic Electracity	Elect. Eng.
Control	High Voltage	Power & Mechanics	
Fluied Mechanics & Heat Transfer		Mechanical Workshop	Mech. Eng.

Ministry of Higher Education and Scientific Research
National Strategy For Higher Education In Yemen Republic
Sana'a University - College of Engineering
April / 2005

The number of graduated students between 1999/2005

Acad year	Subject	Yemeni			Non-Yemeni			Total		
		M	F	Total	M	F	Total	M	F	Total
1999/2000	Civil Eng.	71	3	74	1	0	1	72	3	75
	Elect. Eng.	85	2	87	1	0	1	86	2	88
	Arch. Eng.	9	7	16	0	0	0	9	7	16
	Mech. Eng.	15	0	15	0	0	0	15	0	15
	Total	180	12	192	2	0	2	182	12	194
2000/2001	Civil Eng.	87	0	87	0	0	0	87	0	87
	Elect. Eng.	81	3	84	10	0	10	91	3	94
	Arch. Eng.	25	7	32	0	2	2	25	9	34
	Mech. Eng.	24	0	24	0	0	0	24	0	24
	Total	217	10	227	10	2	12	227	12	239
2001/2002	Civil Eng.	135	3	138	1	3	4	136	6	142
	Elect. Eng.	123	10	133	3	1	4	126	11	137
	Arch. Eng.	10	4	14	1	0	1	11	4	15
	Mech. Eng.	43	0	43	0	0	0	43	0	43
	Total	311	17	328	5	4	9	316	21	337
2002/2003	Civil Eng.	118	1	119	4	0	4	122	1	123
	Elect. Eng.	107	7	114	7	2	9	114	9	123
	Arch. Eng.	25	9	34	1	2	3	26	11	37
	Mech. Eng.	34	1	35	0	0	0	34	1	35
	Total	284	18	302	12	4	16	296	22	318
2003/2004	Civil Eng.	87	0	87	0	0	0	87	0	87
	Elect. Eng.	108	8	116	5	0	5	113	8	121
	Arch. Eng.	23	3	26	0	0	0	23	3	26
	Mech. Eng.	25	0	25	2	0	2	27	2	29
	Total	243	11	254	7	0	7	250	13	263
2004/2005	Civil Eng.	115	1	116	4	0	4	119	1	120
	Elect. Eng.	122	14	136	3	0	3	125	14	139
	Arch. Eng.	20	4	24	0	2	2	20	6	26
	Mech. Eng.	15	0	15	0	0	0	15	0	15
	Total	272	19	291	7	2	9	279	21	300
Total Number		1507	87	1594	43	12	55	1550	101	1651

Note: all subject start after the Elementary year except for the Arch. Dept. which start from the first year

Ministry of Higher Education and Scientific Research
National Strategy For Higher Education In Yemen Republic
Sana'a University - College of Engineering
April / 2005

The number of current students (parallel regulation) for year 2004/2005

Level	Department	Yemeni			Nnon-Yemeni			Total		
		M	F	Total	M	F	Total	M	F	Total
Elementary		95	0	95	7	0	7	102	0	102
	Total	95	0	95	7	0	7	102	0	102
2nd	Arch. Eng.	6	3	9	0	0	0	6	3	9
	Elect. Eng.	3	2	5	0	0	0	3	2	5
	Civil Eng.	10	0	10	0	0	0	10	0	10
	Mech. Eng.	0	0	0	0	0	0	0	0	0
	Total	19	5	24	0	0	0	19	5	24
3rd	Arch. Eng.	5	0	5	0	0	0	5	0	5
	Elect. Eng.	2	0	2	0	0	0	2	0	2
	Civil Eng.	4	0	4	0	0	0	4	0	4
	Mech. Eng.	0	0	0	0	0	0	0	0	0
	Total	11	0	11	0	0	0	11	0	11
4th	Arch. Eng.	2	0	2	0	0	0	2	0	2
	Comuni. Elect. Eng.	0	0	0	0	0	0	0	0	0
	Computer & Control	0	0	0	0	1	1	0	1	1
	Power & Mech. Eng.	0	0	0	0	0	0	0	0	0
	Civil Eng.	1	0	1	0	0	0	1	0	1
	Mech. Eng.	0	0	0	0	0	0	0	0	0
Total	3	0	3	0	1	1	3	1	4	
Total Number		128	5	133	7	1	8	135	6	141

