Reviews of National Policies for Education

Higher Education in Egypt



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ISBN 978-92-64-07723-2 (print)
ISBN 978-92-64-08434-6 (PDF)
DOI 10.1787/9789264084346-en

Series: Reviews of National Policies for Education
ISSN 1563-4914 (print)
ISSN 1990-0198 (online)
Revised version (April 2010)
For more details, please visit: www.oecd.org/dataoecd/58/21/44959110.pdf

Also available in Arabic.
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Foreword

For some years now Egypt has been undertaking far-reaching reforms for increasing the competitiveness of the country and making it attractive for foreign direct investment. Aware that the success of this endeavour depends largely on the education and skills of the population, the Government of Egypt invited the OECD and the World Bank to jointly conduct an independent review of the higher education system and to formulate options for immediate and longer term policies towards developing its human capital.

The examiners' report recognises the reform efforts already invested, but it also recommends paying particular attention to the immediate need for structural reforms, for more flexibility and efficiency in governance and institutional management, and for increasing the capacity of the higher education system to deliver relevant education to a broader range of students. If not addressed in a timely manner, these challenges will impede the development of Egypt's full potential to serve the needs of the country. The examiners' report was prepared against a comprehensive background report provided by the Egyptian authorities.

The review was undertaken within the Programme of Work of the OECD Directorate for Education Programme for Co-operation with Non-Member Economies in partnership with World Bank Human Development Department of the Middle East and North Africa Region. The review was financed by the Government of Egypt and the World Bank with an in kind contribution from the European Training Foundation.

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Acronyms

ACB	Admission Co-ordination Board
AED	Academy for Educational Development
ACBEU	Admission Co-ordination Bureau of Egyptian Universities
ARC	Agricultural Research Centre
ASRT	Academy of Scientific Research and Technology
AUC	American University in Cairo
AVE	Advanced Vocational Education (Sweden)
BOT	Board of Trustees
CAO	Central Auditing Organisation
CAPMAS	Central Agency for Public Mobilisation and Statistics
CFI	Canada Foundation for Innovation
CIQAP	Continuous Improvement and Qualifying for Accreditation Project
CNRS	Centre National de la Recherche Scientifique (France)
CPO	Central Placement Office
CV	Curriculum Vitae
EC	European Commission
ECTS	European Credit Transfer and Accumulation System
EEIF	EU-Egypt Innovation Fund
EGAC	Egyptian Accreditation Council
EGP	Egyptian Pound
ERA	European Research Area
FPs	Focal Points
FDI	Foreign Direct Investment
FTE	Full-time Equivalent
GER	Gross Enrolment Rate
GERD	Gross Expenditure on Research and Development
GDP	Gross Domestic Product
GGfD	Good Governance for Development in Arab Countries
HCST	Higher Council for Science and Technology
HDI	Human Development Index

HEC	Higher Education Commission (Pakistan)
HEEP	Higher Education Enhancement Programme
HEEPF	Higher Education Enhancement Project Fund
HEI	Higher Education Institution
HIECS	Household Income, Expenditure and Consumption Survey
ICL	Income Contingent Loan
IEC	Industrial Education Colleges
ISCED	International Standard Classification of Education
ILO	International Labour Organisation
ILOs	Intended Learning Outcomes
Intisseb	Programme for fee paying students
ISPP	Institutional Strategic Planning Project
KAM	Knowledge Assessment Methodology
KEI	Knowledge Economy Index
MENA	Middle East and North Africa
MENPP	Monitoring and Evaluation of New Programmes Project
MITD	Ministry of Industry and Technological Development
MKI	Mubarak-Kohl Initiative
MOE	Ministry of Education
MOF	Ministry of Finance
MOH	Ministry of Housing
MOHE	Ministry of Higher Education
MOME	Ministry of Manpower and Emigration
MOSR	Ministry of Scientific Research
NAQAAE	National Authority for Quality Assurance and Accreditation of Education
NARS	National Academic Reference Standards
NGA	National Governors' Association (USA)
NGO	Non-Governmental Organisation
NPM	New Public Management
NQF	National Qualifications Framework
NRC	National Research Council
NSS	National Skills Standards
OECD	Organisation for Economic Co-operation and Development
PBET	Post Basic Education and Training
PDESAQ	Programme de développement de l'enseignement supérieur et d'appui à la qualité (France)
PFS	Productive Families Scheme
PPP	Purchasing Power Parity
PRI	Public Research Institution

QAAP	Quality Assurance and Assessment Projects
QAAP-II	Quality Assurance and Accreditation Project, Second Phase
R&D	Research and Development
RDI	Research, Development and Innovation
RDIN	Research, Development and Innovation Network
S&T	Science and Technology
SCHE	Supreme Council for Higher Education
SCHRD	Supreme Council for Human Resource Development
SCPU	Supreme Council for Private Universities
SCTC	Supreme Council for Technical Colleges
SCU	Supreme Council for Universities
SET	Science, Engineering and Technology
SFD	Social Fund for Development
SMEs	Small and Medium-sized Enterprises
SPU	Strategic Planning Unit
SSRs	Student Staff Ratios
STCF	Science and Technology Competitive Fund
STDF	Science and Technology Development Fund
TEI	Tertiary Education Institution
TFF	Training Finance Fund
TRM	Technology Road Mapping
TVET	Technical and Vocational Education and Training
UNDP-POGAR	United Nations Development Programme Programme on Governance in the Arab Region
UNESCO	United Nations Education, Scientific and Cultural Organisation
USPTO	United States Patent and Trademark Office
USS	Upper Secondary School
VTC	Vocational Training Centre or Training Centres
WEF	World Economic Forum
WTO	World Trade Organisation

Executive Summary

This report responds to an invitation by the Government of Egypt to the World Bank and the Organisation for Economic Co-operation and Development (OECD) jointly to conduct an independent review of the nation's higher education system and to offer advice on its future development.[1]

A. Main messages

The imperative for higher education reform

The Egyptian higher education system is not serving the country's current needs well, and without far-reaching reform it will hold back Egypt's economic and social progress.

To build and modernise the nation, the Government of Egypt has driven major reforms in macro-economic policy to attract foreign direct investment, monetary policy including floating the Egyptian pound, taxation reform, trade liberalisation including tariff reductions and international trade agreements, and public sector reform including privatisation of state-owned enterprises.

The higher education system remains unreconstructed in this context. It continues to produce largely for the economy of the past, and community expectations of it reflect outdated understandings of its role.

There is an imperative for fundamental reform of the Egyptian higher education system. This imperative arises from the combination of emerging pressures and accumulated dysfunctions.

The pressures arise from the need for Egypt to:

- improve its competitiveness in the global knowledge-based economy, where other countries are intensifying their investments in human capital and knowledge production;

- provide appropriately for a larger and more diversified student population; and
- reduce social inequalities arising from differences in educational opportunity.

The dysfunctions include:

- narrow access and limited opportunities for students;
- poor quality of educational inputs and processes;
- deficiencies and imbalances in graduate output relative to labour market requirements; and
- under-developed university research capability and linkages to the national innovation system.

The imperative demands decisive action to improve policy coherence, institutional responsiveness and system cost-effectiveness.

In particular, action needs to be directed to:

- reducing structural rigidities in the higher education system;
- improving national steering and co-ordination;
- widening choices for students;
- increasing the capacity and flexibility of higher education institutions within a more diversified system;
- improving the availability of information to guide student choice; and
- financing the system more equitably and efficiently, in a sustainable way.

The Government of Egypt already has embarked on a range of reform initiatives to improve higher education operations. The OECD/World Bank review panel commends the Government for its considerable efforts. However, in several areas where substantive reform is required, the approach being adopted focuses mainly on procedural change, and it is not evident that commitment exceeds compliance. Greater attention needs to be given to structural reform, changing the institutional culture and increasing the capacity of the system to contribute to the realisation of national goals. Successful reform of higher education also requires ongoing improvement in the quality and effectiveness of primary and secondary schooling.

Directions for higher education reform

The review panel has identified ten main directions for reform of Egypt's higher education system:

1. Clarify the expected capabilities of graduates

Students, educational institutions and employers all need clearer signals about the purpose of higher education, the meaning of educational qualifications, and the standards of graduate achievement. New approaches to teaching and learning are required to develop employability skills. It is necessary to develop qualifications descriptors and pathways for individuals to build their levels of educational attainment progressively.

2. Improve the balance of graduate output to fit labour market needs

Higher education needs to become more relevant to Egypt's contemporary circumstances. This requires:

- a more balanced supply of graduates of university and technical and vocational education with a view to increasing the proportion of graduates with practical skills relevant to labour market needs;
- wider opportunities for students to undertake studies that can lead to employment;
- greater discretion for institutions to offer courses in response to student demand having regard to labour market opportunities;
- engagement with employers and professional bodies in designing and evaluating courses;
- timely information about labour market supply and demand; and
- professional careers advice to help students and parents make informed educational choices.

3. Strengthen national steering capacity

There is a need for greater clarity of the respective roles of different higher education institutions, and an ability to steer the development of a co-ordinated system. Steps need to be taken to achieve a more effective balance between institutional self-regulation and overall public control of the scale, structure, quality and cost of Egypt's higher education system.

4. Diversify the supply of higher education opportunities to meet a larger student body with varying needs, aptitudes and motivations

Structural reform needs to broaden the base for the participation of new groups of students especially through the modernisation of technical and

vocational education, the expansion of private provision and greater use of on-line and mixed mode learning. There is scope also for niche offerings, including foreign higher education institutions, along with corporate and vendor providers of certificated learning.

Currently, the technical and vocational education and training (TVET) system is very weak and poorly regarded by Egyptian society, and is an unattractive alternative in its present form. A priority is to renew the TVET system, including enhancing the status of TVET qualifications, upgrading facilities, and marketing the value of technical skills to the community.

Additionally, private higher education needs to be expanded to complement public efforts to cater for the planned enrolment growth.

5. Increase institutional operating flexibility and self-management capacity

Egypt might move progressively to a more diverse, student-driven system of higher education, where students can exercise choice over where and what they study, and institutions can exercise autonomy in the admission of students, reflecting their missions and capacities. The Government, while maintaining control over the total number of higher education enrolments at the system and institutional levels through an enrolment-based funding formula, could permit individual institutions to determine the mix of their enrolments across fields of study.

To align Egyptian universities with their international counterparts, public universities with the status of a public corporation might be governed by a Board of Trustees with authority to oversee their academic and operational affairs according to their agreed mission and subject to appropriate accountabilities.

6. Share costs more equitably

The cost burden of higher education provision falls disproportionately on the Government and general taxpayers, while those who benefit the most do not pay their fair share of the costs. Few countries have been able to expand their higher education system while at the same time raising its quality without requiring a significant contribution from students and their families. To support its development objectives, the Government of Egypt needs a sustainable funding strategy for higher education. Such a strategy might have five elements:

i. increased public investment;

ii. diversification of institutional revenues through greater cost-sharing;

iii. private sector expansion;

iv. enrolment growth in the TVET sector; and

v. wider use of new delivery technologies.

Efficiencies might also be found by reducing rates of repeat learning. Increases in tuition costs would need to be accompanied by scholarships and loans for students.

7. Widen admission criteria to recognise diverse potential

Total reliance on the secondary school leaving examination (*Thanaweya Amma*) as the sole basis for admission to higher education limits opportunities for many students. Examination results may reflect differences in family circumstances, school quality and access to private tutoring. However, the *Thanaweya Amma* has the important advantage of being transparent.

Consideration might be given to expanding the criteria for student access to higher education by developing initially a test of generic reasoning and thinking skills to complement the national secondary school examinations. Students could also benefit from being able to express multiple preferences in their applications for higher education admission, including by programme and institution.

8. Raise input quality and embed quality assurance as an institutional responsibility

To improve the quality of teaching and learning, the poor physical condition of the nation's higher education institutions requires a major capital injection. Additionally, public institutions need to develop their capacity for responsible self-management, including monitoring and reviewing the quality of their programmes. Particular effort needs to be directed to the adoption of performance-based management practices, and professional development of faculty and staff.

9. Strengthen university research capacity and its links to innovation

To identify areas for future investment and inter-institutional collaboration, it would be useful to map the research strengths of public universities. Subsequently, a select number of universities, or faculties or centres within them, might be invited to apply through a competitive programme to establish graduate schools or research clusters in designated fields where Egypt seeks to build its capacity.

10. Build a number of leading exemplars

Managing the transition from old to new ways will require leadership and experimentation. Other countries have found it useful to trial innovations as demonstration projects before they are more widely adopted.

In Egypt, such trials might include: development of diverse admissions criteria; funding of enrolments by field of study, with institutions having flexibility to respond to student demand; developing student mobility agreements; curriculum renewal involving employers and professional bodies; and a competitive process for the establishment of a select number of graduate schools.

B. Context

Egyptian context

Egypt occupies a unique geopolitical position arising from its location, size and history. Its relatively youthful population and diversified economic base underpin Egypt's future opportunities.

Egypt's population at the 2006 census was 73 million. Over 97% of the country's population is settled in the narrow strip of the Nile Valley and in the Nile Delta, just 5% of Egypt's total land mass.

Some 23 million (31.7%) of Egypt's population are under the age of 15 years. The youth share of the population has fallen from 40% in 1990.

Egypt's gross domestic product (GDP) per capita in 2007 was USD 1 769.6 (United Nations Statistics Division). There are wide socio-economic disparities across regions.

Since the early 1990s, Egypt has been managing a major transition from a state-controlled economy to a model of internationally-integrated competitive development. Concurrently, Egypt has advanced steadily in achieving the Millennium Development Goals related to water and sanitation, infant and child mortality and maternal mortality.

On the 2007 Global Competitiveness Index, Egypt ranked 65th out of 128 countries and 4th out of 48 countries at the same stage of development. In relation to doing business in Egypt, the third most serious problem identified, after access to finance and inefficiency of bureaucracy, was an inadequately educated workforce. Higher education and training, technological readiness and innovation were identified as competitive disadvantages for Egypt.

In 2005-06, the distribution of formal employment across industry sectors was estimated to be 45% for services, 27% for agriculture, 13% for energy and 15% for all others. The agricultural share of employment has fallen from 40% in 1996.

In the decade from 1988 to 1998 employment in the government sector (civil service and public enterprises) grew at twice the rate of growth of overall employment. In contrast, over the period from 1998 to 2006, public enterprise employment declined and the bulk of employment growth occurred in the private sector, which only accounted for 10% of total formal employment in 2006.

However, overall employment growth was insufficient to absorb new entrants to the workforce (100 000 annually) and informal employment rose to 61% of all employment in 2006 (Assaad, 2007). University graduates, alone among educated entrants to the labour market, experienced an increase in unemployment between 1998 and 2006 (Zaytoun, 2008).

Basic education covers nine years from age of six (primary six years and preparatory three years). After grade 9, students are tracked into either general secondary or technical secondary schools. Broadly 40% of a student cohort tracks into the general secondary strand and 60% into the technical secondary strand.

Technical secondary education has two strands: the first provides technical education in three-year schools; the second provides more advanced technical education in five-year schools.

General secondary schooling of three years prepares students for higher education, access to which is through the highly competitive *Thanaweya Amma* school leaving examination.

Higher education includes public and private technical colleges and universities. Technical colleges offer two-year programmes leading to a Diploma. Universities offer programmes of at least four years leading to a Bachelor's degree, as well as graduate degrees.

The net enrolment rate in primary education increased from 83.7% in 1985 to 98.3% in 2003. Gross enrolment rates in secondary school rose from 61.4% to 87.1% over the same period, while higher education enrolment rates rose from 18.1% to 32.6% (World Bank, 2006).

In 2007-08, some 78% of higher education enrolments were in public universities.

Purpose of the review

Many countries recently have opened their higher education systems to external scrutiny as a means of identifying strengths and weaknesses that internal observers may overlook, and as a source of fresh ideas and critical reflection. The process of preparing for external reviews, in addition to the resulting report, can give impetus to needed reform.

An international panel of examiners with relevant expertise was appointed in 2008 to conduct the review. They benefited from interactions with students and staff of various higher education institutions throughout Egypt and from information provided by government agencies. Observations about current circumstances and proposals for change reflect the views of the panel members.

Many of the problems facing the higher education sector and the national innovation system are understood by Egyptian policy makers, and the Government of Egypt, in consultation with concerned parties, has been taking concrete steps to improve the operation of the higher education system. Notable initiatives include:

- measures to improve the quality of basic and secondary education, including recognition of the importance of quality teachers and quality teaching;
- doubling the funding for Higher Education under the Five-year Plan, 2007;
- formation of the Higher Council for Science and Technology (S&T), the S&T Development Fund, and the Technology Transfer Centres Network;
- consolidation of technical colleges and rationalisation of programmes;
- establishment of more robust arrangements for institutional accreditation and for institutional and programme quality assurance, including the establishment of the National Authority for Quality Assurance and Accreditation of Education; and
- several years of successful experience with competitive funding for performance improvement.

For its part, the Government of Egypt appears willing to take further steps towards devolution of responsibilities and increased use of performance-based funding mechanisms to stimulate wider reform. Energy for reform is also evident among a number of Egypt's higher education institutions. And there are community pressures for change, not least from students and employers.

C. Consideration of the issues

Labour market demand for higher education graduates

In consultations with government agencies, employers, education institutions and students, the review panel was advised that:

- there is a chronic over-supply of university graduates, especially in the humanities and social sciences;
- there are shortages of below-university qualified, skilled personnel;
- university graduates fail to obtain employment in their fields of study;
- employers claim to seek graduates who have more than technical subject knowledge but also "soft skills" of communication, team work, problem solving, reliability, and adaptability;
- university students are dissatisfied that they do not develop practical skills; and
- many graduates seek to work overseas as a means of gaining practical experience and income.

Data deficiencies defy proper analysis of the supply-demand balances, including the extent to which degree graduates are shunting those with a lower level qualification from employment. A variety of factors are working together to compound the confusion, including: the transition of the employment base from a high level of reliance on public sector activity to greater market exposure; cultural attitudes favouring particular educational qualifications and occupations; lack of informed career advisory services for students; lack of follow-up surveys of graduate destinations; limited analysis of rates of return to graduates; and the absence of structured employer engagement with higher education institutions.

The lack of balance and fit in graduate supply to the labour market is at the core of Egypt's challenge, not just for university education but for all forms of higher education and for secondary education, including notably technical and vocational education and training which spans both the secondary and tertiary sectors. What needs to be addressed is not only the horizontal dimension of the mismatch – the skewed pattern of student enrolment by field of study – but also the vertical dimension – the disproportionate valuing of university education over other types of higher education, with all its associated economic and personal costs.

Student demand for higher education

Demand for higher education is continuing to expand. On the basis of the population projections of the Central Agency for Public Mobilisation and Statistics (CAPMAS), and assuming a rise in higher education participation from 28% to 35% over 2006-2021, consistent with the Government's plan, some 1.1 million additional participants will need to be accommodated at an average growth rate of 3% per year (73 300) over fifteen years. Concurrently, the percentage of the working age population (between 15-64 years) is projected to rise from 55% in 2007 to 67% in 2020. Increasing attention will need to be given to adult workforce skills development as a source of productivity improvement.

Additionally, recent (post 2006 census) population estimates indicate resurgence in fertility, adding to the flow of young people entering schooling from 2012. Hence, a further youth surge is projected to flow through to higher education from 2024.

Importantly, the next decade (2010-20) presents a window of opportunity for Egypt to build a more appropriate platform for accommodating growth in the youth population and their higher education participation, while developing new ways and means of meeting the varying needs of adult learners.

Cost-effective enlargement in participation, through the lower average student unit cost of shorter-cycle programmes and efficient delivery modes, would enable the enlargement to occur principally through the modernisation of technical and vocational education to make it a quality option, the expansion of private provision, and greater use of on-line and mixed mode learning. This opportunity sets the framework for many of the recommendations of the review panel, as outlined below.

Recommendation for the general direction of reform

1. Egypt might take advantage of the demographic window of opportunity over the next decade, in the context of economic restructuring, to construct a more appropriate platform for accommodating growth in the youth population and their higher education participation, while developing new ways and means of meeting the varying needs of adult learners. Particular consideration might be given to the following aspects:

a. Structural reform needs to broaden the base for the participation of new cohorts especially through the modernisation of technical and vocational education, the expansion of private provision and greater use of on-line and mixed mode learning.

b. Attention should be given during this transitional period to improving the quality and labour market relevance of university education (rather than over-expanding quantitatively), differentiating institutional profiles to achieve distinctive missions, and building the capacity of universities to manage themselves in a more self-reliant way.

c. Significant attention should be given to improving the quality, relevance and status of technical and vocational education and training at both the secondary and tertiary levels, with the explicit purpose of greatly expanding enrolments in post-secondary TVET.

d. Research capacity needs to be built up to an internationally competitive level in selected areas, and integrated with university education.

Strengthening links between higher education and the labour market

Surveys of students and graduates of Egypt's higher education and vocational education sub-sectors indicate common concerns:

- insufficient choice of field of study relevant to career preference;
- highly restricted opportunities for students to change fields of study;
- inadequate preparation for employment resulting from curriculum irrelevancies;
- lack of practical skills formation;
- an over-concentration on memorising content, passive pedagogies; and
- lack of learning materials, library books, facilities and equipment.

In both sub-sectors there are symptoms of a supply-driven culture largely unresponsive to student needs, and this culture is entrenched, as outlined below, by the financing and regulatory arrangements by which the higher education system is governed.

In the case of technical and vocational education and training, there is a double jeopardy, as that sub-sector suffers from low status, poor funding and poor quality. It will be important for Egypt to reinvigorate rather than neglect technical and vocational education, to raise its status and quality, and to provide incentives for greater numbers of students to participate. This

aspect of the reform agenda will also need to address the poor links with business and industry, the rigidity of education and training programmes, and the lack of articulation across upper secondary, vocational and university education.

Recommendations for improving the fit of higher education to labour market needs

2. The Government might consider developing with each public higher education institution, in consultation with national and regional employers, a broad compact that clarifies the institution's distinctive mission, the scope and focus of its educational provision, expectations of its performance, associated resourcing to build its capacity, and the extent of its substantive and procedural autonomy. It would be important in this process to clarify the labour market areas for which each institution prepares graduates.

3. A much wider range of information is necessary to guide student choice and institutional planning, and the Government should consider establishing a professional labour market information service that can provide prospective students, careers guidance advisers and higher education institutions with information about trends in labour supply and demand, and the labour market outcomes of graduates in different fields.

Developing national steering mechanisms

Egypt faces the imperative of having to enlarge tertiary education participation and attainment with scarce resources without diminishing quality. This will require improving the success rates of currently participating cohorts of students and drawing in new cohorts, including an increasing number who are less well prepared. The growth and diversity of the student body will need to be accommodated cost-effectively.

The challenge for policy is to establish the frameworks and incentives to promote the necessary supply diversity – a variety of institutional types (differentiated universities, specialist niche providers for particular occupations alongside corporate and vendor providers, technical institutes, variants of the Liberal Arts Colleges and Community Colleges found in North America, on-line providers (local and foreign), and combinations of institutions (public, private and public-private partnerships) offering diversity of learning modes, places, intensities, times and prices.

At the same time, the effectiveness of established higher education institutions needs to be greatly increased. Internationally, good practices in the development of well-functioning higher education systems involve a

joined-up approach to policy for educational effectiveness and quality assurance, having regard to local, national and international labour markets for graduates. An emerging model for managing the increasing scale and complexity of contemporary higher education is one of mutual responsibility between governments and institutions in shaping and delivering quality outcomes to meet individual and national needs.

Recommendations for strengthening system steering

4. Egypt should take deliberate, gradual and transparent steps to achieve a more effective balance between institutional self-regulation and overall public control of the scale, structure, quality and cost of its higher education system. The direction of reform should involve greater responsibility and discretion for accredited higher education institutions, and less central regulation and detailed supervision of their activities.

5. The Government might develop a single legal framework for higher education covering all sectors: public universities, technical colleges, and private institutions (for-profit and non-profit). This legal framework could provide for:

- establishment of a new Supreme Council for Higher Education with responsibility for steering the future course of the whole higher education system (see below);
- the opportunity for public institutions to become independent autonomous public corporations (see below); and
- a definition of "non-profit" private institutions.

6. Consideration might be given to establishing a single Supreme Council for Higher Education (SCHE) co-chaired by the Minister of Higher Education and the Ministry of State for Scientific Research. The SCHE could be the pre-eminent planning, co-ordinating, and information services agency for higher education in Egypt, covering all institutions and providers: public, private non-profit and for-profit institutions, technical colleges, foreign institutions, and Open University. Particular attention might be given to the following matters:

a. The new SCHE could have responsibility for a range of functions related to achieving responsiveness, coherence and sustainability in Egypt's higher education system. It is envisaged that these functions could include: strategic planning; information collection, analysis and reporting; the administration of funding programmes, including student scholarships and loans, and strategic investment funds aligned with national priorities; and advice to the Minister regarding

the establishment of new institutions and institutional branches, and methods of institutional financing and associated accountability reporting.

b. The membership of the SCHE might include persons with proven ability to make significant contributions to higher education, business leaders, community leaders, and representatives of public universities, private universities, technical institutes, vocational colleges, and secondary schools. A small number of senior officials with direct responsibilities related to the nation's higher education strategy might participate on an *ex-officio* basis.

c. Advising the SCHE could be a council of public university presidents, and council of private university presidents, and the existing Supreme Council for Technical Colleges (SCTC) to ensure attention to the unique mission of technical colleges.

d. It is envisaged that implementation of this recommendation would lead to consolidation within the new SCHE of those functions currently exercised by the Supreme Council for Universities (SCU), the Supreme Council for Private Universities (SCPU), and the Supreme Council for Technical Colleges (SCTC), and the functions of the Ministry of Higher Education relating to the operation of institutions.

Increasing institutional flexibility

Egypt continues to be burdened by an outmoded framework of public sector administration. Higher education is affected by that problem, both in its internal organisation and in its relations with government agencies. The Egyptian higher education system is highly centralised, across segmented agencies and multiple layers of control, but it is not well planned. Legislative provisions have detailed specifications and various central agencies exercise highly interventionist powers over operational minutiae. Budget allocations to higher education institutions are not linked to the respective roles and needs of individual institutions. Employment and staffing policies in the sector mirror those of the public sector at large, fostering commensurate problems of staffing imbalances, promotion by years of service, and poor remuneration.

The opaque processes for determining student enrolment levels at each institution, and by faculty and specialty, is an excessive form of micro-management that limits institutional flexibility and impedes responsiveness

to changes in student demand and labour market needs. Curiously, private institutions are subject to many of the same regulatory controls imposed on public institutions, thereby negating the benefits of a strong and innovating private sector.

Governments the world over are devolving more responsibilities to higher education institutions, in recognition of their economic and social importance and their growing complexity. Governments are giving them more substantive and procedural autonomy, so that the institutions have the flexibility necessary to respond to varying needs in changing and competitive circumstances. The process of devolution involves changed roles for government and institutions, and changing relations between them.

The means of devolution include reforms to system steering and institutional governance, clarification of institutional roles and performance expectations, less-restricted funding with stronger accountability for cost-effectiveness, and stronger quality assurance processes with a focus on educational outcomes. Among the mechanisms used to increase autonomy, accountability and responsiveness are competitive funding schemes, and mission-based performance-related compacts.

There is growing recognition of the need for a strengthened national policy capacity, dissemination of information about institutional performance, the elimination of redundant regulations, and stronger academic quality assurance and consumer protection. The next step is to provide greater autonomy to the universities, technical colleges and institutes, particularly in matters of student selection, programme offerings and enrolments, curricula, and academic staff appointment, promotion and compensation.

One option for proceeding is to identify a small number of institutions with which to trial more flexible arrangements. A successful model is that of the Suranaree University of Technology in Thailand which has been given the special designation of a "public autonomous university". It receives a lump sum budget from the national government and has discretion over the use of its resources. It is self-governing in terms of its personnel and operates outside the civil service. It reports on the results it manages and demonstrates what it is possible to achieve.

Recommendations for increasing responsible institutional self-management

7. The Government might undertake a structured and transparent process for increasing the responsibilities of individual institutions, and building their capacities for self-management, with the ultimate aim that all public

universities and technical colleges will achieve the status of autonomous public corporations.

8. To improve the effectiveness of public higher education institutions and create a level playing-field for both public and private institutions, the Egyptian authorities could grant more autonomy to universities and institutes, allowing them to operate with more flexible educational processes, administrative procedures and financial management rules.

9. Egypt's public higher education institutions could be given increased responsibility, building on the foundations of the Quality Assurance and Assessment Projects, to undertake strategic planning with a view to aligning their programmes and the educational processes with student demand and labour market needs. To that end, the Government will need to devolve a wider range of authorities to institutions, particularly over their educational offerings, student admissions, staffing, and resource utilisation, within a framework of institutional accountability for managing those resources effectively to achieve results.

10. Public universities with the status of a public corporation might be governed by a Board of Trustees with authority to determine, according to its agreed mission and subject to appropriate accountabilities, its academic and operational affairs. Particular attention would need to be given to the range of direct and delegated responsibilities of an institution's Board of Trustees, including independent authority to:

- appoint, evaluate, set compensation for, and dismiss the president, vice presidents, deans and all other administrative staff of the institution;
- appoint, promote, transfer, compensate, and dismiss academic staff;
- establish enrolment levels by faculty/programme;
- admit students to specific programmes;
- establish, revise or eliminate academic programmes;
- realign academic staffing to serve student demand and institutional priorities; and
- manage the usage, including carry-overs, of all institutional revenues.

11. It is envisaged that the SCHE would develop the criteria for institutions to demonstrate their capacity to assume public corporation status. Each university would be assessed in terms of its readiness to move to a more autonomous status and granted that status on an institution-by-

institution basis. One criterion could be that all faculties and the institution as a whole have been awarded full accreditation by NAQAAE (National Authority for Quality Assurance and Accreditation of Education).

12. Desirably over time, higher education institutions that demonstrate the capacity to manage themselves well and deliver to agreed expectations would be allowed increasing discretion in decision making about student enrolments, course offerings (openings and closures), personnel recruitment and promotion, and the deployment of resources.

Student access to higher education

The transition of students from the general and vocational/technical tracks of upper secondary education to higher education in universities, colleges, and other tertiary institutions is one of the most significant challenges for education reform in Egypt. A major problem, from both efficiency and equity perspectives, is the skewed representation of secondary school students in tertiary education. Whereas 60% of secondary student enrolments are in technical secondary schools, some 95% of enrolments in post-secondary technical colleges are students from general secondary schools. The students going to technical colleges are predominantly general secondary track students who failed to gain admission to university. Students of the technical and vocational education and training (TVET) sub-system are effectively "tracked-out", facing a dead-end in terms of their prospects for further learning.

The Government of Egypt has taken some initiatives to address the rigidity and narrowness of secondary school tracking, but much more comprehensive reform will be required, including changes to school structure, curriculum and assessment, in order to diversify the learning opportunities for students and increase their prospects of success. Nevertheless, reform at the tertiary level cannot wait for progress in secondary education; simultaneous and iterative reform is needed in both domains, with progress in one area reinforcing change in the other.

An immediate issue to be addressed is that of the transition from secondary to tertiary education. There are widespread concerns about the appropriateness of continuing total reliance on the secondary school examinations as the sole basis for admission to higher education**.** Examination results may reflect differences in input factors, such as family circumstances, school quality and/or access to private tutoring. The process does not place the students where they fit, overlooks their latent ability and cannot reliably predict their subsequent academic performance**.**

At the same time, there appears to be little community and professional support for dispensing with the *Thanaweya Amma* examinations and replacing them with admission practices that may be perceived as less transparent.

Hence the most fruitful approach is to **retain** the national examinations, perhaps in modified form so that they can reinforce needed reforms to secondary education, and **complement** them with additional selection criteria and processes. The complementary selection mechanisms could be set centrally for national application, or authorised nationally for optional use at the discretion of individual higher education institutions, or determined by the institutions themselves. Some combination of these options could be organised, with institutional discretion being permitted only for institutions that meet specified preconditions such as official accreditation and transparent procedures of student selection. Australia and Georgia offer illustrations of practical approaches in this regard.

The main advantages of a complemented approach is that it takes account of school achievement through an examination system that is based on evaluating the educational outcomes from secondary schooling, offers another insight into the potential of a student to succeed, and identifies particular aptitudes that may not have been revealed through the student's selection of school subjects. Another advantage of well-constructed tests of generic reasoning and thinking skills in a range of familiar and less familiar contexts which do not require subject specific knowledge, is that they do not lend themselves readily to practised answers or to predictable questions of the kind that often sustain the mass tutoring industry.

Recommendation for widening student access to higher education

13. Egypt might move progressively to a more diverse, student-driven system of higher education, where students can exercise choice over where and what they study, and institutions can exercise autonomy in the admission of students, reflecting their missions and capacities. Particular consideration should be given to the following matters:

a. The Government, while maintaining control over the total number of higher education enrolments at the sectoral and institutional levels, could permit individual institutions to decide which students they admit and the programmes to which they admit them.

b. The process for admission to higher education institutions should be based on an expression of student preferences, a first round of institutional offers, students' acceptance or rejection of first round

offers, and a second round of institutional offers and student acceptances.

c. The Government might encourage students about to complete their secondary schooling to express an order of preference for higher education institutions and programmes, and enable students who meet the threshold requirements for entrance to higher education, but who are not admitted to the institution of programme of their first preference, to have their second or third preferences considered. Over time, students should be given wider choices for enrolling in their preferred fields of study where they meet the entry requirements, or accepting a place of their second preference in another field or institution.

d. To certify educational attainment through schooling, and to enable student access to further learning, there should continue to be a system of national examinations in the final years of secondary schooling, desirably supplemented by portfolios of student work and indicators of achievement through continuous school assessment.

e. For the purpose of admission to higher education, the results of the national secondary examinations and other indicators of achievement at school could be complemented by student results on professionally constructed tests of generic reasoning and thinking skills.

f. Initially, the Egyptian authorities might have an appropriate set of tests of generic reasoning and thinking skills professionally designed and trialled, and after revision, used for a period at the national level, in order to familiarise students, parents and personnel in schools and higher education institutions with the innovation, and build up public confidence in its use. Eventually, higher education institutions may be permitted to use validated supplementary selection instruments of their choice.

g. The introduction of these recommended changes to higher education admissions could take place alongside the development of academic reference standards, quality improvement in teaching and learning and assessment, institutional capacity building, and the implementation of national quality assurance procedures, including of student admission processes.

Raising the quality and effectiveness of higher education

On the basis of the available information and views presented to the review panel regarding the quality of inputs, processes, outputs and outcomes for universities and higher institutes, the following observations can be offered:

Educational inputs: The system generally has very high student staff ratios (SSRs). Medicine, natural and veterinary sciences are the fields with the lowest ratios, suggesting more intensive teaching. In these fields, Egypt's ratios, notably in its public universities, are on par with leading institutions of the developed world. Except for those fields, private universities have better SSRs than public universities by a considerable margin, and notably in the social sciences, where the public university SSRs reflect a standard of higher education well outside internationally acceptable norms. With the single exception of art, the SSRs of private higher institutes are well above internationally accepted standards. The problem of large classes is compounded by poor facilities and equipment in many institutions.

Educational processes: University education in Egypt can generally be described as being based on a narrow, rigid and often outdated curriculum typically bound by the single perspective of the lecturer whose texts form the assessable content of a course. An emphasis on the memorisation of content predominates over the development of critical reasoning and analytical skills. Assessment in higher education is based typically on content-recall rather than the demonstration of higher order reasoning skills.

Educational outputs: Over the decade to 2005/06, Egypt's output of graduates grew by more than 1 million (116%). Some 80% of these additional graduates had studied in what are designated as theoretically-oriented areas, whereas for Middle East and North Africa (MENA) countries the equivalent share is 66%, and for OECD countries some 60%. Additionally, apparent stability in the broad composition of graduate supply is not symptomatic of a responsive and dynamic higher education system. For instance, graduate output was flat over the decade in engineering, archaeology, economics and political science, social service, and tourism and hotels.

Notwithstanding scarce resources devoted to research, development and innovation, Egypt's research output in terms of articles published in international journals doubled over the decade to 2007, but it is still very low by international comparisons. Over half of Egypt's university research output is derived from just three universities. The alignment of university research with national development goals is weak.

Quality assurance and improvement

Egypt has adopted a strong approach to external quality assurance, primarily to safeguard minimum standards and provide consumer protection in the context of growth in private sector provision of higher education. Particular initiatives include the World Bank financed Quality Assurance and Accreditation Projects, the Egyptian Government's establishment of the National Authority for Quality Assurance and Accreditation of Education (NAQAAE), and the development of National Academic Reference Standards for various fields of university study.

Given the challenges ahead, it is encouraging to observe that much of the necessary groundwork has been laid: quality assurance documentation and manuals have been developed and made available to academic staff of higher education institutions; training and professional development opportunities have been provided; and indications have been given that good performance will be recognised and rewarded.

However, important work remains to be done at the institutional level in moving beyond compliance, and to mature the internal quality culture and management capacity.

Recommendations for raising educational quality and effectiveness

14. A holistic approach to improving the quality and effectiveness of Egyptian higher education would:

- focus on learning outcomes in terms of the capabilities that graduates will need in a changing world for life, work and further learning;
- integrate research into university education, especially in graduate schools; and
- involve government agencies and institutions accepting shared responsibilities for raising the standards of educational inputs, processes and outputs, in consultation with employers and in the context of a strategic approach to internationalisation.

15. Progress could be made on developing an Egyptian National Qualifications Framework (NQF), specifying learning outcomes in terms of graduate attributes for each level of educational award, including secondary schooling certificates, technical and vocational education and training diplomas, and other higher education degrees, and indicating the pathways that may be taken from one award to another. Particular consideration might be given to the following matters:

a. Alignment of the NQF with the Bologna Process model, including European Credit Transfer and Accumulation System (ECTS) equivalence;

b. Cross-sectoral coherence and articulation;

c. Further development of graduate attributes in the NQF, including through continual revision of the National Academic Reference Standards (NARS) and Institutional Learning Outcomes; and

d. Clarification of different institutional roles, particularly with regard to the fields and levels in which they are authorised to offer higher education qualifications.

16. All higher education institutions should be expected to provide up to date public information about their programmes and courses, admission requirements, and graduate destinations. Consideration might be given to embedding the following practices:

a. Each institution tracks the destinations of its graduate classes annually.

b. All higher education institutions obtain feedback annually from graduates about their satisfaction with their course, and from employers about their satisfaction with graduates, and report the findings publicly.

c. Higher education institutions, in partnership with employers, seek to offer internships to students to enable them to acquire practical experience as part of the curriculum.

d. In developing graduate capability statements (institutional learning outcomes), higher education institutions engage with prospective employers of their graduates.

17. The capacity of public higher education institutions for effective performance management could be purposefully strengthened through attention to the following aspects:

a. Public higher education institutions adopting performance-based management practices along with structured professional development of faculty and staff.

b. Public higher education institutions developing formal processes of student evaluation of courses and teachers, and the results should inform revision of courses, learning materials and teaching methods.

c. Students being involved in the quality assurance mechanisms of institutions, including in the design of evaluation forms and monitoring frameworks.

Developing a strategy for internationalisation

All over the world, higher education and university research are internationalising on an unprecedented scale and at a rapid rate. Internationalisation is now multi-dimensional. Conventional notions of effectiveness, quality and relevance are necessarily expanding, and governments and institutions around the world are having to adapt to the new realities. However, these trends are not evident in Egypt where internationalisation has not featured as an area of policy attention.

By comparison with other countries, the number of Egyptian students abroad is very low. Many students indicate a keen interest in study abroad, but their aspirations are not being realised. International students in Egypt have increased in recent years but represent only 1.3% of all higher education enrolments. Several institutions have indicated a desire to accept international students. The institutions themselves, however, generally do not actively attract international students, and many lack adequate infrastructure to accommodate them, and there are bureaucratic impediments.

Fostering academic staff mobility, in an orderly way, is one of the most effective long term means of internationalising of higher education. Mobility initiatives in Egypt do not appear to be driven by strategy at either the system or institutional level.

Second language learning in Egyptian higher education institutions is very limited, though several programmes are offered in English and French at some universities. Students wish to be exposed to a more internationalised curriculum, including the opportunity to master a second language and to have a study abroad experience.

In general, Egypt is opening up to the international community in various ways but has yet to develop a strategy for internationalisation of its higher education system. A cornerstone of a contemporary internationalisation strategy is the development of a comprehensive national qualifications framework, aligned as far as possible with international developments, especially the Bologna Process reforms, but encompassing all

levels of educational qualification, including the school leaving certificate, technical diplomas, and degrees. Such a qualifications framework, by detailing the knowledge, understandings and competencies expected of graduates for a given qualification, sets the reference point for curriculum and assessment, and for student learning pathways. An internationally attuned qualifications framework would enable Egyptian graduates to find employment wherever they might seek it and facilitate the recognition of qualifications of foreigners seeking to work or study in Egypt.