Notes:

- 1) All subject start after the Elementary year except for the Arch. Dept. which start from the first year
- 2) Non-Yemeni students should pay \$2500 annually.
- 3) Yemeni student should pay between \$750-\$1500 annually under parallel regulation
- 4) Yemeni students under parallel regulation enter the college with high school grade $\geq 75\%$
- 5) Yemeni students under regular regulation pay YR 7350.

Ministry of Higher Education and Scientific Research
National Strategy For Higher Education In Yemen Republic
Sana'a University - College of Engineering
April / 2005

The number of current students for year 2004/2005

Level	Department	Yemeni			Non-Yemeni			Total		
		M	F	Total	M	F	Total	M	F	Total
Elementary		450	38	488	19	4	23	469	42	511
	Total	450	38	488	19	4	23	469	42	511
1st	Arch. Eng.	19	13	32	0	3	3	19	16	35
	Elect. Eng.	206	21	227	1	2	3	207	23	230
	Civil Eng.	222	6	228	2	0	2	224	6	230
	Mech. Eng.	40	0	40	1	0	1	41	0	41
	Total	487	40	527	4	5	9	491	45	536
2nd	Arch. Eng.	29	1	30	2	1	3	31	2	33
	Elect. Eng.	131	25	156	3	1	4	134	26	160
	Civil Eng.	169	5	174	2	1	3	171	6	177
	Mech. Eng.	25	0	25	1	0	1	26	0	26
	Total	354	31	385	8	3	11	362	34	396
3rd	Arch. Eng.	27	5	32	0	1	1	27	6	33
	Comuni. Elect. Eng.	116	9	125	3	0	3	119	9	128
	Computer & Control	62	15	77	0	1	1	62	16	78
	Power & Mech. Eng.	24	0	24	0	0	0	24	0	24
	Civil Eng.	162	2	164	1	0	1	163	2	165
	Mech. Eng.	34	0	34	1	0	1	35	0	35
Total	425	31	456	5	2	7	430	33	463	
4th	Arch. Eng.	21	16	37	0	0	0	21	16	37
	Comuni. Elect. Eng.	101	2	103	2	0	2	103	2	105
	Computer & Control	42	15	57	1	0	1	43	15	58
	Power & Mech. Eng.	21	0	21	0	0	0	21	0	21
	Civil Eng.	148	2	150	5	0	5	153	2	155
	Mech. Eng.	21	0	21	0	0	0	21	0	21
Total	354	35	389	8	0	8	362	35	397	
5th	Arch. Eng.	22	5	27	0	2	2	22	7	29
Total	22	5	27	0	2	2	22	7	29	
Total number		2092	180	2272	44	16	60	2136	196	2332

Note: All departments start after the Elementary year except for the Arch. Dept. which start from the first year

Ministry of Higher Education and Scientific Research
National Strategy for Higher Education In Yemen Republic
Sana'a University - College of Engineering
April / 2005

The number of Yemeni staff for the academic year 2000/2005

Department	Number of Yemeni staff															Total number of staff		
	Prof.			Assoc. Prof.			Assis. Prof.			Lect.			Inst.			M	F	Total
	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total			
Civil Eng.	5	0	5	11	0	11	18	1	19	1	0	1	1	1	2	36	2	38
Elect. Eng.	5	0	5	4	0	4	9	0	9	0	0	0	3	2	5	21	2	23
Arch. Eng.	1	0	1	5	0	5	8	1	9	1	0	1	1	3	4	16	4	20
Mech. Eng.	0	0	0	1	0	1	5	0	5	0	0	0	0	0	0	6	0	6