Recommendation for developing a comprehensive internationalisation strategy

18. Consideration should be given to formulating a more comprehensive internationalisation strategy for Egyptian higher education. This strategy could provide for:

- a statement of national policy objectives and principles;
- a more coherent set of actions aligned with national priorities;
- the embedding of internationalisation competencies into the statements of expected graduate attributes in the national qualifications framework;
- development of institutional twinning arrangements for the joint conduct of research and the awarding of diplomas and degrees;
- encouraging second and third language learning throughout the education system;
- ensuring that international students are included in Egypt's quality assurance and consumer protection arrangements;
- professionally promoting Egypt as a study destination for students in other countries;
- systematically collecting and reporting data on the movement of students and academic staff;
- reducing unnecessary regulations and bureaucratic procedures related to international collaboration; and
- providing adequate incentive funding and support, including support for Egyptian undergraduate students to have a period of study abroad.

Strengthening the development and application of knowledge

In general, Egypt lacks a well-defined strategy for research, development and innovation (RDI). Its capacity for basic science is weak. Its RDI management is under-developed and unco-ordinated, and there is inadequate investment in research and development (R&D). Consequently, Egypt has a low level of readiness to be competitive in the global knowledge economy.

The recent establishment of Higher Council for Science and Technology provides the basis for high-level co-ordination and prioritisation of R&D aligned with national development goals and strategies. The new Science and Technology Competitive Fund and the EU-Egypt Innovation Fund provide incentives for raising research quality and linking research activity with industry development needs.

One major structural barrier to the development of future capability is the separation of research from university education and knowledge exchange. This fragmentation, which derives from centralist periods and influences, does not suit the contemporary character of knowledge formation and diffusion, gives rise to loss of synergies, impedes cross-disciplinary work, and yet does not enable the development of critical scale.

Over-staffed research institutes affiliated with various ministries account for more than three-quarters of RDI expenditure. Egypt's high dependency on full-time personnel in dedicated research institutes is inefficient and exposed to several risks: the continuing predominance of a supply-driven approach to research and innovation; under-performance and loss of dynamism; and difficulties attracting and nurturing young talent.

Another structural weakness is the high dependency on input-based funding, and the associated low use of competitive research funding.

Recommendations for strengthening capacity for research, development and innovation

19. Through the Higher Council for Science and Technology, chaired by the Prime Minister, the Government of Egypt should commission an industry performance and foresight project, and an associated mapping of Egyptian R&D capacity to serve identified development needs and opportunities.

20. The Government should continue to build on the recently established Science and Technology Competitive Fund to provide demand-driven funding for RDI initiatives on a competitive basis.

21. Gross expenditure (public and private) on R&D should be sharply focussed on areas of internationally benchmarked research strength and national research priorities.

22. The Government should provide incentives for linking centres of research excellence with leading universities in cognate fields, including joint researcher appointments, collaborative supervision of doctoral and post-doctoral students, and joint participation in international research collaboration schemes.

23. Funding for centres of excellence in universities with demonstrated research capacity needs to increase significantly. Particular consideration should be given to the following matters:

a. The Government should provide incentives for research collaboration involving universities, research institutes and enterprises in Egypt.

b. Most research funding should be allocated to research teams and projects on a competitive basis, with independent peer reviewing of research proposals.

c. A competitive process, along the lines of the German Excellence Initiative, could help to integrate research into university education in key centres and graduate schools.

d. Over time, the Government should undertake a major programme of strategic investment in state-of-the-art research infrastructure.

e. The Government should cause to have produced annually a national report on the state of Egypt's RDI system, comparing Egypt's capacity and performance with international comparators.

Financing expansion and improvement in a sustainable manner

The Government's ability to carry out its master plan to expand the higher education system while improving quality will hinge, to a large extent, on the availability of sufficient financial resources. In comparison with other MENA countries, public spending on higher education in Egypt is reasonably high, and the burden of future expansion and quality improvement will need to rely more heavily on private expenditures.

Even though the share of higher education public expenditures in the total education budget is relatively high, public spending on education has decreased over recent years since 2002, and per student expenditures at the

higher education level are relatively low. As a result, the public universities and institutes are severely under-resourced in terms of faculty, infrastructure, equipment and learning materials. It is well recognised that the combination of rapidly increasing enrolment and lack of resources has led to further deterioration of quality in most public higher education institutions. Funding for university research is also very low, limiting the ability of universities to play an important role in the generation and dissemination of knowledge.

A case may be made for a time-limited capital injection to upgrade the higher education material base. However, without concurrent management reforms at the institutional level, encouraged by financing incentives for performance improvement, there could be little confidence that the investment would yield a sustainable return.

With limited performance-based budget allocation mechanisms, public higher education institutions have no particular managerial and financial incentives to be more innovative and use resources more efficiently. Broadly, the institutions having the lowest rates of productivity (graduate output per academic staff) have the highest student enrolments, there being no apparent realisation of economy of scale benefits. It appears that the very large public universities perform sub-optimally on both the quality and efficiency dimensions.

The tightly-controlled administrative system and rigid government regulations under which all higher education institutions operate provide insufficient incentive and flexibility to use their limited resources in the most efficient and effective manner.

The fact that the duration of a number of professional first degrees in Egyptian universities is generally one year and often two years longer than similar degrees in North America or some European countries represents a major social cost. Consideration might be given to reviewing the costs and benefits of the first year of general studies in professional courses such as engineering and medicine, where time to graduation is particularly long. The vocational educational and training sector also lacks short and flexible programmes that provide students with opportunities to attain intermediate qualifications.

The increase in private higher education enrolment and the growing segmentation, within public institutions, between students who study free-of-charge and those who pay fees in various forms, could result in serious social disparities in terms of access to higher education and labour market outcomes. Despite significant progress in the past decade, gender and regional inequities still require special efforts.

Recommendations for financing growth and improvement

24. It is highly unlikely that Egypt can achieve its ambitious enrolment expansion and quality improvement goals using the traditional mode of funding public higher education institutions predominantly with budgetary resources. The Government needs to design and implement a sustainable funding strategy that would realistically support its long term reform and development objectives. This would guide decisions about the desirable level of public funding, possible avenues for resource diversification, increased cost-sharing in an equitable way, and more efficient ways to distribute public resources among institutions and students.

25. A five-pronged strategy is proposed to attain the 2022 targets: (i) mobilising a greater share of public expenditures for education in GDP, with a proportional increase in spending on higher education; (ii) increasing resource diversification in public universities and institutes, including higher levels of cost-sharing; (iii) removing barriers and incentives for further growth of the private sector; (iv) enlarging enrolments in practically-oriented programmmes and institutions; and (v) establishing cost-effective distance education modalities for a significant proportion of the student population.

26. It is essential that the Government accompanies increased cost-sharing with a well-targeted programme of need-based scholarships and student loans to guarantee access for able students from low-income backgrounds.

27. To promote greater efficiency in the use of public resources, the Government should consider a combination of complementary performance-based funding allocation mechanisms to distribute public resources among higher education institutions, including a funding formula for recurrent expenditures (student-based or graduate-based funding), competitive funding for investment projects, and performance contracts to promote priority policy objectives.

28. In view of the run-down condition of many public higher education institutions, consideration should be given to a one-off major capital injection and capacity building investment programme. Such a programme could be implemented over the decade 2010-20, preceding the next demographically-driven enrolment surge into post-secondary education. The focus of such a programme could be on upgrading the material base of the public institutions, including their buildings, libraries and teaching and research equipment, as well as curriculum renewal and management improvement. (See recommendation 9 above).

29. The Higher Education Enhancement Project (HEEP) competitive fund could be confirmed as the principal allocation mechanism to distribute investment resources.

Managing the implementation transitions

Clearly, there is a wide gap between Egypt's current policies and practices for higher education development and those being adopted in the leading and emerging nations. Given Egypt's circumstances it is unrealistic to expect that gap to be closed in one large immediate step. Nevertheless, it is imperative for Egypt to be clear about its longer-term goals, keep it sights on moving ahead in absolute and relative terms, and manage well the required transition to a more dynamic, sustainable and coherent national system of higher education.

Assuming the Government of Egypt is inclined to adopt the broad direction of the recommendation set out below, even if not in its specificity, it will be necessary to select those changes which can be delivered early and which are likely to have the knock-on effect of creating conditions for subsequent adoption of change in other areas.

Recommendation for managing the reform process

30. Consideration should be given to a staged process of implementing specific reform initiatives through experimentation and piloting, to test the workability of processes, to demonstrate feasibility, and to build support.

Notes

[1] Higher education encompasses post-secondary education and training programmes leading to the award of post-school qualifications, including vocational, technical and academic awards.

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Chapter 1. Introduction

This chapter gives an overview of the terms of reference of the review and definitions of Egyptian tertiary education programmes.

The review panel was tasked to assess the condition of higher education in Egypt, to evaluate policies for higher education and research, and to identify future policy options to help meet Egypt's needs.

The panel benefited greatly from the information collated by the Strategic Planning Unit (SPU) of the Ministry of Higher Education, and other government agencies, and from the visits and meetings with students and staff of higher education institutions. The willingness of government officials, business people, faculty and administrators of higher education institutions, and students to engage in dialogue was greatly appreciated.

Purpose and scope of the exercise

The review panel has been guided by a broad view of higher education, understood as encompassing formal "post-secondary" or "tertiary" education leading to the award of post-school qualifications. The review encompasses the full range of tertiary programmes and institutions. As noted at the end of this Introduction, the review panel has adopted international conventions for the definition of tertiary education programme levels. The panel has also been guided by a strong view of the high personal, social and economic worth of higher education. Its social and economic value has been well captured by the World Bank in the following statement:

> Tertiary education exercises a direct influence on national productivity, which largely determines living standards as a country's ability to compete in the global economy. Tertiary education institutions support knowledge-driven economic growth strategies and poverty reduction by: (a) training a qualified and adaptable labour force, including high-level scientists, professionals, technicians, teachers in basic and secondary

education, and future government, civil service and business leaders; (b) generating new knowledge; and (c) building the capacity to access existing stores of global knowledge and to adapt that knowledge to local use. Tertiary education institutions are unique in their ability to integrate and create synergy among these three dimensions. Sustainable transformation and growth throughout the economy are not possible without the capacity-building contribution of an innovative tertiary education system. This is especially true in low-income countries with weak institutional capacity and limited human capital. (Hopper, 2008)

Request from Egypt and Terms of Reference

The review panel was invited to comment broadly on the condition of higher education in Egypt and matters relating to its future development. At the outset, the Minister responsible for Higher Education identified several areas of policy concern and attention, and invited the panel to address inter alia:

- The strengths and weaknesses of the Egyptian higher education system relative to international capacity and performance;
- Graduate output quality and relevance to Egypt's social and economic requirements;
- The appropriate balance between university education and vocational education and training;
- The effectiveness of the transition from secondary to tertiary education;
- The respective roles of public and private providers of higher education;
- The place of research within the higher education system;
- The structure of financial incentives for performance improvement in higher education institutions; and
- The extent to which the Government's own policies and regulations for the development of Egyptian higher education are appropriate, well directed and effective.

Country Background Report

Unless otherwise indicated, the source of data presented in this report is the Country Background Report prepared by the Strategic Planning Unit in

2008, *Higher Education in Egypt: Background Report*. That report is being published as a companion document to this examiners' report.

Caveats

The panel visited Egypt and conducted site visits and consultations in October 2008. The data prepared for and collected by the panel reflected the global economic conditions at the time and, in many instances, were lagging behind the contemporary circumstances. Not long afterwards, an unprecedented collapse of financial houses and credit supply in the United States quickly spread around the world, leading to crashes in equity markets, heavy falls in business and consumer demand, and the sudden onset of a global recession.

At the time of preparing this report, in the early aftermath of the global financial crisis, reservations were being raised about several assumptions and practices, built up over the past quarter century, regarding debt-financed consumption, speculative finance, high-risk lending, and inadequate regulatory regimens. Additionally, adverse global environmental signals induce rethinking about the energy and water intensity of business and household activity, the design and production of consumer goods, and the pricing of various inputs. At the beginning of the second decade of the twenty-first century, major changes to the structure of incentives for economic development can be expected.

None of this diminishes the panel's firm understandings that: (a) investments in human capital and the knowledge base are fundamental to the competitiveness and social inclusiveness of nations; and (b) open trade and export-market development paths are crucial for national economic growth and social well-being. Rather, new opportunities arise for countries to innovate, develop new sources of energy, and exploit more accessible seas and more arable areas of land. Egypt, for instance, given its location, is potentially well-located to benefit from changes to transport corridors, as well as to exploit its expansive and previously unproductive desert as a site of new energy production, perhaps from solar and wind technologies supplying Europe, Africa and Asia.

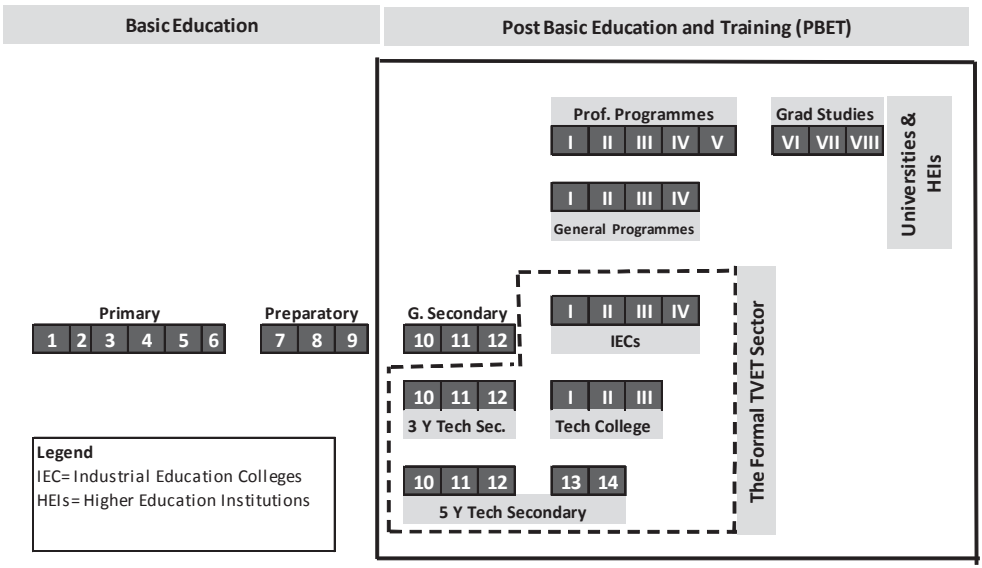
Nevertheless Egypt, among other countries, will be affected by the changed global fundamentals, and previous trajectories and projections of economic growth will require revision. One corollary is that Egypt may need more time to build the capacity that is necessary to make quantitative and qualitative improvements in its human capital and knowledge bases. In this context, what matters most is clarity of strategic direction, even if the pace of progress is slowed.

Definitions of tertiary education programmes

International statistical conventions define tertiary education in terms of programme levels: those programmes at ISCED[1] levels 5B, 5A and 6 are treated as tertiary education, and programmes below ISCED level 5B are not.[2] In some countries the term higher education is used more commonly than tertiary education, at times to refer to all programmes at levels 5B, 5A and 6 and at times to refer only to those programmes at levels 5A and 6. An additional complication is presented by the practice, in some countries, of defining higher education or tertiary education in terms of the institution rather than the programme. For example, it is common to use higher education to refer to programmes offered by universities, and tertiary education to refer to programmes offered by institutions that extend beyond universities. This review follows standard international conventions in using tertiary education to refer to all programmes at ISCED levels 5B, 5A and 6, regardless of the institutions in which they are offered.

Figure 1.1 depicts the structure of the Egyptian education and training system.

Figure 1.1 **Education and training in Egypt**



Source: Samih Mikhail, OECD/World Bank review team, 2008.

Table 1.1 relates Egypt's technical and vocational education programmes to the ISCED framework.

Table 1.1 **The link between the TVET sector's institutions and the ISCED designations**

TVET Stage in Egypt	ISCED Designation	Comments
Three-year Technical Secondary Education	ISCED 3B or 3C	The duration of ISCED 3 programmes differs among countries, typically ranging from two to four years of schooling. In addition, this level may either be "terminal" and/or "preparatory." ISCED Level 3 programmes are sub-classified according to the destination for which a programme is designed: (i) ISCED 3A indicates programmes designed to provide direct access to ISCED 5A programmes (university); (ii) ISCED 3B, direct access to ISCED 5B education (alternative short cycle programmes of higher education); and (iii) ISCED 3C, direct entry into the labour market, although this designation also holds for programmes that provide access to ISCED 4 programmes.
Five-year Technical Secondary Schools	4B or 4C	The ISCED 4 designation cover programmes that straddle the boundary between upper-secondary and post-secondary education. Level 4 programmes cannot, considering their content, be regarded as tertiary programmes. Although they are often not *significantly* more advanced than ISCED 3 programmes, they serve to broaden the knowledge and skills of participants who have already completed a programme at Level 3. Students are typically older than those in ISCED 3 programmes. Level 4 programmes are sub-classified according to the destination for which a programme is designed: (i) ISCED 4A programmes provide direct access to ISCED 5A education; (ii) ISCED 4B, direct access to ISCED 5B education; and (iii) ISCED 4C, direct entry into the labour market.

TVET Stage in Egypt	ISCED Designation	Comments
Two- or Three-year Technical College Programmes	5B	These programmes are generally more practical and occupationally specific than university (ISCED 5A) programmes. Qualifications in category 5B are typically shorter than those in 5A and focus on occupation-specific skills. The programmes are generally geared for direct entry into the labour market, although some programmes may cover certain theoretical foundations. A 5B programme typically meets the following criteria: (i) it is more practically oriented and occupation-specific than programmes at the ISCED 5A; (ii) does not prepare students for direct access to advanced research programmes; and (iii) has a minimum duration of the full-time equivalent of two years.
The Four-year Industrial Education Colleges' (IEC) Programmes	5A	The curriculum of programmes at this level is similar to traditional university programmes and has a strong theoretical foundation and prepares students for professions as secondary technical school teacher, or occupational trainer in a productive sector. As the organisational structure of programmes in tertiary education varies greatly across countries, no single criterion can be used to define boundaries between ISCED 5A and ISCED 5B education. The following criteria are the minimum requirements for classifying a programme as ISCED 5A: (i) it must have a minimum cumulative academic duration (at the tertiary level) of the fulltime equivalent of three years; (ii) it provides the level of education required for entry either into a profession with high skills requirements or an advanced research programme; and (iii) the programme is taught by faculty who have advanced degree credentials.

Notes

1 The International Standard Classification of Education (ISCED) provides the foundation for internationally comparative education statistics and sets out the definitions and classifications that apply to educational programmes within it.

2 Programmes at level 5 must have a cumulative theoretical duration of at least two years from the beginning of level 5 and do not lead directly to the award of an advanced qualification (those programmes are at level 6). Programmes are subdivided into 5A, programmes that are largely theoretically based and are intended to provide sufficient qualifications for gaining entry into advanced research programmes and professions with high skills requirements, and into 5B, programmes that are generally more practical/technical/occupationally specific than ISCED 5A programmes. Programmes at level 6 lead directly to the award of an advanced research qualification. The theoretical duration of these programmes is three years full-time in most countries (*e.g.* Doctoral programme), although the actual enrolment time is typically longer. These programmes are devoted to advanced study and original research.

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Chapter 2. Egypt and its Educational System: An Overview

This chapter provides a summary of supplementary background information about Egypt's population, economy and education system.

Economic development

The current government is headed by Prime Minister Ahmed Nazif, who was appointed by President Hosni Mubarak in 2004 with a brief to liberalise the nation's economy. Under comprehensive economic reforms initiated in 1991, Egypt relaxed many price controls, reduced subsidies, lowered inflation, cut taxes, and partially liberalised trade and investment. Manufacturing became less dominated by the public sector, especially in heavy industries. A process of public sector reform and privatisation began to enhance private business opportunities. Agriculture, mainly in private hands, has been largely deregulated, with the exception of cotton and sugar production. Construction, non-financial services, and domestic wholesale and retail trades are largely private.

Gross domestic product (GDP) per capita based on purchasing power parity (PPP) increased fourfold between 1981 and 2006, from USD 1 355 in 1981 to an estimated USD 4 535 in 2006. GDP per capita at constant 1999 prices increased from EGP 411 in 1981 to EGP 8 708 in 2006. GDP per capita increased from USD 587 in 1981 to an estimated USD 1 518 in 2006 (International Monetary Fund).

Major fiscal reforms were introduced in 2005 in order to tackle the informal sector which according to estimates represents somewhere between 30% to 60% of GDP. Significant tax cuts for corporations were introduced for the first time in Egyptian history. The new Income Tax Law No. 91 for 2005 reduced the tax rate from 40% to 20%. According to government figures, tax filing by individuals and corporations increased by 100%.

The Egyptian industrial sector has been transformed from domination by large and inefficient state enterprises protected from competition into one that is more flexible and globally competitive.

Many changes were made to cut tariffs, tackle the black market, and reduce bureaucracy. Amendments to investment and company law were introduced in order to attract foreign investors. Significant improvement to the domestic economic environment increased investors' confidence in Egypt. The Egyptian Stock Exchange Market is considered among the best ten emerging markets in the world. The changes to the policy also attracted increased levels of foreign direct investment in Egypt. According to the UN Conference on Trade and Development's 2008 World Investment Report, Egypt was ranked the second largest country in attracting foreign investment in Western Asia, that region itself being the fastest growing destination for foreign direct investment flows worldwide (United Nations, 2008).

Egypt's primary economic strength stems from its diversity in comparison with the rest of the region, as the country's economy is founded on a diverse base. Table 2.1 shows the composition of GDP in 2005/06. Hydrocarbons extractions constituted 9% (the lowest proportion in the Arab world); manufacturing, 19%; agriculture 16%; wholesale and retail trade, 12%; construction and real estate, 8%; financial and telecommunications services, 8%; and externally oriented sources, such as the Suez Canal and tourism, over 3% each.

In addition to the traditional industrial sectors, such as clothing, textiles, furniture, paper and pharmaceuticals, the Government has targeted six areas for special attention where it is believed Egypt has comparative advantage. These areas are engineering machinery and equipment, labour-intensive consumer electronics, automotive components, life sciences, biotechnology and handicrafts.

The main challenges to the development strategy are an inflated bureaucracy that hinders investment, the need for more high-skilled workers in the local workforce, the uncertain cost of energy, and the lingering effects of the credit crisis. The priorities for Egypt are to create jobs and eradicate poverty. The Government is working to implement reforms, including through an overhaul of the education system.

Table 2.1 **Gross domestic product at factor cost by economic sector in 2005/06**

Sector Share (%)	Total	Private	Public
	426 149.9[1]	**284 370.4**[1]	**141 779.5**[1]
Agriculture, Forestry & Fishery	15.5	23.3	0.0
Mining (Oil, Gas & others)	8.8	2.0	22.4
Manufacturing	18.9	24.7	7.3
Electricity	1.8	0.4	4.7
Water	0.4	0.0	1.3
Construction & Building	4.6	6.1	1.7
Transportation & Storage	5.0	5.9	3.1
Communication	2.2	3.2	0.3
Suez Canal	3.3	0.0	10.1
Wholesale & Retail Trade	11.5	16.5	1.4
Brokerage & Subsidiary	5.7	3.0	11.2
Insurance & Social Insurance	2.5	0.1	7.3
Restaurants & Hotels	3.3	4.9	0.1
Real Estate Activities	3.7	5.3	0.4
General Government	9.3	0.0	27.9
Education, Health & Personal Services	3.3	4.6	0.6
Total	100.0	100.0	100.0

Note: [1] EGP Million

Source: CAPMAS (2008), *Egypt in Figures*.

Global competitiveness

With a score of 4.1 out of 7, Egypt ranked 65th out of 128 in the 2007 Global Competitiveness Index, and 4th out of 48 countries in the same stage of development (World Economic Forum, 2008). An inadequately educated workforce was identified as the third most serious problem, after access to finance and inefficiency of bureaucracy, in relation to doing business in Egypt. Higher education and training, technological readiness and innovation were identified as competitive disadvantages for Egypt. Particular deficiencies include the poor quality of the education system, low quality of mathematics and science education, limited capacity for research and development (R&D), and weak university-industry collaboration.

Human development

The infant mortality rate improved from 73 to 33 deaths per 1 000 over the decade 1995 to 2005. Life expectancy for males and females increased from 49.5 and 51.9 years respectively in 1981, to 62.9 and 71.4 years in

2004. The population below the national poverty line is 19.6% (2005). While population below USD 1/day is 3.1% and population below USD 2/day is 43.1%. Within the MENA countries, Egypt is ranked 1st in population size, 13th in GDP per capita and 15th on the human development index (HDI), as shown in Table 2.2.

Table 2.2 **Indicators for Middle East and North Africa (MENA) countries**

Country	Human Development Index (HDI) Value (2004)	HDI Rank	GDP per capita (PPP USD) (2004)	GDP per capita rank	Population 2004 (millions)	2004 Population rank	Population 2015 (millions)
Algeria	0.728	12	6 603	9	32.4	3	38.4
Bahrain	0.859	2	20 758	2	0.7	18	0.9
Djibouti	0.494	16	1 993	15	0.8	16	0.9
Egypt	0.702	14	4 211	13	72.6	1	88.2
Iran	0.746	10	7 525	8	68.8	2	79.9
Iraq	n.a.	n.a.	n.a.	n.a.	28.1	5	36.5
Jordan	0.760	9	4 688	11	5.6	10	7.0
Kuwait	0.871	1	19 384	4	2.6	14	3.4
Lebanon	0.774	8	5 837	10	3.5	13	4.0
Libya	0.798	6	n.a.	n.a.	5.7	9	7.0
Morocco	0.640	15	4 309	12	31.0	4	36.2
Oman	0.810	5	15 259	5	2.5	15	3.2
Qatar	0.844	3	19 844	5	0.8	16	1.0
Saudi Arabia	0.777	9	13 825	7	24.0	6	30.8
Syria	0.716	13	3 610	14	18.6	7	23.8
Tunisia	0.760	7	7 768	8	10.0	8	11.1
United Arab Emirates	0.839	4	24 056	11	4.3	11	5.6
West Bank & Gaza	0.736	11	n.a.	12	3.6	12	5.0
Yemen	0.492	17	879	7	20.3	7	28.5

Source: Global University Network for Innovation (2008), *Higher Education in the World 3*, Palgrave Macmillan, Basingstoke, United Kingdom.

There are marked gender differences in adult illiteracy rates: 17% for males and 41% for females. This disparity reflects cultural, social and economic factors. Significant signs of progress can be seen in increased literacy rates for males aged 15 to 24 years from 71% to 85% between 1986 and 2005, and for females from 54% to 79% over the same period, representing major steps towards gender equity.

The trends and comparisons shown in Table 2.3 indicate substantial progress by Egypt since the mid 1980s. In several instances (*e.g.* adult literacy, average years of schooling, enrolment rates in tertiary education)

Egypt has come from below the MENA average to above it, reflecting in part a sustained level of expenditure on education as a share of GDP.

Table 2.3 **Selected indicators, Egypt compared with MENA average (italics)**

Indicator	1975	1985	1995	2000	2002	2003
Expenditure on education as per cent of GDP	5.0 *(4.2)*	5.7 *(5.2)*	5.6 *(4.8)*	5.5 *(5.3)*	5.9 *(5.7)*	
Enrolment rate in primary education	70.0 *(84.6)*	85.4 *(93.0)*	99.8 *(91.7)*	104.6 *(97.0)*	104.7 *(98.6)*	103.9 *(95.4)*
Enrolment rate in secondary education	40.3 *(35.5)*	61.4 *(54.1)*	76.5 *(62.3)*	85.9 *(69.1)*	86.9 *(73.9)*	87.1 *(73.7)*
Enrolment rate in tertiary education	11.7 *(5.9)*	18.1 *(12.0)*	20.2 *(14.5)*	30.2 *(21.8)*	28.5 *(26.0)*	32.6 *(23.8)*
Adult literacy rate (aged 15 and older)	35.4 *(35.8)*	43.2 *(47.0)*	51.1 *(60.4)*	65.6 *(69.0)*		71.4 *(68.7)*
Average years of schooling of adults	1.55 *(2.34)*	3.56 *(3.64)*	4.99 *(4.92)*	5.51 *(5.39)*		

Source: The World Bank (2008), The Road Not Traveled: Education Reform in the Middle East and Africa, Washington.

Poverty and income distribution

According to the 2005 Household Income, Expenditure and Consumption Survey (HIECS), estimated per capita poverty lines vary across the regions. Data from a World Bank and Ministry of Economic Development poverty assessment, based on comparisons between actual expenditures (and the cost of a consumption basket securing 2 470 calories per day per person), show that individual Egyptians who spent less than EGP 995 per year in 2005 are considered "extreme poor", those who spent less than EGP 1 423 per year are "poor" and those who spent less than EGP 1 853 per year are "near poor". According to these data, some 19.6% of the population is considered to be "poor" and 21% "near-poor" (El-Saharty, 2005).

Population

According to the 2006 Population, Housing and Establishments Census, the population of Egypt was 72 798 million. Males represented 51% and females 49%. The rural population accounted for 57% and the urban

population 43%. The age composition of the population is shown in Table 2.4.

Table 2.4 **Egyptian population by age composition, 2006**

Age group	<1 year	1 to less than 5 years	5 to less than 15 years	15 to less than 45 years	45 to less than 60 years	60 plus years	Total
Population ('000s)	628	7 090	15 363	36 288	9 001	4 428	72 798
Age group share of population (%)	0.9	9.7	21.1	49.9	12.4	6.0	100.0

Source: CAPMAS (2008), *Egypt in Figures*.

Almost one third (31.7%) of Egypt's population was aged under 15 years in 2006. This proportion has fallen from 37.7% in 1996.

Workforce

As shown in Table 2.5, Egypt's labour force participation rate has been rising alongside its increasing population. The estimated workforce in 2006 of 23.3 million comprised 21.0 million employed and 2.1 million unemployed persons, with an official unemployment rate of 9%. Unemployment was distributed almost equally between rural and urban areas.

The Government continues to play a significant role in the labour market, accounting for 26.5% of the employed labour force, although the government share of employment has fallen from 40% in 1982 as a consequence of policy measures to reduce public sector functions and develop private sector activity.

Agricultural employment has been declining, down from 41% in 1990 to 27% in 2006. The service sector accounts for the bulk of employment growth.

Table 2.5 **Population and labour force trends**

Labour force trends	1996	2000	2001	2002	2003	2006
Population (millions)	59.30	63.3	64.6	65.9	67.3	72.6
Labour Force (millions)	17.20	18.9	19.5	19.6	19.7	23.3
Participation rate (%)	29.10	29.9	30.1	29.8	29.4	32.1
Employed (millions)	15.70	17.4	18.0	17.5	17.7	21.2
Unemployed (millions)	1.53	1.5	1.5	2.1	2.0	2.1
Unemployment rate (%)	8.90	7.9	7.6	10.7	10.0	8.9

Source: CAPMAS (2008), *Egypt in Figures*.

Table 2.6 shows the distribution of employment by major sectors. In 2005/06, services represented 45% of Egypt's employed workforce.

Table 2.6 **Distribution of employment by activity, 2005/06**

Agriculture	27.29%
Mining, petroleum and industry	13.45%
Construction	7.80%
Education and health services	6.23%
Services	45.23%

Source: Ministry of Economic Development

Informal enterprises in Egypt are defined as enterprises that do not have a licence or do not have a commercial registrar, and therefore operate outside legislation and state supervision. The number of employers in the informal sector is estimated at 1.4 million, representing 82% of employers in Egypt. Employed in the informal sector is estimated to be around 8.2 million, or 39% of the total workforce (Frost, 2008).

The progress made in reducing illiteracy can be seen in Table 2.7. Nevertheless, serious problems remain, including, as the table shows, gender inequalities. Women are less educated than men. Almost half the female population (48%) have less than six years of schooling compared with 36% of men. Whereas 42% of males have educational attainment of grade 12 or above, the equivalent proportion for females is 34%.

Table 2.7 **Population distribution by educational status (10 years and older)**

Educational Status	1996 Census	%	2006 Census	%	Males (%)	Females (%)
Illiterate	17 646 025	39.4	16 806 657	29.6	22.3	37.3
Read & Write	8 413 075	18.8	7 114 499	12.0	13.4	10.5
Adult Education Graduates	0	0.0	687 454	1.0	1.2	0.7
Less than Intermediate Certificate	7 911 817	17.6	11 134 399	19.4	20.8	17.9
Intermediate Certificate	7 408 296	16.5	14 283 546	25.8	28.2	23.3
Above Intermediate Certificate	904 212	2.0	1 808 268	2.5	2.8	2.3
University Certificate & above	2 547 995	5.7	5 476 704	9.6	11.1	8.0
Total	**44 831 420**	**100.0**	**57 311 527**	**100.0**	**100.0**	**100.0**

Source: CAPMAS (2008), *Egypt in Figures*.

The interaction of educational attainment and gender is important for employment opportunity. As shown in Table 2.8, men occupy four out of five jobs overall. Male dominance in employment has increased since 1997 among the illiterate population. It is only among the population with grade 12 or above qualifications that women represent more than one quarter of employed persons. The employment share has been increasing for women with post-secondary qualifications.

In 2006, the unemployment rate for people with below secondary education was 0.9%, whereas for those with secondary education the unemployment rate was 19.8%, and for those with higher education 14%.

Rural-based technical secondary graduates had the highest unemployment rates in 1997 and experienced some of the most significant declines (from 16% to 6% for males and from 63% to 41% for females). Nevertheless, unemployment rates among female graduates with technical secondary degrees remain very high.

University graduates are the only educational group to have experienced an increase in unemployment between 1997 and 2006. Referred to as an Arab phenomenon, "educated unemployment" is seen to arise from two factors: an excess of graduate supply over labour market demand; and over-production of graduates in the social sciences (Zaytoun, 2008).

Table 2.8 **Employment by level of education and gender (per cent), 1997-2002**

level of education	**1997**	**2000**	**2001**	**2002**
Total employment	100	100	100	100
of whom men	*80.9*	*81.1*	*81.9*	*81.5*
The share of employed persons with the following level of education:				
Illiterate	31.3	28.7	24.3	23.2
of whom men	*76*	*75*	*78*	*80*
Read & write (6 years of school)	21.6	20.9	21	21.2
of whom men	*95*	*95*	*95*	*95*
Below Intermediate (9 years of school)	6.8	6.5	6.4	6.2
of whom men	*94*	*94*	*94*	*95*
Intermediate (12 years of school)	23	24.2	28	28.2
of whom men	*75*	*80*	*77*	*76*
Above Intermediate (14 years of school)	4.6	4.5	4.9	5.2
of whom men	*72*	*73*	*73*	*67*
University Degree (at least 16 years of school)	12.7	15.2	15.4	15.8
of whom men	*76*	*77*	*74*	*73*

Source: CAPMAS (2008), *Egypt in Figures*.

In 2006, the unemployment rate for people with below secondary education was 0.9%, whereas for those with secondary education the unemployment rate was 19.8%, and for those with higher education 14%.

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There are evident educational attainment imbalances, such as a low level (4%) of labour demand for persons with intermediate qualifications, whereas that group represents the highest proportion (55%) within the unemployed. Meanwhile there are reported shortages of skilled labour supply in the industrial sectors. Additionally there are regional imbalances between the more prosperous governorates (Cairo, Giza, and Alexandria account for two-thirds of total demand) and other governorates in Lower Egypt.

Education system

Basic Education (Primary and Preparatory): Basic education (six years of primary and three years of preparatory) is a right for Egyptian children from the age of six. After grade 9, students are tracked into one of two strands: general secondary schools or technical secondary schools.

General Secondary Education: This stage of three years starts from grade 10 and aims at preparing students for work and further education. Graduates of this track normally join higher education institutes in a highly competitive process based mainly on their results of the secondary school leaving exam (*Thanaweya Amma).*

Technical Secondary Education (Industrial, Agricultural, Commercial and others): Technical secondary education has two strands. The first provides technical education in three-year technical secondary schools. The second provides more advanced technical education in an integrated five-year model; the first three years are similar to those of the former type and the upper two years prepares graduates for work as senior technicians. Graduates of both tracks may access higher education depending on their results in the final exam. However, their transition rates are low in comparison to graduates of general secondary education.

University and Higher Education: This type of education is provided in universities or higher specialised institutes. The duration of study extends from two years in middle technical institutes to four, five, or six years in university colleges and higher institutes. Master and PhD degrees require at least two and three years of study respectively.

Al-Azharite Education: Al-Azharite education follows the same direction of the general education with regard to hours of study for each school subject. However, Al-Azhar offers religious instruction as part of the curriculum.

In primary education 62% of students attend public schools, 29% private schools and 9% religious Al-Azhar schools. Public education plays a greater role in general secondary education accounting for 92% of all enrolments.

Similarly, in technical secondary education, 93% of enrolments are in public schools.

Technical and vocational education

Formal TVET in Egypt is provided through secondary education in Technical, Commercial and Agricultural Schools, and in higher education in Technical Colleges (formerly known as Middle Technical Institutes), and Institutes of Industrial Education.

Secondary school TVET

The Ministry of Education (MOE) administers about 1 600 technical and vocational schools, together, enrolling over 2.2 million students in technical, commercial and agricultural secondary schools that lead to a three-year technical diploma or five-year advanced technical diploma. Until recently, government policies have limited access to higher education by tracking more than 60% of preparatory school graduates into technical secondary schools, whose graduates mostly enter the labour market directly and have very limited opportunity for access to universities.

Poor employment outcomes for technical and vocational students, coupled with the higher unit cost of the sector, led the Government to reconsider the policy of streaming. As part of broader reforms in education, the MOE has begun to cut back the technical and vocational stream, beginning with the 350 or so commercial schools. Between 2002 and 2006 a number of the commercial schools were converted to general education. The curricula of most technical secondary schools are being redesigned to place greater emphasis on general subjects and to reduce hours spent on technical and vocational subjects.

The technical colleges

The technical colleges, administered under the Ministry of Higher Education, comprise eight regional technical colleges, which include 45 middle technical institutes covering a variety of disciplines. In 2002, the MOHE with support from the World Bank, launched a Higher Education Enhancement Project (HEEP) which included a component which clustered the 45 middle technical institutes into eight technical colleges. Three of the colleges were chosen as HEEP pilots (AED, 2008):

- *Mataryia Technical College* comprises six institutes on two campuses; the Shubra commercial and industrial institute, and the Mataryia commercial and industrial institute.
- *Mehalla Technical College* comprises six institutes on four campuses including Mehalla industrial and commercial, Zagazig industrial and commercial, Mansoura commercial and Domietta commercial.
- *South Valley Technical College* comprises nine institutes on four campuses. The institutes include aluminium in Naga Hamady; commercial, industrial, travel & hotel, and the survey and irrigation institutes in Quena; and the commercial, industrial, and restoration of antiquities institutes in Aswan.

The industrial education colleges

MOHE, with support from the World Bank, also established a number of industrial education colleges (IECs) which offer four-year programmes leading to a Bachelor of Technology to train technical teachers for technical secondary school. The IEC accepts graduates of industrial secondary schools (both three- and five-year systems) and graduates of the industrial technical institutes. The IEC prepares these graduates as qualified teachers to teach both theoretical and practical subjects in the industrial secondary schools so as to improve the level of the teachers of practical subjects.

Other middle level institutions

Middle level technical institutions of higher education and training include institutions of other ministries such as defence, communications and tourism, which provide targeted technical education and training in their specific sectors, as well as nine private technical colleges. All these middle level institutions offer a higher technical diploma in industrial and commercial fields.

TVET and the International Standard Classification of Education (ISCED)

The structure of educational systems varies widely among countries, making a framework to collect and report data on educational programmes with a similar level of educational content, a clear prerequisite for internationally comparable education statistics and indicators. In 1999, a revised International Standard Classification of Education (ISCED) was

adopted by the United Nations Education, Scientific and Cultural Organisation (UNESCO) General Conference. In this multidimensional framework ISCED levels 1, 2 and 3A refer to the primary education stage, the preparatory stage and general secondary stage.

Other TVET programmes

Other forms of training include training through industry attachments (dual systems and apprenticeships schemes), in-service training, and re-training of both employed and unemployed workers in the labour force. These modes of TVET provision are provided formally through private or public institutions, as well as informally through on-the-job training by employers.

Entry-level vocational training is provided to almost 60 000 trainees a year in 232 training centres managed by six ministries outside the education portfolios. These are the Ministries of Industry and Technological Development, Housing, Manpower and Emigration, Agriculture, Health, and Culture. The centres are usually described by the term Vocational Training Centres (VTCs). They provide a wide variety of courses providing many skills. Four of the ministries (Manpower and Emigration, Agriculture, Health, Culture) run shorter courses (of a few months in duration) for semi-skilled occupations. The 22 000 trainees who complete these courses each year receive a certificate issued by the relevant ministry.

Two other ministries, Housing (MOH) and Industry and Technological Development (MITD), run longer courses for skilled workers and graduate about 30 000 trainees a year between them. The 74 VTCs of the MOH certify their technicians. The 38 VTCs of the MITD run three-year training courses and issue technical diplomas accredited by the MOE as equivalent to diplomas issued by Technical Secondary Schools. The MITD courses are also important because they are undertaken on an apprenticeship basis. Trainees do two years in the VTCs and the third year of work attachment in industry. In addition to these VTCs, the MOE and the Arab Academy of Technology finance 19 centres classified as private VTCs, that graduate about 12 000 trainees a year.