The number of non -Yemeni staff for the academic year 2000/2005

Department	Number of non - Yemeni staff															Total number of staff		
	Prof.			Assoc. Prof.			Assis. Prof.			Lect.			Inst.			M	F	Total
	M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total			
Elementary	0	0	0	1	0	1	3	0	3	0	1	1	0	0	0	4	1	5
Civil Eng.	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Elect. Eng.	0	0	0	2	0	2	1	0	1	1	0	1	0	0	0	4	0	4
Arch. Eng.	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	1
Mech. Eng.	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	3	0	3

Total number of Yemeni and non-Yemeni staff for 2004/2005	Department	M	F	Total
	Elementary	4	1	5
	Civil Eng.	37	2	39
	Elect. Eng.	25	2	27
	Arch. Eng.	17	4	21
	Mech. Eng.	9	0	9
Total number of staff for 2004/2005	92	9	101	
Total number of student for 2004/2005	2271	202	2473	
The Staff - Student ratio for 2004/2005 is 1:24				

Mainstreaming gender
in the national strategy for the development of higher education in
Yemen

A few major points of consideration

26 November 2005

by Dr Carin Vijfhuizen
and

The Women Research and Training Center, Aden University

This note was elaborated upon request by Aziz Alhadi, from the higher education office in Sana'a, who requested me to write a few major gender points for the recently elaborated national higher education strategy in Yemen. Numerous books and documents are written about mainstreaming gender in education and those need to be consulted in order to come up with a sophisticated gender mainstreaming strategy for the 'national strategy for the development of higher education in Yemen'. In this note we have elaborated a few major points for gender mainstreaming, but a sophisticated gender mainstreaming strategy for the higher education in Yemen requires a separate consultancy. This note addresses the following issues 1) a statement on mainstreaming; 2) position of Yemeni women in education; 3) how equity is addressed in the higher education strategy; 4) the vision and the key objectives of the higher education strategy; and 5) the mainstreaming of gender under each key objective.

1. An important statement for consideration (see Magno et al, 2003:1):

Guided by the UN convention on the rights of the child (CRC), the convention on the Elimination of all forms of discrimination against Women (CEDAW), and the platform of the international conference on population and development (Cairo 1994), the fourth world conference on women in Beijing (1995) strongly articulated a global commitment to gender equity by advancing the concept of " gender mainstreaming " which promotes integration of gender-sensitive policy prescription into national development policies and programs at all levels and throughout all sectors. Following the Beijing Declaration, Yemen has ratified the CEDAW agreement and has also formulated a national gender strategy 2003-2005; and 2006-2010.

2. Women and Education in Yemen (see Niethammer, 2005: 1-7)

The position of women in Yemen is of course relative to the position of women in other countries in the region. In the Middle East and Northern Africa (MENA) region, Yemen is one of the countries that scores lowest on various social indicators. Niethammer (2005: 1-7) provides the latest update. She explains that Yemen has witnessed significant achievements in education and health over the last decades. However, Yemen's continuous high rates of population growth dilute potential progress in reducing poverty. Yemen's female primary school enrolment rate is the second lowest, Djibouti being the lowest (46,7 % for girls; 67,6 % for boys). Secondary female enrolment is 29% in 2000. In 2002, 17,4% of those attending secondary school in rural areas were girls, and 86,2 were boys. In urban area 37% of students enrolled in secondary education were girls. Overall, Yemen's female tertiary enrolment rate was 4.6% in 1998, compared to a rate of 13.7% for all of MENA. The male enrolment was 16.7%. Of the students who graduated from universities in 2000, only 27% were female.

3. The way equity is addressed in the national strategy for higher education (2005: 36 -37)

"The main equity questions that arise in higher education in Yemen concern gender and the urban/rural divide. Only about 26 per cent of the university population is girls, and the proportion of the urban population with university education is more than seven times greater than that of the rural population. Even those women who attend higher education are, other than in medicine and dentistry where their representation is strong, predominantly represented in the lower prestige and less economically valuable subjects of education, social sciences and humanities.