In-service training

In service or post entry-level training includes up-grading of workers' skills and training for the unemployed and other disadvantaged groups. Accurate information on in-service training in the private sector is difficult to find. Data prepared within the Social Fund for Development (SFD) show,

for example, that there are only 46 in-service training centres (also referred to as Vocational Training Centres) in the private sector, training less than 50 000 employees a year. It is difficult to accept that this reveals the full extent of in-service training in the private sector but no comprehensive studies have yet looked into this matter in more detail (Abrahart, 2003).

The SFD also reports that about 25 000 public sector employees a year receive in-service training in 106 training centres (again termed VTCs but distinct from those providing entry-level training), 68 of them are in state-owned enterprises but this number can be expected to decline with privatisation and diminution of activity and level of funding in state-owned enterprises. The other 38 centres are run by seven government agencies. Finally, the SFD has identified another 833 training centres that provide vocational training for various disadvantaged groups, particularly women, disabled and unemployed youth. The centres are also described as VTCs but they are often community-based centres designed to meet community development needs. Most of these centres are run by non-governmental organisations (NGOs), local organisations, and are heavily subsidised by government funds.

The centres provide training to help participants to improve their ability to generate income, usually in the informal sector. They handle almost 40 000 participants a year, mostly in short courses. Half of the participants are in what is known as the Productive Families Scheme (PFS), a programme administered by the Ministry of Social Affairs but implemented through NGOs. Compared to other VTCs, the training in these centres is more *ad hoc* and less structured. Much of their work is best described as informal training and they are considered in more detail later in the report under the section on informal training.

Higher education

Higher education in Egypt has a long history which dates back to 988 AD, a few years after the building of the Al-Azhar mosque in 969 AD. Al-Azhar, founded by the Fatimids, is considered to be the oldest operating university in the world. Al-Azhar University was initially founded as a *Jami'ah* ("university" in Arabic) which issued academic degrees, and had individual faculties for a madrasah and theological seminary, Islamic law and jurisprudence, Arabic grammar, Islamic astronomy, early Islamic philosophy and logic.

Up until 1957, there were five public universities in Egypt located in Cairo, Alexandria, and Assiut and one private university, the American University in Cairo. Until the 1950s, Egypt was able to maintain

international standards in higher education and research. A process of higher education expansion began in the 1960s, through the establishment of university branches across the country, subsequently emerging as independent universities in the 1970s.

The growth of higher education in Egypt started in 1957, after the establishment of Assiut University to increase access of Upper Egyptians to higher education. Later in the 1970s, the Government took further steps to consolidate higher education by opening seven new universities throughout the country, such as Al-Minya University, the former branch of Assiut University.

Table 2.9 **Higher Education enrolments and staff by type of institution, 2006/07**

a. Enrolment

Higher Education institutes		Number of institutes	Enrolment	% of Total Enrolment	% of Total Enrolment	Enrolled in Postgraduate	% of Total Postgraduate
Public Univ.	Full time	17	1 101 431	43.3	79.9	177 425	84.5
	New modes		401 956	15.8		0	0.0
Al-Azhar		1	**397 383**	15.6		22 504	10.7
Public Technical Colleges		8	131 189	5.2		0	0.0
Private Universities		17	**48 329**	1.9	20.1	1 077	0.5
Private Higher Institutes		121	428 211	16.8		9 016	4.3
Private Middle Institutes		22	34 241	1.3		0	0.0

b. Staff

Higher Education institutes		Number of institutes	Number of staff	% of Total staff number	% of Total staff number	Number of Academic staff
Public Univ.	Full time	17	37 965	76.68	93.74	25 392
	New modes					
Al-Azhar		1	**7 177**	14.50		3 379
Public Technical Colleges		8	1 269	2.56		
Private Universities		17	**1 436**	2.90	6.26	586
Private Higher Institutes		121	1 654	3.34		2 234
Private Middle Institutes		22	8	0.02		19

Source: Strategic Planning Unit database, MOHE, Egypt.

Main findings and conclusions

Egypt has made significant progress in reducing illiteracy and increasing rates of educational participation.

Nevertheless, major inequalities persist, especially on a regional basis. The interaction of educational attainment and gender is particularly important for employment opportunity.

However, an excess of university graduate supply over labour market demand, and over-production of graduates in the social sciences, gives rise to "educated unemployment".

Meanwhile, there are shortages of technical and middle level professional skills, but technical and vocational education and training suffers from low investment and status.

There are stresses on higher education institutions that have absorbed growth in student enrolments without commensurate increases in funding.

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Chapter 3. Development Strategy

This chapter considers Egypt's economic and social circumstances, its five-year economic development plan, its demographic challenges, the imperatives and expectations that arise for higher education and research, and the strategic choices it has in seeking to align higher education with its needs.

Overview

In the previous chapter, a number of key aspects of Egypt's economic condition and development needs and strategy were identified.

Chief among Egypt's strengths are its strategic location, its large youth population in an ageing world (39% < 15 years), a relatively diversified economic base, and major progress over recent years towards economic liberalisation and its integration into the world economy. In addition to the traditional industrial sectors, such as clothing, textiles, furniture, paper and pharmaceuticals, the Government has targeted six areas for employment growth where it is believed Egypt has comparative advantage: engineering machinery and equipment; labour-intensive consumer electronics; automotive components; life sciences; biotechnology; and handicrafts.

Major deficiencies to be overcome, as indicated in the previous chapter and elaborated in subsequent chapters, include the high proportion of the population without adequate education and functional literacy (around 30%), an informal labour market comprising around 40% of the population, an outmoded framework of public sector administration, lack of a balanced, diversified view of higher education, and a weak research and development system.

Major efforts and expenditures have been made to expand educational participation and attainment throughout Egypt. Despite these efforts, and indicative of the size of the challenge remaining, just 20% of 15-year-old children were still enrolled in formal educational institutions in 2008, with

most leaving due to poverty or cultural reasons such as ambivalence towards female education in rural areas.

Future progress depends on increasing the supply of highly skilled workers, raising rates of educational participation and success, improving the quality of human capital formation through education and training, improving the linkages between higher education and labour market needs, strengthening the links between higher education, research and national innovation, and further internationalising economic ties.

The Government's Five-year Plan

Egypt's Ministry of Economic Development has set down the major elements of the country's economic development strategy for a sustainable, high employment economy.

The strategy

The strategy for achieving high levels of employment is based on the following:

- Promoting private investment, with special attention to small enterprises.
- Improving the labour quality in compliance with the requirements of the labour market. This is to be achieved through upgrading human skills by modernising training centres.
- Developing the education system to produce skilled workers qualified to enter the labour market.
- Narrowing the supply and demand gap in the labour market by reducing rates of educational drop-out, and expanding second-chance learning support services.
- Improving the performance of the labour market in terms of co-ordination between supply and demand by marketing promotion and by activating the role of the governmental employment offices, and improving their capabilities as well as organising the work of the private employment offices, in addition to establishing a database for recording surpluses and deficits in job opportunities, and for training and retraining needs.

Quantitative targets

Population

- Reducing the rate of births from 26.2 per thousand in the base year (2001-02) to 25.2 per thousand in the first year of the Plan, and then to 21.2 per thousand at the end of the Plan (2006-07).
- Reducing the mortality rate from 6.2 per thousand in the base year to 6.1 per thousand in the first year of the Plan, and then to 5.9 per thousand at the end of the Plan.
- Limiting the natural rate of increase of the population to reach 19.1 per thousand in the first year of the Plan, and then 15.3 per thousand at the end, compared to about 20 per thousand in the base year.
- Reducing the population growth rate to 1.75% on average during the Five-year Plan so that Egypt's population would reach 72 million at the end of the Plan (2006-07) against 65.9 million in the base year.
- Achieving relative stability in the size of external migration to be at the current level of 1.9 million, for the number of Egyptians abroad (temporary migration).
- Therefore, the population is estimated to be 73.9 million at the end of the Plan, including Egyptians residing abroad.

In terms of age structure, it is estimated that the percentage of the population under 6 years shall decrease from 14.8% in the year 2001-02 to 14.6% in the first year of the Plan, and to 13.8% in 2006-07. This shall lead to a decline in the dependency burden from 63.1% in 2001-02 to 62.1% in the year 2002-03, and to 57.9% in the year 2006-07. The increase in population of working age is expected to increase to 5.1 million, and the school age population to 1.02 million at the end of the Fifth Plan.

Workforce

The Five-year Plan aims to increase the number of workers from about 17.95 million in 2001-02 to about 21.4 million in 2006-07 with an average annual growth rate 3.45%. In the first year of the Plan, it is targeted that the number of workers would reach 18.5 million, exceeding the base year 2001-02 by 537 000, and with a growth rate of 3.5%; this is in addition to the replaced jobs, so that the average annual increase will reach 657 000 workers.

Education and training

The strategy gives priority to:

- Encouraging demand side involvement by incorporating private sector inputs into curriculum design;
- Fostering stronger university-industry links through industry internships for students, and faculty engagements in the private sector;
- Identifying and introducing programmes in high demand fields; and
- Continuing tracer studies of graduates, with feedback to improve curriculum design and career counselling.

Two important dimensions are noticeably absent from this economic development plan: (i) harnessing and augmenting research and development to support the prioritised areas of economic growth and innovation; and (ii) engaging purposefully through international collaborations to expand Egypt's capacity and networks for sustaining its competitiveness.

Accommodating demographic growth

There has been a growing demand for higher education in Egypt expressed in the growth in the apparent participation rate or Gross Enrolment Rate (GER), which has almost doubled in the last twenty five years from 16% in 1982/83 to 27.7% in 2005/06 for the age group 18-23, bringing total enrolments to 2 438 636 students. Table 3.1 shows student enrolments by type of higher education institution.

It is expected that the demand for higher education will continue to grow strongly. According to the strategic plan of the Ministry of Higher Education, the gross enrolment rate is projected to increase from 27.7% in 2006/07 to 35.0% in 2021/22 (a more optimistic scenario projects a rise to 40%). Taking CAPMAS estimates of demographic growth into account, this increase will entail the accommodation of a 29% increase in the total number of student from 2 642 000 students to 3 394 000 students (35% scenario) or even to 3 888 000 (40% scenario), as outlined in Table 3.2. In absolute numbers the rise in enrolments is projected to range from 752 000 to 1 246 000.

Table 3.1 **Number of students enrolled in higher education in Egypt by type of institute**

Institution type	2005/06	
	Gross Enrolment Rate (%)	Student Enrolments
Public Universities	11.7	1 050 013
Public Universities (New modes)	4.5	361 727
Al-Azhar	4.1	366 286
Public Higher Institutes	0.2	17 675
Private Universities	0.5	144 480
Technical Colleges	1.6	37 203
Private Higher Institutes	4.6	422 626
Private Middle Institutes	0.4	38 626
Total	**27.7**	**2 438 636**

Source: Strategic Planning Unit database, MOHE, Egypt.

Table 3.2 **Enrolment growth projections in higher education 2006/07 to 2021/22**

	2006/07		**2021/22**			
			Scenario 1		**Scenario 2**	
	GER	**Enrolment**	**GER**	**Enrolment**	**GER**	**Enrolment**
Total	27.73%	2 642 000	35.00%	3 394 000	40.00%	3 888 000
% Increase			29%		47%	

Source: Strategic Planning Unit database, MOHE, Egypt.

Assuming a rise in higher education participation from 28% to 35% over 2006-2021, suggests some 1.1 million additional participants will need to be accommodated at an average growth rate of 3% per year (73 300) over 15 years. This is a manageable expansion, if the bulk of growth is provided for in private and non-university institutions, as well as in shorter programmes and mixed mode learning. However, achieving the necessary change in patterns of student enrolment will require fundamental structural and cultural changes.

The percentage of the working age population (between 15-64 years) is projected to rise from 55% in 2007 to 67% in 2020. Increasing attention will need to be given to adult workforce skills development as a source of productivity improvement.

Additionally, recent (post 2006 census) population estimates indicate resurgence in fertility, adding to the flow of young people entering schooling from 2012. Hence, a further youth surge is projected to flow through to higher education from 2024.

The next decade presents a window of opportunity for Egypt to build a more appropriate structural platform for accommodating growth in the youth population and their higher education participation, while developing new ways and means of meeting the varying needs of adult learners, including second-chance opportunities and enhanced learning pathways.

Cost-effective enlargement in participation, through the lower average student unit cost of shorter-cycle programmes and efficient delivery modes, would enable the enlargement to occur principally through the modernisation of technical and vocational education, the expansion of private provision and greater use of on-line and mixed mode learning. Such a far-reaching modification of post-secondary participation will require major change in the structure of secondary education, including further measures to reduce the rigidity of the secondary technical and general education tracks.

The Egyptian government has indicated its interest in better preparing Egyptian graduates for the modern workplace.

Even if Egypt is successful through its economic development plan to achieve a significant expansion of employment opportunities, it is unlikely that domestic labour market demand will be sufficient to absorb all of the additional increase in the output of graduates. Hence, higher education needs to prepare graduates for worlds of work in varying international environments.

Strategic choices for higher education

Egypt's future depends considerably on the contributions made by higher education and research, through the development of the skills of the Egyptian people, through the generation of jobs in world-competitive enterprises, through the adaptation of modern technologies to address social and environmental needs, and through modernisation and professionalisation of the public sector.

The national development strategy for sustainable jobs growth and stronger integration with the world economy requires increased effectiveness in higher education in four main areas:

- Fitting the need for high-level and intermediate skills through value-adding human capital investment and a balanced supply of graduates of university and technical education;
- Underpinning innovation in the targeted growth sectors through high quality research and development;
- Raising overall educational attainment through cost-effective expansion of enrolment as a means of reducing poverty and dependency, and improving national productivity; and
- Improving the efficiency and responsiveness of higher education institutions through better allocation and management of resources, and greater diversity in modes of provision.

For higher education to make these necessary contributions it needs itself to undergo fundamental micro-economic reform. Otherwise unreformed, it will be dysfunctional and a cost to Egypt's development capacity.

The major problems facing the higher education sector and the national innovation system are well understood and the Egyptian Government, in consultation with the sector and other stakeholders, has been taking concrete steps to achieve far-reaching improvements. Among them are the following commendable initiatives:

- Measures to improve the quality of basic and secondary education, including recognition of the importance of quality teachers and quality teaching;
- Recognition of the need to improve the transition from school to further education; and to the labour market;
- Introduction of career guidance services into secondary schools (pilot);
- Doubling of funding for Higher Education under the Five-year Plan, 2007;
- Establishment (July 2007) of the Higher Council for Science and Technology chaired by the Prime Minister and involving government, business and community leaders;
- Formation of the S&T Development Fund to provide demand-driven funding for RDI initiatives on a competitive basis;
- Formation of the Technology Transfer Centres Network;

- Consolidation of specialisations into broad-banded educational programmes (*e.g.* reduction of programmes in Agricultural Education from 39 to 7) enabling better structured programmes and graduate multi-skilling;
- Modernisation of technical and vocational education via the consolidation of 47 mid-level technical colleges and the establishment of boards of trustees for their governance;
- Establishment of more robust arrangements for institutional accreditation and for institutional and programme quality assurance, including the establishment of the National Authority for Quality Assurance and Accreditation of Education – contributing to systemic reform;
- Introduction of competitive funding for performance improvement; and
- Commitment of EGP 1 000 million for Phase 2 of HEEP for the quality assurance and accreditation project (QAAP-II).

The main questions for policy are: where to next? And how far and how fast can these reforms be pursued?

Three broad options are available for policy decision:

- *maintaining the status quo*: adding more expectations to an over-stretched, directionless and dysfunctional system;
- *transformative change*: radical change to the policy paradigm – taking on vested interests that fail to add value for Egypt, and driving fundamental structural and cultural change;
- *incremental reform*: deliberate and phased unlocking of potential through the development of new policy instruments, with clarity of long-term goals and consistency of means to reach them.

The following chapters are designed to shed light on the most appropriate policy course for Egypt.

Recommendations

Egypt should take advantage of the window of opportunity over the next decade to construct a more appropriate platform for accommodating growth in the youth population and their higher education participation, while developing new ways and means of meeting the varying needs of adult learners.

Structural reform needs to broaden the base for the participation of new cohorts especially through the modernisation of technical and vocational education, the expansion of private provision and greater use of on-line and mixed mode learning.

Attention should be given during this transitional period to improving the quality of university education (rather than expanding quantitatively), differentiating institutional profiles to achieve distinctive missions, and building the capacity of universities to manage themselves in a more self-reliant way.

Research capacity needs to be built up to an internationally competitive level, and in selected areas, integrated with university education.

Chapter 4. System Steering and Institutional Governance

This chapter locates Egypt's models for directing the higher education system and its models for the internal organisation of different higher education institutions in the context of international developments in public sector reform. It considers the need for new balances between government direction, institutional discretion, and market-based mechanisms in Egypt's evolving policy framework for higher education. Directions are suggested for reform of the frameworks for system steering and institutional governance.

Introduction

The preceding chapters have made it clear that for Egypt to achieve regional and global competitiveness, it will need to progress a long-term, step-by-step strategy to increase the quality of its human resources and its capacity for research and innovation. To accomplish these goals, it will be necessary for Egypt to transform the structure, performance, responsiveness and financing of its higher education system. A broad consensus exists in Egypt on the need for a new regulatory framework for the system. This need was underscored by the declaration for action resulting from the February 2000 National Conference on Higher Education Reform, endorsed by the President and the Prime Minister, repeatedly emphasised by government policy statements, and identified as a priority by external policy reviews.

Egypt participates in an initiative, Good Governance for Development (GGfD) in Arab Countries, supported by OECD and the United Nations Development Programme Programme on Governance in the Arab Region (UNDP-POGAR). The approach has emerged in an effort to define the effective functioning of the public sector as well as the relationships among governments, citizens and parliaments. It encompasses a broad political agenda for increased government transparency, accountability, responsibility, efficiency and participation. Specific reforms focus on reducing administrative burdens, introducing merit-based hiring and

promotion, preventing corruption, and providing administrative services online. These changes affect areas critical to higher education reform, including strategic planning, budgeting, resource allocation, and public sector employment (OECD, 2005).

Further reform will require concerted action in three areas: (a) the development of new capacities for the Egyptian state to orient, influence and co-ordinate improvements in the higher education system; (b) the development of new capacities for higher education institutions to position themselves strategically, engage more purposefully with their communities and manage themselves more cost-effectively; and (c) the formation of new relationships between the state and institutions within the more competitive operating environment.

Policy framework

Three main forces shape contemporary higher education systems and their performance: (a) the norms of the academic community; (b) the powers of the state; (c) and the operation of market forces through student demand, labour demand for graduates, and competition among providers of higher education services. As discussed in the preceding chapters, and especially in Chapter 5, these forces operate increasingly in an internationalised environment.

In many countries there is a strong and proud tradition of academic self determination. At its best, this tradition through scholarly inquiry and critique opens up understanding of the nature of things beyond their appearances or false claims. Many societies, appreciating the long-term value of knowledge advancement, have accorded academic institutions, particularly universities, special dispensations in their organisation ("university autonomy") and conduct ("academic freedom"). At its worst, this tradition can lead to insularity from the broader community that supports the academy, and self-referenced protection that cannot be justified with reference to community standards of effectiveness and efficiency. Unchecked, strong academic norms can lead also to a loss of diversity and resource wastage within a national system, as the valuing of prestige induces emulation of the research university model of organisation.[1]

Market and quasi-market pressures in higher education can be powerful drivers of innovation and efficiency. They can widen choices for students through opening up a greater diversity of providers offering different ways and means of learning, at different places, times and prices. In turn, a system that is more responsive in meeting the diversity of student demand also,

ceteris paribus, contributes more dynamically through the production of graduates to meeting the nation's labour market requirements.

Several countries, including Egypt, have traditions of strong central direction of higher education through their phase as statist societies. The forms of direction have arisen in the context of mostly uniform expectations of higher education and homogeneity of institutional types and roles. In many instances, as the size of the system has expanded, the directive mechanisms have grown to be numerous, overlapping yet disconnected across various ministries and agencies, and cumbersome. While they still can stifle institutional initiative, the control measures have not kept pace with the changing nature of the system and have become weak means for achieving coherent outcomes for government.

Both market and state drivers of higher education systems can lead to a nation forfeiting some of the value that higher education institutions add to the society. For instance, there can be a loss of fields of scholarship that are not well regarded by state authorities or for which student demand may be low or so fickle as to jeopardise their sustainability. Furthermore, a system driven strongly by student demand may lead to gaps in the output of graduates to meet labour market requirements. Competitive pressures can lead to cost-cutting that diminishes educational quality. Certain conditions attaching to research funding, from governmental as well as commercial sources, may undermine scholarly integrity or produce narrowness and short-termism of approach. In countries where universities have played and continue to play a role in the democratisation of society, contemporary developments can give rise to fundamental questions of institutional *raison d'être*:

> The freedom to inquire, to debate and to speak truth to power, whether it be the power of government, of those who fund the university, or those who manage it, is central to the vitality of the university and its utility to society. It is crucial that rectors and university governing bodies understand this essential source of institutional strength, that they are steadfast in its support, strong in its defence and are not seduced by the fallacy of managerial primacy: the things that make management difficult need to be removed or reformed. An easily governed university is no university at all. (Bolton, 2008)

While the market must play a powerful role it cannot be left solely to drive a higher education system that is fully contributive to its community. There is a necessary role for government, such as in ensuring equity and accessibility, and safeguarding quality and standards, but that role needs to enable not diminish responsiveness and integrity. In the contemporary context, steering of higher education relates to the leadership and co-

ordination of a more open system including a more diverse network of public and private institutions, more diverse students, and institutional interactions with wider community members, including enterprises and non-governmental organisations. In this broader context, the goal is not only steering to meet the priorities of governments, but also steering aimed at responding to the broader and long-term public interest. A challenge for Egypt, as for many countries, is to move from policies and structures designed in a previous era for controlling relationships between the state and institutions, to one designed to achieve desired outcomes in a more diverse and dynamic contemporary environment.

It is also important that academic values form part of a nation's steering strategy, lest they be over-ridden entirely by instrumentalist purposes. Several options are available to this end, such as including persons of good judgement and higher education experience in central advisory and co-ordinating agencies for higher education. Additionally, in promoting internal institutional means of organising around those values there is a need to shift from older, inward-oriented and closed forms of collegiality to more professional and accountable management. The main option to this end is including external members on institutional governing board, with variants on this option reflecting different balances between internal and external members, and the source of external appointments.

System steering

Steering involves the means by which governments encourage the institutional components of a national system to function in order to link higher education to a country's strategic goals. Steering incentives can be direct and indirect, and include regulatory, structural, financial, contractual and competitive mechanisms. The balance between direct and indirect means often reflects the maturity of a nation's political economy, the strength of its higher education institutions, and the compatibility of institutional and governmental values.

Steering has been defined as "the externally derived instruments and institutional arrangements which seek to govern organisational and academic behaviours within higher education institutions" (Ferlie, 2007). The term suggests a less interventionist and more facilitative role for the state, whereby the state defines national goals, sets the structure of incentives, uses a variety of instruments to influence institutional behaviour and performance, and monitors outcomes. The use of policy instruments and the monitoring of their effectiveness can be at arm's-length from government, such as through a "buffer body" like the Higher Education Funding Council for England.

The OECD suggests that countries need to balance their use of steering instruments for tertiary education, whether through governmental direction and incentives or through competition and student choice:

> Possible ways of meeting these two goals (meeting national socio-economic needs and promoting institutional autonomy) and optimise outcomes in the areas of quality, efficiency and system responsiveness include, for example, instruments such as performance contracts or performance-related funding and the collection and dissemination of more and better information, for system monitoring, policy development and information to stakeholders…. Depending on national circumstances, governments may wish to evaluate how they may strategically use institutional competition and student choice as a means to achieve stronger performance from their tertiary system. This may be achieved by recognising new types of institutions, allowing the portability of institutional subsidies and/or student support, strengthening credit transfer and articulation arrangements to foster mobility between institutions, and improving the availability of information about quality to prospective students. (Santiago *et al.*, 2008)

The most difficult challenge will be that of striking the right balances at the right times in Egypt's progress, particularly the balance between government regulation and market mechanisms, between centralisation and decentralisation of decision-making, and between direct and indirect means of steering. This challenge also involves designing regulatory, financing and accountability instruments that fit the circumstances and help achieve national goals without stifling institutional innovation and differentiation.

Institutional governance

Governance refers not so much to what institutions do but how they do it; the ways and means by which an institution sets its directions and organises itself to fulfil its purpose. Governance can be understood generally to involve "the distribution of authority and functions among the units within a larger entity, the modes of communication and control among them, and the conduct of relationships between the entity and the surrounding environment" (Ricci, 1999).

In higher education, governance processes deal with multiple dimensions of an institution: how it coheres; how its exercises authority; how it relates to internal members (students and staff); how it relates to external stakeholders (government, business, local community, international institutions); how it makes decisions; and how and how far it delegates responsibility for decisions and actions internally. The structure of

governance includes the role of institutional governing boards and presidents, their participative structures, their procedural rules and sanctions, their policies for resource allocation, and their arrangements for performance management, monitoring and reporting.

Good governance facilitates decision-making which is rational, informed and transparent, and which leads to organisational efficiency and effectiveness. An important characteristic of good governance is that of probity. Decision-making should ensure that varying interests are appropriately balanced, that the reasons behind competing interests are recognised, and that one interest is not endorsed over others on arbitrary grounds (Trakman, 2008).

A central consideration is the relationship of institutional governance to the state, primarily the extent of institutional autonomy and its effect on institutional performance. Institutions necessarily have to develop new capacities for internal governance when the locus of responsibility for decisions about student admission, staffing, curriculum, and the use of financial resources is shifted to the institutional level. An interesting policy question arises in respect of managing such a transition: should the devolution of responsibilities await demonstration of an institution's capacity to manage them, or does the capacity to manage increased responsibilities only develop once they are devolved?

Neave and van Vught portray a continuum in the relationship of government to higher education institutions from a "state control" model to a "state supervising" model (Neave, 1994); that is a shift from intervening to influencing, or from "rowing" to "steering", or from micro-regulation to meta-regulation. Fielden suggests that this shift is made necessary by the larger scale and complexity of contemporary higher education systems:

> The management of very complex academic communities cannot be done effectively by remote civil servants, and the task should be left to institutions themselves. Giving them autonomy recognises that their management needs are different and allows them full exercise of their academic freedoms. The constraints of centrally managing a system that needs to be flexible and responsive have become clear. (Fielden, 2008)

The interaction of system steering with institutional autonomy, accountability and responsiveness

A useful distinction has been made between "substantive" autonomy and "procedural" (or operational) autonomy (Berdahl, 1990). Substantive autonomy refers to the authority of institutions to determine academic and research policy including what and how to teach, whom to admit as students,

whom to employ and promote in academic staffing appointments, what to research and publish, and the awarding of degrees.

Procedural autonomy refers to the authority of institutions in essentially non-academic areas such as revenue raising and expenditure management, non-academic staff appointments, purchasing, and entering into contracts. Procedural autonomy includes the freedom of an institution to manage its administrative affairs and expend the financial resources at its disposal in a prudent way to give effect to its priorities (Government of India, 2005).

The rationale for distinguishing between the two kinds of autonomy is that "substantive autonomy" is essential for safeguarding academic integrity, while "procedural autonomy" provides for the operational discretion necessary for institutional responsiveness to varying needs and circumstances. Arguably, procedural autonomy is a precondition for the exercise of substantive autonomy in dynamic environments. For instance, when institutions are funded on the basis of their historic costs (primarily staff salaries) rather than on the basis of student enrolments, they have no incentive to be responsive to changes in student demand. Rather they will continue a supply-driven approach to graduate production that may well be at odds with the dynamics of the labour market for graduates. When institutions have more discretion over the mobilisation of their resources, including personnel, they have greater flexibility to adjust their educational offerings to changing circumstances. When such discretion is disallowed the institutions ossify and the system atrophies.

"Accountability" is the flip side of the autonomy coin. It is the responsibility that an institution assumes in return for the freedom accorded it. Different dimensions of accountability can be illustrated by the basic questions: Who is accountable to whom, for what purposes, for whose benefit, by what means, and with what consequences? (Burke, 2004, p. 2).

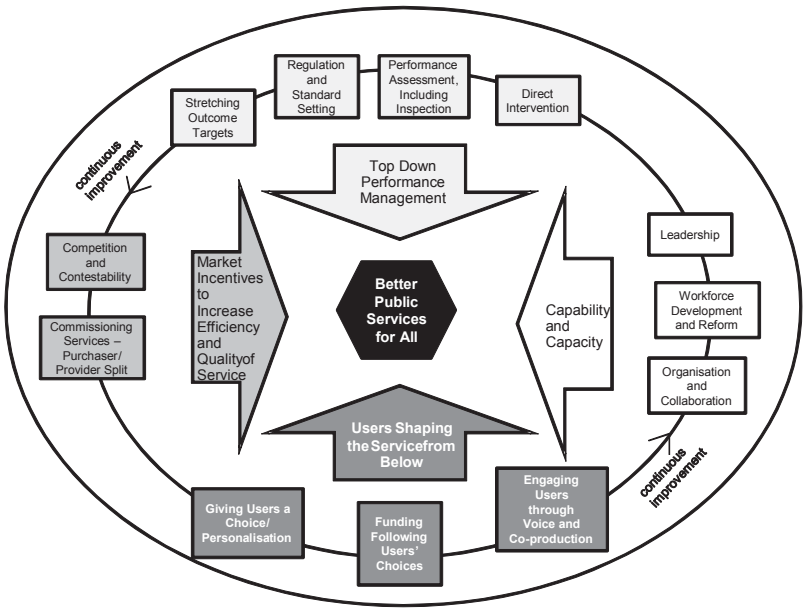
The purposes and benefits of accountability will differ significantly depending on the answer to the question, "To whom." The differing – and occasionally conflicting – expectations of students, faculty and staff, employers, public officials, and the broader society create serious challenges for higher education institutions.

The means of accountability differ depending on the underlying modes of accountability, described by Burke as bureaucratic, professional, political, managerial, market, and managed market (Burke, 2004, p. 2). The techniques and consequences differ according to the accountability mode. Bureaucratic accountability, for instance, tends to focus on inputs and processes and uses the policy tool of regulation, whereas market-based accountability emphasises outputs and outcomes, and uses policy tools such

as financial incentives and public disclosure of information about performance.

Over the past two decades in OECD member and other countries, reforms in higher education governance have taken place in the context of generalised changes in public sector management. Higher education reforms in Japan, Korea, Australia, Britain, New Zealand, and Indonesia, among others, have been greatly influenced by broad public sector reform agendas.

Figure 4.1 **United Kingdom Government's model for public service reform**



Source: Benington (2007).

The dominant trend has been the adoption of "new public management" (NPM) approaches in programmes of public service and higher education reform (Ferlie *et al.*, 1996). The policy design features of NPM, as implemented in Britain are represented in Figure 4.1. Three main elements of the approach can be identified: *modernisation* – bringing in faster and more flexible ways of budgeting, managing and accounting for the delivery of services, including through performance monitoring against measurable indicators; *marketisation* – introducing market-type and competitive mechanisms, separating purchasers from producers, introducing competitive neutrality principles into the commercial operations of public sector

organisations, encouraging user responsiveness, and perceiving "clients" as "customers"; and *minimisation* – outsourcing or "hollowing-out", devolving decision making downwards to smaller units, and giving those units greater operational discretion (Shattock, 2008).

The first NPM wave emphasised decentralisation, privatisation and market approaches. Many countries adopted these changes by copying reforms from elsewhere, often without adequate consideration of the country-specific circumstances. The approach too readily became formulaic, and in the higher education domain induced compliance through "the dominance of systems over academic values" (Kogan, 2000).

Based on a survey of OECD countries, Byun Kiyong from the Korean Ministry of Human Resources Development has summarised the recent changes as: (a) a significant change in the role of the central government from direct control (by rules and regulations) to indirect involvement ("steering at a distance" using contractual policy and/or an incentive system based on performance assessment); (b) increased procedural autonomy but less substantive autonomy in terms of strategic priority setting for universities; (c) a strengthening of the administrative and leadership functions within universities, but a weakening of the traditional "collegial" principle (shared governance by the academic leadership); (d) a greater emphasis on external involvement (*i.e.* industry, government) in university decision making so as to introduce a service philosophy; and (e) emphasis on "competition between service providers" and "consumer choice" to promote a market orientation of universities (Byun, 2008).

With the trend to more decentralised, "market-driven" systems, governments are finding the need to redefine and restructure their relationships with higher education institutions. This need arises from a mix of pressures and ambiguities that make the *status quo* unsustainable. Among these pressures are the need for higher education institutions to accommodate students with a wider range of backgrounds, abilities and aspirations and to respond to the changing demands of the labour market. Additionally, governments seek to increase the responsiveness of institutions to major public priorities such as ensuring access and opportunity for disadvantaged populations and under-served regions, and research and technology for economic development (Burke, 2004a; Crosstalk, 2005). Concerns arise too about the risk of narrowing diversity in a nation's higher education system resulting from student demand for entrance to more prestigious institutions and convergence of institutional missions and profiles toward the research university mission. There are also calls for quality assurance and consumer protection for students at public and private institutions (OECD, 2004b), including ways of assisting

students, particularly those from low income circumstances, to meet rising costs of study (Johnstone, 2003).

There are concerns that in devolved contexts, local power elites may frustrate the goal of serving national interests (Bardham, 2002). Frequently governments and their central agencies have concerns about inadequate competence of institutional management (especially financial management with potential risks for the public interest) (OECD, 2004a; Middlehurst, 2004). At the same time, faculty and administrators of the institutions worry about managerialist approaches displacing academic values and treating education as a commodity and compromising research (Bok, 2003; Geiger, 2004), and that increased institutional autonomy in setting the conditions of employment will mean the loss of basic rights and protections associated with civil service employment (OECD, 2003; Amaral, 2003).

These concerns are contributing to growing pressures for increased accountability in countries throughout the world (Salmi, 2008). The focus has shifted from traditional concerns about accountability of public institutions to governments over the use of resource inputs to a broader concern about accountability for outcomes and performance. The demands arise not only from governments but also from students, employers and a wider range of stakeholders. In Europe, a key part of the Bologna process involves the development of qualifications frameworks that can be linked to learning outcomes and competition for degrees. These frameworks, then, are being used in a new generation of quality assurance and accreditation processes (Salmi, 2008, pp.1-2).[2, 3]

More recent reforms involve pragmatic adaptation by using elements of old and new approaches to address problems identified in the first wave. Among the commonly identified flaws are lack of capacity to ensure responsiveness of a decentralised, privatised system to public purposes, weak public accountability, difficulties in achieving co-ordination among dispersed public and non-governmental entities responsible for different elements of system co-ordination, and the need for more coherent whole-of-government reform as opposed to piecemeal implementation. Reform agenda since the late 1990s have emphasised four themes: co-ordination, accountability, re-regulation and performance management (Peters, 2001).[4]

An even more dynamic view of the relationship between higher education institutions, the state, the market and the wider community is conveyed by the notion of "responsiveness". This notion differs from that of accountability in two important respects: first, it suggests agency on the part of the institution, and allows for diverse ways and means of contributing to plural expectations, diverse needs and changing circumstances; and second, it places less emphasis on institutional compliance with external

requirements. One of the instruments for redefining and redesigning institutional-governmental relations is that of the negotiated compact.

In their relations with government and the market, higher education institutions may be regarded as having features in common with other "third sector" organisations. As noted above, universities like non-government, community service organisations, serve multiple constituencies and have multiple accountabilities:

> Without accountability to donors, funding sources may dry up; without accountability to regulators, charters may be revoked; without accountability to beneficiaries, services may not be used; without accountability to staff and volunteers, operational capacity may be eroded; without accountability to members and political constituents, credibility may be undermined. (Brown, 2007)

Compacts have emerged in the community service sector as an alternative to the "principal-agent" model of accountability. The "principal-agent" model, which focuses on motivating agents to achieve the goals of their principals, such as through purchaser-provider arrangements, typically involves principals specifying performance expectations, reporting arrangements, and rewards and punishments for various outcomes. The "mutual accountability" model, in contrast, focuses on creating compacts that define shared goals and "buy-in" to responsibility for achieving them. The compacts define mutually accountable relationships, and they "require developing shared understanding, respect, trust and mutual influence" (Brown, 2007).

Over the last decade, in the United Kingdom, Canada and Australia, compacts have been employed as a method of defining and formalising relationships between governments and voluntary and community-based organizations (Casey *et al*., 2008a). In large part, compacts have emerged as a corrective to the negative impacts of the purchaser-provider model of government relations with community service agencies (Casey *et al*., 2008b).

Typically, the texts of compacts include:

- A statement of representation that identifies the parties representing the sectors in adopting and implementing the compact;
- A statement of principles addressing the roles and functions of the signatories, including recognition of their autonomy, as well as their rights and obligations;

- An outline of the areas of co-operation, such as service delivery and policy formulations in various areas of interest;
- An outline of instruments of co-operation, including codes of good practice and joint consultative and decision-making bodies; and
- A statement on implementation activities, including proposed monitoring and evaluation processes, provisions for review, and a mechanism for settling disputes (Bullain, 2005).

In post-Thatcher/Major Britain, compacts emerged out of community sector reaction to government funding cuts and the conversion of grants into contracts, alongside increased demands for accountability. As part of its "third way" approach, the Blair Government launched in 1998 a *Compact on relations between the government and the voluntary and community sector in England*. That compact described itself as "a general framework and an enabling mechanism to enhance the relationship between the government and the sector" (Home Office, 1998). In 2006 a "Commissioner for the Compact" was appointed, replaced in 2007 by a "Commission for the Compact". In the same year the Compact was tested in the High Court, resulting in a ruling that the Compact is "more than a wish list; it is a commitment of intent" (Casey *et al.*, 2008a).

In the United States, a best practice guide to postsecondary education compacts, prepared for the National Governors' Association (NGA) in 2007, views the postsecondary compact as "a new vehicle for aligning postsecondary education to state economies":

> Among other efforts to reform postsecondary education, governors can use the compact framework to encourage the postsecondary education system and other relevant stakeholders to agree on the mission and key outputs of a system that emphasizes innovation in exchange for state commitments to budget stability and enhanced autonomy in postsecondary education. (National Governors Association, 2007)

Within the NGA preferred approach "the compact involves establishing:

Goals. The compact sets long-term goals to address a state's major economic challenges – typically based on the results of a comprehensive assessment. Its aim is to hold institutions accountable for meeting these goals in exchange for a state's commitment to stabilising the postsecondary education budget, rewarding performance, and providing autonomy through deregulation.

State responsibilities. The state and postsecondary roles within the compact are then negotiated. The state provides clear direction as to its

expectations and priorities for the postsecondary education system. Furthermore, states establish budget stability tied to incentives (or sanctions) based on how well the system meets the goals for the compact. States in turn give more autonomy to postsecondary education – such as reducing regulations and reporting requirements – so these institutions have maximum flexibility to meet the compact's ambitious goals.

Mutual Accountability. Once all the stakeholders agree on the roles and objectives, an accountability system is set up to ensure that there are tools to enforce the contract on both sides. Tools include transparency, rewards, and penalties or sanctions for failing to meet expectations. The compact is underpinned by a robust longitudinal data system so that stakeholders can track the long-term performance of students and assess their gains according to agreed-upon postsecondary education metrics."

Reindl has noted a shift from largely implicit compacts between universities and state legislatures to more explicit and formal agreements (Reindl, 2008). He positions this shift in the context of five converging "reality" pressures: political realities (increasing expectations and scrutiny from policy makers and the general public); fiscal realities (increasing demand for governmental resources in the face of structural deficits); economic/demographic realities (emergence of knowledge economy alongside an aging and diversifying population); regulatory realities (increasing devolution of responsibilities); and market realities (intensifying drive for prestige) (Reindl, 2008).

Reindl has identified three broad types of postsecondary education compacts emerging in the US:

- *Revenue* stabilisation compacts – having the narrow focus of balancing the income of institutions as between state subsidies and tuition fee revenues over a period of time (*e.g.* Michigan);
- Productivity compacts – with a broader interest in improving equity and efficiency, with state subsidies linked to gains in student access, progression and completion (*e.g.* Maryland);
- Development compacts – with a wide agenda of increasing institutional autonomy in exchange for fulfilment of state priorities (*e.g.* North Dakota).

The combination of accountability and yardstick competition, whether through negotiated compacts or performance-related funding mechanisms, allows the possibility of experimentation in the ways and means of higher education provision (Besley, 1995; Seabright, 1996). Additionally "development compacts", suitably tailored, offer a mechanism for managing

the transition from the present high level of central control to a more decentralised approach to system steering with greater autonomy for higher education institutions.

System steering in Egypt

The Egyptian higher education system is highly centralised. The President of the Arab Republic plays significant roles, including among other powers, authorising the establishment of institutions, appointing public university presidents, and appointing the heads of all the principal entities. Figure 4.2 depicts the major entities that have direct or indirect impact on higher education in Egypt. The following is a summary of the roles of the principal bodies.

The Ministry of Higher Education (MOHE)

The Ministry of Higher Education (MOHE) has jurisdiction over all higher education through supervision and co-ordination of all post-secondary education, planning, policy formulation and quality control. The MOHE also oversees teacher training for basic education. An especially important unit of the MOHE is the Central Placement Office (CPO) which is responsible for controlling the admissions process for students entering higher education and the distribution of students among public universities (Ministry of Higher Education, 2008b, p. 19).

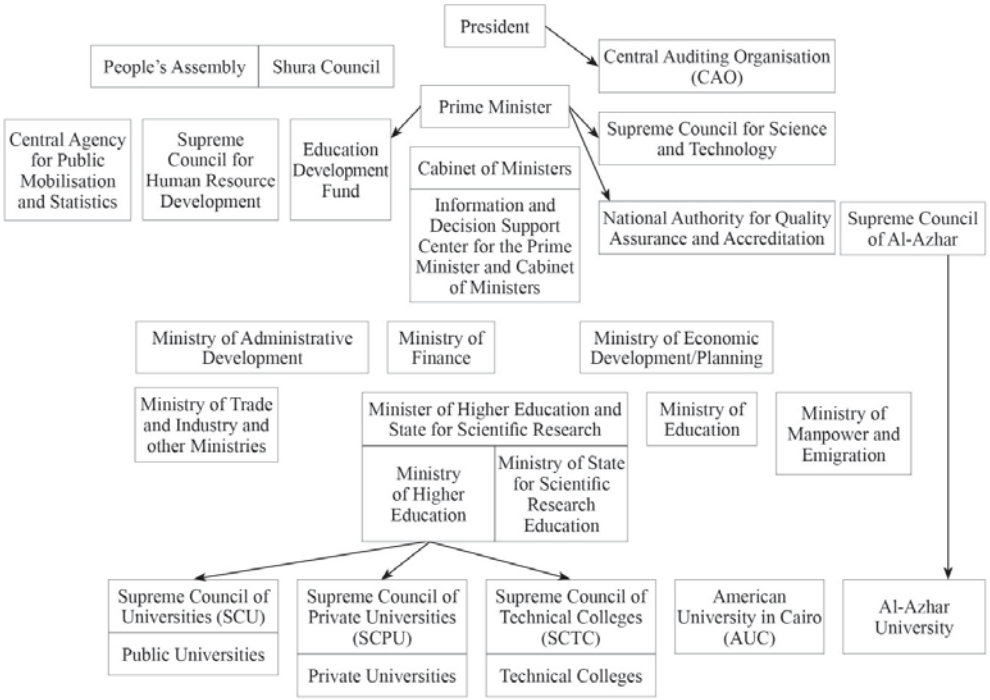
The Minister of Higher Education and State for Scientific Research has a dual portfolio encompassing higher education as well as scientific research which takes place in not only universities but also in a wide range of research institutes and centres, as described in Chapter 6.

Two institutions are outside the jurisdiction of the MOHE. Al-Azhar University is the responsibility of the Central Administration of Al-Azhar Institutes, which is a department of the Supreme Council of Al-Azhar. The American University in Cairo (AUC) has a unique legal status as a private institution outside the jurisdiction of Act No. 101, the private universities act of 1992.

Although most public and private universities and other postsecondary institutions are within the jurisdiction of the MOHE, each sector operates under a different legal authorisation. All public universities are governed by Act No. 49 enacted in 1972 and are under the jurisdiction of the Supreme Council of Universities (SCU). All private universities operate within the framework of Act No. 101 and under the jurisdiction of the Supreme Council for Private Universities (SCPU). Technical colleges operate within

the framework of Act No. 528 of 2003 and under the jurisdiction of the Supreme Council for Technical Colleges (SCTC).

Figure 4.2 **Principal offices and entities with direct or indirect authority related to higher education in Egypt**



Source: Aims McGuinness, OECD/World Bank review team, 2008, based on The Universities Organisation Law No. 49/1972, the Country Background Report and other documents.

State entities at higher levels than the MOHE

The Central Auditing Organisation (CAO), an independent entity reporting to the President, supervises the accounting of financial performance of governmental entities and seeks to prevent corruption. A representative of the CAO is assigned to each public university.

The Prime Minister plays a central role in overall policy leadership for the system and most directly by chairing the Cabinet of Ministers. The Information and Decision Support Centre for the Prime Minister and Cabinet of Ministers is the principal planning and policy analysis unit at this level of government.

Several entities with significant responsibilities related to higher education report to the Prime Minister, including:

- The Central Agency for Public Mobilisation and Statistics (CAPMAS), the national statistical agency.
- The Supreme Council for Science and Technology (see Chapter 7).
- The National Authority for Quality Assurance and Accreditation (NAQAAE), an independent entity established by Presidential Decree in 2007 (Act No. 82 of 2006) acts as the sole accrediting body for all types and levels of education in Egypt (higher education, pre-university, and technical and vocational education and training). The main purpose is to support more than 50 000 educational institutions fostering quality assurance measures, preparing them for accreditation, and granting them accreditation.[5]
- The Education Development Fund, an independent entity with resources to support education development at different levels of the system (Act No. 290 of 2004).[6]
- The Supreme Council for Human Resources (SCHR) was established in 2000 to design a national training and employment strategy which was completed in August 2002. The object of the strategy is to design a technical and vocational education and training (TVET) system that is responsive to market needs, develop a new legal and institutional framework for TVET schools and centres to make them more autonomous, and enhance labour mobility. One of its results was the reorganisation and consolidation of TVET programmes. The SCHR is developing definitions of skill standards for professions (OECD, 2008).

Several ministries carry out functions with a direct or indirect impact on higher education. Among the most significant are:

- The Ministry of Finance (MOF) is responsible for overall finance policy and for determining the budget allocations for public universities and technical colleges. The MOF restricts the ability of institutions to reallocate funds from among line items (especially the first line item for salaries, which constitutes about 70% of the total budget). The MOF also establishes the policies and regulations restricting the uses of self-generated revenue. For example, the MOF requires that universities deposit all self-generated revenue (*e.g.* revenue from services to communities or from fees for special programmes) in the Bank of Egypt and that the universities remit a percentage of self-generated revenues to the MOF (see Chapter 8).

- The Ministry of Planning is responsible for the national "investment" budget. All public university proposals for budgetary increases in addition to those in the recurrent budget must be approved by the Ministry of Planning.
- The Ministry of Administrative Development is responsible for all public employment in Egypt, oversees the regulation of public/civil service employment, and must approve the number of staff positions in public institutions and technical colleges.
- The Ministry of Education is responsible for the pre-university education system, including the non-higher education TVET system. The MOE's role and functions intersect with the MOHE in several critical ways. The MOE obviously plays an important role in preparing students for postsecondary education and training, but the ministry is also responsible for administering the Thanaweya Amma, the unified exam for secondary school leavers that is used to determine admission to higher education.
- Other ministries such as the Ministry of Manpower and Employment, the Ministry of Trade and Industry, and the Ministry of Health carry out functions such as the operation of research centres or training programmes, which are important elements of Egypt's overall postsecondary education and training and research system. The Ministry of International Co-operation is responsible for co-operative agreements with other countries, including the development of international institutions such as the new Japanese-Egyptian University.

Governance of the TVET sector

The public system is administered by a multitude of government agencies, working often independently although recently the Government has sought to bring about more co-ordination between them and to bring more cohesion to TVET policies by establishing the Supreme Council on Human Resource Development (SCHRD), a tripartite body chaired by the Minister of Manpower and Emigration, and membership including the Ministers of Education, Higher Education, Industry and Technological Development, Electricity and Power, Health and Population, Communications and Petroleum. Other members include representatives of trade unions, employers associations and the Social Fund for Development.

The SCHRD's *Policy Statement on Skills Development in Egypt* outlines the Government's strategic objectives for TVET that includes the

development of: (a) a qualifications framework to foster lifelong learning; (b) a TVET system that would be responsive to the demands of the economy; (c) a new legal and institutional basis for governing TVET institutions; and (d) enhanced labour mobility. A number of short-term priorities for development emerged out of these objectives including: (i) developing tripartite management of training in individual industries; (ii) establishing an integrated framework TVET including through its links to employment; (iii) creating a qualifications framework for TVET; (iv) reviewing relevant donor-supported initiatives with a view to preparing options for continuing worthwhile initiatives; (v) reforming the administration of government training centers by monitoring their performance and providing them with greater financial responsibility and accountability for their operations; and (vi) developing a substantive non-government training market.

Governance of public universities

The Supreme Council for Universities (SCU) is the central co-ordinating and regulatory body for public universities. The SCU is chaired by the Minister of Higher Education. Other members include the presidents of the public universities, five members "experienced in higher education and public affairs" who serve for two renewable years by a decree of the Minister of Higher Education after consultation with the SCU, and the Secretary General of the SCU. The SCU Secretary General is appointed by Presidential decree on the recommendation of the Minister of Higher Education. The overall responsibility of the SCU is "…setting down of the general policy of the university or academic education and scientific research work in universities, their orientation and co-ordination in such a way as to cope with the needs of the country, and to facilitate the achievement of the national, social, economic and scientific objectives of the State" (Article 19, Act No. 49).[7] Responsibilities of the SCU include:

- Defining criteria and quality guidelines for establishing academic programmes, new faculties, universities, and higher education institutions and controlling the application of such criteria and guidelines;
- Approving academic programmes based on a reference to an academic framework;
- Forming teams from the academic community to act as external examiners in all disciplines to ensure equal quality of students in the final year of study and graduation projects and works;

- Proposing and deciding on the admissions policy, criteria and the number of students admitted into each discipline, faculty, and university;
- Setting up the modalities of equivalence of academic degrees;
- Establishing and implementing the framework and system of promoting the academic staff in higher education institutions and universities (Ministry of Higher Education, 2008b, p. 36).

The SCU is also responsible for:

- Recommending the criteria for allocating public funding to be granted to each public university;
- Approving the executive statutes (by-laws) of the universities and the internal statutes and regulations relating to the faculties and institutes.

Public universities are defined in law as independent entities. Act No. 49 states that:

> Universities are public authorities of a scientific and cultural nature. Each of them stands as a corporate person. They are entitled to accept those donations granted them which would not conflict with the original object for which the university has been established. (Article 7)

The Act further states that "Each university shall have its own budget to be prepared and set up the same manner as that of the public authorities" (Article 8).

While Act No. 49 states that universities' have independent legal status, the reality as described above is that university governance is extensively integrated with and subject to the authority of the MOHE, the SCU, and multiple other entities. The Act further sets forth detailed specifications regarding the internal governance and operation of public universities, including the composition and responsibilities of university councils, the appointment and tenure of university presidents (head or chancellor), and the structure and responsibilities of faculties and departments.

Act No. 49 defines the requirements regarding appointment of academic staff (teaching and research), duties of academic staff, and other conditions of employment. In contrast to non-academic staff who are considered public employees subject to the laws and regulations established by the Ministry of Administrative Development, the requirements related to academic staff are defined by Act No. 49 and not the general laws and regulations applicable

for public employees. Any changes in the basic parameters of the academic profession in Egypt would require changes in Act No. 49.

Governance of private universities

The American University in Cairo (AUC) has existed for 82 years as a private university, but Egypt only legalised the establishment of other private universities in 1992 with the passage of Act No. 101. No legal framework in Egypt makes a clear distinction between for-profit and not-for-profit institutions. The MOHE oversees the process of approving new private institutions and regulating existing institutions through the Supreme Council for Private Universities (SCPU), an entity established by Presidential Decree No. 219 in 2002. The Minister of Higher Education serves as chair of the SCPU. Among the responsibilities of the SCPU are:

- Reviewing proposals to establish new private universities and making recommendations to the MOHE. Establishment of new institutions is subject to a Presidential Decree.
- Setting minimum conditions for private university operations, including:
  - Minimum requirements students must meet to be admitted;
  - Minimum requirements regarding academic staff (for example, a recently approved requirement that a minimum percentage of academic staff must be full-time); and
  - Approval of new academic programmes.

Governance of technical colleges

The public sector for technical education is administered under the auspices of the MOHE through the Supreme Council for Technical Colleges (SCTC) within the framework of Act No. 528 of 2003. As an outcome of the Higher Education Enhancement Project (HEEP), Ministerial Decree No. 2655 in 2006 reorganised the system to consolidate forty-five technical institutes under eight technical colleges and to establish the SCTC (Ministry of Higher Education, 2008c). Decree No. 2655 established Boards of Trustees (BOTs) for each of the eight colleges. The decree specifies the powers and authority for the BOTs, but the extent to which the intended decentralisation has actually occurred varies among the colleges. All technical colleges are public institutions and all staff have a status the same as all public employees under the jurisdiction of the Ministry of

Administrative Development) and are hired centrally by the MOHE (Ministry of Higher Education, 2008a).

Private higher institutes, which provide primarily postsecondary occupational programmes, operate within the framework of Act No. 52 of 1972. These institutes are regulated directly by the MOHE.

Egyptian higher education in a comparative perspective

As outlined above, the main international trend is for governments to grant higher education institutions greater autonomy while refocusing the government's role from controlling to steering through use of financing and other policy tools to ensure accountability and responsiveness of the system to public purposes.

A 1998 survey of 20 countries, including Malaysia, commissioned by the Australian government, found that the countries could be grouped into three categories: an Anglo-American group with the highest degree of university autonomy, a European group occupying a middle position and an Asian group where government influence is the highest. Malaysia and Indonesia came out as the countries with the least university autonomy. Notable exceptions among the countries surveyed were France which showed a level of government influence comparable to the Asian group, New Zealand, which was in the middle of the European group, and Singapore which came out at the border between the Anglo-American and the European groups (Anderson, 1998 cited in World Bank, 2007).

The governance structures in the benchmark countries identified for the purpose of this review tend to have centralised governance structures comparable to the Asian group. Algeria and Tunisia have structures reflecting influences of French higher education. Both these countries have ministries which have responsibility for higher education and research with mandates similar to the Egyptian Ministry of Higher Education and State for Scientific Research. Turkey's higher education system is under strong central control of the Council of Higher Education (*Yök*), an entity separate from the Ministry of National Education. The recently established (2004) Ministry of Higher Education in Malaysia is charged with strategic direction of the higher education sector.

Box 4.1 **Malaysian Ministry of Higher Education**

The Ministry of Higher Education (MOHE) was recently established with the responsibility of providing strategic direction and overseeing the development of the sub-sector. The other key component of the overall system governance structure is the National Council of Higher Education, established in 1996 to plan and co-ordinate both the public and private sectors of higher education. The Council, which is chaired by the Minister of Higher Education, determines policies in relation to staff salaries in public institutions, fees, student selection, funding, courses of study and other matters.

To date, MOHE and the Council have performed their functions along a model of centralised governance and management system that has granted some degree of autonomy to the public universities but not the authority to manage key aspects of their operation. The current system is restrictive, in particular, with respect to three critical decision-making capacities that are paramount before universities can compete at a "world-class" level… The recent transformation of the Ministry of Education's higher education department into a full-fledged Ministry of Higher Education marks the determination of the Malaysian government to provide effective guidance and oversight for this sector considered to be a key component of the country's knowledge development strategy. As the new Ministry gets fully established and defines its mission and functions, one of its priority tasks is to find an appropriate balance between its control and facilitation roles. The most critical elements that need to be revised are the rules of admission to be able to enrol the most qualified students, the capacity to offer a competitive remuneration package to attract and retain the best professors and researchers, and the ability to recruit leaders who can be at the forefront of the strategic move towards making the Malaysian universities into world-class institutions of research and learning. In addition, there is a need to relax the administrative and financial rules and controls to which public universities are required to conform in their daily management.

Source: World Bank (2007). Malaysia and the Knowledge Economy: A World Class Higher Education System. Washington, D.C.: World Bank Group, March 2007, p. 36.

Nevertheless, most of these countries are making efforts to increase university autonomy and redefine roles and functions of central agencies in terms of strategic planning, quality assurance and modernisation of finance policies. For example, The Government of Tunisia is pursuing a major reform initiative, *Programme de développement de l'enseignement supérieur et d'appui à la qualité* (PDESAQ), designed to improve the knowledge, competency, and skills of graduates so that they can contribute to a more knowledge-based and diversified economy. Key elements of this

strategy include the revision of the legal framework to give greater autonomy to universities, development of a quality assurance system, and development of financing mechanisms to provide higher education institutions with incentives to improve their quality and performance (World Bank, 2006). In Turkey, reform of higher education governance and finance to increase institutional autonomy and redefine the role of the Council of Higher Education is a major priority in the 9th Development Plan for the period 2007-2013 (Republic of Turkey, 2007). The reorganisation of the Malaysian Ministry of Education's higher education department into the Ministry of Higher Education demonstrates the determination of the Malaysian government to provide effective guidance and oversight of the higher education system (see Box 4.1).

The higher education system in Pakistan evolved from conditions quite different from those in Tunisia, Turkey or Egypt. British colonial influence from 1858 to Independence in 1947 as well as indigenous influences before and after that period made their mark in Pakistan. After a period of decline, the country's higher education system is undergoing fundamental changes under the leadership of the Government of Pakistan. A key element of the reforms is the Higher Education Commission established in 2002 as the nation's policy leadership and co-ordinating entity (see Box 4.2).

Box 4.2 **Pakistan Higher Education Commission**

The Higher Education Commission, created in 2002 by Presidential Ordinance, (HEC – a reincarnation of the earlier University Grants Commission), is an autonomous "body corporate having perpetual succession responsible for formulating policies, guiding principles and priorities for higher education. The HEC reports directly to the Prime Minister. The HEC chairperson is appointed by the Prime Minister and has the status of a federal minister. Among other functions, the HEC submits recurring and developmental budgets to the Government and allocates funds to institutions on the basis of performance or need; grants charters to award degrees in public and private institutions; develops guidelines and facilitates implementation of a system of evaluation of performance of faculty members; provides guidelines regarding minimum criteria and qualifications for appointment, promotion, and salary structure and other terms and conditions of service of faculty members for adoption by individual institutions and review of their implementation."

Major initiatives of the HEC include: Quality: (i) establishment of a Quality Assurance Agency at the HEC and Quality Enhancement Cell at HEIs; (ii) a programme launched to equip both new and existing faculty with advanced qualifications; (iii) introduction of a new compensation system (Tenure Track System); (iv) provision for laboratories, equipment and scientific material; (v) alignment of academic degrees with international norms; and (vi) curriculum revision. Access – measures have been taken both to expand supply and to boost

demand: (i) expansion of existing infrastructure; (ii) exploitation of the potential of distance learning; and (iii) provision of undergraduate and post-graduate scholarships to students in both the public and private sectors. Governance: (i) implementation of measures to introduce a culture of accountability in Universities/DAI, to clarify administrative procedures, and to institute transparent quality assurance mechanisms; and (ii) strengthening capacity of HEC through streamlining of financial management and procurement procedures, and stakeholder consultations.

Continuing issues related to governance include: (a) Insufficient accountability of HEIs; (b) Internal governance of Universities/DAI is highly inefficient, administrative staff are under-qualified and excessive power remains in the hands of the vice chancellor and the registrar, and skill gaps within HEC and the concentration of power within a very thin leadership layer mean that a lot of work still remains to be done to institutionalise reforms.

Sources: The World Bank. Pakistan: Country Summary: Higher Education; Higher Education Commission:

http://hec.gov.pk/abouthec.html

Comparative perspective on autonomy

As illustrated in Table 4.1, Egyptian higher education institutions have significantly less substantive and procedural autonomy on several key decision areas than in other countries.

The contrast between Egypt and the other countries listed in Table 4.1 reflects reforms enacted in those countries since the early 1990s. Higher education reforms involve changes to policies on autonomy and accountability across all OECD countries and many developing economies, but each country is undertaking these reforms within a different historical and cultural foundation and context.

In each of the countries listed in Table 4.1, the current level of autonomy resulted from intentional reform initiatives and after vigorous debate about the balance between increased institutional autonomy and public accountability. The continuing debates about autonomy of national universities in South Korea, for example, focus on concerns of university academic staff that increased autonomy could mean the loss of the status of "public officials," a status that accords professors a unique standing in Korean society. Concerns about the enrolment balance between Metropolitan Seoul and less populated areas of Korea led the Government to be reluctant to relinquish control over student enrolment volume.

Table 4.1 **Comparison of substantive and procedural autonomy in selected countries**

	Substantive Autonomy			Procedural Autonomy	
	1	2	3	4	5
Institutions are free to:	Set academic structure/ course content	Employ and dismiss academic staff[1]	Decide size of student enrolment[2]	Spend budgets to achieve their objectives	Set salaries[1]
Netherlands	◐	●	●	●	●
Poland	◐[3]	●	●	●	◐
Australia	●	●	◐[3]	●	●
United Kingdom	●	●	◐	●	●
Japan[4]	◐[4]	●	◐[4]	●	●
Denmark	◐	●	●	●	◐
Sweden	●	●	◐	●	●
Finland	◐	●	◐	●	●
Korea[5]	◐[5]	◐[5]	X	X	X
Egypt	**X**	**X**	**X**	**X**	**X**

Legend: Aspects in which institutions: ● Have autonomy; ◐ Have autonomy in some respects. X No autonomy or severely limited by external authority

Notes: Data in this table are based on responses to a follow-up of the 2003 OECD survey of university governance administered by Byun Kiyong in July 2007. 1. "Employ and dismiss academic staff" (column 2) and "Set salaries" (column 5) include cases where any legal requirements for minimum qualifications and minimum salaries have to be met. 2. "Decide size of student enrolment" (column 3) includes cases where some departments or study fields have limits on the number of students able to enrol. 3. *Poland*: The decision on the establishment of a new degree programme (column 1) and the entrance capacity (column 3) in a given field and at a given level of study is taken by the government based on the opinion of the State Accreditation Committee. 4. *Japan (National)*: Changes in the organisation of a faculty (column 1) should be approved by the government if the type of degree awarded is changed accordingly (*The organisational structure of national universities should be written in a mid-term plan of each individual institution with its revision subject to government approval*); Institutions can determine their entrance capacity (column 3) provided that they can meet the criteria pre-set by the government (*i.e.* the student/faculty ratio, per capita facilities etc); 5. *Korea (National/Public)*: The creation of new academic departments (Column 1) on an undergraduate level requires government approval. On a graduate level, the decision to create departments and majors is devolved to individual institutions if it falls within a total enrolment quota; The decisions regarding employment and dismissal of academic staff (Column 2) are taken by the university concerned. The number of positions, however, is subject to government control.

Source: BYUN Kiyong, New Public Management in Korean Higher Education: Is it a reality or another fad? *Asia-Pacific Education Review*. 9(1). April. 2008. Seoul, Korea, modified to include information on Egypt.

Capacity for strategic system leadership and steering

A critical element of system steering and institutional leadership and management is the capacity to link strategic planning, resource allocation, and accountability. Ideally, this relationship should occur at the level of the Cabinet of Ministers to link the budget and resource allocation for higher education and science to the nation's strategic priorities. The strategic plan for the MOHE should guide budget and resource allocations decisions for the higher education system. In a public institution, each of these functions should be linked to the priorities of the state and the broader society.

To illustrate the connection between state and institutional strategic planning budgeting and accountability, Ireland uses a Strategic Innovation Fund to support both institutional strategic priorities as well as national priorities. The indicators used for university accountability reflect performance related to both institutional priorities and national strategy.

A particular concern about Egypt's current structure for setting directions for the system is that the membership of the SCU and the SCPU comprises mainly institutional presidents. This composition ensures that these fora will be exceptionally conservative, inwardly focussed and concerned primarily with ensuring uniformity in the application of policy. Presidents serving on such bodies must defend their own institutions' interests and typically will be reluctant to be critical of the performance of others. Consequently these bodies cannot make strategic decisions that require differential treatment of institutions based on national priorities, performance or other criteria. The experience of other countries is that a significant representation of civil society (stakeholders knowledgeable about higher education but not currently employed by institutions) increases attention to strategic issues.

Institutional governance reform in Egypt

The need for fundamental change in the governance of Egyptian higher education has been a consistent theme for more than a decade. The declaration for action resulting from the February 2000 National Conference on higher education reform, endorsed by the President and Prime Minister, identified 25 specific reform initiatives, one of which was the need for a new legislative framework for governance of the system.

The Project Appraisal for the HEEP project concluded that "The performance and quality of higher education is currently severely compromised by overly centralised control of the system and pervasive and widespread inefficiencies. The appraisal concluded that:

- A rigid and outdated legislative framework governs the system.
- A moribund civil service code regulates staffing and promotion policies.
- Public sector control over mundane operational details raises costs, and inefficiencies in resource allocation and utilisation, and destroys incentives for improved performance and quality.
- Budget allocations to higher education institutions are not linked to the respective roles and needs of individual institutions.
- Although the SCU goes through the exercise of establishing programme guidelines for universities, budget allocations to the different institutions are determined unilaterally by the Ministries of Finance (recurrent budget) and Planning (investment budget) and are assigned by line-item categories.
- Institutions do not have the latitude to shift resources across line-item categories. And, usually, budget allocations received are simply mechanical incremental adjustments to the previous year's budget and line-item allocations. Under this kind of system, it does not make sense for sector institutions to invest time or resources in developing the management information systems (MIS) needed to guide strategic planning and resource allocation decisions. While they do collect some data, they make little use of them and do not routinely report on the data. Budgetary discretion is very limited in the universities, but is most limited for the Middle Technical Institutes.
- The MOHE exercises tight fiscal control over their day-to-day operation, requiring approval even for purchases of simple equipment and requisitions for basic maintenance.
- Employment and staffing policies in the sector mirror those of the public sector at large, fostering commensurate problems of overstaffing, promotion by years of service, and poor remuneration" (World Bank, 2002).

The HEEP project had three goals related to governance: (i) increase university autonomy; (ii) allow for the consolidation of the technical colleges and the formation of governance structures; and (iii) establish the National Quality Assurance & Accreditation Agency. While the project achieved the second and third goals, the first goal related to reform of the governance of universities has proven to be a major challenge (World Bank, 2008).

Initially, considerable work was completed on a new legislative framework. The mid-term review mission of the HEEP project in June 2005 reported that a national committee had finalised the first draft of the new legislative framework and it was ready to undergo endorsement by all stakeholders. The review reported that institutional autonomy, the process of appointing senior academic administrators, selection and recruitment of faculty and their remuneration, would comprise the cornerstones of this draft legislation. Nevertheless, the report noted that "…because the new legislative framework contained salary structures that require provisional clearance from the concerned government authorities, high level discussions with the Prime Minister and the concerned ministers are currently ongoing to ensure adequate funding sources for the new legislation" (World Bank, 2005).

In June 2006, the United States Association of Governing Boards for Universities and Colleges (AGB) conducted a study of the Egyptian governance structure on behalf of UNESCO at the request of the MOHE (Novak, 2006). The study recommended that Egypt adjust the governance model so as to:

- Maintain the positive elements in the current governance pattern while modifying the roles and responsibilities of key entities and the relationships among them to achieve a more effective balance between institutional self-regulation and overall public control;
- Create a unitary Supreme Council that combines the SCU with the other Supreme Councils; reduce the regulatory control of the unitary Supreme Council but increase its strong advisory role on academic standards and other issues;
- Develop a strengthened national policy capacity within the Ministry of Higher Education to represent the public interest, to assemble and disseminate data on educational achievement, and to eliminate unnecessary and counterproductive regulations;
- Develop a strengthened national policy capacity within the Ministry to manage competition among the publicly funded HEIs and the private sector; reinforce the great potential of the new National Authority for Quality Assurance and Accreditation in Education (NAQAAE) to focus attention on educational effectiveness, and thereby advance both academic quality and consumer protection;
- Provide greater autonomy to the universities initially, and then to the technical colleges and institutes in matters affecting curricula, courses, text, teaching modalities, and academic staff selection, promotion and compensation;

- Liberalise human resource oversight so as to recognise and reward higher credentials and achievement; support the expansion of the private and for-profit sector with appropriate controls for quality and good service to educational consumers;
- Revise policies and procedures so as to encourage greater mobility of academic staff; and adjust policies and procedures for recognising student credentials so as to encourage greater student mobility both within Egypt and between Egypt and other countries.

The AGB/UNESCO report outlined two options for new steering entities: a realigned MOHE and a new Higher Education Authority. The MOHE has indicated that work was continuing on development of a unified legal framework, encompassing all higher education institutions (public, national, international, and private) to replace the current highly fragmented legal structure. Recognising the time required to develop support for a major change in governance, the Government has adopted a gradual approach by making changes as opportunities arise. Among the significant actions, in addition to those mentioned in Chapter 6 on Research, Development and Innovation, are:

- Organisation and initial accomplishments of NAQAAE.
- The allocation of one billion EGP (2007-2012) for preparing public universities for accreditation (including institution-level strategic planning) through the Continuous Improvement and Qualifying for Accreditation Project (CIQAP). Developing and sustaining the basic institutional quality framework is an essential prerequisite for increased institutional autonomy.
- Consolidation of middle technical institutes and reform of system and institutional governance to provide greater autonomy for technical colleges.
- Creation of the Strategic Planning Unit of the MOHE and completion of the Master Plan 2007-2012. Significant elements of the strategic planning initiative involve:
  - Strengthening the data/information infrastructure for policy analysis and decision-making at the level of the Ministry and at the institutional level;
  - Links with planning at the level of the Cabinet of Ministers (Information and Decision Support Centre for the Prime Minister and Cabinet of Ministers), CAPMAS, and the Ministries of Finance and Planning;

  - Support for institutional-level strategic planning; and
  - Regional planning with the initial implementation in Alexandria and Southern Upper Egypt.

- Plans for extending capacity through expanding the private sector, including the concept of a national university, encouraging other private institutions, and collaboration with foreign governments to expand capacity (*e.g.* the Japan-Egyptian University).
- Introduction of a new salary/remuneration structure of faculty members on 1 July 2008. The new regulations for increasing the university staff salaries aim at connecting the income with performance. University professors may be able to receive additional pay in addition to their basic salaries depending on performance. This new system gives university staff the option to join or not to join (World Bank, 2008).

Challenges in institutional governance reform

Notwithstanding the positive developments of recent years, highly centralised governance of Egyptian higher education remains a serious barrier to institutional effectiveness and, hence, to the nation's competitiveness. The positive developments such as the culture of quality fostered under the HEEP project and the new accreditation system will be difficult to sustain if fundamental changes are not made to governance and financing policies.

Egyptian public universities and technical colleges are not coherent organisations capable of a degree of self-governance, but more an assemblage of faculties and other units or functions that are tethered vertically to the Supreme Council, MOHE, or the Ministries of Finance, Planning or Administrative Development, NAQAAE, and in some areas, to the Prime Minister and ultimately the President.

The Country Background Report made clear the extent of central control:

- The President appoints university leaders by decree based on nominations from the MOHE.
- The MOHE appoints the heads of technical colleges.
- The Central Accounting Office (reporting to the President of the Arab Republic) supervises the accounting of financial performance and tracks corruption through an official assigned to each

institution, but this person does not have responsibility to inform or assist the institution's leadership in assessing the institution's financial performance.

- Institutions can own lands and equipment, but they are regarded as government property and a university cannot take a decision to sell or replace a piece of land or building without a prior approval from the Cabinet of Ministers.
- Institutions can spend budgets to achieve objectives but budgets are allocated for specific line items where the ability to shift from one budget line item to another is very limited specifically since these lines items come from diverse resources (*e.g.* staff cost come from the MOF and the investment budget comes from the Ministry of Economic Development).
- Institutions can recommend their academic structure but the decision rests with MOHE and SCU.
- Universities recommend enrolment levels, but the decisions are taken by the SCU and MOHE.

In such a tightly controlled system with multiple vertical controls to separate entities, an institution's president and other institutional leaders cannot reasonably be held accountable for an institution's performance. With all the focus on controlling the pieces, no one is held accountable for the performance of the whole. The establishment of Boards of Trustees, as in the recent reform of technical colleges, or new accreditation requirements, will have limited impact on institutional operations because the institutional presidents and governing councils do not have sufficient authority to take decisions about even basic issues.

A basic issue is that of the appointment of the academic leader of a higher education institution. Table 4.2 indicates the main options. The trend internationally is for appointments to be made by the governing body of the institution, after open international advertisement.

Table 4.2 **Ways by which institutional presidents/rectors are appointed**

By the Head of State	By a Minister of State	By the Governing Board of the Institution	By election
Direct appointment without consultation	Direct appointment without consultation	Sole right of appointment through invitation	By members of the institution's governing body
Appointment after consultation	Appointment after consultation	Sole right of appointment after open invitation to apply	By the professoriate
	Approval of outcome of a selection process	Recommendation of a shortlist to the Minister	By all academic staff
	Selection of one candidate from shortlist provided by the Board	Recommendation of a single candidate to the Minister	By academic staff, general staff and students
		Government representative on Board's selection committee	By staff, with nomination passed to Minister for approval

Source: Based on Fielden, J. (2008) Global Trends in University Governance, World Bank Education Working paper Series, No. 9, March, p. 39.

The Strategic Planning Unit (SPU) of the MOHE has made good progress in developing a new Master Plan for the period 2007-2012. As noted in the Country Background Report, strategic planning at the institutional level is one of the requirements for accreditation as specified by NAQAAE. The Government has allocated EGP one billion to support the Continuous Improvement and Qualifying for Accreditation Project (CIQAP) which is being allocated to institutions to implement an action plan to improve the undergraduate/graduate education process, to enhance research

and community service, and to sustain the internal quality assurance system. Consequently, all public institutions are working on updating their strategic plans. However, as noted in the Country Background Report, "no mechanism exists to motivate/require higher education institutions at any level to respond to the higher education sector's national or regional priorities." It will be difficult to sustain strategic planning unless it has a connection to budgeting and resource allocation.

Quality assurance and institutional accreditation

The establishment of NAQAAE as an independent quality assurance and accreditation body linked to the Prime Minister is an important development. The work of this body has the potential for contributing to the overall quality assurance and accountability framework within which universities and technical colleges could be granted increased substantive and procedural autonomy. However, there are some concerns as discussed in Chapter 6. Additionally, notwithstanding its wide charter crossing the schools and post-schools sectors, NAQAAE appears not to have been involved in one of the most critical issues involving both ministries; the reform of the national examination system for secondary school completion and university entrance. The relationships between NAQAAE and the line Ministries could be stronger.

Egypt is in the process of developing a National Qualifications Framework (NQF) but apparently a decision has not been made on which agency should be ultimately responsible for such a framework. There is an opportunity to link NAQAAE's responsibility for development of NARS to the National Qualifications Framework, perhaps by assigning responsibility for the NQF to NAQAAE. An example of such a link can be found in the Scottish Credit and Qualifications Framework.[8]

Academic staff

As discussed above, the Act No. 49 regarding the structure of the academic profession places severe limitations on public universities regarding employment, promotion, and dismissal of academic staff. The introduction of a new salary/remuneration structure of faculty members in 1 July 2008, which provides academic staff the option of additional pay based on performance is an important step but not a long-term solution. Universities should have the flexibility they need to support their educational and research functions, and to make the structural changes necessary to respond to changes in student demand and other factors. Decisions regarding the compensation of individual academic staff should

be made *within* the academic structure of each university (preferably at the department or faculty level) and not by decisions outside the university at the level of the MOHE. Within the framework of assurances regarding basic protections of employment rights and due process, universities should have autonomy in appointments, promotion, and dismissal of academic staff. Specifically, universities should have the responsibility to:

- Determine the numbers of academic staff by level by faculty and department, and realign staff positions among faculties according to student enrolments and other criteria;
- Appoint, promote and pay staff on merit, and reassign and dismiss people according to processes defined in a revised regulatory framework; and
- Advertise all academic staff vacancies openly outside as well as inside the university and make appointments on the basis of merit of the best available candidates, whether from other universities, Egyptian or foreign.

Enrolment levels and student placement

As discussed above, the process for determining student enrolment levels at each university and within universities by faculty and specialty is excessively centralised and limits the flexibility of university leaders to align resources with needs and improve quality. The highly centralised process of student selection and placement severely restricts students' choices and results in students being assigned to disciplines or professions that bear little relationship to their career aspirations or abilities. Enrolment controls are also the result of the need to manage excessive demand for certain universities (*e.g.* Cairo University) and an imbalance among faculties and professions.

The university entrance examination and placement process is currently being reformed. Whatever the outcome of those changes, universities should be able to select their students from a pool of students identified as meeting the basic requirements for admission (Ministry of Higher Education, 2008b).

Many countries face challenges in matching student demand to capacity and labour market demand. In some cases, it is necessary to increase capacity to accommodate demand for qualified students. Given the excess demand from qualified students in Egypt and evidence of mismatch between labour market needs and student demand, an overall enrolment management policy may be necessary. The Master Plan for 2007-2012 calls for several strategies to accommodate demand including an Open University,

encouraging more private institutions, and establishing institutions through agreements with foreign governments.

Nevertheless, universities should have a much stronger role in determining their total enrolment levels and their enrolments by faculty and department. Currently, these levels appear to be established opaquely with little consideration of recommendations from the universities. An alternative to the current approach could be a negotiated compact between the national higher education policy and co-ordinating body and the university on enrolment levels.

Under any alternative, universities should have the authority to make the final decision on admission of students. Students who meet the basic requirements for entrance to higher education through the national examination and selection process, but who are not admitted to their first choice of department, faculty or university, should have the opportunity of taking up their second preference at the same or different university, or to reapply at a later time.

The ability to increase capacity is directly related to changes in finance policies to ensure adequate resources are available. Because of excess supply or demand in certain critical field or professions (*e.g.* health professions or law) many countries establish enrolment caps or *numerus clausus*. Other countries (*e.g.* Australia, United States) use financial incentives for students to enrol in high priority fields, and financial incentives for institutions to accommodate enrolments. Rather than apply detailed controls to enrolments of all faculties and departments, Egypt might consider focussing on enrolment levels in critical fields and use financial incentives rather than regulatory controls whenever possible to achieve alignment of capacity with demand and labour market needs.

Budgeting, resource allocation and accountability

Table 4.3 compares the responsibilities that the Ministry has today and those that would be desirable under a "steering from a distance" approach.

In terms of financial management and controls, Table 4.4 below outlines the main changes that would be needed in the context of granting more autonomy to the higher education institutions to empower them to use more flexible management practices.

Table 4.3 **Key areas of government regulation: two scenarios**

Areas of oversight and regulation	Present situation	Proposed approach
Formulating overall vision and setting policies	Yes	Strengthened
Allocating budgetary resources based on performance and equity criteria	No	Yes
Evaluating and promoting quality	Limited	Strengthened
Allowing flexibility to hire and dismiss faculty	No	Yes
Allowing flexibility to establish salary levels	No	Yes
Imposing *ex ante* financial controls and audits	Yes	No
Allowing flexibility in procurement rules	No	Yes
Monitoring/evaluating	Limited capacity	Yes

Source: Aims McGuinness, OECD/World Bank review team, 2008.

As discussed in Chapter 8, reforms in budgeting, resource allocation and accountability are essential complements to institutional governance reform. Table 4.4, taken from Fielden, contrasts the typical centralised model, as found in Egypt, with the autonomy model found in an increasing number of countries (Fielden, 2008). Fielden notes the concerns of decentralising states about the level of competence at the institutional level for managing devolved budgetary responsibilities. He suggests governments should seek to satisfy themselves, through efficiency audits and other mechanisms, that institutions meet certain pre-requisites for accepting devolved responsibilities, such as a sound governance structure, reliable information systems and appropriately qualified administrative staff.

Table 4.4 **Changing approaches to financial control**

Topic	Centralised Control	Full Autonomy
Annual budgets	Agreed in detail by Ministry of Finance and MOHE	Agreed by the University Council (but reported to MOHE and Supreme Council of Universities)
Budget reallocation	"Line item control" so that institutions cannot switch expenditure between the set budget categories	Freedom to allocate and spend as required within the overall budget awarded by the Ministry of Finance and MOHE
Expenditures	Prior control for each expenditure	Controls and audits after resources are expended
Under-spending at the end of accounting period	Surrender of under-spent sums to Ministry of Finance	Freedom to carry forward under-spending (and to absorb any over-spending from future funds within limits)
External earnings from non-government sources	Risk of diminished budget from Ministry of Finance / MOHE as a result of perception of additional external earnings	Freedom to retain and spend freely all sums earned from non government sources
Tuition fees for domestic and international students	Fees set by MOHE	Fee levels can be set freely and the money retained without affecting the budget allocation from the government

Source: Adapted from Fielden, J. (2008), Global Trends in University Governance, The World Bank, HDNED Education Working Paper Series, No. 9.

Fielden also explains the *quid pro quo* involved in giving institutions greater financial autonomy. For those institutions with full autonomy through a block grant allocation of funds an essential corollary is that they are expected to supply their funding body with reliable and prompt reports on how the money has been spent, as well as other statistical returns related to performance and outputs. This represents a move away from the principle of the MOE reviewing planned expenditure in advance and relies on the financial probity of the institution to follow its budget plans and record its expenditure accurately. Mature systems such as those in Australia or the UK

are able to rely on financial reports once a year, but with a provision for more frequent reporting, if an institution is thought to be facing financial problems. One model is for the funding body to require three-year financial forecasts of operations and cash liquidity at the same time as annual reports on performance. These cash predictions are sometimes aggregated and used by the funding body to portray the overall financial health of the sector.