The UNESCO Millennium Development Goals require a 1:1 ratio of female to male tertiary education enrolment by 2015, whereas in Yemen at present the ratio is less than 1:2.8. Nevertheless there is clearly a very significant political desire to increase the participation of women and rural populations, and this features prominently within the "Poverty Reduction Strategy" and "Yemen's Strategic Vision 2025". A further strength is the existence of the remote education colleges of universities, which, although referred to elsewhere as a problem, do help to ensure that those who might find it impossible to travel for higher education have some form of higher education available nearby' (2005:36-37)'.

The national strategy says: "The main problem impeding greater equity in higher education is not particularly a higher education issue but a more general one concerning society and society's values. Nevertheless, it is up to higher education to do what it can to address the question" (p 37). Indeed, it is necessary to emphasize that higher education institutions must address the gender question, by mainstreaming gender in its higher education, and in addition the higher education institutions have also a role to play in influencing the society. How to mainstream gender is addressed below, per key strategic objective.

4. The national strategy for the development of higher education

Formulated vision:

"To create a higher education system characterized by quality, broad participation, multiple and open routes vertically and horizontally, that is effective and efficient and delivers quality programs, shows excellence in teaching, learning, research and service to society, and enhances Yemen's quality of life."

Formulated key strategic objectives:

Key Strategic Objective 1: Governance

Ensure that at both national and institutional level arrangements are such as to ensure that the HE system is governed and regulated in such a way as to optimise decision making and the development of the system.

Key Strategic Objective 2: Institutional diversification

Ensure that Higher Education in Yemen develops in a diverse way, with increasing diversity of institutions to meet increasingly diverse needs.

Key Strategic Objective 3: Resources

Ensure that sufficient resources are provided to enable a high quality system, and that such resources are optimally deployed.

Key Strategic Objective 4: Teaching, Research and Service

Ensure that appropriate levels of teaching, research and service take place, of the highest possible quality, to meet the needs of Yemen and its people.

5. Addressing the mainstreaming of gender in the national strategy for higher education; a few major points (from Magno et al, 2003; Leo-Rhynie et al)

The following gender issues apply for all four key strategic objectives:

- Identify gender equity as an explicit goal of educational reform.

- Education system monitoring
A whole range of gender – disaggregated statistics is necessary to ensure gender equity in all aspects of education spending, and access to inputs and outcomes. Without this information, significant problems of inequity may go unnoticed.

- Education policymaking and implementation
The policymaking process itself needs to become more gender sensitive. This requires inclusion of women or women’s organizations at decision-making levels and in school management.

- Societal and contextual analysis of attitudes towards gender on the part of communities and parents
There is a need to work closely with local communities and families to identify and address the causes of nonattendance for both boys and girls.

- Economic relevance
Programs need to be put in place encourage all students, boys and girls, to pursue careers on the basis of their abilities and interests, even if that means moving into a non-traditional occupation .

- Reformed materials and curricula that reflect sensitivity to gender.

- Training of decision makers to reduce gender bias.

- Build institutional capacity to assess programs, policies, performance and procedures from a gender perspective. For example organizational gender “audits ” can be undertaken to identify areas of good practice and obstacles to equality initiatives and provide general and thematic gender analysis training for school, university and policymaking staff.

- Include women’s NGO’s as stakeholders that participate fully in the policy dialogue process.

For each specific key objectives:

Under 1 Governance

- Increase the number of women in management positions within educational institutions (in boards and committees).
- Build capacity among key stakeholders to advocate for gender equity.
- Encourage collaboration between government and educational institutions to ensure implementation of gender- sensitive strategies programs.
- Include gender as a significant dimension of policy analysis.
- Improve coordination among various international donor agencies for collective endeavor to eliminate gender disparity in education.

Under 2: Institutional diversification

- Increase the number of women in management positions within educational institutions (in boards and committees).
- Build capacity among key stakeholders to advocate for gender equity.
- Encourage collaboration between government and educational institutions to ensure implementation of gender- sensitive strategies programs.
- Include gender as a significant dimension of policy analysis.
- Improve coordination among various international donor agencies for collective endeavor to eliminate gender disparity in education.