Legal framework for private institutions

The MOHE is pursuing a promising strategy of increasing higher education sector capacity through different types of higher education institutions, including non-profit private institutions. Having a clear legal foundation for non-profit institutions is an important prerequisite to developing a strong private sector. For-profit institutions can play important roles, especially in filling niches in the higher education system but their need for profitability pushes them to concentrate on professional/technical programmes for which there is high demand and a clientele able to pay tuition fees at levels sufficient to more than cover operating costs. There can be incentives for the for-profit institutions to reinvest surpluses to improve quality where these investments will increase the profitability of the school.

In contrast, none of the surpluses of non-profit institutions can be used for the personal benefits of owners. These institutions have stronger incentive to reinvest surpluses in quality improvement and to reallocate revenues internally to cross-subsidise high priority academic programmes. For non-profit institutions to become a stronger element in the Egyptian higher education system, it is important to have a strong legal framework setting forth the conditions that institutions must meet to achieve this status. It is also important to have tax policies that recognise not-for-profit status. For example, countries with large private sectors such as Japan and Korea take great care to specify the conditions such as for an institution to be considered "non-profit." These include requirements that members of institutional governing boards not have any financial interest in the institution, and that institutions make public their financial records. They also require institutions to be accredited. New institutions must meet minimum requirements regarding the structure and content of academic programmes and the numbers, time commitments, and qualifications of academic staff. It is also important that non-profit institutions be exempted from taxation provided that their revenues are reinvested to advance their missions.

In Egypt, private institutions are subject to many of the same regulatory controls that apply to public institutions thereby negating some of the potential benefits of a strong private sector. Private institutions should be

largely free from governmental regulation, except for basic regulations defining legal status, requiring that certain conditions be met to establish new institutions, and basic requirements regarding quality such as minimum requirements for academic staff, facilities and equipment, accreditation through NAQAAE, and consumer protection. In particular, private institutions should have substantial autonomy to establish, reorganise and discontinue academic programmes, appoint, promote, compensate, and dismiss faculty members, and establish enrolment levels and conditions for student admission.

Development of a unified legal framework for all higher education in Egypt should be a priority, but "unified" should not mean that the same regulatory policies are applied uniformly to both public and private institutions. It is also important that composition of steering, co-ordinating and governing bodies such as the Supreme Councils not discourage the development of a strong private sector. Providing for representation of the private sector on such councils is one way to ensure that the contributions of these institutions are considered in policy deliberations.

Technical college governance

As noted earlier, consolidation of middle technical colleges and reform of the governance of these institutions were significant accomplishments of HEEP. Nevertheless, as emphasised in the recent *Gap Analysis* prepared for and with the MOHE by the Academy for Educational Development (AED) a significant gap remains between the intent and the reality of implementation of these reforms. As noted by the AED report, the intent of the Ministerial Decree of October 2008, the Technical College Boards of Trustees (BOTs) have specific power and authority but their function is not fully developed. Continued centralised control by the MOHE of critical functions, such as appointment of staff and financing, impeded the ability of BOTs to carry out their responsibilities and for institutions to have the flexibility needed for responsiveness to labour market needs. The report makes the following additional observation:

> While selected elements of the operation of the Colleges need to be centralised to ensure that national priorities are addressed and that there are minimum standards of instruction, if Colleges are to react to the needs of local employers, and gain their support and involvement in programme planning and implementation, the Colleges need increased flexibility and local control in programme content, financing, and staffing (*i.e.* decentralisation). For decentralisation to be successful, existing policies need to be changed and the MOHE needs to provide leadership in the form of templates, guidelines, and staff training to help Colleges

> implement decentralised operations (*i.e.* develop local advisory councils for specialised programmes, market and operate on-job-training, undertake employer and graduate surveys, etc.). Increased accountability must also go hand-in-hand with decentralisation. (Academy for Educational Development, 2008)

These findings have important implications not only for the technical colleges but also for the design and implementation of governance reform for the higher education system as a whole. For the technical colleges, the actions recommended by the AED regarding clarification of roles and responsibilities and increased training at the levels of the MOHE, the BOTs, and the institutions should be a high priority.

The development of a unified legal framework for higher education must recognise the unique role and mission of technical education, especially the need for flexibility and rapid response to changing labour market demands. Too often structures and policies formed for traditional higher education institutions are imposed on technical college systems in a manner that undermines the technical college mission. As noted in the AED report, technical colleges need central mechanisms to ensure links with national workforce/human resource initiatives and co-ordinated response to national training demands. At the same time, these institutions need the flexibility to respond to regional training needs. Any new unified legal structure should reflect the distinctive technical college mission.

The challenges in implementing the governance reforms for technical colleges illustrate the need for careful preparation, including policy change and training, needed for initiatives to decentralise governance to succeed. Changes are needed in policies and practices at the central and institutional levels, but even more important, changes are needed in the basic capacity and "mentality" of leaders at all levels. It takes time, training and support for decentralisation to work.

As emphasised at the beginning of this chapter, accountability is the flip side of the autonomy coin. The danger is that as the governance of institutions such as technical colleges is decentralised, the out-dated central means of accountability will not change. The result will be that the benefits of decentralisation will be lost. What is needed is a fundamental redesign of the accountability systems to emphasise outcomes and performance rather than compliance with input oriented, "pre-audit" controls.

Legal status of autonomous public institutions

As Egypt works toward the goal of more autonomy for public institutions, it is important to clarify the intent regarding the legal status,

authority, and responsibility of autonomous institutions. Table 4.5 illustrates conceptually a range of government/institutional relationships. State Universities in Egypt are technically "legal persons" as defined by Act No. 49, but they are essentially treated as either state agencies or state-controlled institutions. The technical colleges are treated more explicitly as state agencies even under the new governance arrangements. The goal of higher education reform should be to move all universities and technical colleges eventually to the status of state-aided institutions or public corporations organised for public purposes.

The legal status of universities in the United Kingdom illustrates the status of "public corporation." (See Box 4.3)

Higher education institutions should have substantive and procedural autonomy balanced by reasonable accountability. Examples of key points of authority and responsibility include:

- University leadership with responsibility for the effective and efficient performance of the institution's mission;
- Authority to establish, revise, or discontinue academic programmes (within a quality and accountability framework);
- The authority and responsibility, within broad requirements regarding employee rights, to appoint, promote, assign, reassign and dismiss and set remuneration levels for academic and non-academic staff;
- The authority to select and admit students based on the institution's standards – standards that may exceed the minimum requirements for students' eligibility to enter higher education;
- Authority to allocate public and non-public funding internally in a manner consistent with the institution's strategic plan and requirements for transparency and public accountability for use of funds;
- Authority to carry over funds from one fiscal year to the next without penalty, and authority to invest savings; and
- Authority to make purchases, enter into contracts, and carry out other administrative and financial transactions, without being subject to requirements for prior approval by external entities.

Table 4.5 **Levels of state control and institutional legal status**

High Regulatory Control	A. Institution as State Agency	Higher education institutions are treated in a manner similar to other state agencies such as those responsible for public safety or transportation. No recognition is given to the special mission and circumstances of universities. Regulations regarding academic, management, administrative, and fiscal issues are extensive. Accountability is based on inputs more than outcomes. Emphasis is on pre-audit controls. Basic argument: no state agency should be exempt from regulations applicable to all agencies. State civil service laws apply to academic and non-academic staff.
	B. State-Controlled Institution	The distinctiveness of higher education institutions from other state agencies is recognised, but most of the budget and financing policies applied to other state agencies are also applied to higher education. Regulations regarding academic, management, administrative, and fiscal issues are extensive. Accountability is based on inputs more than outcomes. Emphasis is on pre-audit controls. Academic staff is regulated by special laws but these are centrally controlled. State civil service laws apply to non-academic staff.
	C. State-Aided Institution	Higher education institutions have a legal status according them substantial autonomy from the government. Regulations regarding academic, management, administrative, and fiscal issues are limited. Accountability is based on outcomes. Emphasis is on post-audit, not pre-audit controls. The government provides base, categorical, and capital funding but with expectation of substantial non-state funding (tuition, private giving, etc.). Both academic and non-academic staff are exempt from state civil services laws.
Low Regulatory Control	D. Public Corporate Model for Institutional Governance	As in model C, institutions have a legal status (*e.g.* public corporation) according them substantial autonomy. The expectation of state funding is less certain and expectations are that institutions will seek non-state funding to carry out missions. Academic and non-academic staff are exempt from state civil service laws. Government may or may not control tuition/fee policy. Government funding allocated on block grant basis or through targeted investment or performance funding. Accountability is based on outcomes and performance.

Box 4.3 **Universities as public corporations**

The United Kingdom universities are organised in a manner that gives them a high degree of autonomy. Higher education institutions in United Kingdom share the characteristics of being: (a) legally independent corporate institutions; (b) bodies having charitable status; and (c) accountable through a governing body which carries ultimate responsibility for all aspects of the institution. The legal status of charities gives United Kingdom universities an advantage over most other European universities with regard to university entrepreneurship and commercialisation of research. Being charities, universities are encouraged to generate funding from commercial activities, whether in the form of sales of products, consultancy, contract research, or other. A charity may generate a surplus, and retain it, but is required to use this surplus in accordance with its charitable status, which in the case of universities implies spending any surplus on research and education. Thus, in the United Kingdom, the legal framework encourages and accommodates commercialisation activities as an integral part of regular university operation, whereas in most other European countries such commercial activities are seen as problematic and are subject to considerable regulations and restrictions. The advantage of the United Kingdom model is that universities are governed in a manner that supersedes the traditional private-public distinction. Universities are neither public, nor private, in conventional terms. They are private in the sense that they are free to generate funds from various commercial activities, but non-private in the sense that the surpluses they generate can never be paid to anyone as profits, but must always be spent on further research and education. They are non-public in the sense that they are private charities, but public in the sense that the overall aim of their activities is to serve public ends; namely research and education.

Source: World Bank (2007) Malaysia and the Knowledge Economy: A World Class Higher Education System. Washington, D.C.: World Bank Group, March 2007, based on Vestergaard 2005.

Capacity building essential for institutions to receive increased autonomy

Accomplishing major governance reform is a significant political challenge. While a few countries have accomplished massive change through the enactment of a single reform initiative, the reality in most countries is that change takes place on a step-by-step basis with careful planning and extensive efforts to develop a consensus for change among key stakeholders. Importantly, it takes time and careful planning to develop the capacity at the national and institutional levels to implement change that

involves a shift from a highly centralised to a more decentralised, diversified system.[9] The most politically sensitive issues inevitably revolve around: (1) concerns of academic and non-academic staff that they will lose basic civil service protection and other employment rights; (2) concerns of students that decentralisation and increased autonomy may lead to efforts to impose or increase fees; (3) lack of an accountability framework to ensure that more autonomous institutions respond to public priorities; (4) fears of fraud and abuse; and (5) concerns that proposals for decentralisation and increased autonomy are thinly disguised strategies of governments to disinvest in higher education.

These concerns were central to the debate that preceded the enactment of Virginia's 2005 Restructured Higher Education Financial and Administrative Operations Act (Restructuring Act), which granted three public universities increased autonomy in return for compacts to address public priorities and provide students and employees with basic guarantees (Couturier, 2006). They are at the core of opposition to increasing the autonomy of Korean Universities (Byun, 2008). And they are continuing issues in the perennial debate about higher education reform in France (Marshall, 2007; Musselin, 2001).

One of the main lessons from the experience of others is that it is useful to have working demonstrations of the types of reform envisaged. That suggests a process of selectivity in identifying and supporting particular institutions that can lead the way in areas of reform. This matter is considered in Chapter 9.

Main findings and conclusions

Governments the world over are devolving more responsibilities to higher education institutions, in recognition of their economic and social importance and their growing complexity, and giving them more substantive and procedural autonomy, so that the institutions have the flexibility necessary to respond to varying needs in changing and competitive circumstances. The process of devolution involves changed roles for government and institutions, and changing relations between them. The means of devolution include reforms to system steering and institutional governance, clarification of institutional roles and performance expectations, less-restricted funding with stronger accountability for cost-effectiveness, and stronger quality assurance processes with a focus on educational outcomes. Among the mechanisms used to increase autonomy, accountability and responsiveness are competitive funding schemes, and mission-based performance-related compacts.

The Egyptian higher education system is highly centralised, across segmented agencies and multiple layers of control, but it is not well planned. Legislative provisions have detailed specifications and various central agencies exercise highly interventionist powers over operational minutiae. By international comparisons, Egypt's higher education institutions have extraordinarily limited discretions and no incentives for performance improvement and responsiveness to changes in student demand and labour market needs. Budget allocations to higher education institutions are not linked to the respective roles and needs of individual institutions. Employment and staffing policies in the sector mirror those of the public sector at large, fostering commensurate problems of overstaffing, promotion by years of service, and poor remuneration. The opaque processes for determining student enrolment levels at each institution, and by faculty and specialty, is an excessive form of micro-management that limits institutional flexibility and impedes responsiveness. Curiously, private institutions are subject to many of the same regulatory controls imposed on public institutions, thereby negating the benefits of a strong and innovating private sector.

The Egyptian authorities are aware of the need for fundamental reform, including the need to achieve a more effective balance between institutional self-regulation and overall public control of the higher education system, its scale, structure, quality and cost. At the government level, impressive steps have been taken with the development of the Master Plan 2007-2012, supported by a Strategic Planning Unit (SPU) in the higher education ministry, and the establishment of NAQAAE. At the institutional level, initiatives funded through the QAAP and associated schemes have demonstrated an increasing capacity and readiness for higher levels of self-management. Further reform of institutional management is necessary, and it is likely to take root when the institutions themselves have real responsibilities to use their resources efficiently and effectively to achieve agreed results.

Looking ahead, there appears to be recognition of the need for a strengthened national policy capacity, dissemination of information about institutional performance, the elimination of redundant regulations, and stronger academic quality assurance and consumer protection. The next step is to provide greater autonomy to the universities, technical colleges and institutes, particularly in matters of student selection, programme offerings and enrolments, curricula, and academic staff appointment, promotion and compensation.

Clearly, there is a wide gap between Egypt's current policies and practices for higher education development and those being adopted in the leading and emerging nations. Given Egypt's circumstances it is unrealistic

to expect that gap to be closed in one large immediate step. Nevertheless, it is imperative for Egypt to be clear about its longer-term goals, keep it sights on moving ahead in absolute and relative terms, and manage well the required transition to a more dynamic, sustainable and coherent national system of higher education.

Recommendations

Overall recommendation

Egypt should take deliberate, gradual and transparent steps to achieve a more effective balance between institutional self-regulation and overall public control of the scale, structure, quality and cost of its higher education system. The direction of reform should involve greater responsibility and discretion for accredited higher education institutions, and less central regulation and detailed supervision of their activities.

Legislative framework

The Government of Egypt might develop a single legal framework for higher education covering all sectors: public universities, technical colleges, and private institutions: (for-profit and non-profit). This legal framework ought to provide for:

- Establishment of a new Supreme Council for Higher Education with responsibility for steering the future course of the whole higher education system (see below);
- The opportunity for public institutions to become independent autonomous public corporations (see below); and
- A definition of "non-profit" private institutions.

System steering authority

Consideration might be given to establishing a single Supreme Council for Higher Education (SCHE) co-chaired by the Minister of Higher Education and the Minister of State for Scientific Research. The SCHE should be the pre-eminent planning, co-ordinating, and information services agency for higher education in Egypt, covering all institutions and providers: public, private non-profit and for-profit institutions, technical colleges, foreign institutions, and Open University.

The new SCHE could have responsibility for a range of functions related to achieving responsiveness, coherence and sustainability in Egypt's higher education system. It is envisaged that these functions would include: strategic planning; information collection, analysis and reporting; the administration of funding programmes, including student scholarships and loans, and strategic investment funds aligned with national priorities; and advice to the Minister regarding the establishment of new institutions and institutional branches, and methods of institutional financing and associated accountability reporting.

The membership of the SCHE might include persons with proven ability to make significant contributions to higher education, business leaders, community leaders, and representatives of public universities, private universities, technical institutes, vocational colleges, and secondary schools. A small number of senior officials with direct responsibilities related to the nation's higher education strategy might participate on an *ex-officio* basis.

Advising the SCHE could be a council of public university presidents, and council of private university presidents, and the existing Supreme Council for Technical Colleges (SCTC) to ensure attention to the unique mission of technical colleges.

It is envisaged that implementation of this recommendation would lead to consolidation within the new SCHE of those functions currently exercised by the Supreme Council for Universities (SCU), the Supreme Council for Private Universities (SCPU), and the Supreme Council for Technical Colleges (SCTC), and the functions of the Ministry of Higher Education relating to the operation of institutions.

Institutional responsibilities

The Government of Egypt might undertake a structured and transparent process for increasing the responsibilities of individual institutions, and building their capacities for self-management, with the ultimate aim that all public universities and technical colleges will achieve the status of autonomous public corporations.

Public universities with the status of a public corporation might be governed by a Board of Trustees with authority to determine, according to its agreed mission and subject to appropriate accountabilities, its academic and operational affairs.

Particular attention would need to be given to the range of direct and delegated responsibilities of an institution's Board of Trustees, including independent authority to:

- appoint, evaluate, set compensation for, and dismiss the president, vice presidents, deans and all other administrative staff of the institution;
- appoint, promote, transfer, compensate, and dismiss academic staff;
- establish enrolment levels by faculty/programme;
- admit students to specific programmes;
- establish, revise or eliminate academic programmes;
- realign academic staffing to serve student demand and institutional priorities; and
- manage the usage, including carry-overs, of all institutional revenues.

Balancing system steering and institutional flexibility

The Government of Egypt might consider developing with each public higher education institution, in consultation with national and regional employers, a broad compact that clarifies the institution's distinctive mission, the scope and focus of its educational provision, expectations of its performance, associated resourcing to build its capacity, and the extent of its substantive and procedural autonomy.

It is envisaged that the SCHE would develop the criteria for institutions to demonstrate their capacity to assume public corporation status. Each university would be assessed in terms of its readiness to move to a more autonomous status and granted that status on an institution-by-institution basis. One criterion should be that all faculties and the institution as a whole have been awarded full accreditation by NAQAAE.

Desirably over time, higher education institutions that demonstrate the capacity to manage themselves well and deliver to agreed expectations would be allowed increasing discretion in decision making about student enrolments, course offerings (openings and closures), personnel recruitment and promotion, and the deployment of resources.

Notes

1 "A central problem for higher education policy in every modern society is how to sustain the diversity of institutions, including many of which are primarily teaching institutions without a significant research capacity, against the pressure for institutional drift toward a common model of the research university – the effort alone shapes the character of an institution to be something other than what it is – a prescription for frustration and discontent." Trow, M. (2003), "On Mass Higher Education and Institutional Diversity", in University Education and Human Resources. Technion-Israel Institute of Technology. Tel Aviv. See also van Vught, F. (2008), "Dealing with Diversity: institutional classifications in higher education", L H Martin Institute Conference, Melbourne, 27-28 November.

2 See also the Scottish Credit and Qualifications Framework as an example. www.qaa.ac.uk/scotland/default.asp.

3 See Organisation for Economic Co-operation and Development (OECD) website for papers and presentations at IMHE General Conference, "Outcomes of Higher Education: Quality, Relevance and Impact," for comprehensive perspective on developments related to accountability among OECD member and non-member countries. www.oecd.org/site/0,3407,en_21571361_38973579_1_1_1_1_1,00.html

4 See Cloete. N., Maassen, P. and J. Miller (2003), "Great Expectations, Mixed Governance Approaches, and unintended Outcomes: The Post-1994 Reform of South African Higher Education.," paper presented at the 2003 CHER Conference in Porto, Portugal, September 2003, for application of the Peter's framework to policy change in South African higher education.

5 PowerPoint presentation for OECD/World Bank team on the National Authority for Quality Assurance and Accreditation.

6 Established by Presidential Decree Act No. 290 for the year 2004.

7 Excerpts from The Universities Organization Law No. 49/1972, as translated into English by The Middle East Library for Economic Services, www.egyptlaws.com.

[8] See also the Scottish Credit and Qualifications Framework as an example. www.qaa.ac.uk/scotland/default.asp.

[9] See discussion of the experience of countries and states in the United States with major governance change in UNESCO/AGB report, Novak, McTaggart, and Gholan (2006). *Report on Higher Education Governance Change.*

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Chapter 5. Student Access to Higher Education

This chapter focuses on the mainstream channels for young people's participation in tertiary education and training – the transition from secondary school to higher education. It outlines different models of structuring the transition, describes Egypt's current transition processes, identifies their strengths and weaknesses, canvasses the main issues for policy, and suggests a direction for reform.

Policy framework

Around the world, access to publicly-financed tertiary education is typically based on an assessment of a student's ability to benefit, sometimes referred to as "the merit principle". The rationale is twofold: to limit the opportunity costs for individuals and to reduce wastage in public expenditures. Other considerations may come into play in the private sector of tertiary education provision, where choice is extended according to ability to pay.

In "elite" systems of higher education (where the participating cohort represents less than 15% of the school leaver age group), ability to benefit is normally identified on the basis of demonstrated academic merit, and primarily student achievement at school, as measured by summative evaluation (final examination), formative evaluation (continuous assessment over several years of schooling) or a combination of summative and formative measures. For elite higher education systems, the assessment of student learning acts primarily to filter out those students who are not sufficiently prepared to succeed in further academic study. Simultaneously, the requirements for university admission exert a pervasive influence over the structure and content of the secondary school curriculum, particularly at the upper-secondary level. Many countries have streamed students at different stages of secondary education according to "academic" or "practical" orientations so that those with greater aptitude for acquiring practical skills can develop the readiness necessary for employment and/or

further skills development, without being subject to assessment against academic criteria. However, early streaming can have perverse effects, particularly for some individuals, whose life chances are arbitrarily limited, given that assessments of readiness reflect social circumstances as well as innate ability.

In "mass" tertiary education systems like Egypt's[1] (over 35% of the age cohort participating in higher education) the screening role of secondary schooling is looser than in elite systems, as there are more diverse students participating, and there are wider options available to students for further study and work. Additionally, with the application of advanced technologies, a broad range of technical occupations require higher order cognitive skills – such as for understanding electronics in the automotive and electrical trades and security-related fields. An increasing number of industries, and technical, professional and paraprofessional occupations, are no longer served adequately by graduates of a narrow curriculum that fails to develop higher order reasoning, cognitive flexibility, numeracy, communication and interpersonal skills.

As the student body diversifies, and the expectations of graduate capabilities rise and widen, the processes for student selection and admission to tertiary education need to adapt. It is no longer appropriate for the secondary school curriculum to be dominated by the interests of academic filtering for university readiness, or for a binary division of students at earlier stages of secondary schooling that under-prepares the practically-minded for the knowledge-based roles they will have to perform. Additionally, taking a less instrumentalist view, all students would benefit in their preparation for life from a more broadly based educational foundation, especially given the unpredictable world ahead.

In "universal" tertiary education systems, (around 90% participating at some stage, including adult learners) the focus of policy shifts from a concern about student entry screening to a concern about graduate exit standards. A universal system of tertiary education accommodates young and adult learners, caters for their varying needs and circumstances through diversity of provision, and provides multiple points of entry and exit and flexible pathways across the different points.

To enlarge tertiary education participation cost-effectively, by drawing in new groups of learners, many of whom have low aspirations or readiness for tertiary education, and focusing not only on access but also on success – on graduate output and graduate learning outcomes – it becomes necessary to provide much greater diversity of learning opportunities – diversity of qualifications, diversity of curricula, diversity of structured learning pathways for individuals, diversity in forms of student support, diversity of

institutional types (differentiated universities, specialist niche providers for particular occupations alongside corporate and vendor providers, technical institutes, variants of the Liberal Arts Colleges and Community Colleges found in North America, on-line providers, local and foreign), and combinations of institutions (public, private and public-private partnerships) offering diversity of learning modes, places, intensities and times, where learners can make their own trade-offs between utility, convenience, quality and price, and obtain the qualifications they want from a single provider or multiple providers.

As Egypt has not yet developed a lifelong learning agenda, the appropriate focus at this stage is on issues typical of "mass" participation systems. Eventually, the policy framework will need to accommodate adult as well as young learners and enable supply diversity as outlined above. In constructing a policy transition from elite to mass participation it is prudent to have regard to wider, longer-term requirements. At this stage, however, two major policy issues need to be addressed: first, where decision making about student admissions should reside; and second, the criteria by which student admission decisions should be made.

Where should decisions about student admissions be made?

With regard to the first issue, a model of the transition process from secondary to tertiary education is outlined in Figure 5.1. The model highlights two distinct approaches to the transition process. One approach operates in jurisdictions such as France and Germany as well as Egypt, with strong external (central or local) control over the transition and admission processes, and where tertiary institutions have no (or very limited) input to decisions over the allocation of students. The other pathway can be found in countries such as the United Kingdom, United States and Canada where the scale and shape of the transition is centrally co-ordinated, such as through enrolment volume caps for different institutions, but with institutions determining which students they will admit.

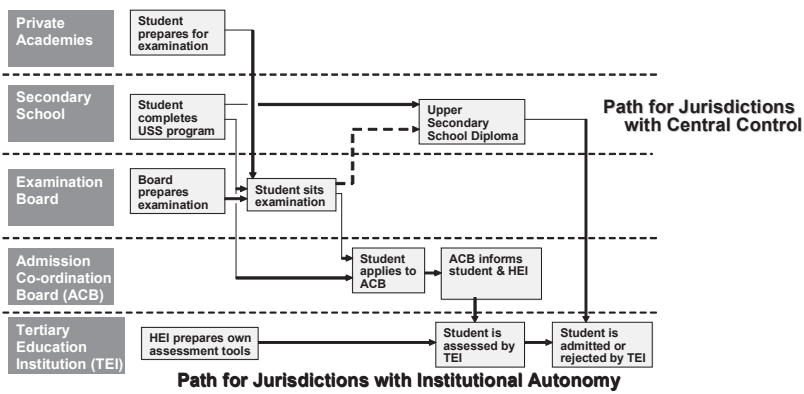
The key stakeholders in the process apart from the students and their families include: (a) the secondary schools of various types, and their teachers and administrators; (b) the examination boards and their affiliated institutions; (c) the admission and co-ordination board or centre that oversees the admission process to tertiary institutions; (d) tertiary education institutions; and (e) institutions and tutors outside the formal education system that provide services to prepare students for examinations.

The effectiveness of the secondary-tertiary education transition can be judged from different perspectives. From the perspective of students,

effectiveness means access to tertiary education that will open up life opportunities, alongside confidence in the integrity and fairness of selection processes, and in the quality of secondary education as preparation for tertiary education. For public tertiary education institutions what matters is their ability to have a meaningful input into the selection of students, the alignment of their enrolments with their academic mission and capacity, and the adequacy of resources to serve the number and characteristics of the students they admit. From a government perspective, a successful transition means a fair and efficient process that yields outcomes that serve national as well as individual needs within affordable limits. Additionally, governments may be concerned to provide reasonably equitable access across socio-economic groups, gender, and geographic regions to meet community aspirations, increase social equity and sustain the viability of regional institutions.

The policy challenge is to find an acceptable mechanism for managing the educational transition that balances these various interests.

Figure 5.1 **A model of the transition process**



Source: S. Mikhail (2007), Systems of Higher Education TPS 1806, Department of Theory and Policy Studies, Ontario Institute for Studies in Education OISE, University of Toronto.

In the preceding chapter, attention was drawn to the need for the higher education system to contribute effectively to realising Egypt's national development goals. In the following chapters, attention will be given to enabling higher education institutions to contribute dynamically and in diverse ways to these goals, including by providing them with greater

operating flexibility and substantive autonomy, so that they may be responsive to varying needs and circumstances, including those of their students, those of the labour market, and those of the community as expressed through its elected government.

The international trend in higher education policy is to increase the flexibility of local institutions over the management of inputs and to clarify expectations of their accountability to manage for results. This development involves changes to traditional models of central control through changes to the system steering mechanisms alongside development of stronger capacities within institutions and in their relations with multiple stakeholders.

In this context, reform in many countries involves assigning higher education institutions responsibility to achieve particular outcomes in terms of graduate capabilities and employment destinations, and increasing their discretion over the ways and means of achieving those objectives, including curriculum, pedagogy, staffing and student intake. As higher education institutions innovate and diversify their offerings, students have wider opportunities to exercise choice over what they study, where and how.

Of course, a government can continue to control its expenditures on higher education while allowing institutions greater decision making authority in the admission of individual students. As discussed in Chapter 8, the government may allocate institutions a funding envelope to cover an enrolment volume up to a fixed limit, and employ funding formulae or competitive schemes with incentives for output performance improvement. Alternatively, the government may allocate rationed vouchers up to a set number of students to use at the institution of their choice. Additionally, the government may encourage the growth of private institutions to accommodate a share of the student demand and introduce cost-sharing in public institutions through tuition pricing flexibility.

What are the criteria by which student admission decisions should be made?

With regard to the second policy issue, Annex 5A outlines the different admission policies adopted in various countries. The basic models are: (i) reliance on a single school-based examination; (ii) reliance on generic abilities and aptitude tests; (iii) a combination of (i and ii); and (iv) the exercise of discretion by individual higher education institutions within a transparent framework.

Policies relating to student admission to tertiary education in developed economies moving from elite to mass systems have been guided typically by the underpinning principles of merit, fairness, transparency, and equity. As countries move from mass to universal tertiary education participation, there is more openness in selection criteria, reflecting greater diversity of opportunity, and a corresponding shift of focus on demonstrated graduate capabilities. Given Egypt's circumstances, it may be useful to clarify the principles appropriate to its stage of development. Consideration might be given to the following:

- *Merit* – access should be based on demonstrated capacity to benefit, as indicated by performance in appropriate tests of preparedness, competence and aptitude, rather than on ability to pay or influence.
- *Fairness* – decisions regarding access should be impartial and free from bias, dishonesty or injustice.
- *Transparency* – the criteria for admissions decisions should be publicly disclosed and the processes of applying the criteria should be open to scrutiny.
- *Equity* (horizontal) – Opportunity should be available to all, and particular students should not be systematically discriminated against on the basis of their social circumstances, personal characteristics, affiliations or location.

The advantages of a policy for admission based on a single school-based examination are that through its universality it reflects application of the principles of merit, fairness and transparency outlined above, except insofar as the examinations themselves may discriminate through cultural bias, and the examination results may reflect differences in input factors, such as family circumstances, school quality and/or access to private tutoring. The disadvantages are that national examination results are typically represented by scaled marks that reflect a norm-referenced rather than criterion-referenced result. Particularly in systems that allow only one chance of tertiary education access, student life chances are determined by their performance on a single event, and latent ability can be overlooked.

The advantages of an admissions policy based on institutional discretion are that it enables institutions to take a more rounded look at an individual than may be revealed through their school exam results, and then to customise their programmes to suit particular student interests and motivations. It also provides prospective students with the opportunity to present a variety of claims for entry, based on a portfolio of their work at school and elsewhere, including testimonials, and to indicate their talents and motivations at interview or audition. The main disadvantages are the

potential lack of transparency in the decision-making process and the risk of partiality and corruption, and the high costs associated with resource-intensive case-by-case considerations.

A hybrid admissions policy, one that makes use of school-based examination results as a threshold indicator, supplemented by other indications of ability and commitment, combines the advantages of the former two policy approaches. However, it also combines the risks of their disadvantages.

Arguably, a more robust and defensible approach is one that complements the objective information available as a guide to institutional decision making, such as through the use of general ability tests. A complemented admissions model, operating in Australia, is illustrated in Box 5.1. Other countries, such as Mexico, have been adopting this hybrid approach. The main advantages of the complemented approach is that it takes account of school achievement and offers another insight into the potential of a student to succeed, identifies particular aptitudes that may not have been revealed through the student's selection of school subjects, and cannot be crammed for.

Box 5.1 **Australia's uniTEST**

uniTEST has been developed to assist Australian universities with the often difficult and time consuming processes of student selection. The test has been developed jointly by ACER and Cambridge Assessment. The test has been designed to assess the kinds of generic reasoning and thinking skills that underpin studies at higher education and that are needed for students to be successful at this level. uniTEST assesses this reasoning and thinking across the two broad domains of mathematics and science, and humanities and social sciences. The test is designed for current school leavers to complement existing selection criteria such as Tertiary Entrance Score.

uniTEST assesses a student's capacity to reason in a range of familiar and less familiar contexts which do not require subject specific knowledge. It is expected that the wider the range of contexts that a student is able to reason in, the more successful they are likely to be in applying these skills in new contexts and future study.

Reasoning in the domains of mathematics and science is described as quantitative and formal reasoning and includes the application of generally accessible quantitative, scientific and technological information – including numbers, tables, graphs, text and diagrams.

The kinds of reasoning typically elicited in the domains of arts, humanities and the social sciences are described here as verbal and plausible reasoning. This encompasses verbal and visual comprehension, plausible reasoning, holistic

judgments about meaning, and socio-cultural understandings (*e.g.* the interpretation of subjective human constructs).

Critical reasoning addresses general reasoning elicited in both the broad domains and is relevant to a range of courses including scientific, technical, business humanities and social sciences. This reasoning is assessed by means of a 95 item multiple choice test taken over 150 minutes.

uniTEST is developed to rigorous professional and technical standards. Test questions are designed and developed by teams of test writers expert in their fields. All test questions must pass detailed panelling, trial testing, analysis and final review. The content, style and duration of the test are determined to ensure the testing programme is relevant, fair, valid and reliable. uniTESTtest data are subjected to statistical analysis to check that each test question has performed as required. Test questions in development are carefully scrutinised in an ongoing attempt to minimise gender, ethnic or religious bias, and to ensure the test is culturally fair. The test may contain a small number of trial questions which will not contribute to candidate scores.

Results are made available online to students approximately 2 weeks after sitting uniTEST. Students are sent an email advising them of an access code which will be needed to access results online. Students receive a scale score out of 100 for each of the 3 sections in the test and a total scale score. The universities assess a student's uniTEST results alongside their academic performance, such as Tertiary Entrance Rank.

The following universities used uniTEST for 2009 entry: Flinders University, Macquarie University, The Australian National University, and University of Ballarat.

Source: Australian Council for Educational Research (ACER), Melbourne.

A variant of the complemented admissions policy approach is illustrated with reference to the nation of Georgia (see Box 5.2). This approach was developed to address some of the challenges that are familiar in Egypt.

Concerns about the current system for admission to higher education in Egypt

Imbalance in the source of transition

Table 5.1 shows the enrolment in secondary education by study track and type of institution. The total number of students enrolled in technical secondary is 56.4% compared with 35.6% in general secondary and 8% in Al-Azhar.

Box 5.2 **University entrance exams in Georgia**

A new model of University Entrance Examinations (UEE) was introduced in 2005 to combat corruption in university entrance and to reduce the inequities resulting from expensive private tutoring in preparation for university exams. The Ministry of Education and Science set up a National Assessment and Examinations Centre (NAEC), and it was decided to introduce three compulsory examinations – a General Aptitude Test (GAT), Georgian Language and Literature, and Foreign Language (English, German, Russian or French) – and one optional subject. Optional subjects (2006) were Mathematics, Science, Georgian History, Social Sciences, and Literature. Standardised scores (100 to 200) are used.

The GAT consists of multiple-choice questions, while the subject examinations have a mixture of question types, closed and open ended, as well as an essay. (Markers of open ended and essay-type questions were trained extensively.) A scaling model is used to equate scores of candidates who take different versions of the same subject exam, and faculties give "weights" to exam subjects by allocating coefficients to them. Each entrant for each faculty then has a "competitive score" (= the sum of all scaled subject scores multiplied by their coefficients) on the basis of which they can rank-order applicants. Results are recognised by all HEIs, although individual HEIs can determine "weights". Candidates are now able to apply to several faculties simultaneously. About 50% of applicants obtain a university place.

In 2006, there were 30 000 candidates each taking four exams. Administration of the exams is done in 14 centres in 10 cities throughout the country; these centres are closely monitored by trained supervisors and have video surveillance systems. Investments in information technology for registration, processing and barcoding proved to be important. Marked scripts are scanned so that candidates can see their own marked papers, thus ensuring maximum transparency and reducing the need for appeals; in 2006 only 0.6% of the total number of scripts were subject to appeal.

Early indications are that the new UEE has increased participation of students from rural areas and poor families, and that the number of non-Georgian applicants increased by 32% since the introduction of UEE.

Source: Johanna Crighton, consultant to the OECD, and Quentin Thompson, consultant to the World Bank, 2006.

Table 5.1 **Number of students enrolled in secondary education in Egypt by track and type of institute**

	2005/06			
	Public	**Private**	**Total**	**% of Total Enrolment**
Total Technical Secondary	1 832 259	128 903	1 961 162	**56.4**
Total General Secondary	1 145 174	94 015	1 239 189	**35.6**
AL-Azhar	279 963	--	279 963	**8.0**
Total	3 257 396	222 918	3 480 314	**100.0**

Source: CAPMAS (2008), *Egypt in Figures*.

Table 5.2 shows the transition rate from general and technical secondary education to higher education in Egypt. The main source of transition to higher education is the general secondary education channel with a transition rate of 80.3% compared to a transition rate of merely 6.8% for technical secondary education. A general secondary school leaver is 15 times more likely than a technical secondary school leaver to enter higher education. The technical secondary education pathway has become effectively a dead-end, much to the disadvantage of students who take that track and to the balance of graduate supply to meet labour market needs.

Table 5.2 **Transition rate to higher education institutions from general and technical secondary schools, 2005/06**

	General Secondary (%)	**Technical Secondary (%)**
Public universities	54.5	0.300
Al-Azhar	0.1	--
Private universities	0.6	0.002
Private higher institutes	17.6	2.400
Technical colleges	5.4	3.500
Private middle institutes	2.0	0.600
Total	80.3	**6.800**

Source: CAPMAS (2008), *Egypt in Figures*.

Furthermore, when the number of students admitted to universities with either foreign-accredited certificates are factored in, only 0.6% of the total

have public technical secondary education certificates and 4.1% with foreign-accredited technical diplomas, as shown in Table 5.3.

Table 5.3 **Average distribution of students admitted to public universities by educational background, 2005/06**

	General Secondary	Technical Secondary	Foreign Secondary	Technical Diplomas
Public universities (%)	91.5	0.6	3.8	4.1

Source: CAPMAS (2008), *Egypt in Figures*.

Narrowness of the basis of admission

Currently, admission to university in Egypt is based entirely on a candidate's score on a national secondary education leaving examination (*Thanaweya Amma*). The examination is administered annually by the Ministry of Education (MOE). Students who pass satisfactorily can apply for a higher education place through the Central Placement Office (CPO). The CPO allocates students to particular institutions having regard to the following criteria:

- The maximum number of students to be admitted to each higher education institution, normally decided by MOE and the Supreme Council for Universities (SCU);
- The rank of the scores of candidates wishing to enter the same higher education programmes; and
- The ranked preferences of candidate students.

Admission to higher education in Egypt is based on the grades of *Thanaweya Amma*, having regard to the cumulative results of the final two years of the secondary stage. The process is centrally co-ordinated by a university admission bureau The Admission Co-ordination Bureau of Egyptian Universities (ACBEU, *Maktab Tanseek Al-Jame'at Al-Masriyah)*. The number of student places available in each institution and programme is determined by the SCU.

The basis for the allocation of student places is not transparent, and it appears that it largely reflects the academic staffing structure of institutions

within a system that is supply-driven rather than one that is responsive to student demand.

Candidates submit their institution and programme preferences to the ACBEU and are "matched" to a programme, having regard to their examination results and their expressed preferences. In practice, however, students are assigned to a local institution, and that institution must accept the students assigned to it. If there are more students expressing a preference for a given programme than the institution's allocated places for that programme then the surplus students are allocated a place in another programme within that institution. Students do not have the option of nominating second and third preferences either by institution or programme. During the review panel's site visits many students complained that they were enrolled in courses for which they had little interest and aptitude, and which they believed would not enhance their employment prospects as graduates.

Private universities have the freedom to administer entrance exams within the boundaries set for the minimum cut-off scores for each discipline as determined by the SCU. Entrance exams administered at private universities are mainly foreign language proficiency tests that ensure that the applicants have the minimum requirement level to cope with instruction in a foreign language. In the case of private universities, students can apply to several institutions and programmes.

The *Thanaweya Amma* exam used to be held in the last year of the secondary education. It was considered to be a nightmare for Egyptian students and their families. Those who could afford to do so would pay for private tutoring to help students gain the required scores for higher education admission. In an effort to relax the psychological pressures on students and the financial burdens on families, the Government split *Thanaweya Amma* into two exams conducted sequentially in the last two years of the secondary education, the marks from both being combined into a final score. However, the reform was perceived by many families as a doubling of the burden, with two *Thanaweya Amma* replacing one. The "empty classroom" syndrome, resulting from students being elsewhere preparing for the exam, was extended from one year to two, thereby increasing the inefficiency of the formal educational system.

Students who complete the vocational secondary education stream and seek to access higher education must rely on their scores in the final year examination. Places available to them in public institutions are limited by the MOHE. Private institutions may be more flexible in enrolling these students.

Concerns about adverse impacts on access

The current process of admission to higher education is perceived by the government and the public as transparent and fair; however, it is not perceived as a valid system for placing the students in the appropriate line of study in higher education. Indications given by university faculty members and students suggest that that there is no strong correlation between the secondary education leaving examination score and subsequent student performance at university.