Under 3: Resources

- Enough resources available to monitor, conduct research and train all decision makers and staff on gender.
- Funds to establish a Gender Management System or gender focal point in the Ministry of higher education and scientific research and to elaborate its functioning.
- Funds to train women in management.

Under 4: Teaching, research and service

- Curriculum and education materials

Including a gender dimension into curriculum reform programs is vital to reducing gender inequity. Reformed curricula should include standards regarding the representation of gender and for gender equity. These standards should be supported by guidelines for textbook authors and in the criteria for textbook evaluation.

- Develop gender – sensitive curricula, textbooks, and teaching materials.

- Conduct textbook and curriculum analysis to eliminate gender stereotyping.

- Teacher training

Teachers need gender awareness training if they are to play their part in promoting gender equity in education.

- Increase the professional prestige of teachers.
- Ensure that in-service teacher education institutions promote innovative teaching strategies that promote gender equity in school.
- Achieve gender equity in science classrooms (see Necuse)

- Research

To lessen the gender gap in enrollments in secondary school and higher education, it is crucial to understand the reasons for the feminization of higher education and the underlying reasons for gender gaps for both genders in secondary school. Gender studies departments and other institutes can be encouraged and contracted to research these issues, in countries where they exist.

- Improve data collection in order to reliably identify significant problems of inequity.
- Involve university genders studies programs in research on relevant gender issues in education.

At a higher institutional level, surpassing the key objectives:

Gender focal points or Gender management systems are mentioned, which should become part of the Ministry of Higher education, i.e. a group of gender experts who can ensure gender mainstreaming and monitoring at all levels and in all activities. A gender strategy for that group should be elaborated upon through a consultancy.

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Glossary and List of Abbreviations

Accreditation	The process by which the state evaluates the fitness of institutions to offer education, and permits them to practise
Appraisal	A process for formally reviewing the performance of staff
Credit accumulation and Transfer (CAT)	A process for providing recognition to students for the learning they achieve as they go along, short of a full qualification (e.g. for the modules they complete). The credits obtained can subsequently be totaled to achieve the qualification sought
Distance education	Education that takes place in the home or other location remote from any institution's campus
Expatriate Staff	Staff working in a country other than their own
GDP	Gross Domestic Product
GER	Gross Enrolment Ratio (the proportion of a stated age group that enrolls in the level of education under consideration)
HE	Higher Education
ISCED	International Standard Classification of Education – a UNESCO initiative to achieve an internationally agreed way of defining levels of education,

IT	Information technology
MDG	Millennium Development Goals – developed by the United Nations with the support of the World Bank and other agencies to make substantial headway by 2015 in tackling poverty by promoting human development as the key to sustaining social and economic progress
MoHESR	Ministry of Higher Education and Scientific Research
NRA	National Research Agency
Opportunity cost	Expenditure on one thing that is preempted by the decision to spend on another
PBF	Performance-based funding: a basis for funding institutions that takes account of their relative performance on measures that are predetermined by the funding body.
Per capita	Per person
Post Secondary Education	Formal education that takes place after the secondary phase
QA	Quality Assurance
Real terms	After allowing for the effects of inflation
Recurrent expenditure	Expenditure on higher education other than for investment purposes
Running costs	That part of recurrent expenditure that is passed to universities for them to spend
SCU	Supreme Council for Universities

Student:staff ratios	The number of students divided by the number of faculty members
Tele-assisted distance education	Distance education that is based on communications technology
Tertiary Education	UNESCO defines 'Tertiary Education' as both "programs that are largely theory-based and are intended to provide sufficient qualifications for gaining entry into advanced research programs and professions with high skill requirements" (ISCED 5A) and "programs that focus on practical, technical or occupational skills for direct entry into the labour market." (ISCED 5B)
TFT	Task Force Team
UNESCO	United Nations Educational, Scientific and Cultural Organisation
Unit cost	Public recurrent expenditure, excluding scholarships aboard, per public university student
YR	Yemeni Rials