There is a great variation among secondary schools from one area to another within the same governorate and from one district to another and among schools within the regions. Additionally, poor students are disadvantaged by being educated in low-performing schools and by having very limited resources to afford private tutoring, whereas students of better off families can afford better schools, and more time for tutoring, exam-oriented practice and training on test-taking strategies.

In general, there is community unease with the current admission system based entirely on the secondary leaving examination. The Egypt Daily News (10 June 2008) e-newspaper has reported along the following lines:

> *Thanaweya Amma*... Pictures of students and parents in tears or students anxiously revising before exams became regular features in all newspapers. Some exams were described as "too difficult" and others reportedly contained mistakes. Writers, regardless of affiliations, criticised what they described as 'the annual nightmare'.

Egypt is not alone in its concerns about the cost-effectiveness and fairness of secondary to tertiary education transitions. In recent years, many countries have reformed their transition practices. For instance, in the United Kingdom, the General Certificate of Education (GCE) has been substantially restructured and the A-levels examinations reformed. In the United States, several jurisdictions have been introducing new high school graduation requirements and the idea of some kind of national school-leaving examination has again been raised. In France, new technical and vocational *Baccalaureat* examinations have been introduced.

Recent research (OECD, 2004) suggests that success of students in tertiary education is dependent on both knowledge and competencies acquired in secondary education as well as non-academic aptitudes, attitudes, and motivation. Accordingly, many countries are beginning to implement innovative and flexible approaches to assessment, admissions and student selection that take aptitude, motivation and even work experience into account. In so doing, they attempt to ensure greater equity of

student access, improved success, reduced drop-out rates, and more efficient use of resources.

Assessment of proposed changes to the higher education admissions system

To address the concerns outlined above, and help to increase equity and responsiveness, the Egyptian authorities have canvassed options for reforming the higher education admissions system. One option is the decoupling of matriculation from upper secondary school evaluation, by moving to a criterion-referenced, competency-based (pass/fail) approach to the reporting of student results (replacing norm-referenced student ranking), and having higher education institutions set their own admissions tests. A healthy debate has ensued.

As part of the Egypt's efforts in reforming pre-university education and higher education, a national conference on reforming secondary education and polices for admission to universities was held in May 2008. Table 5.4 presents a summary of the relevant recommendations of the conference with a preliminary assessment of the current institutional capacity to implement these recommendations, proposed implementation arrangements, the expected public reaction, and the likely impact on higher education admissions.

This preliminary assessment of the admission reform recommendations indicates that implementation arrangements would need to be clarified and new capacities for their implementation would need to be built. Public reactions can be expected to be largely negative because a number of relevant reforms, notably within secondary schooling, would be seen to be necessary prior to the adoption of new approaches to higher education admission.

However, pelicans will keep on reproducing the same eggs unless someone makes an omelette.[2] Reform of Egypt's higher education system cannot wait upon reform of the secondary schooling system, itself a major exercise; simultaneous and mutually reinforcing reforms need to be undertaken in both education sectors. Action to diversify avenues of student access to higher education and related forms of demonstrating capacity to benefit, would relieve the high reliance on the single academic examination that so dominates the secondary curriculum, narrows learning opportunities and sustains the inequities of the private tutoring industry.

Table 5.4 **Analysis of the National Conference Recommendations for Reforming Higher Education Admission Polices**

Recommended policy	**1. Achieve equivalence among all secondary education graduates in their cognitive, emotional and skill levels**	**2. Provide a unified joint trunk, inclusive of syllabuses and activities that ensure integration and flexibility among the various specialisations of secondary education, general and technical alike**
Institutional capacity to implement	Capacity needs to be built	Capacity needs to be built
Implementation arrangements	Not defined	Not defined
Expected public reaction	Positive	• Mixed reactions • Unclear expectations
Related reform policies	• Curriculum development • Transition from pre-secondary to secondary reform	• Curricula reform • Transition from pre-secondary stage to secondary education
Impact on higher education admission process	More demand for higher education	More demand on higher education
Comments	This is an equity issue with reference to access ratios of the different types of secondary education (Technical, public and Al-Azhar) and also demographic issues	System needs to address the pre-secondary education system and the reform of technical education in order to attract comparable quality of students other than the performance on the end of prep school standardised exam

Recommended policy	**3. Implement the comprehensive assessment system in the secondary stage and to all the knowledge, skills, attitudes and values acquired in the course of student learning. This is intended to enhance effectiveness of the educational process in and outside the classroom and to support the school's active role**	**4. Apply comprehensive assessment to each year of the three academic years of the secondary education**
Institutional capacity to implement	Capacity needs to be built for comprehensive assessment according to defined standards	Capacity needs to be built
Implementation arrangements	Not defined	
Expected public reaction	Mixed reaction when compared with primary education experience with comprehensive assessment (mainly negative assessment from both teachers and parents)	
Related reform polices	• Curricula reform • Teachers' capacity building for implementing comprehensive assessment	
Impact on higher education admission process	Not defined	
Comments	• Teachers need to develop the capacity for applications of comprehensive assessment standards • A solid quality assurance system needs to be in place to eliminate corruption, nepotism and bias	

Recommended policy	**5. Test the student at the end of year three of the secondary stage for obtaining the certificate of completion of secondary stage (general and technical). His/her success in the comprehensive assessment of that very same year shall be a condition for sitting for the examination, together with the attendance and punctuality ratio in this regard.**
Institutional capacity to implement	Limited capacity exists
Implementation arrangements	Arrangements of the current system partially apply
Expected public reaction	• The public are questioning the difference between certificate of secondary education completion exam and the comprehensive exam. • Too much emphasis is placed on end of stage assessment. Reliability of assessment is questioned.
Related reform polices	• Curricula reform • Assessment methodology reform. • Quality assurance of the validity of test administration procedures
Impact on higher education admission process	Same Demand
Comments	The relationship between the third year comprehensive assessment and the end of secondary stage certificate exam needs to be defined.
Recommendation policy	**6. Admission into higher education shall rely on two criteria:** **(i) The result of the certificate of completion of the secondary stage as one of the criteria of admission; and** **(ii) Testing for the measurement of student skills, abilities and attitudes, general and specific.**
Institutional capacity to implement	Capacity to develop valid and reliable certificate exams needs to be enhanced
Implementation arrangements	Arrangements need to be reviewed for more valid and reliable results
Expected public reaction	One measure can be fairer although it might not be enough. However, there is the fear of corruption using an added measure
Related reform polices	• Assessment capacity enhancement. • National exam administration measures and standards for ensuring fairness and equity need to be set and implemented • Reform of both secondary education and higher education • Defining National Qualification Framework • Building capacity for assessing abilities, skills attitudes and values
Impact on higher education admission process	• More demand on private tutoring • Spending more resources to prepare for the new tests
Comments	An accurately defined assessment framework needs to be established, piloted and results should be shared with the public to build their trust Informing the public at every step will ensure their endorsement

Recommended policy	**7. Reaffirm that the University Admission Alignment Bureau shall continue as a mechanism to assign students to the higher education institution, based on their desires and a summation of a percentage of the result of the final test of the secondary stage and a percentage of the result of the abilities test, so as to ensure justice and equal opportunity**	**8. Consider the practical experience acquired in the labour market, if and when a holder of the certificate of completion of the secondary stage re-applies to join higher education, in accordance with the national system for qualifications and professions**
Institutional capacity to implement	Limited capacity exists. The capacity to combine score and distribute the applicants according to composite score needs to be built	Capacity does not exist
Implementation arrangements	Not defined	Not defined
Expected public reaction	Mixed	Negative
Related reform polices	Curricula and assessment reform at both secondary and higher education	Not identified
Impact on higher education admission process	If evidence of validity is not given, serious equity issues will exist	Not defined
Comments & suggestions	The weight per each secondary education certificate subject and the results of the national admission assessment procedure needs to indentified and validated.	• With unemployment rate of graduate of higher education, the transition from secondary school to work is uncertain • The relevance of working experience to admission to a certain major may have serious validity and reliability concerns
Recommended policy	**9. Structure and develop the academic programmes and educational pathways to keep abreast with the quality needed in the inputs to higher education with multiple pathways and the ability to effect change and needful reforms.**	
Institutional capacity to implement	Capacity enhancement needed	
Implementation arrangements	Not defined	
Expected public reaction	Uncertain	
Related reform polices	Reform of secondary education curricula, learning and assessment procedures	
Impact on higher education admission process	More demand on higher education	
Comments	Reform of admission polices is dependent on achievements of this policy. A valid and effective admission process is not the target but it is a by product of the reform results	

Source: Ahmed Dewidar, OECD/World Bank review team, 2008.

On 29 January 2009, a panel discussion was held at the testing colloquium in the 14th EFL Skills Annual Conference at the American university in Cairo. The theme of the discussion was "University Admission Tests: A promise or a threat". The panel involved assessment and education experts from Egypt, United Kingdom and United States, and the audience included around 300 teachers and university faculty members. Among the many concerns raised were the following:

- The current system is fair but not valid for the purpose because it does not place the students where they fit and cannot predict their academic performance at university.
- The transition to a different policy for admission requires reform in secondary education as well as higher education.
- There is no capacity at the university level for designing and administering entrance exams.
- Admission processes that move away from the visible fairness of the national examination would need to be monitored and controlled by the government to minimise corruption and nepotism, at least at the beginning.
- More autonomy should be given to universities gradually, and where they have established quality control procedures for monitoring the process of admission.
- Multiple measures should be developed according to the mission and academic programme goals standards for equity.

However, reflecting the high stakes and complexities of the admissions issue, a strong view emerged that for the time being, university-specific admission tests are seen to represent more of a threat than an opportunity. This is because the public are anxious not to lose their last resort to fairness within the current system regardless of its limited validity, given that the proposed options for change open the doors to unknown practices with a high propensity for corruption, more private-tutoring, inequity and bias. Without further detailed work on implementation specifics and a major communications campaign, students will not know how they will be assessed, and there is the risk that information used in assessing applicants may not be consistently reliable. Additionally, a second entrance exam would add to the burdens on students and families.

Assuming these views are representative of a concerned community, the Egyptian authorities will have to have regard to their substance, and work to engage multiple stakeholders in the exploration, development and trial of different options.

Main findings and conclusions

The transition of students from the general and vocational/technical tracks of upper secondary education to higher education in universities, colleges, and other tertiary institutions is one of the most significant challenges for education reform in Egypt. This transition is significant and becomes problematic when its structure and processes are not flexible enough to enable young people and adults to navigate the passages between schooling and work at various stages of their lives and, in the long-term, it affects their economic and social well-being.

There are widespread concerns about the appropriateness of continuing total reliance on the secondary school examinations as the sole basis for admission to higher education. Examination results may reflect differences in input factors, such as family circumstances, school quality and/or access to private tutoring. The process does not place the students where they fit, overlooks their latent ability and cannot predict their subsequent academic performance at university.

At the same time, there appears to be little community and professional support for dispensing with the examinations and replacing them with admission practices that are perceived to be less transparent.

Consequently it would be preferable to explore options that retain the national examinations, perhaps in modified form so that they can reinforce needed reforms to secondary education, and complement them with additional selection criteria and processes. The complementary selection mechanisms could be either set centrally for national application or authorised nationally for optional use at the discretion of individual higher education institutions, or determined by the institutions themselves. Some combination of these options could be organised, with institutional discretion being permitted only for institutions that meet specified preconditions.

A possible complementary selection instrument is some variant of the Australian or Georgian approaches illustrated in Boxes 4.1 and 4.2 above. The main advantages of the complemented approach is that it takes account of school achievement through an examination system that is based on evaluating the educational outcomes from secondary schooling, and offers another insight into the potential of a student to succeed, and identifies particular aptitudes that may not have been revealed through the student's selection of school subjects. Another advantage of well-constructed tests of generic reasoning and thinking skills in a range of familiar and less familiar contexts which do not require subject specific knowledge, is that they do not

lend themselves readily to practised answers to predictable questions of the kind that often sustain the mass tutoring industry.

Recommendations

Overall recommendation

Generally, Egypt should move to a more diverse, student-driven system of higher education, where students can exercise choice over where and what they study, and institutions can exercise autonomy in the admission of students, reflecting their missions and capacities.

Specific recommendations

The Government, while for fiscal policy reasons maintaining control over the total number of publicly-funded higher education enrolments at the sectoral and institutional levels, should permit individual institutions to decide which students they admit and the programmes to which they admit them.

The process for admission to higher education institutions should be based on an expression of student preferences, a first round of institutional offers, students' acceptance or rejection of first round offers, and a second round of institutional offers and student acceptances.

The Government should encourage students about to complete their secondary schooling to express an order of preference for higher education institutions and programmes, and enable students who meet the threshold requirements for entrance to higher education, but who are not admitted to the institution of programme of their first preference, to have their third or second preferences considered.

There should continue to be a system of national examinations in the final years of secondary schooling, perhaps supplemented by portfolios of student work and indicators of achievement through continuous school assessment.

For the purpose of admission to higher education, the results of the national secondary examinations and other indicators of achievement at school, should be complemented by student results on professionally constructed tests of generic reasoning and thinking skills.

Initially, the Egyptian authorities should have an appropriate set of tests of generic reasoning and thinking skills professionally designed and trialled,

and after revision, used for a period at the national level, in order to familiarise students, parents and personnel in schools and higher education institutions with the innovation, and build up public confidence in its use. Eventually, higher education institutions should be permitted to use validated supplementary selection instruments of their choice.

The introduction of these recommended changes to higher education admissions should take place alongside the development of academic reference-standards, quality improvement in teaching and learning and assessment, and institutional capacity building, and the implementation of national quality assurance procedures, including of student admission processes.

Annex 5A. A Typology of Admission Policies Worldwide

Type 1: Secondary leaving exams	
National exam score only	Austria, France, Ireland, Egypt
National exam score, plus secondary school academic performance	Tanzania
National exam score, plus application dossier	United Kingdom
Regional/state exam score, plus secondary school academic performance	Australia
Type 2: Entrance exams	
National exam score only	China, Iran, Georgia
National exam score, plus secondary school academic performance	Turkey, Spain
Institutionally administered exam scores only	Argentina, Paraguay
Institutionally administered exam scores, plus secondary school academic performance	Bulgaria, Serbia
Type 3: Standardised aptitude tests	
Standardised aptitude test scores or secondary school academic performance	Sweden
Standardised aptitude test scores, plus application dossier	United States

Type 4: Multiple exams	
National entrance exam scores, plus institutionally administered entrance exam scores	Japan, Russia, France (*Grandes Écoles)*
National entrance exam scores, institutionally administered entrance exam scores, and/or secondary school academic performance	Brazil
National secondary leaving exam scores, plus institutionally administered entrance exam scores	Finland
National secondary leaving exam scores, plus standardised aptitude test scores	Israel
Multiple exams administered by multiple entities	India
Type 5: No exam	
Secondary school academic performance	Norway, Canada
Application dossier does not require exam scores	Certain United States institutions

Source: World Bank, 2008: University Admission Worldwide, Education Working Paper Series Number 15, Washington, D.C.

Notes

1 With a total higher education enrolment of 2.4 million students, the annual commencing flow is estimated at 0.53 million, representing 34.7% of the estimated population aged 17 years (1.54 million), and 50.8% of the number of students completing general secondary and technical secondary school (1.05 million).

2 Robert Denos, Le Pélican: "Jonathan's pelican, in the morning, laid a white egg and out of it came a pelican who resembled him amazingly. And this second pelican lay, in turn, a white egg from which, inevitably, came out another one, who did the same. This can go on for quite some time if we don't first make an omelet."

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Chapter 6. Educational Quality and Effectiveness

This chapter considers the effectiveness of higher education in Egypt in equipping graduates with understandings and skills for life, work and further learning. The chapter assesses the available information about the quality of higher education inputs, processes and outputs. Particular attention is given to the fitness of Egyptian higher education for the purpose of meeting local, national and international labour market needs. Initiatives to improve educational quality and standards in Egyptian higher education are examined in the light of developments in international practice, and recommendations are made for increasing capacity and performance.

Introduction

Significant efforts have been made in recent years to address concerns from employers, parents, students and faculty about the quality of Egyptian higher education. The Government of Egypt has committed to developing a framework for quality assurance and improvement that is relevant to Egypt's needs and circumstances and internationally reputable.

Policy framework

Quality assurance is a mechanism to verify that the results being achieved are fit for the purposes for which the higher education institution is supported by the community. *Quality improvement* may be understood as a sub-set of the quality assurance system, involving specific measures to raise standards of inputs, processes and outputs.

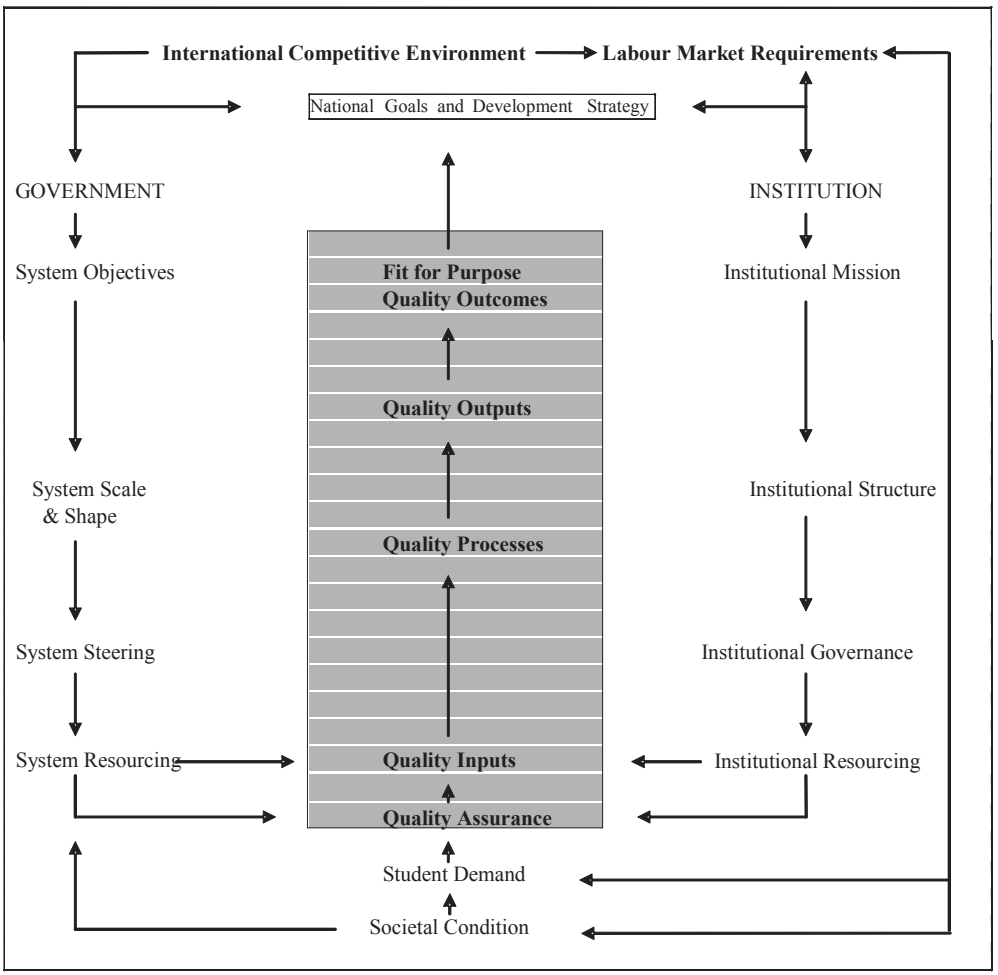
Quality is a judgement about how good something is. Normally it is a judgement that is relative to expectations and comparisons, while having regard to its substance, design and formation. In the case of higher education, quality may be referenced to various inputs (*e.g.* students,

teachers, facilities), processes (*e.g.* curriculum, teaching methods, learning experiences), outputs (*e.g.* graduations, graduate capabilities), and outcomes (graduate destinations and financial returns to graduates). In large and diverse higher education systems that admit students with different abilities, motivations and levels of preparation, and supply graduates to various employers with different needs and expectations, there are multiple views about quality.

What matters most in this pluralistic context is that quality is judged relative to the educational objectives of each higher education institution, for whom the key question is: *how do we know how good we are?* And when education is understood as a process of personal transformation, the evaluation of quality necessarily focuses on the difference between the capabilities of students commencing at an institution and those of its graduates. Such assessments may be made directly through pre- and post-testing of a student cohort, or through comparisons of work undertaken by first year and final year students in a given subject area. Additionally, it needs to be identified how much of the difference can be attributed to the higher education experience that the institution enables. That assessment is necessarily indirect, relying on input and process indicators. Even so, the standards of an institution's graduates may fall short of those of other institutions with like missions and with the expectations of employers, in which case the institution is obliged to review and improve the quality of its inputs and processes.

Quality improvement in this broad sense requires several preconditions: (i) clarity of institutional missions and educational objectives; (ii) adequacy of resource inputs; (iii) deliberate, effective marshalling of the available resources to achieve set objectives; (iv) formative feedback from students and teaching faculty to know how well the intended educative processes are performing; (v) summative assessment of graduate capabilities; and (vi) structured arrangements for evaluating graduate and employer satisfaction.

Figure 6.1 **Governmental and institutional responsibilities for quality higher education meeting individual, societal and national economic needs**



Source: Adapted from Gallagher (forthcoming).

In this view, quality improvement is necessarily a dynamic process involving layers of interactions within a higher education institution (*e.g.* student-student; student-teacher; teacher-team leader, department-institutional leadership) and between it and external stakeholders (*e.g.* employers, government, alumni). The respective roles of government and institutions in this process are best understood in terms of mutual responsibility.

Figure 6.1 attempts to depict these responsibilities, locating quality assurance as a sub-system within a wider system designed to satisfy students' and society's needs and expectations, and achieve outcomes that advance the international competitiveness and social development of the nation. Figure 6.1 places institutional quality assurance and improvement within two spaces: (i) in the framework of the government's goals and development strategy for the nation, including human capital formation to meet labour market requirements, and development of the knowledge base to support national innovation; and (ii) in international context, including international labour markets in which a country's graduates need to be competitive.

For its part, the government establishes the system steering infrastructure that clarifies roles, objectives and expectations (*e.g.* national qualifications framework describing degree standards in terms of graduates capabilities; national system structure that clarifies the different missions of different institutional types; institutional accreditation preconditions and continuing conditions; external quality evaluation procedures and requirements for internal self-evaluation). Additionally, for public institutions, the government provides resources and decision-making discretion with the understanding that the resources will be managed well to achieve agreed results. For their part, the institutions are responsible for accomplishing their varying missions, continuously innovating in order to increase responsiveness to changing needs and raise their standards, and accounting publicly for how well they perform. Ultimately the quality of outcomes depends on institutions' efforts, and the primary function of government policy and regulatory frameworks is to facilitate those institutional efforts.

Many countries have installed formal external quality assurance and audit procedures that add compliance burdens to higher education institutions, and give an appearance of attending to matters of quality, but do little to raise standards. It is important to make clear, especially for countries whose qualitative problems derive in large part from their very limited resources, the relationship of external quality assurance processes to the internalisation of a quality improvement culture.

The quality of Egyptian higher education

Egypt's higher education system delivers two types of degree at the undergraduate level. The *Bachelor* degree is awarded on successful completion of at least four years of sustained study (in some fields the programme length is five or six years). The *Diploma* is awarded after study programmes of two years, predominantly in technical colleges and private middle institutes.

Table 6.1 **Higher education enrolments by type of institution and gender 2006/07**

Institution Type	Males	Females	Persons	Persons enrolled share of all institution enrolments (%)
Public universities	966 188	909 755	1 875 943	78.1
Higher institutes	226 417	142 184	368 601	15.3
Intermediate technical institutes	82 712	75 813	158 525	6.6
All institutions	**1 275 317**	**1 127 752**	**2 403 069**	**100.0**

Source: CAPMAS (2008), *Egypt in Figures*.

As Table 6.1 shows, only 6.6% of student enrolments are in Diploma programmes. The Country Background Report attributes this imbalance to low status, poor funding and poor quality of vocational education, and limited places available for vocational education graduates to transfer to universities. The imbalance is inappropriate for purposes of cost-effective labour supply, equitable student access and choice, and education system efficiency. It will be important for Egypt to discard a second-best approach to vocational education, to raise its status and quality, and to provide incentives for greater numbers of students to participate.

Although the Technical College qualifications are intended to reflect a higher level of skills being attained, many students and employers have regarded these skills as more suitable for skilled workers than for technicians. Only about half of the 75 000 annual intake actually complete their programmes of studies, and some 60% of those are unemployed after graduation. The flow of students between institutions and sectors has largely

been governed by a system of streaming. Although this has been of considerable importance in Egypt, it has distorted the flow of students between sectors. For more than 30 years until recently, technical and vocational secondary education had been expanding. Students aged about 14 or 15 years were streamed either to general education or, increasingly, to technical and vocational education.

Quality of technical and vocational education and training

Regrettably, the review panel was able to obtain only limited information to support constructive observations about the condition of vocational education and directions for its reform. However, there are other similar reviews and exercises underway focussed on the vocational education sub-sector, and from the findings of a 2008 USAID survey of middle technical college graduates, there appear to be many similarities in their reported concerns and those raised by students in the degree-granting institutions who were interviewed during the review panel's site visits.

As the USAID student survey had a low response rate (only 19%) its findings are indicative only. In respect of the 2007 graduate cohort, these include the following:

that 47% of the graduates are unemployed, 2.7% are full-time students, 10% are self-employed, 8% are working and continuing education and training, 4% are employed by an enterprise, firm or government office, and the rest are either in the military or married and do not work.

that of the 4% who were employed, 66% indicated they have a part-time job and 34% had a full-time job.

that of the 47% of graduates who indicated they were unemployed, 50% said that the primary reason for unemployment was that they could not find an occupation matched with the areas of their study, 16% intended to do more training, and 8% feel that they are not sufficiently qualified ion their area of study.

that 53% of the studied group stated that their occupation or study courses are not related to the training received in the Middle Technical Colleges, and 47% acknowledged they are somewhat or directly related.

The USAID employer survey had a response rate of 38%. It found that:

the greatest proportion of employees hired are from secondary technical schools (41%), followed by general secondary (17%), with a much smaller proportion from the Middle Technical Colleges and Universities

(16% each). They are currently looking for new employees with secondary technical education (47%) to fill current vacancies.

The review panel heard comments on the poor outcomes of the TVET system, particularly reflected in the high unemployment rate of TVET graduates. While much of the unemployment can be attributed to economic circumstances, it seems that a major cause of the poor outcomes is the quality of the TVET system itself. The most telling criticism of the system is that TVET curricula are not sufficiently responsive to labour market needs. The reason for this can really be traced to the supply-driven nature of the system. Finance is allocated to TVET in a way that takes no account of emerging needs, or of the performance of institutions. There are no system-wide criteria to assess the performance of TVET institutions, with minor exceptions in more progressive ministries such as MITD.

The recently established Training Finance Fund should have an impact on how funds are allocated but until new guidelines for the Fund are fully implemented, their impact will remain uncertain. In the absence of suitable financial incentives change has been difficult to effect. As a result, curricula still tend to be outdated and reviewed too infrequently. Training programmes are still largely institution-based and although greater efforts are being made to develop systems that use more employer-based attachments, far more employers participation than is evident so far will be needed if these systems are to succeed.

Developments through various donor-financed TVET reform projects will also be important. For instance, the local partnerships that are to be developed between industry and individual training centres are intended to develop alternative ways of providing practical skills training and should impact on curriculum reform. Training standards are being developed in a number of sectors, which should result in clearer definition of skill requirements and, as education and training programmes are designed for relevant skills formation, learning pathways can be built for students to move from one skill level to another or from one institution to another. This should also have an impact on the reforms taking place in the technical colleges and in secondary education.

TVET qualification standards

A National Skills Standards (NSS) Project has been recently completed to develop a new qualifications framework for the TVET sector. The key objectives of the framework include: (a) workers certification that properly reflects their abilities and competencies; (b) portable credits that allow trainees to proceed from one sector of education or training to another;

(c) independent assessment procedures; and (d) independent accreditation procedures.

The new framework will cover post-primary school qualifications that are broadly equivalent to Levels 1, 2 and 3 of the International Standard Classification of Education (ISCED). The work is financed by the SFD's Human Resource Development Programme. A team of local and international consultants in co-operation with employers in three industries (manufacturing, tourism, and building and construction) completed the development of the standards. The new framework establishes not only skill standards but also the procedures for testing and certifying trainees. The framework is supported by the Egyptian Accreditation Council (EGAC) with a mandate to develop procedures for accrediting training providers. It will be important to incorporate this framework within a comprehensive national qualifications framework for the whole of Egypt's education system. That will be necessary for ensuring that TVET is regarded as an integral and valued part of tertiary education, that is integrated with the secondary and other higher education opportunities, and that students can move across the various parts of the education and training system without having to repeat work they have already completed.

Other efforts along the same lines include the work of the MOE's Mubarak-Kohl Initiative (MKI), which is planning to assist the private sector to prepare regulations (standards, curricula, assessments etc.) for 28 trades covering the same three industries as the NSS as well as a number of commercial occupations. MKI also has plans to open the system to students with higher school qualifications (up to year 12 completion); and to other levels of skills (for example, banking and information technology).

A new labour law recently passed by the Egyptian parliament establishes a system of licensing to support the standards. One licence will apply to individual skilled workers, in effect a legislated requirement that a person must be certified as skilled before being able to practise in the relevant field. A modest fee of EGP 40 will be charged for issuing a certificate. Certificates will only be issued against the new skill standards. Businesses providing skilled work for customers will be required to use only licensed employees. Training providers must also be licensed according to the Law and their training programmes must be submitted to the relevant ministry for approval. By implication, any unlicensed training provider will be operating illegally. Consequently, there is a possibility that, far from opening up the private training market, the new Law could serve to make it more difficult for training providers to operate and could subject them to interference from public training providers whose own record is so criticised.

Although the Law is administered by the Ministry of Manpower and Emigration (whose Minister is also the Chairman of the SCHRD) the Ministry does not currently have any specified role in issuing certificates for skilled workers except, of course, for trainees in its own training centres. Further clarification will be needed on this matter.

TVET institutions tend to regard their capacity as being severely limited in two respects: a lack of suitably trained instructors; and a lack of adequate training resources and equipment. The lack of suitably qualified and experienced instructors appears to be the over-riding factor limiting the effectiveness of TVET in Egypt. It results largely from inadequate recurrent funding since it is mainly attributable to the low wages offered. Instructors who are graduates of the Technical Secondary Schools usually have little work experience of their own, while instructors who have acquired skills through work experience usually no formal training or preparation as certified trainers.

In the long-term, this problem must be considered in the general context of redefining teaching careers by ensuring that teachers are properly selected and that they subsequently have a viable teaching career. In the shorter-term, there is a significant difficulty with financing the training of those staff already in the system. There are over 3 000 trainers in vocational training centres providing entry-level training, together with 900 technicians and about 1 200 managers, supervisors and specialists. There are similar numbers in other vocational training centres (VTCs). Apparently, the training of all these staff is currently beyond the capacity of the system and yet even these numbers are far too small if the system is to expand.

The NSS Project has addressed some of these challenges to some extent but only in the short-term and only on a small scale. NSS has developed a set of manuals for training the trainer and sets of "Student-Centred Learning Packs". Training of instructors has been completed; a total of more than 250 VTC instructors have already undergone training as qualified instructors using new skill standards in the manufacturing industry, tourism industry and in building and construction, in addition to over 100 trainers of trainers. These instructors, have in turn, commenced training more instructors. The challenge remains substantial and needs continued support from the Government.

Specific observations regarding the quality of higher education

As students are the primary clients of higher education and graduates the main output of the system, their concerns are paramount and are given prominence here. Among those concerns common to students of the higher

education and TVET sub-sectors are: insufficient choice of field of study relevant to career preference; inadequate preparation for employment as a result of curriculum irrelevancies; and lack of practical skills formation because of an over-concentration on memorising content, passive pedagogies and lack of facilities and equipment (Academy for Educational Development, 2008).

The discussion that follows, which refers primarily to the universities and higher institutes, deals in turn with educational inputs, processes, outputs and outcomes.

Educational inputs

The inputs considered below are students, academic and other staff, student: staff ratios, learning materials, facilities, and student services. The quantity and quality of inputs obviously depend in large part on the level and forms of financial resources provided. Financing issues are considered in Chapter 8.

Students

There is no information available about the quality of students being admitted to higher education in Egypt. Student admission is based on national examination results that are norm-referenced (relative to the performance of other students) rather than criterion-referenced (relative to desired competency levels), preparedness for which is heavily influenced by parental capacity to pay for private tutoring rather than student ability to succeed. Additionally, students can apply only to their local institution, and because higher education is free, students who pass the normative cut-off mark in the examinations have right of entry to their local institution, though not necessarily in their preferred field of study. The review panel was unable to discern the extent to which there are concentrations of talented students in some institutions or fields. Even for the more highly selective fields such as medicine, access and ability to benefit appears to be moderated significantly by ability to pay for preparatory training.

More open systems of student access, as discussed in Chapter 5, could involve wider criteria for student selection and wider choices for students in the exercise of their preferences by field of study and institution.

Staff

In the 2007 survey of public university students, summarised in the Country Background Report, 35% of respondents indicated that they had experienced problems with academic staff. A recurring problem was the unreliability of lecturers in adhering to the lecturing schedule. These findings are indicative of a supply-driven culture largely unresponsive to student needs.

Academic and general staffing of higher education institutions follows Egypt's public service system of permanent appointments to post, with promotion based on seniority, and pay based on salaries fixed by the Ministry of Finance. Under this system, there is no difference in remuneration or tenure for high-performing and under-performing staff. In 2006, with a view to lifting performance quality and dynamism in the sector, the Minister for Higher Education proposed the introduction of a "merit system" of hiring according to qualifications and promotion according to achievements. The proposal met academic staff resistance. Meanwhile, across several fields for which there is strong demand for high order professional skills, universities are finding it increasingly difficult to attract and retain academic staff. One university advised the review panel that its number of engineering academics had halved between 1998 and 2008, because the academics had found higher paying jobs in the non-academic labour market.

The review panel did not have access to information about academic staff qualifications, experience, and measures of esteem, such as membership of distinguished academies and other awards. Information obtained from site visits suggests that only a small proportion of university academic staff are research active. In one large university it was suggested that some 10% of staff were research active at a level that would be recognised internationally and up to 30% were capable of performing quality research if given sufficient resources and incentives. The remainder were regarded as unable to be seriously research active. In the world's leading research universities typically some two-thirds of academic staff would be research active, including one third whose research would be internationally reputable.

The low level of research activity in Egyptian institutions relative to major universities in other countries reflects, in part, high teaching workloads and the ability of academic staff to work up to two days per week outside their employing university. This arrangement reflects the inadequacy of faculty remuneration and the inability of individual academic staff to support research from their teaching income. An approach to higher education that is informed by research is not an Egyptian characteristic, as

best the review panel can ascertain, at least at the undergraduate level. Matters relating to university research are discussed in Chapter 7.

The review panel was unable to obtain information about the qualifications of administrative and general staff, and their opportunities for professional development.

Student staff ratios

The rate of growth in the volume of higher education students has been rapid in Egypt over the past 30 years. In 2008, there were 2.4 million undergraduate students and about 250 000 postgraduate students enrolled in higher education institutions. That number represents 17 times the total number of undergraduate and postgraduate students in 1966. Clearly such growth puts pressure on financial, human and physical resources. The Country Background Report acknowledged that shortfalls in the financing of growth "resulted in serious deterioration of the quality of education where academic success mandated the use of tutors, whose fees are beyond the reach of students of modest means." The equity implications are explored further in Chapter 8. Here the focus is on aspects of quality, a major indicator for which is the student to student academic staff ratio. The higher the ratio the more likely it is that students will be taught in larger classes, have fewer interactive learning experiences, and have less direct contact with their teachers.

There are no available data disaggregated by level of education (undergraduate, Master's, Doctorate). As Table 6.2 shows, there are very wide differences in gross student/staff ratios by field of study and type of institution. Medicine, natural and veterinary sciences have the lowest ratios, suggesting more intensive teaching. With the curious exception of medicine in the private higher institutes, Egypt's ratios in these fields, and notably in its public universities, are on par with leading institutions of the developed world.

Except for those fields, private universities have better SSRs than public universities by a considerable margin, and notably in the social sciences, where the public university SSRs reflect a standard of higher education well outside internationally acceptable norms, where student to staff ratios typically range from 10:1 to 20:1, across different fields of study and institutions. With the single exception of art, the SSRs of Egypt's private higher institutes do not meet internationally acceptable standards. Similarly, in the fields of education, social sciences and cultural studies, Al-Azhar University has unusually high SSRs.

Table 6.2 **Student staff ratios by institutional type and field of education 2006/07**

Sectors/ Sciences	Students per Faculty member			
	Public Universities	Private Universities	Private Higher Institutes	Al-Azhar University
Educational	44	7	–	127
Basic	9	9	–	13
Medical	8	16	348	4
Engineering	31	13	146	21
Cultural & literary	57	16	246	95
Art	20	8	8	–
Agricultural & veterinary	9	–	811	14
Social	158	10	429	133
Total	29	13	273	55

Source: Country Background Report.

As shown in Table 6.3 in Egypt's public universities, there are on average 26.2 students for every teaching appointment (professors, assistant professors, teachers, assistant teachers and demonstrators). The student/ faculty ratio ranges from 13.2, half the national average, at Helwan and Suez Canal Universities to 50 at Al-Azhar University, the Mubarak Police Academy being the outlier with 121.5. When the police academy and Al-Azhar are excluded, the national average ratio is 23.3 students per academic staff member. Eight universities have ratios lower than that average and eight have higher ratios. There is a significant interaction of the ratios with student enrolment concentrations by field of study. For example, across the public universities the student/faculty ratio in medical sciences is 8 to 1, and in basic sciences and agricultural and veterinary sciences it is 9 to 1. However, much higher ratios are to be found in the fields of education (44 to 1), cultural and literary studies (57 to 1) and social sciences (158 to 1).

Table 6.3 **Students, faculty and graduates of Egypt's public universities, 2005/06**

University	Student enrolments	Teaching Faculty	Student: faculty ratio	Graduates
Cairo	267 844	9 973	26.9	29 820
Asyout	69 602	3 284	21.2	13 190
Al-Azhar	365 886	7 335	49.9	51 960
Tanta	95 481	3 250	29.4	17 396
Helwan	53 773	4 065	13.2	18 253
Suez Canal	48 750	3 433	13.2	9 734
Ain Shams	197 032	9 338	21.1	31 878
Alexandria	175 872	6 135	28.7	26 980
El-Mansoura	121 738	4 646	26.2	21 974
El-Zagazig	99 497	4 799	20.7	19 742
El-Menia	43 323	2 400	18.1	7 886
El-Menoufia	80 216	2 810	28.6	14 387
Ganoub El Wadi	65 627	1 241	27.5[2]	7 689
Souhag [1]	n.a.	1 146		5 312
El Fayoum	21 991	1 454	15.1	4 325
Beni Suef	36 706	1 174	31.3	7 756
Kafr El Sheikh	26 688	693	38.5	4 991
Banha	58 605	2 835	20.7	11 342
Mubarak Police Academy	5 708	47	121.5	
All Government universities	**1 834 339**	**70 058**	**26.2**	**304 635**

Notes: [1] Souhag University separated from Ganoub El Wadi University in 2005/06.
[2] Including Souhag.
Source: Ministry of Higher Education.

Learning materials

In the majority of public institutions, teachers prepare lecture/laboratory notes for students to use as their main source of information. These texts contain the assessable content of courses of study. As only a few copies are available through the library, the students normally have to buy these texts. The panel was given to understand that for the most part these texts are not subject to peer review. In one public university, students complained to the review panel that the content in the set text in one field was out of date. However, as part of the new quality assurance procedures, measures have been taken in some institutions to have courses and materials reviewed periodically by external evaluators, though this is not common practice.

There appears to be use of a wider range of learning materials, including international textbooks, in the new partnership programmes (*Intisseb*) of public universities enrolling students on a fee-paying basis, and in private universities (see Chapter 8). In one private university, the students advised the review panel that they could access lectures and suggested readings via the Internet.

Facilities

For higher education institutions seeking accreditation there are standards to be met in relation to lecture theatres, laboratories, and libraries. The review panel understands that the Ministry of Higher Education is examining possible minimum standards for space, seating, lighting, ventilation, and other aspects of teaching facilities.

The Country Background Report reported the findings of a 2007 survey of a sample of public university students a large proportion (2 out of 5) of whom said they had problems finding a place in lecture halls and laboratories. A further 1 in 5 students reported difficulty accessing library space. The review panel's site visits to a range of public institutions confirmed the view that they are operating only on the bare basics. In some institutions, especially higher institutes, the condition of the facilities is so poor, as not to be conducive to effective teaching and learning.

One the other hand, the panel visited one private university that was very well-equipped in modern facilities for medium-sized and small-group learning, and whose campus was wired with fibre-optic cable and had wireless access in several areas, enabling students to access learning materials on-line.

Quality of the educational process

The processes considered below include curriculum, pedagogy, student support services, student feedback, and student assessment.

Curriculum

From information provided in the Country Background Report, presentations made to the review panel, and the panel's own observations, higher education in Egypt can generally be described as being based on a narrow, rigid and often outdated curriculum bound by the single perspective of the lecturer whose texts form the assessable content of a course. An emphasis on the memorisation of content predominates over the

development of critical reasoning and analytical skills. A focus on "theoretic" as opposed to "practical" ways of knowing gives precedence to "knowing what to say" rather than "knowing how to perform". The combination of narrow content and disconnected context risks a failure to broaden the perspectives of graduates and prepare them with the skills they will need to adapt to future change.

Broader and more innovative approaches to curriculum are to be found in the newer institutions. For instance, in one private university, the review panel was advised that elective courses comprise 20% of the curriculum.

Additionally, signs of progress can be seen in the vocational education sub-sector with the development of curricula according to the relevant industry skill/job requirements using, to start with, the National Skills Standards (NSS), where available. The curriculum renewal effort extends to some 26 programmes containing 440 courses in the commercial, industrial, civil, architect, hotel, management & tourism and social services specialisations.

Pedagogy

The reality of a narrow, content-heavy curriculum delivered to very large classes in poorly equipped facilities gives rise, as a necessary condition of teacher survival in the majority of institutions, to reliance on "the recitation method" of one-way communication, "telling" rather than "asking". For students, the experience is a passive one of "listening" rather than participating in interactive and experiential modes of learning.

The Country Background Report painted a picture of emerging pedagogical practices in Egypt but the review panel could not corroborate real gains towards more active pedagogy, even in the elite professional fields of lower student enrolment. In some of the recently established private institutions, there appear to be serious efforts to make learning more group-based and experiential. However, for the system in general there appears to be much more "talking the talk" than "walking the talk", with a tendency to describe minor changes within current practice, undeservedly, as paradigmatic shifts.

Support services

The review panel was advised that a significant number of students remain enrolled for many years repeating subjects in public universities. However, data deficiencies in respect of year-on-year student progress obscure the extent of student repetition of courses of study. For the majority

of enrolments in public institutions, there appear to be no mechanisms for identifying students at risk of failure. Only in the hard sciences do there appear to be periodic evaluations enabling students to identify their shortcomings and improve their performance before the final examination.

In one private university, students advised the review panel that students were assigned to study groups each with an academic advisor. The students explained that semester workloads could be adjusted according to a student's grade point average. Students not achieving satisfactorily would take a lower workload the following semester, and if then they continued not to perform satisfactorily they would be counselled to change their course of study.

Student evaluation of teaching

Teaching evaluation through student feedback is beginning to be accepted as regular practice in a number of institutions. Typically, questionnaires are distributed two weeks before the end of classes, and analysed by quality assurance units. In large faculties like commerce and law, the exercise can be costly, and electronic systems of collecting student feedback are being explored. The QAAP activities are said to have encouraged some teaching staff to respond to the feedback obtained from students, for the purpose of improving their teaching performance and revising course materials, or developing the curriculum as reflected in course reports. However, on the basis of responses by teaching staff and students during site visits, such practice is rare.

Student assessment

Assessment in higher education is based typically on content-recall rather than the demonstration of higher order reasoning skills. In some faculties of public institutions a shift can be discerned from traditional methods of student evaluation such as essay questions to shorter questions, and problem solving tasks. At one private university, the students advised the review panel that they undertook weekly assignments, including group-based activities, and received regular feedback on their work.

The Country Background Report reports the findings of a 2007 survey of public university students, where 42% of participants indicated problems with assessment and examination procedures, half of whom expressed concern about unfairness in examination grading. Requirements associated with QAAP funding are producing demonstrations of improved practices, including: students being made aware of grading criteria at the commencement of a course; model answers to typical questions being made

available to students; and the use of external evaluators to comment on the appropriateness of assessment methods and their fairness and efficiency.

Educational outputs

Higher education enrolment statistics are collected annually but on an aggregate basis only, so it is not possible to compute year-on-year progression rates and cohort completion rates. Estimates of gross graduation rates are discussed in Chapter 8. In general terms it appears that the gross completion rate is of the order of 75% of the commencing cohort, and drop out from first year accounts for some 20% of the overall attrition. Both efficiency and qualitative concerns arise from this rate of production. The efficiency issues are discussed in Chapter 8. Here the focus is on quality and relevance.

Tables 6.4a and 6.4b show shifts in graduate supply by field of study over the decade 1995/96 to 2005/06. The total output of graduates grew by more than 1 million (116%) over the period. Four out of five of the additional graduates had studied in what are designated as theoretically-oriented areas. However, the share of graduates from fields defined as "practical" fell only by one percentage point, from 20% to 19%, over the period. This apparent stability in the broad composition of graduate supply is not symptomatic of a responsive and dynamic higher education system. Some shifts are more evident in particular areas of graduate supply to professional occupations, as discussed below.

In terms of absolute growth, the top field was commerce, with an increase of 270 526 graduates and an increase in share of total graduate output of 2.6 percentage points. Interestingly, the second and third largest fields of absolute growth, humanities (120 442) and law (97 909), experienced a relative decline with a loss of share, the former by 0.8 percentage points and the latter by 1.6 percentage points. The fourth largest growth field was education (77 831), which also lost share (by 3.4 percentage points).The fifth field of absolute growth in graduate output was Islamic and Arabic Studies (71 806), increasing its share by 1.8 percentage points. Engineering was the sixth largest in terms of output volume growth but its share remained flat at 5.2%. When seen against a fall in the sciences share from 3.3% to 2.5%, the overall downward trend in S&T graduate supply is worrying in the technologically-sophisticated modern global economy. Technology graduates rose sharply by some 750% but off a low base, to represent merely 0.7% of Egypt's graduating class of 2005/06.

Graduate supply to the health professions, particularly medicine and pharmacy rose in absolute terms and as a share of total output, with a

noticeable trend to feminisation. Graduate output was flat over the decade in engineering, as noted above, and also in archaeology, economics and political science, social service, and tourism and hotels. One possible explanation for this flatness is that institutions are paid on an historical cost-plus basis, largely reflecting their staffing structure rather than their student enrolment mix, and this method funding perpetuates a supply-driven approach to higher education rather than one than is responsive to changes in demand.

Graduate capabilities

Recent progress has been made in Egypt in defining expectations of higher education outcomes in terms of graduate capabilities. Egypt's quality assurance and improvement initiatives in higher education include the World Bank financed Quality Assurance and Assessment Projects (QAAP) which was pivotal to the development of the National Academic Reference Standards (NARS) which in turn provided impetus for defining Intended Learning Outcomes (ILOs) for different faculties. The ILOs are faculty-generated statements of the knowledge and skills to be acquired by students through different programmes and courses. The QAAP required academic staff to assess student learning outcomes against the ILOs, including by obtaining the views of students, alumni, and employers about the achievement and appropriateness of programme ILOs.

The QAAP internal audit survey conducted in 2007 indicated that: (a) graduates exhibited inadequate personal, subject-specific and employment-related skills; (b) current academic programmes provide an insufficient foundation for employment; and (c) there is insufficient commitment of the faculties to teaching and learning methods that enable students to achieve course ILOs, making available course specifications, and informing students of assessment criteria. That report usefully suggested closer engagement with alumni, employers and other stakeholders in the design and development of educational programmes, and evaluation of their performance and relevance (Ministry of Higher Education, 2008). Further work in that direction would form a good foundation for the development and application of a national qualifications framework to underpin quality assurance and qualifications recognition.

Table 6.4 **Higher education graduates by study orientation and gender, 1995/96-2005/06**

a. Theoretical studies

Study Orientation	1995/96 Persons	*Share (%)*	2005/06 Persons	*Share (%)*	Change 1995/96-2005/06 Persons	Change (%)
THEORETICAL						
Arts & Humanities	**117 577**	***13.5***	**238 019**	***12.7***	**120 442**	**102**
Domestic management	**4 588**	***0.5***	**3 638**	***0.2***	**-950**	**-21**
Tourism & Hotels	**3 514**	***0.4***	**12 162**	***0.7***	**8 647**	**246**
Education	**123 338**	***14.1***	**201 169**	***10.7***	**77 831**	**63**
Dar El-Uloum	**8 336**	***1.0***	**16 729**	***0.9***	**8 393**	**101**
Quran Knowledge	**152**	***0.01***	**1 070**	***0.06***	**918**	**604**
Artistic Education	**1 707**	***0.2***	**1 576**	***0.08***	**-131**	**-8**
Musical Education	**763**	***0.1***	**794**	***0.04***	**31**	**4**
Social Service	**11 360**	***1.3***	**24 422**	***1.3***	**13 062**	**115**
Archaeology	**1 939**	***0.2***	**3 919**	***0.2***	**1 980**	**102**
Mass Communications	**927**	***0.1***	**13 378**	***0.7***	**12 451**	**1343**
Sufficient Productivity Institute	**10 037**	***1.2***	**4 992**	***0.3***	**-5 045**	**-50**
Commerce	**192 077**	***22.0***	**462 603**	***24.6***	**270 526**	**141**
Law	**110 891**	***12.7***	**208 800**	***11.1***	**97 909**	**88**
Economics & Political Science	**1 504**	***0.2***	**3 385**	***0.2***	**1 881**	**125**
Sharia & Law	**18 754**	***2.2***	**46 177**	***2.5***	**27 423**	**146**
Languages (Al-Alsun)	**3 102**	***0.4***	**10 099**	***0.5***	**6 997**	**226**
Islamic Message & Theology	**22 874**	***2.6***	**48 038**	***2.6***	**25 164**	**110**
Islamic & Arabic Studies	**34 388**	***3.9***	**106 194**	***5.7***	**71 806**	**209**
Islamic faculty for Girls	**2 613**	***0.3***	**8 990**	***0.5***	**6 377**	**244**
Arabic languages	**15 118**	***1.7***	**37 204**	***2.0***	**22 086**	**146**
Languages & Translation	**2 164**	***0.2***	**4 757**	***0.3***	**2 593**	**120**
Special type Education	**0**	***0***	**30 339**	***1.6***	**30 339**	**n.a.**
Kindergarten	**0**	**.**	**3 192**	***0.2***	**3 192**	**n.a.**
Azhar Girls	**0**	**.**	**1 448**	***0.08***	**1 488**	
Mubarak Police Academy	**0**	**.**	**5 708**	***0.3***	**5 708**	**n.a.**
Total Theoretical	**696 839**	***80***	**1 516 353**	***81***	**819 514**	**118**

b. Practical studies

	1995/96 Persons	*Share (%)*	2005/06 Persons	*Share (%)*	Change 1995/96-2005/96 Persons	Change (%)
PRACTICAL						
Medicine	**25 530**	***2.9***	**62 934**	***3.3***	**37 404**	**147**
Athletic Education & Physiotherapy	**13 462**	***1.5***	**24 270**	***1.3***	**10 808**	**80**
Fine & Applied Arts	**9 167**	***1.1***	**10 376**	***0.6***	**1 209**	**13**
Engineering	**45 120**	***5.2***	**98 382**	***5.2***	**53 262**	**118**
Agriculture	**20 222**	***2.3***	**24 902**	***1.3***	**4 680**	**23**
Pharmacy	**15 070**	***1.7***	**45 143**	***2.4***	**30 073**	**200**
Dentistry	**2 950**	***0.3***	**10 220**	***0.5***	**7 270**	**246**
Agricultural & Environmental Sciences	**154**	***0.02***	**176**	***0.001***	**22**	**14**
Petroleum & Mining	**841**	***0.1***	**1 943**	***0.1***	**1 102**	**131**
Sciences	**28 681**	***3.3***	**46 240**	***2.5***	**17 559**	**61**
Veterinary Medicine	**6 985**	***0.8***	**16 047**	***0.9***	**9 062**	**130**
Construction Planning	**244**	***0.03***	**934**	***0.05***	**690**	**283**
High Nursing institute	**5 340**	***0.6***	**9 521**	***0.5***	**4 181**	**78**
Technology	**1 519**	***0.2***	**13 018**	***0.7***	**11 500**	**757**
Total Practical	**175 222**	***20***	**364 107**	***19***	**188 885**	**108**
TOTAL ALL	**872 061**	***100.0***	**1 880 460**	***100.0***	**1 008 339**	**116**

Source: Ministry of Higher Education, Education Statistics, 2008.

Educational outcomes

The educational outcomes of most interests are the destinations of graduates in terms of local or international employment or further study, the private financial returns to graduates, and the social returns from public investment in the production of graduates. Graduate destinations are discussed below. The review panel was unable to find any estimates of private internal rates of return to higher education for Egyptian graduates, nor any reports on social rates of return. Such studies in other countries have provided a useful input to policy making, including for determining the appropriate distribution of cost burdens between general taxpayers and private beneficiaries of higher education.

The effectiveness of higher education for Egypt's labour market

With a very large informal economy, disincentives (*e.g.* social security provisions relating to worker insurance and protection against dismissal) for

formal economy employers to report fully on their employee numbers, a lack of information about the flow of persons across the formal and informal economies, and very limited institution-specific tracking of graduate destinations, there is scant information to guide public policy making in Egypt and little pressure on its higher education institutions, to have regard to labour market requirements in educational design, delivery, assessment and quality assurance.

Nevertheless, there is no absence of strongly-held, anecdotally-supported views within the Egyptian community. In consultations with government agencies, employers, education institutions and students, the review panel was advised often that:

- There is a chronic over-supply of university graduates.
- Many university graduates (50% in one institution) fail to obtain employment in the fields in which they have studied; students identified difficulties especially for graduates in humanities, law (Arabic stream), commerce (Arabic stream) and agriculture.
- Employers seek graduates that have more than technical subject knowledge but also "soft skills" of communication, team work, problem solving, reliability, and adaptability.
- Many university graduates have inadequate skills for the jobs they apply for; the commercial post-university tutoring market inflates university graduates' claims to employability on prepared Curriculum Vitae (CVs).
- University students are dissatisfied that their courses fail to help them develop practical skills; many seek to work overseas as graduates partly as a means of gaining practical experience.
- There are serious shortages of below-university qualified, skilled personnel.

There are some inconsistencies and ambiguities in the views presented to the review panel. For instance, if employers seek generalisable skills, why are generalist graduates seemingly disproportionately under-employed? Several students indicated that they had preferred a different course to the one in which they were enrolled but, because of the central allocation system, they had no real choice of career. There appears to be a fundamental lack of policy coherence for the higher education sector. Concerns about quality are disconnected from educational purposes, national labour market requirements, student interests, employer expectations, and international dynamics.

Graduate supply and labour market demand balances

In the absence of data about graduate employment and remuneration outcomes it is difficult to know how well the composition of graduate supply meets labour market requirements in quantitative respects, except insofar as there is a gross over supply of graduates as indicated by the unemployment statistics discussed below. It may well be that Egypt's economy can absorb only modest annual additions to professional occupations in fields that are constrained by public affordability constraints, such as in health, education and social services. Perhaps the rates of growth in fields such as medicine are reasonably appropriate for an expanding population. However, the review panel was given to understand that there are surplus medical graduates in Egypt but also that Egyptian medical graduates are highly regarded for international practice and that international students come to Egypt to undertake studies in these fields. This is to bring both qualitative and international perspectives to the policy considerations.

In the fields of strongest student demand – commerce, law and humanities – it is not self-evident that a high volume of graduate supply is problematic for an economy, so long as the graduates in those fields have good generalist foundations in reasoning, problem solving and communications, and the adaptability for different types of work. This is to turn the attention away from a preoccupation with the graduate volume fit to quantitative labour demand, and to focus more on the quality of graduates and their preparedness for work on unfamiliar projects in diverse and changing environments.

Graduate labour market outcomes

The available stock data presented in Table 6.5 are not strictly comparable, in that: (i) there is no estimate of the labour force by equivalent age and educational attainment categories; and (ii) the latest data on employment by level of education relate to 2002 rather than 2006, and there may be structural and cyclical factors that could explain differences over the interval. There also gender and regional differences of some significance, as discussed in Chapter 2. For instance, men with a university degree represent 17% of all unemployed persons in urban areas and 11% of those in rural areas. Women with a university degree represent 16% of all persons unemployed in urban areas and of 9% those in rural areas. The gender differences may reflect generally lower levels of female participation in the workforce. Additionally, given that the graduate supply of men in urban areas with degrees in commerce and law exceeds that of women by a factor of 1.5, these gender differences may reflect, to some degree, differences by field of education.

Nevertheless, to the extent that the figures shed some light, it may be inferred that: people with elementary schooling have higher rates of participation in the labour force than those without schooling (the difference between the population and employment shares for the illiterate category is heavily influenced by gender factors as discussed in Chapter 2; persons who complete secondary schooling and do further studies have a higher representation in employment than their share of the population; university graduates have much higher representation in unemployment than other tertiary education graduates. The extent of under-employment is not clear, especially whether and how much postsecondary graduates shunt out people without post-school qualifications in the services sector.

The supply-demand mismatches reflect the combination of several factors including: narrow streaming in secondary education; early specialisation; lack of opportunities for multi-skilling and second-chance learning; lack of career guidance services; no systematic surveying of graduate destinations (not seen as an institutional responsibility because students are centrally assigned); no routine surveys of employer satisfaction with graduates (not seen as relevant because curriculum and student allocation decisions are made centrally); few instances of co-operative learning, integrated on-the-job training.

Internationalisation of Egyptian higher education

The internationalisation of higher education is a complex and increasingly sophisticated enterprise. It includes: a growing number of students participating in short-term or degree-granting programmes abroad; increasing collaboration in research, sharing of research facilities, and joint authoring of research publications; the inclusion of international perspectives in curricula; the acquisition of second and third languages; the mobility of academic teaching staff and researchers; the mutual recognition of academic credits and degree equivalences at the international level between institutions; the development of joint and dual degrees; the establishment of branch campuses of universities abroad; the offering of courses and academic programmes at a distance; the acquisition of local universities by private foreign investors; and the development of international consortia.

Table 6.5 **Population, employment and unemployment by educational attainment, 2006**

Educational Status	Population (10 years & older) share (%)	Employed persons (15-64 years) share (2002) (%)	Unemployed persons (15-64 years) share (%)
Illiterate	29.6	23.2	1.8
Read & Write (6 years of schooling)	12.0	21.2	1.2
Adult Education Graduates	1.0	n.a.	n.a.
Less than Intermediate Certificate (9 years of schooling)	19.4	6.2	2.6
Intermediate Certificate (12 years of schooling)	25.8	28.2	60.8
Above Intermediate Certificate (14 years of education)	2.5	5.2	6.7
University Certificate and Above (16 or more years of education)	9.6	15.8	26.8
ALL PERSONS	100.0	100.0	100.0

Source: CAPMAS (2008), *Egypt in Figures*.

Various aspects of higher education internationalisation have become an important part of the trade in higher education services that is expanding to meet student demand beyond the supply capacity of national systems while providing export income to the supplying nations. The forms of trade in higher education services, as defined by the World Trade Organisation (WTO), include "study abroad" (where students move), "movement of

natural persons" (where teachers move), "commercial presence" (where institutions move), and "cross-border supply" (where no one moves). These developments are giving rise to international and supranational conventions regarding recognition of qualifications, provider accreditation, quality assurance and consumer protection. Both foreign and local graduates of national higher education systems seek international recognition of their qualifications so that they can gain employment anywhere in the world.

Additionally, developments in information and communications technology have radically reduced constraints of distance and time in enabling international collaboration in learning and research. The global knowledge society involves *inter alia* greater connectivity of people and information systems, and to stay with the pace of knowledge development it is necessary to be internationally connected. Leading research universities operate within a global environment of intensifying competition for intellectual talent yet they are leaders in international collaboration.

Exponential growth in knowledge, increasing cross-disciplinary research, internationally co-authored articles, and expanding use of digitisation and computational capacity are not recent developments, but the pace and scale of their expansion raises the participation cost threshold in many fields. Twenty years ago, advanced computing was used by only a handful of researchers in a few elite institutions, and the problems they tackled were carefully selected to maximise the cost/benefit ratio. Today advances in microprocessor speeds, networking, software, visualisation, data systems and collaboration platforms have radically altered the conduct of research and education. Researchers in all areas are enhancing or replacing traditional techniques, and creating global networks to enhance collaboration over distance, time and disciplines. The international dimensions of research are discussed further in Chapter 7.

As higher education now functions within a globalised knowledge economy its orientations, operations and references are being transformed. Consequently, conventional notions of effectiveness, quality and relevance are necessarily expanding. Governments and institutions around the world are having to adapt their approaches to higher education to these new realities (Gacel-Avila, 2005).

Higher education institutions in Egypt have long been involved in a variety of international endeavours. However, internationalisation efforts within Egyptian higher education are still relatively marginal to what is regarded as mainstream business, and highly differentiated between types of institutions. A significant effort from the government standpoint is devoted to fostering the mobility of Egyptian graduates to encourage them to secure post-graduate degrees overseas and to attract students to some programmes.

Active participation of Egyptian institutions in international collaborative arrangements, such as the European Union's sponsored Tempus programme, has helped to provide support for the participation of faculty members in international networks, and to foster mobility to and from Europe.

Within Egypt's range of elementary and secondary education there are international programmes whose curricula and qualifications align with those of other countries such as France, Germany, the United Kingdom, and the United States. That model is replicated by a set of selective private universities. Egypt is also active in the dynamic world of transnational higher education, not only as the host to several foreign-backed universities operating in Egypt, but also with one public university having established a branch campus in Lebanon.

The prominent role of Egypt in the Arab world is reflected in the fact that most international students in the country come from the Arab region. Also, half of the Egyptian government-sponsored students abroad are in Arab countries, though the attraction of North America and Europe especially at the graduate level is also noticeable, as shown in Tables 6.6 and 6.7. Many of Egypt's graduates aspire to work in one of the Gulf countries where they can earn reasonable incomes and develop practical skills. Similarly, Egyptian university faculty members commonly take a temporary leave of absence to go to Gulf countries' universities to secure better salaries and broaden their experience.

These various initiatives are driven very much from the bottom-up primarily by individuals or institutions. At the government level, there appears to be no explicit, integrated policy on the internationalisation of higher education. This is perhaps understandable, given the many challenges that it faces; an internationalisation strategy could be seen as a luxury the country cannot yet afford. Nevertheless, as Egypt is seeking insertion in the knowledge economy, developing a national strategy for internationalisation of higher education is not merely desirable but essential. Fostering the development of related strategies at the institutional level, as has been done in other countries, stimulates the transformation of the whole education system. Given Egypt's special international position, developing a strategic approach to the internationalisation of higher education cannot be seen as yet another add on to an already overloaded reform agenda; rather, it is integral to the sustainability of that agenda. It is in recognition of that fact that internationalisation is integrated into the mainstream concerns of this chapter rather than separated out as an adjunct policy issue.

International student mobility

UNESCO and OECD have calculated that on a worldwide basis in 2006 there were 2.9 million tertiary education students enrolled in institutions outside their country of citizenship, of which 83.5% were studying in OECD countries. The growth in this regard has been spectacular given that in 1975 the number of international students was only 0.6 million students (Santiago *et al.*, 2008).

Outgoing students

As shown in Table 6.6 according to calculations made on the basis of UNESCO and OECD data (Kishun, 2009), in 2004 there were only 6 545 higher education Egyptian students abroad, although it is not known: how many of them were in non-award, temporary programmes and how many were in degree programmes; the composition of the group regarding disciplines, destination countries and level of studies; and the number of students sponsored by the government or other sources of funding.

Table 6.6 **Egyptian higher education students abroad**

Destination country	Number of students
United States	1 822
Germany	1 192
France	849
United Kingdom	799
Other countries	1 883
TOTAL	6 545

Source: UNESCO – UIS/OECD (2005). Data selected from Kishun, R. (2009)

By comparison with other countries, the number of Egyptian students abroad is low (0.3% of the national enrolment), as shown in Table 6.7. Many students interviewed during site visits of the review panel expressed a keen interest in study abroad, but these figures suggest that their aspirations are not being realised.

Table 6.7 **Students abroad as a percentage of national tertiary enrolment in selected countries**

Country	% of tertiary students abroad	Top host destinations (2004)		No. of tertiary education institutions (2005/06)	Tertiary enrolment (2004)
		Country	No. students		
Egypt	0.3	United States	1 822	107	2 153 865
		Germany	1 192		
		France	848		
		United Kingdom	799		
		Saudi Arabia	370		
Algeria	3.4	France	22 250	58	716 452
		United Kingdom	452		
		Germany	304		
		Switzerland	266		
		Belgium	255		
Brazil	0.5	United States	7 799	1 402	3 582 105
		Portugal	1 842		
		Germany	1 801		
		France	1 759		
		United Kingdom	1 110		
Colombia	1.4	United States	7 533	299	1 112 574
		France	1 754		
		Venezuela	1 206		
		Germany	988		
		Spain	797		
Indonesia	0.9	Australia	10 184	1 410	3 441 429
		United States	8 880		
		Malaysia[1]	4 731		
		Germany	2 572		
		Japan	1 474		
Iran	0.9	Germany	5 423	101	1 954 920
		United States	2 321		
		France	1 441		
		United Kingdom	1 436		
		Italy	694		

Malaysia	6.5	Australia	16 094	27	632 309
		United Kingdom	11 806		
		United States	6 483		
		Japan	1 841		
		New Zealand	996		
Mexico	1	United States	13 329	1 479	2 236 791
		United Kingdom	1 973		
		France	1 452		
		Germany	977		
		Spain	937		
Philippines	0.3	United States	3 467	1 467	2 427 411
		United Kingdom	777		
		Australia	674		
		Japan	526		
		Germany	229		
Syria	10 385	Jordan	2 272	12	n.a.
		France	2 237		
		Germany	1 207		
		Saudi Arabia	668		
		Armenia	630		
Thailand	1.1	United States	8 937	108	2 251 453
		Australia	5 449		
		United Kingdom	3 754		
		Japan	1 604		
		Germany	958		
Turkey	2.7	Germany	27 582	76	1 918 483
		United States	11 398		
		France	2 273		
		Austria	2 018		
		United Kingdom	1 960		
Ukraine	1	Germany	7 618	294	2 465 074
		Russian Federation	6 841		
		United States	2 004		
		Poland	1 880		
		Hungary	1 172		

Note: [1] Denotes 2002 data.

Source: UNESCO (2006), Global Education Digest 2006, Paris: UNESCO.

In 2008 there were 1 953 Egyptian higher education students abroad supported by government scholarships or "missions", as shown in Table 6.8. A majority of recipients of government financial support were undergraduate students. Only a small proportion of the Egyptian sponsored students abroad (3.7%) were undertaking graduate studies. The proportion graduate students was higher in Europe (13.8%) and North America (4.2%). Just over half of the Egyptian funded students abroad are located within the Arab region, followed by 26% in North America and 18% in Europe. However, when the numbers are disaggregated by level, only 2.7% of graduate students are in Arab countries, while 28.8% are in North America and 65.8% are in Europe.

Table 6.8 **Government supported Egyptian higher education students abroad**

Region	Undergraduate		Graduate		Total	
	No. of students	%	No. of students	%	No. of students	Region's share (%)
Arab region	1 003	99.8%	2	0.2%	1 005	51
North America	483	95.8%	21	4.2%	504	26
Europe	300	86.2%	48	13.8%	348	18
Asia	82	97.6%	2	2.4%	84	4
Australia	12	100.0%	-	0.0%	12	1
Africa	6	100.0%	-	0.0%	6	0
Total	1 880	96.3%	73	3.7%	1 953	100

Source: Data selected from MOHE (2009), Higher Education in Egypt: Background Report.

Incoming students

There are many more students coming into Egypt from other countries than outgoing Egyptian students. The international enrolment of students in Egypt has been growing strongly in recent years, rising from 31 193 in 2002/03 to 41 590 in 2006/07. Notwithstanding this fast growth rate, international students represent only 1.3% of Egypt's total higher education enrolments. The largest international enrolment is at Al-Azhar University (38%) followed by private universities (31%) with the remainder distributed between state universities (open education) and state higher education institutes.

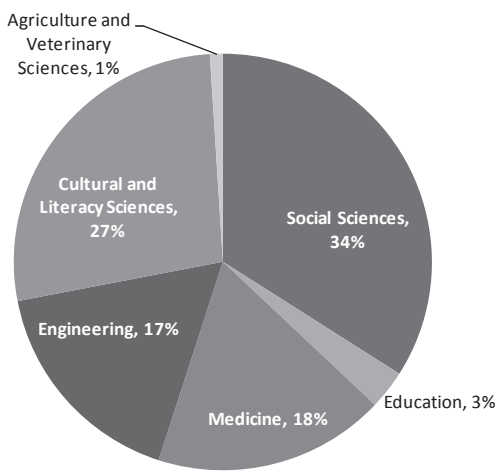
During site visits by the review panel, several institutions indicated a desire to accept international students. The institutions themselves, however,

generally do not actively attract international students, and many lack the adequate infrastructure to accommodate them. Additionally, there are bureaucratic impediments. A lengthy process must be followed in order to sign a Memorandum of Understanding, including a required series of steps at the institution and the Ministry of Higher Education, where all international agreements must have prior approval.

As shown in Figure 6.2, the largest proportion of international students in Egypt is enrolled in the Social Sciences followed by the Cultural and Literacy Sciences. The pattern of enrolments by field has been consistent throughout the period 2002-2007.

Figure 6.2 **Distribution of international students in Egypt by discipline**

(2002-2006)



Source: Analysis based on data provided by the Ministry of Higher Education.

Students from other countries in the region, or from further away (*e.g.* Malaysia) come to Egypt for a restricted number of programmes such as medicine and pharmacy. Many of these students are accepted in Egyptian institutions as part of international collaborative agreements signed by the Egyptian Government which include in some cases the awarding of scholarships. Data collected by Said and Kamel (2008), shows that the scholarships given by the Egyptian government to international students –

mostly from Islamic countries – has fluctuated between 1995 and 2005 from 468 to 2 294 annually.

Academic staff mobility

The flow of scholars to and from Egypt takes a variety of forms including short and long term, postdoctoral missions, visiting professorships, training and development, and consulting. The reported number of Egyptian scholars from public universities who went abroad declined from 251 in the year 2000 to only 74 in 2004. No similar information is available regarding international scholars in Egypt.

Table 6.9 **International scholars from selected countries in United States higher education institutions**

(2003-08)

Place of origin	2003/04	2004/05	2005/06	2006/07	2007/08	% Change 2003-07
Egypt	374	472		738	759	**102.9**
Algeria	63	75		50	50	**-20.6**
Brazil	1 341	1 499		1 862	2 071	**54.4**
Chile	291	296		433	425	**46.0**
Colombia	524	550		626	696	**32.8**
Indonesia	208	207		184	256	**23.1**
Iran	331	398		572	622	**87.9**
Malaysia	176	166		256	272	**54.5**
Mexico	1 032	1 158		1 218	1 396	**35.3**
Philippines	318	372		392	391	**23.0**
Syria	106	109		127	110	**3.8**
Thailand	572	619		653	696	**21.7**
Turkey	1 215	1 427		1 362	1 539	**26.7**
Ukraine	531	549		519	521	**-1.9**
WORLD TOTAL	**82 905**	**89 634**		**98 239**	**106 123**	**28.0**

Source: IIE. *Open Doors*. (2003)(2006)(2008)

Although the 759 Egyptian scholars doing temporary work during the 2007/08 academic year in United States higher education institutions represented only 0.7% of the 106 123 foreign scholars there, as shown in

Table 6.9 Egypt has doubled this number since 2003, and represents the largest rate of growth among comparator countries.

As has been seen in other countries, fostering academic staff mobility, in an orderly way, is one of the most effective long term means of internationalising of higher education. Mobility of academic staff not only provides participating individuals with an international experience and contacts with peers abroad, but eventually will be translated into the classroom and research activities back home. In the case of Egypt, the efforts being made appear not to be driven by strategy, at either the system or institutional level.

In developing strategic approach, questions along the following lines might be raised: *In which countries and institutions should the limited resources be invested? Which type of academic staff and which areas of knowledge should be emphasised? How can opportunities for reciprocal beneficial arrangements with partner institutions abroad be maximised? How can the experience abroad be better linked to concrete academic staff who have been abroad once they return to their home institutions? How can their contributions be measured?*

Second language acquisition

An important dimension of the internationalisation of higher education is graduate acquisition of functional second and, ever more frequently, third languages. Obviously, higher education institutions cannot undertake this project by themselves; it requires prior development of functional proficiency in a second language by the end of secondary school.

As observed during the country visit, the acquisition of second language competencies in Egyptian higher education institutions is very limited, though several programmes are offered in foreign languages, mainly English and French, in a variety of universities. However, in the great majority of academic programmes and institutions, the acquisition of a second language at a basic level of competency is not part of the curriculum. In contrast, students consulted during the review panel's site visits regularly expressed the wish to be exposed to a more internationalised curriculum, including the opportunity to master a second language and to have a study abroad experience.

International dimension in the curriculum

Even if a massive effort could be made to increase the numbers of Egyptian students abroad, those benefitting from such opportunities would

continue to represent a small percentage of all higher education students. Hence to prepare graduates with global skills, outlooks and competencies it is necessary to internationalise the general curriculum. By so doing, a clearer connection can be seen between internationalisation efforts (such as the signing of memoranda of agreements, student and faculty mobility, etc.) and curriculum re-orientation and renewal. Fortunately in the case of Egypt there are good examples where institutions, especially in the private sector, have demonstrated this approach by translating it into academic programmes for developing global competencies in their students. An important challenge remains in expanding on these initiatives across more institutions. Adding a relevant international dimension to the curriculum requires greater flexibility in the curriculum itself. If the process to update the curriculum continues to be highly regulated and to be seen by faculty members and institutions as too bureaucratic, efforts in this regard will continue to be marginal.

Capacity to support internationalisation

All the aforementioned components of an internationalisation strategy for higher education, both at national and institutional levels, cannot be sustained without parallel work devoted to further developing institutional capacity for internationalisation.

At the institutional level, on the basis of the review panel's observation, there appear to be no policies, support services or dedicated funding made available for internationalisation efforts. As in other countries, internationalisation is expressed in terms of the number of agreements and collaborative initiatives with institutions abroad, but typically these are merely symbolic and fail to translate into concrete results. In most universities, the person responsible for international relations, if there is one, is affiliated with the office of the vice president for post-graduate studies, and concerned chiefly about identifying opportunities for graduates to study abroad, rather than with a broader internationalisation agenda. Building institutional capacity for internationalisation involves *inter alia*: leadership commitment to the policy as an integral part of the change agenda; the development of institutional internationalisation plans; the active participation of academic and general staff; the creation and staffing of support units; the recruitment and training of international education professionals; and the active participation of institutions in relevant international education networks and fora.[1]

At the government level, the Country Background Report identified a fundamental framework factor that needs careful attention:

A major drawback in the higher education system, is that apart from individual efforts in some institutes, there is no national framework that has been adopted by the Ministry of Higher Education to increase the international relevance and competitiveness of its higher education system. Till now, there is no link with major structural reforms taking place in the world such as "the Bologna Process".

Consideration might be given to formulating a more comprehensive internationalisation strategy for higher education. This strategy could provide for:

- a statement of national policy objectives and principles;
- a more coherent set of actions and programmes, including for mobility and research collaboration, aligned with national priorities;
- development of a national qualifications framework aligned with the Bologna Process;
- the embedding of internationalisation competencies into the statements of expected graduate attributes in the national qualifications framework;
- encouraging second and third language learning throughout the education system;
- ensuring that international students are included in Egypt's quality assurance and consumer protection arrangements;
- professionally promoting Egypt as a study destination for students in other countries;
- systematically collecting and reporting data on the movement of students and academic staff;
- reducing unnecessary regulations and bureaucratic procedures related to international collaboration; and
- providing adequate incentive funding and support, including support for Egyptian undergraduate students to have a period of study abroad.

Quality assurance and improvement initiatives in Egypt

Since 2002, Egypt has been putting in place a new quality assurance system for higher education. comprising: an internal quality assurance system operated by individual higher education institutions; and an independent external quality assessment system based on peer review. A new National Authority for Quality Assurance and Accreditation of Education (NAQAAE) was established under a Presidential Decree in 2006;

Law No. 82-2006. Its main role is to verify institutional self-evaluations with regard to institutional capacity and educational effectiveness. Criteria in respect of institutional capacity include: strategic planning; organisational structure; leadership and governance; credibility and ethics; administration; financial and physical resources; community service; and institutional evaluation and quality management. Criteria in respect of educational effectiveness include: students and graduates; academic standards; academic programmes/courses; teaching, learning and learning support; teaching staff; scientific research; post-graduate studies; and evaluation of the effectiveness of the educational process.

Private and public institutions undergo the same procedures of accreditation. Concerns about quality of private higher education extend beyond ensuring adequate threshold capacity upon establishment to offer acceptable programmes, and now include measures to ensure that private institutions continue to build their capacity as they enrol more students. For instance, measures are being taken to reduce the reliance of private institutions on academic staff of other institutions and to become more self-sustaining. As indicated earlier in this chapter, some of the best practices in Egyptian higher education are to be found among the private institutions.

Another newly established government entity involved in assuring quality and helping faculties/institutes in public universities to be ready for accreditation is the "Steering Committee for the Project of Continuous Improvement and Qualifying for Accreditation". This committee was established in February 2008 and is mainly concerned with:

- Continuous Improvement and Qualifying for Accreditation Project (CIQAP)
- Quality Assurance and Accreditation Project, second phase (QAAP-II)
- Monitoring and Evaluation of New Programmes Project (MENPP)
- Institutional Strategic Planning Project (ISPP)

It is only in recent years that attention has been given to quality improvement. Previously the focus was one of quality control through central regulation and inspection. Still today there are vestiges of the former culture of regulated quality in central agencies and institutions themselves. Even so, significant advances have already been achieved at both national and institutional levels, but the new approach is met with a mixture of enthusiasm, scepticism and mistrust. Hence, the Government's stated quality assurance intentions can be perceived by institutions as just another set of regulations. Consequently, there is variability in the operations of the new

approach, ranging from a genuine translation into a new type of institutional behaviour, to superficial compliance with required procedures without affecting educational practices. Similarly, within government agencies there are differences in the pace of change, and inconsistencies and duplication in implementation. Egypt is not alone in having leaders and laggards in the process of innovation diffusion and, like others, will need to persist patiently with the course of reform.

Quality from an international comparative perspective

As shown in Table 6.10, tertiary education systems have been transitioning in terms of their quality approach from traditional ones dominated by a culture of control and supervision (Type I) towards more decentralised and proactive quality assurance and enhancement approaches (Type III). The Egyptian case can be categorised as entering the stage of a transitional system (Type II). It is clear, that at a certain point the system will continue evolving towards a mature Type III system although it is important to ensure that this progression is carefully managed.

NAQAAE has achieved important milestones including the intensive training of more than 500 specialists in a relatively short period of time and the development of the National Academic Reference Standards (NARS), among other activities.

There are, however, some limitations in the approach taken by NAQAAE which may make it worth considering the experience of other countries. One limitation is that NAQAAE is structured to play a variety of roles which are kept separate in most other countries. The combination of NAQAAE's functions of fostering quality, granting accreditation and enforcing compliance creates for role ambiguity and potential conflict of interest. Another limitation is that the scope of NAQAAE is extraordinarily wide, including all levels of education. In most countries with advanced accreditation systems, there is a clear differentiation between accreditation for elementary and secondary schooling, on the one hand, and postsecondary education on the other hand. Considering the size of the education system in Egypt, the ambitious goal of subjecting all educational institutions to accreditation as indicated by NAQAAE may not be realistic.

Table 6.10 **Typology of tertiary education quality frameworks**

Variable/Type	Type I: Traditional	Type II: Transitional	Type III: Mature	Egypt
Approach to quality	Quality Control (QC)	Quality Assurance (QA)	Quality Enhancement (QE)	High on QC. Initial work in QA
National efforts	Focus on procedures to control/impose quality measures	Procedures accompanied by incentives, training and monitoring	Accreditation based on adoption of QA practices	Still strong on procedures and control with novel pilot programmes based on incentives. Creation of a National Agency (NAQAAE) similar to those of Type III countries
Level of institutional intervention	Institution-wide	At the level of Academic offerings	Institutional and academic offerings	Major emphasis on Institution-wide intervention with initial work on accreditation of academic offerings
Timing of intervention	*Ex-ante-facto*	*Ex-post-facto*	Both	Both

Variable/Type	Type I: Traditional	Type II: Transitional	Type III: Mature	Egypt
Dominant evaluation approach	Educational inputs	Educational processes	Both	Major emphasis on educational inputs
Participatory approach	Mandatory	Voluntary	Both	Mandatory
Applicability by institutional type	Either private OR public educational institutions. Differential treatment	Private AND public educational institutions. Trends towards equal treatment	Educational institutions and specialised accrediting agencies. Equal treatment	Applicable to both although with stricter enforcement and regulations in the case of private institutions
Applicability by institutional level	Universities	Universities and some non-university institutions	All levels of the tertiary education system	Initial work at the level of universities. Planned efforts at the level of non-university institutions
Level of government participation	Central. Government Agency	Semi-autonomous	Independent. Non-governmental entity	Central. Although NAQAAE is semi-autonomous in theory, all its members are appointed by the central government
Level of student participation	QA system application	QA system design	Both	QA system application

Source: Adapted from Marmolejo (2005).

In other countries where there is a dedicated approach to higher education there is also found to be typically a division of responsibilities and workloads associated with the accreditation of institutions by a national or regional accrediting agency, and the accreditation of academic programmes by a variety of specialised accrediting agencies, themselves previously

authorised by the national accreditation agency or by the government. In Australia and Canada, for instance, governmental agencies have responsibility for institutional accreditation while quality auditing is a function of a separate auditing body. Such a division of responsibilities, although not without its own limitations, can avoid bottlenecks in the accreditation process and the accumulation of excessive power in one agency.

A third limitation is the perceived sense of duplication of efforts. NAQAAE's extensive engagement of representatives of disciplines and professions in the development of the NARS as well as in many of the training functions appears to duplicate functions being performed by the SCU and HEEPII (CIQAP and QAAP-II). Understandably, NAQAAE may need to provide training for the development of the NARS, but it may be more appropriate for the MOHE, the SCU or a new higher education entity for the whole higher education sector to undertake the training and technical assistance to institutions preparing for accreditation.

Finally, in practice NAQAAE continues to be a government agency with its members and authorities appointed by the central government. Consideration might be given to moving towards a shared responsibility model by having some members appointed on the nomination of higher education institutions and employers.

National qualifications framework

In the implementation of the Bologna Process in Europe, for making higher education programmes of study more comparable and compatible, a university-driven project for "tuning" educational learning outcomes has been initiated recently. This approach involves changing from a teacher-centred approach to a student-centred approach, with far-reaching implications for teaching, learning and assessment methods. In the tuning approach, much like NARS in the Egyptian context, learning outcomes are expressed in terms of levels of competence to be achieved by learners. Competencies represent a dynamic combination of cognitive and meta-cognitive skills, knowledge and understanding, interpersonal, intellectual, practical skills, and ethical values. Tuning also has given attention to the Europe-wide use of student workload accounting system, the European Credit Transfer and Accumulation System (ECTS). ECTS is not only a system for facilitating the mobility of students across Europe through credit accumulation and transfer, but can also facilitate programme design and development.

The Government might consider building on NARS as a means of harnessing the potential of the "Bologna Process" as an additional trigger for structural reform within its higher education system. This involves *inter alia* describing diploma and degree levels of a National Qualifications Framework in terms of the broad competencies expected of graduates with those qualifications. Some alignment with the Bologna Process could help Egypt to develop more efficient mechanisms for adapting academic programmes to the needs of the labour market, and to facilitate the insertion of Egypt into the global economy. The "tuning" and ECTS initiatives are proving to be effective not only in the European context but elsewhere. Their adaptation for Egypt's circumstances could be a stimulus to important structural reforms, quality improvements and internationalisation of Egyptian higher education.

Main findings and conclusions

Internationally, the best practices in the development of well-functioning higher education systems involve a joined-up approach to policy for educational effectiveness and quality assurance, having regard to local, national and international labour markets for graduates. An emerging model for managing the increasing scale and complexity of contemporary higher education is one of mutual responsibility between governments and institutions in shaping and delivering quality outcomes to meet individual and national needs.

Surveys of students and graduates of Egypt's higher education and vocational education sub-sectors indicated common concerns: insufficient choice of field of study relevant to career preference; inadequate preparation for employment as a result of curriculum irrelevancies; and lack of practical skills formation because of an over-concentration on memorising content, passive pedagogies and lack of facilities and equipment. In both sub-sectors there are symptoms of a supply-driven culture largely unresponsive to student needs.

In the case of vocational education, there is a double jeopardy, as that sub-sector suffers from low status, poor funding and poor quality. It will be important for Egypt to reinvigorate rather than continue to neglect technical and vocational education, to raise its status and quality, and to provide incentives for greater numbers of students to participate.

With regard to universities and higher institutes, an assessment of the quality of inputs, processes, outputs and outcomes indicates the following:

Educational inputs

The system generally has very high student staff ratios. Medicine, natural and veterinary sciences are the fields with the lowest ratios, suggesting more intensive teaching. In these fields, Egypt's ratios, notably in its public universities, are on par with leading institutions of the developed world. Except for those fields, private universities have better SSRs than public universities by a considerable margin, and notably in the social sciences, where the public university SSRs reflect a standard of higher education well outside internationally acceptable norms. With the single exception of Art, the SSRs of private higher institutes are much higher than international norms. Similarly, in the fields of education, social sciences and cultural studies, Al-Azhar University has SSRs that are incompatible with quality of provision. The problem of large classes is compounded by poor facilities and equipment in many institutions.

Educational processes

Higher education in Egypt can generally be described as being based on a narrow, rigid and often outdated curriculum bound by the single perspective of the lecturer whose texts form the assessable content of a course. An emphasis on the memorisation of content predominates over the development of critical reasoning and analytical skills. The reality of a narrow, content-heavy curriculum delivered to very large classes in poorly equipped facilities gives rise, to reliance on "telling" rather than "asking". For students, the experience is a passive one of "listening" rather than participating in interactive and experiential modes of learning. The Country Background Report painted a picture of emerging pedagogical practices in Egypt but the review panel could not corroborate real gains towards more active pedagogy, except in the most impressive private universities, where there are serious efforts to make learning more group-based and experiential. Assessment in higher education is based typically on content-recall rather than the demonstration of higher order reasoning skills. In some faculties of public institutions a shift can be discerned from traditional methods of student evaluation such as essay questions to shorter questions, and problem solving tasks. At one private university, the students advised the review panel that they undertook weekly assignments, including group-based activities, and received regular feedback on their work.

Educational outputs

Over the decade to 2005-06, Egypt's output of graduates grew by more than 1 million (116%). Four out of five of the additional graduates had

studied in what are designated as theoretically-oriented areas. However, the share of graduates from fields defined as "practical" fell only by one percentage point, from 20% to 19%, over the period. This apparent stability in the broad composition of graduate supply is not symptomatic of a responsive and dynamic higher education system. Graduate supply to the health professions, particularly medicine and pharmacy rose in absolute terms and as a share of total output, with a noticeable trend to feminisation. Graduate output was flat over the decade in engineering, archaeology, economics and political science, social service, and tourism and hotels. One possible explanation for this flatness is that institutions are paid according to their staffing structure not their student enrolment mix, and this method funding perpetuates a supply-driven approach to higher education rather than one than is responsive to changes in demand.

The QAAP internal audit survey conducted in year 2007 indicated that: (a) graduates exhibited inadequate personal, subject-specific and employment-related skills; (b) current academic programmes provide an insufficient foundation for employment; (c) there is insufficient commitment of the faculties to teaching and learning methods that enable students to achieve the intended learning outcomes of the course, making available course specifications, and informing students of assessment criteria. That report usefully suggested closer engagement with alumni, employers and other stakeholders in the design and development of educational programmes, and evaluation of their performance and relevance.

Higher education links to the labour market

In consultations with government agencies, employers, education institutions and students, the review panel was advised often that:

- There is a chronic over-supply of university graduates.
- Many university graduates (50% in one institution) fail to obtain employment in the fields in which they have studied; students identified difficulties especially for graduates in humanities, law (Arabic stream), commerce (Arabic stream) and agriculture.
- Employers seek graduates that have more than technical subject knowledge but also "soft skills" of communication, team work, problem solving, reliability, and adaptability.
- Many university graduates have inadequate skills for the jobs they apply for; the commercial post-university tutoring market inflates university graduates' claims to employability on prepared CVs.

- University students are dissatisfied that their courses fail to help them develop practical skills; many seek to work overseas as graduates partly as a means of gaining practical experience.
- There are serious shortages of below-university qualified, skilled personnel.

University graduates have much higher representation in unemployment than other tertiary education graduates. The extent of under-employment is not clear, especially whether and how much postsecondary graduates shunt out people without post-school qualifications in the services sector. The supply-demand mismatches reflect the combination of several factors including: narrow streaming in secondary education; early specialisation; lack of opportunities for multi-skilling and second-chance learning; lack of career guidance services; no systematic surveying of graduate destinations (not seen as an institutional responsibility because students are centrally assigned); no routine surveys of employer satisfaction with graduates (not seen as relevant because curriculum and student allocation decisions are made centrally); few instances of formal learning integrated with on-the-job training.

Internationalisation

Higher education and university research are internationalising on an unprecedented scale and at a rapid rate. Internationalisation now involves: a growing number of students participating in temporary or degree-seeking programmes abroad; increasing collaboration in research projects, exchanges and twinning programmes, sharing of research facilities, and joint authoring of research publications; the mobility of academic teaching staff and researchers; the acquisition of second and third languages; the mutual recognition of academic credits and degree equivalences at the international level between institutions; the development of joint and dual degrees; the establishment of branch campuses of universities abroad; the offering of courses and academic programmes at a distance; the acquisition of local universities by private foreign investors; and the development of international consortia. Consequently, conventional notions of effectiveness, quality and relevance are necessarily expanding, and governments and institutions around the world are having to adapt to the new realities.

By comparison with other countries, the number of Egyptian students abroad is low (0.3% of the national enrolment), as shown in Table 6.7. Many students interviewed during site visits of the review panel expressed a keen interest in study abroad, but these figures suggest that their aspirations are not being realised. The international enrolment of students in Egypt has

been growing strongly in recent years, rising from 31 193 in 2002/03 to 41 590 in 2006/07. Notwithstanding this fast growth rate, international students represent only 1.3% of Egypt's total higher education enrolments. The largest international enrolment is at Al-Azhar University (38%) followed by private universities (31%).

During site visits by the review panel, several institutions indicated a desire to accept international students. The institutions themselves, however, generally do not actively attract international students, and many lack adequate infrastructure to accommodate them. Additionally, there are bureaucratic impediments. A lengthy process must be followed in order to sign a Memorandum of Understanding, including a required series of steps at the institution and the Ministry of Higher Education, where all international agreements must have prior approval.

Fostering academic staff mobility, in an orderly way, is one of the most effective long term means of internationalising of higher education. Faculty mobility not only provides participating individuals with an international experience and contacts with peers abroad, but eventually will be translated into the classroom and research activities back home. In the Egyptian case, the efforts being made do not appear to be driven by strategy at either the system or institutional level.

As observed during the country visit, the acquisition of second language competencies in Egyptian higher education institutions is very limited, though several programmes are offered in foreign languages, mainly English and French, in a variety of universities. However, in the great majority of academic programmes and institutions, the acquisition of a second language at a basic level of competency is not part of the curriculum. In contrast, students consulted during the review panel's site visits regularly expressed the wish to be exposed to a more internationalised curriculum, including the opportunity to master a second language and to have a study abroad experience.

In general, Egypt is opening up to the international community in various ways but has yet to develop a strategy for internationalisation of its higher education system.

Quality assurance and improvement

Egypt may be seen to be transitioning in its approach to quality from a control model to a more decentralised and combined quality assurance and enhancement model. Impressive progress is being made through the World Bank financed Quality Assurance and Accreditation Projects, the Egyptian Government's establishment of the National Authority for Quality

Assurance and Accreditation of Education, and the development of National Academic Reference Standards for several fields of study. There are some limitations to the initial formation of NAQAAE: its ambiguous position in combining the roles of fostering quality, granting accreditation and enforcing compliance; institutional and programme accreditation; its duplication with other agencies; and its membership consisting only of government appointments. Some separation of functions, clarification of the respective roles of different agencies, and shared responsibilities between government and institutional interests would help the process mature on a sustainable basis.

Given the challenges ahead, it is encouraging to observe that much of the necessary groundwork has been laid: quality assurance documentation and manuals have been developed and made available to university staff; training and professional development opportunities have been provided; and indications have been given that good performance will be recognised and rewarded. Important work remains to be done in maturing the internal culture of institutions and engaging external stakeholders in the endeavour to improve higher education quality and effectiveness.

Recommendations

Overall recommendation

An holistic approach to improving the quality and effectiveness of Egyptian higher education needs to: (i) focus on learning outcomes in terms of the capabilities that graduates will need in a changing world for life, work and further learning; and (ii) involve government agencies and institutions accepting shared responsibilities for raising the standards of educational inputs, processes and outputs, in consultation with employers and in the context of a strategic approach to internationalisation.

Systemic recommendations

Consideration ought to be given to developing an Egyptian National Qualifications Framework (NQF), specifying learning outcomes in terms of graduate attributes for each level of educational award, and indicating the pathways from one award to another. The NQF should be aligned as far as possible with the Bologna Process, including European Credit Transfer and Accumulation System (ECTS) equivalence.

Further development of Egypt's quality assurance framework for the higher education system ought to be linked directly to the statements of

graduate attributes in the NQF, including through continual revision of the National Academic Reference Standards (NARS) and Intended Learning Outcomes (ILOs).

Consideration might be given to clarifying formally the roles of different institutions in the Egyptian higher education system, particularly with regard to the fields and levels in which they are authorised to offer higher education qualifications.

It will be important for Egypt to raise the status and quality of vocational education, and to provide incentives for greater numbers of students to participate.

The Government might consider developing with each public higher education institution, in consultation with national and regional employers, a broad compact that clarifies the institution's distinctive mission, the scope and focus of its educational provision, expectations of its performance, associated resourcing to build its capacity, and the extent of its substantive and procedural autonomy. It would be important in this process to clarify the labour market areas for which each institution prepares graduates.

Desirably over time, higher education institutions that demonstrate the capacity to manage themselves well and deliver to agreed expectations would be allowed increasing discretion in decision making about student enrolments, course offerings (openings and closures), personnel recruitment and promotion, and the deployment of resources.

Desirably over time, students would be given wider choices for enrolling in their preferred fields of study where they meet the entry requirements, or accepting a place of their second preference in another field or institution.

A much wider range of information is necessary to guide student choice and institutional planning, and the Government ought to consider establishing a professional labour market information service that can provide prospective students and higher education institutions with information about trends in labour supply and demand, and the labour market outcomes of graduates in different fields.

Consideration might be given to formulating a more comprehensive internationalisation strategy for Egyptian higher education. This strategy could provide for:

- a statement of national policy objectives and principles;
- a more coherent set of actions aligned with national priorities;

- the embedding of internationalisation competencies into the statements of expected graduate attributes in the national qualifications framework;
- encouraging second and third language learning throughout the education system;
- ensuring that international students are included in Egypt's quality assurance and consumer protection arrangements;
- professionally promoting Egypt as a study destination for students in other countries;
- systematically collecting and reporting data on the movement of students and academic staff;
- reducing unnecessary regulations and bureaucratic procedures related to international collaboration; and
- providing adequate incentive funding and support, including support for Egyptian undergraduate students to have a period of study abroad.

Institutional recommendations

Egypt's public higher education institutions could be given increased responsibility, building on the foundations of the quality assurance and assessment projects, to undertake strategic planning with a view to aligning their programmes and the educational processes with student demand and labour market needs. To that end, the Government will need to devolve a wider range of authorities to institutions, particularly over their educational offerings, student admissions, staffing, and resource utilisation.

All higher education institutions should be expected to provide up to date public information about their programmes and courses, admission requirements, and graduate destinations. To this end each institution should track its graduate classes annually.

Public higher education institutions could adopt performance-based management practices along with structured professional development of faculty and staff.

All higher education institutions could engage employers in developing graduate capability statements (ILOs).

All higher education institutions might annually obtain feedback from graduates about their satisfaction with their course, and from employers about their satisfaction with graduates, and report the findings publicly.

All public higher education institutions should develop formal processes of student evaluation of courses and teachers, and the results should inform revision of courses, learning materials and teaching methods.

Students ought to be involved in the quality assurance mechanisms of institutions, including in the design of evaluation forms and monitoring frameworks.

Higher education institutions should develop integrated internationalisation strategies that help to widen the experiences and opportunities of Egyptian students and faculty, and increase the attractiveness of Egyptian higher education to foreign students and staff, including through student and staff exchanges, and twinning arrangements for joint teaching and research.

Higher education institutions, in partnership with employers, should seek to offer internships to students to enable them to acquire practical experience as part of their curriculum.

Notes

[1] As example of the limited participation of Egyptian institutions in relevant international networks, as of March 2009 only six Egyptian institutions were among the 609 members of the UNESCO based International Association of Universities (IAU, www.unesco.iau.org), and only four out of the 110 standing members of the Association of African Universities were from Egypt (www.aau.org/membership/index.htm).

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Chapter 7. Research, Development and Innovation

This chapter develops a framework for the comparative analysis of the Research, development and innovation system in Egypt and relevant comparator countries. The framework is applied to identify the strengths and weaknesses of the RDI system in Egypt along with the major challenges the country faces.

The Research, Development and Innovation (RDI) framework

It is widely recognised that research, development and innovation (RDI) contribute significantly to national economic development and social well-being. Nations which develop and effectively manage their knowledge assets perform better economically; knowledge-based enterprises systematically out-perform those with less knowledge focus; and individuals with more knowledge usually get better paid jobs. Investments in research and development, education and training, and other intangible assets are the cornerstones of a modern knowledge economy. Reform of the RDI system in Egypt is an essential element in the reform of its knowledge base.

The RDI system in Egypt has many of the salient features that are common to other lower middle income countries in the region and around the world: lack of a well defined national RDI strategy; the dispersion of RDI initiatives among many RDI centres and institutes; an inadequate level of funding; overall weak capacity for basic scientific research; and poor RDI management.

The innovation system

Innovation is central to the development of successful economies. Developing countries often lack the capacity to innovate and, consequently, to improve their positions in the competitive global market. The capacity to innovate helps countries achieve advantageous positions in key industrial

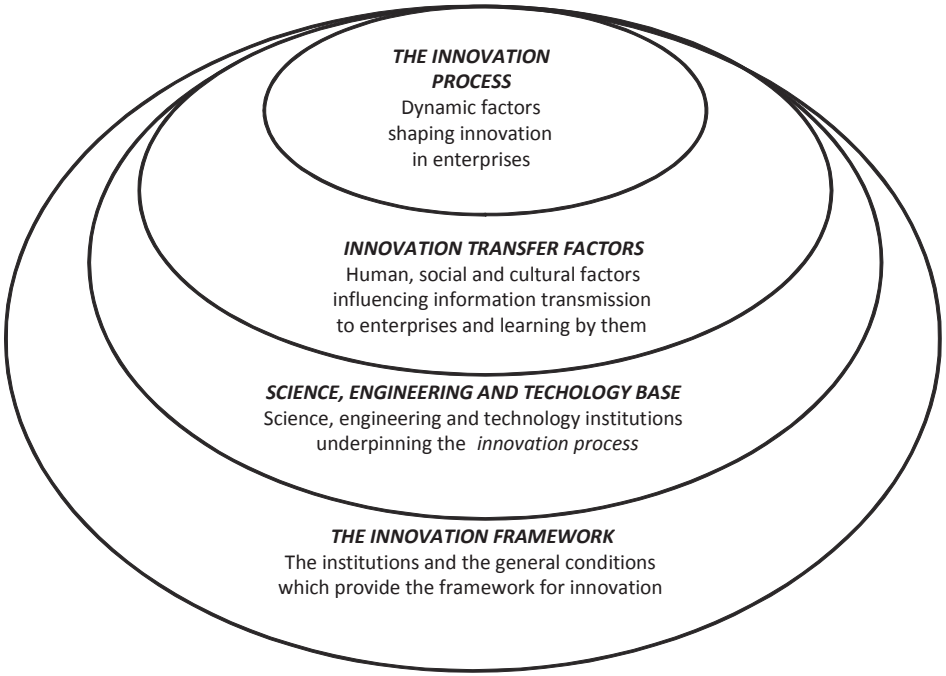
and service sectors. The policy terrain that characterises a national innovation system can be defined in terms of four broad domains presented in the innovation policy map shown in Figure 7.1. These four domains of the innovation policy terrain are:

The innovation framework

The innovation framework defines the broader conditions and structural, legal, economic, financial, and educational factors that determine the rules and opportunities for innovation. This domain defines the external environment which surrounds innovation activities at the enterprise level, and comprises institutions which have been established mostly for reasons unconnected to innovation, but with which enterprises have to contend. The institutional environmental factors which provide the framework within which innovation occurs, and have substantial effects on business innovation include:

- *The educational system* which determines the level of educational attainment of the working population, and the level of education of the domestic consumer market;
- *The communications infrastructure*, including roads, telephones and electronic communication;
- *The financial institutions*, the quality of the financial markets and the ease of access to venture capital;
- *The legislative framework* and macro-economic environment including patent laws, taxation levels, corporate governance rules, and policies relating to interest and exchange rates, tariffs and competition;
- *Market accessibility* including possibilities for the establishment of close relations with customers, as well as the size and ease of access;
- *Industry* structure and the competitive environment, including the existence of supplier firms in complementary industry sectors.

Figure 7.1 **Policy domains of national innovation systems**



Source: S. Mikhail, "TPS 1806: Systems of Higher Education Ontario Institute for Studies in Education", 2007.

Science, engineering and technology (SET) education

Scientific knowledge and engineering skills are a primary support for innovation. In most countries, these reside in public and private sector science, engineering, and technology institutions. The output of scientific knowledge from these institutions provides the foundation for innovation. The elements of the national SET system include:

- *The vocational education and training (VET) system* that provides the skilled workers who form the backbone of a balanced innovation system.
- *The SET institutions* that are an integral part of a diversified higher education system.

- *RDI programmes* including both public funding for programmes directed towards public good such as healthcare, basic education, the environment and public security, as well as strategic RDI programmes directed towards "pre-competitive" or generic technologies.

- *Support system for basic research*. Initiatives that are sometimes perceived as providing little direct benefit to business innovation, but can have substantial indirect benefits for enterprises. Many areas of basic research provide fertile ground for the training of skilled technology-oriented scientists – whose experience can often be successfully directed to industrial problems.

It is important to note that contemporary problems involving high levels of complexity increasingly involve cross-disciplinary perspectives, including contributions from humanities and social sciences disciplines, such as accounting, anthropology, creative arts, cultural studies, economics, ethics, history, management, psychology, and sociology.

Innovation transfer factors

These are factors whose nature is significantly determined by the social and cultural characteristics of the population, and strongly influence the effectiveness of the linkages, flows of information and skills, and absorption of learning which are essential to business innovation. They include:

- *Formal and informal linkages among enterprises* including networks of small firms, relationships between users and suppliers, relationships among enterprises, regulatory agencies and research institutions, and stimuli within "clusters" of competitors. They can all produce information flows conducive to innovation or make enterprises more receptive to them.

- *The presence of expert technological "gatekeepers" which* includes individuals who keep abreast of new developments (including new technology and codified knowledge in patents, the specialised press and scientific journals), and maintain personal networks, which facilitate flows of information crucial to innovation within enterprises.

- *RDI Networks* are designed to promote innovative inputs and secure competencies in areas of expertise unattainable by individual countries and their institutions. Furthermore, these networks play a significant role in securing a critical mass of resources, both human and financial, particularly because the increasing sophistication, cost

of equipment and consumables, renders RDI activities an expensive endeavour whose costs are better shared among as many concerned partners as possible.

- *Mobility of expert technologists or scientists* will affect the speed at which new developments can spread.
- *Access to public R&D capabilities by enterprises* can be a major advantage in countries and societies where such access in facilitated and encouraged.
- *Spin-off company formation* which usually involves the transfer of particular skilled individuals – is often a valuable means of achieving commercialisation of new developments arising out of public sector research.

The innovation process

This is the most central domain to business innovation – it covers dynamic factors within or immediately external to the enterprise and very directly impinging on its innovativeness. The complex system of factors shaping innovation at the enterprise level is sometimes referred to as the "innovation dynamo". The propensity of an enterprise to innovate depends, of course, on the technological opportunities it faces, and its ability to recognise and exploit them. In order to innovate, a firm must figure out what these opportunities are, set up a relevant strategy, and have the capabilities to transform these inputs into a real innovation – and do so faster than its competitors. An enterprise capacity for innovation also depends on the characteristics of the firm: the structure of its labour force and facilities, its financial structure, its market strategy, capacity of its competitors, alliances with other enterprises and/or with universities, and its internal organisation. Many of these aspects are complementary. A particular skill structure will go hand in hand with a particular type of market strategy, and financial organisation.

Product and process innovation encompass activities of considerably broader scope than corresponding RDI endeavours. Consequently, networking aimed at innovative products and processes are correspondingly broader and more protracted than networking involving purely R&D activities. An important distinction between innovation networking and R&D networking resides in the establishment of partnering teams and institutions. While R&D networking can be properly handled on the basis of partner institutions, including university research laboratories and public sector research centres, a broader range of institutions need to be involved in innovation networking. An innovation network, whether aimed at a new

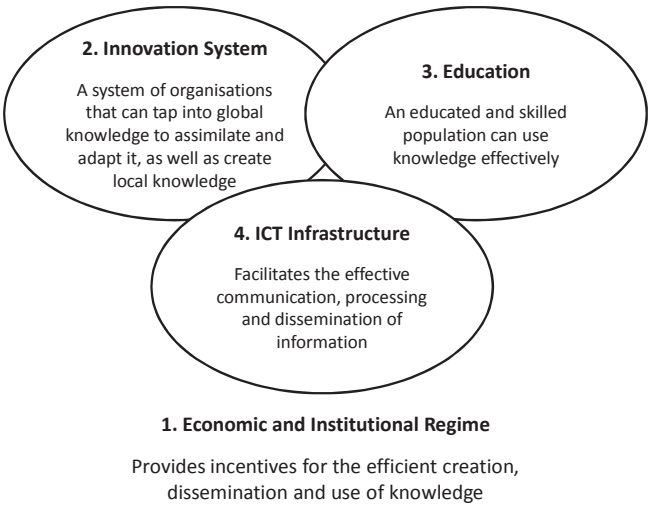
product or process, will most likely require partnerships between and among technical institutions, enterprises, selected suppliers and providers of technical services, as well as institutions that tackle testing, standardisation and certification issues.

Readiness for the knowledge economy: the knowledge economy index

The knowledge-based economy can be defined in terms of the following characteristics (World Bank, 2003): (i) rapid innovation is a permanent and central feature of the knowledge-based economy, differentiating it from previous forms of organisation; (ii) an economy of networks operating at different hierarchical levels and involving numerous forms of co-operation and interactions between the public and private sectors; (iii) human capital that plays a decisive role in the growth of the economy; and (iv) information-related activities proliferate in all sectors of the economy and tacit knowledge is constantly codified and disseminated. All of the above have imperative consequences on ways of conducting business, given that knowledge becomes a key factor of production, perhaps even more important than financial and physical assets, which therefore requires the adoption by firms of new strategies and management techniques.

A country's readiness for the Knowledge Economy is expressed in terms of the Knowledge Economy Index (KEI), a composite index consisting of four pillars as outlined in Figure 7.2: 1) economic and institutional regime; (2) education; (3) ICT infrastructure; and (4) innovation. The Knowledge Assessment Methodology (KAM) was developed and adopted by the World Bank Institute to provide a comprehensive comparative base for comparing the readiness of countries for the knowledge economy.

Figure 7.2 **The pillars of the Knowledge Economy Index (KEI)**



Source: S. Mikhail, "TPS 1806: Systems of Higher Education Ontario Institute for Studies in Education", 2007.

The structure and organisation of the RDI system in Egypt

Table 7.1 describes aspects of three different models of governance of the RDI system. Until recently, Egypt had adopted a highly centralised model, with a single ministry in charge of scientific research, development and innovation, the State Ministry of Scientific Research (MOSR), providing top-down priority setting, and with stakeholder involvement only on an advisory basis. The model involves also a relatively small competitive grant funding, and RDI is primarily carried out by full-time personnel in public research institutions (PRIs), while university faculty, although larger in numbers than their counterparts in PRIs, produced less output.

Table 7.1 **Characteristics of models of RDI governance**

Aspect of the Models	**The Centralised Model**	**The Decentralised Model**	**The " Dual" Model**
Ministerial structure	Single Ministry in charge of scientific research (sometimes combined with higher education)	Many government departments play a role in RDI	Federal as well a regional ministries in charge of RDI
Priority setting and stakeholder involvement	• Primarily top down from the central government • Stakeholder involvement only at advisory level	• Primarily bottom up from research community • Strong stakeholder involvement	• Both top down and bottom up modes • Stakeholder involvement for part of the RDI budget
Funding streams	• Primarily direct institutional funding of PRIs and universities • No independent funding agencies • Relatively few competitive grant programmes	• Primarily RDI project-based funding • Independent funding agencies manage competitive grant programmes to universities • Secondary mission-oriented funding of PRIs	• A mixture of institutional funding of PRIs and universities and competitive grant programmes to universities and PRIs from independent funding agencies
Role of RDI personnel and institutions	• RDI is primarily carried out by full time personnel as well as short-term post docs in PRIs • Universities and their faculty members play a secondary role	• RDI is carried out primarily by faculty, short-term post docs and graduate students in universities • PRIs play a secondary role in performing RDI work	• Mixed mode involving balance between universities and PRIs
RDI evaluation	• Ad-hoc committees struck to evaluate the strategic plans and the performance of the PRIs	• Peer review of the competitive proposal for funding as well as the outcome of the funded projects	• Committee review of PRIs • Peer review of competitive proposals

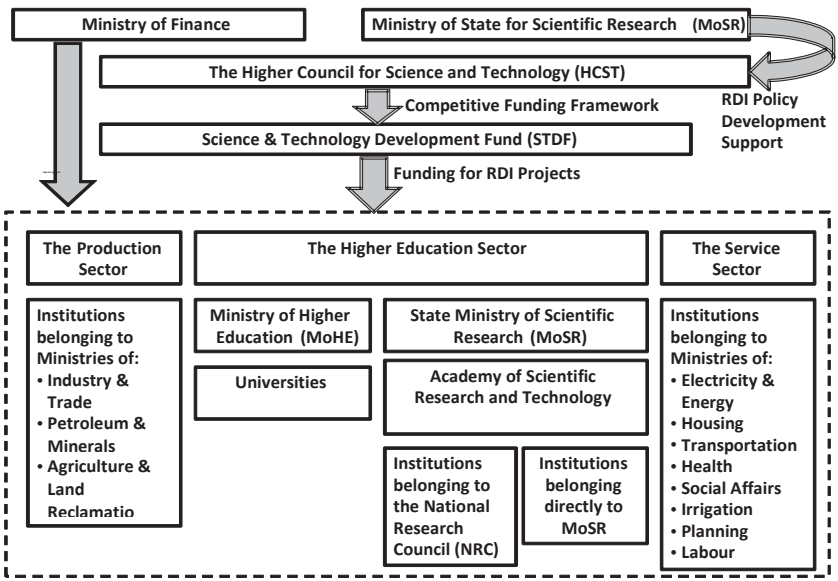
Strengths of the model	• Authority at level of PRIs provides the autonomy to pursue long-term high risk basic RDI • Stability of funding allows the establishment of a stable base of researchers • PRIs provide attractive long-term career opportunities in RDI	• Responsive mode allows quick reaction and response to emerging challenges • Research training is an integral component of project funding allowing the development of young researchers • Independent funding agencies protected from changes in government • Strong involvement of enterprises in RDI projects	• Responsive to regional economic development priorities • Stable long term basic research in PRIs • Responsive project funding • Research training combined with project funding • Flexibility for public/private co-operation
Weaknesses of the model	• Slow to respond to new interdisciplinary areas of RDI • Hard to motivate or remove less productive researchers in permanent positions • The very weak link between research and training of young researchers • Change in governments have direct effect on the fortunes of PRIs	• Lack of guaranteed long-term stable funding for researchers • Need for co-ordination among agencies • Lack of direct targeting of priority RDI areas • Increased use of temporary post-docs reduces the attractiveness of careers in RDI	• Complicated structural landscape • Some redundancy between PRI's work and funded research projects in universities • Need for co-operation between centrally and locally funded initiatives

Source: Adapted from "Governance of Public Research: Towards Better Practices", OECD 2005.

The RDI system in Egypt has been recently revamped through the passage of Presidential Decrees No. 217 and No. 218 in July 2007 to establish the Higher Council for Science and Technology (HCST), and the Science and Technology Competitive Fund (STCF) respectively. Today, the RDI system which is still a predominantly publicly funded system consists of institutions belonging to various public sector ministries in three sectors as outlined in Figure 7.3.

The Higher Council for Science and Technology (HCST) is chaired by the Prime Minister of Egypt and includes key ministers from eight Ministries including Higher Education, Trade and Industry, Electricity and Energy, Health, Agriculture, Planning, Communications, and International Relations. The HCST includes also five prominent Egyptian expatriate scientists, and three representatives of the civil society in Egypt. Funding for RDI will consist of two key components: 1) continued supply-side funding for the operational expenses of existing institutions, at reduced level, from the Ministry of Finance; and 2) much enhanced funding of RDI projects on a competitive base from the newly established Science and Technology Development Fund (STDF). The overall goal of the proposed restructuring is to increase the expenditure on RDI from the level that existed over the period 2003-07 and represented an average of 0.24% of the GDP to an average level of 0.5% of GDP over the five-year period 2007 to 2012.

Figure 7.3 **The structure and organisation of the RDI system in Egypt**

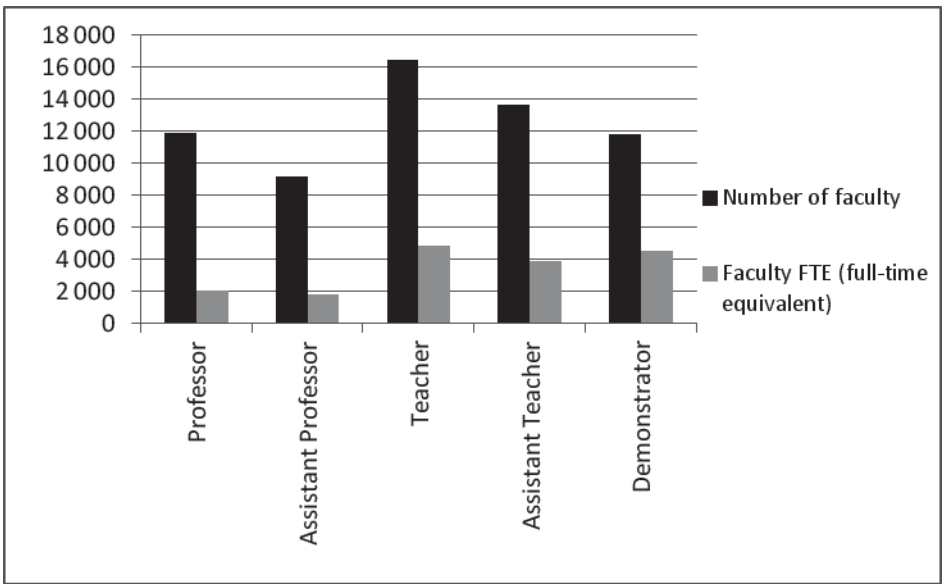


Source: Adapted from the State Ministry of Scientific Research Information.

The research carried out in Egyptian public universities is shaped by the nature of employment of university faculty. More than one third of the total number of faculty members employed in Egyptian public universities is in the categories of professors or assistant professors as outlined in Figure 7.4.

These two categories would normally play a leadership role in conducting RDI initiatives and projects. However, the apparent abundance of potential research capacity is misleading because of two reasons. First, the average faculty member in this category works only at 20%[1] of his/her full time load as a result of the practice of allowing faculty to continue working on a part time basis past the retirement age of 65. The second reason is that many faculty members in this category opt out to be engaged for less than full load to accept teaching assignments in the growing private universities in Egypt.

Figure 7.4 **Profile of academic staff in Egyptian universities**



Source: Ministry of Higher Education, Egypt, 2008.

Priority setting in RDI

Until the turn of the century, the RDI system in Egypt had two main stakeholders: the research community consisting of all the mostly public research institutions within and external to the public universities, and the government through its ministries that fund these institutions. The interest of the former group was focussed mainly on securing the funding and resources needed to pursue their autonomously determined RDI agenda. The interest of the government, on the other hand, was to maintain the capacity of the system for knowledge production that could benefit society and lead

to sustainable economic growth. The growth of globalisation and knowledge economies has led, *inter alia*, to the emergence of the private sector and civil society as key stakeholders with strong interest in the RDI system. As innovation becomes more science-based, and as enterprises restructure their RDI initiatives, they make more intensive use of public RDI institutions, and seek access to highly skilled young researchers and engineers. Any reform to the structure and funding of RDI should now be also informed by the interests of the private sector and civil society organisations.

The number of RDI workers in the various ministries involved in scientific research and development is outlined in Table 7.2.

Public funding of RDI

The funding of the RDI system in Egypt is provided primarily by the Ministry of Finance (MOF) based on planning documents developed by the Ministry of Planning in consultation with the Ministry of State for Scientific Research (MOSR), the Ministry of Higher Education (MOHE), and other line ministries that have PRIs such as the Ministry of Agriculture and Land Reclamation. The funding line items are based on the previous year's budget with allowance for some minor growth, or approved increases in staff salaries. There is no systematic way to assess the level of investment needed in infrastructure development, acquisition of new technologies, materials, supplies or knowledge resources. The overall level of funding of RDI in Egypt in 2007 was 0.2% of the GDP, low by OECD standards, but comparable to the level of funding in other lower middle income countries.

Management of human resources

Research workers in Government PRIs are hired typically after completing a first degree in science, engineering or other relevant disciplines. They are assigned to their various units and departments according to identified needs. Following this, their career path typically involves registering in one of the Egyptian universities, or sometimes overseas, to pursue graduate studies in a field relevant to their work at the PRI, leading to Masters or PhD degrees. They are often jointly supervised by a university faculty member and a senior member of their PRI, giving the faculty supervisor access to the facilities of the institution. By contrast, graduate students at the universities have only limited opportunities to access the PRI facilities.

Table 7.2 **The number and affiliations of RDI workers in Egypt**

No.	Category	Number of Researchers
1	Universities (Ministry of Higher Education (MOHE)	63 174
2	NRC and Ministry of Scientific Research (MOSR) Institutions	5 768
Total MOHE and MOSR		68 942
3	M. of Industry and Trade	1 287
4	M. of Agriculture and Land Reclamation	86 669
5	M. of Military Production	26
6	M. of Petroleum and Minerals	2 711
Total Production Sector		90 693
7	M. of Information	30
8	M. of Communication	105
9	M. of Investment	561
10	M. of Housing and Urban Communities	599
11	M. of Education	190
12	M. of Culture	455
13	M. of Environment	60
14	M. of Administrative Development	182
15	M. of Health and Population	2 527
16	M. of Manpower and Immigration	106
17	M. of Water Resources & Irrigation	632
18	M. of Transportation	656
19	M. of Planning	261
20	M. of Civil Aviation	170
21	M. of Electricity and Energy	4 275
Total Service Sector		10 809
Total of all RDI Workers		170 444

Source: State Ministry of Scientific Research, Egypt, 2008.

Recent developments: the research, development and innovation (RDI) programme

A new RDI programme was launched with a grant of EUR 11 million from the European Union (EU) in October 2007 in co-operation with the Ministry of Scientific Research. The aim of the programme is to enhance Egypt's overall performance in RDI. More specifically the programme endeavours to: (i) strengthen the link between the RDI sector and Egyptian industry, and the culture of technology transfer; and (ii) facilitate Egypt's participation in the programmes of the European Research Area (ERA). The RDI Programme has three main components: the EU-Egypt Innovation Fund (EEIF); the RDI Network (RDIN); and policies for monitoring and evaluation of RDI initiatives.

The EU-Egypt Innovation Fund (EEIF)

The fund supports the innovation cycle from R&D to the development of business products. It also supports initiatives to enable Egyptian-European co-operation in technology transfer. The EEIF provides grants through two competitive schemes: a large projects grant scheme; and a smaller projects grant scheme.

- *The Large Projects Grant Scheme:* This grant scheme involves grants in the range of EUR 100 000 - 500 000 for initiatives that can contribute to sustainable development in Egypt through co-operation with European national and regional partners. Funding is available to the following type of initiatives for durations up to 24 months: (i) projects designed to cater to the development needs of the Egyptian economy; (ii) projects that support the enhancement of the innovation system; (iii) initiatives with clearly defined objectives, beneficiaries and outcomes; and (iv) collaborative applied RDI initiatives focusing on the development of innovative products, processes and services.

- *The Small Grants Scheme:* The small grants scheme involves grants in the range of EUR 10 000 - 25 000 for initiatives that enhance collaboration between the RDI community and industry with emphasis on technological innovation, especially those initiatives that benefit small and medium-sized enterprises (SMEs). Examples of such initiatives include: (i) projects involving efforts to improve and quality of products and the efficiency of production processes; (ii) projects supporting the capacity building of RDI in SMEs; (iii) projects promoting partnership between RDI in the universities

and HEIs and the SMEs; and (iv) projects involving the knowledge transfer from RDI institutions to SMEs.

The Research, Development and Innovation Network (RDIN)

The RDIN is a network of focal points (FPs) established in universities, public research centres and enterprises with a mission to promote and facilitate the participation of Egyptian RDI workers in EU-funded programmes. The RDIN supports the effective dissemination of knowledge, and information to Egyptian RDI workers to enhance their capacity for effective participation in ERA-funded initiatives. RDI funded services include: (i) developing data bases in the FPs about EU-funded RDI initiatives and programmes; (ii) providing advice and assistance to Egyptian RDI workers to support their participation in ERA programmes; (iii) providing legal and financial services to Egyptian RDI workers and their institutions; (iv) organising ERA-supported international conferences, workshops and seminars on relevant topics; and (v) providing travel grants to Egyptian RDI workers to participate in ERA conferences, seminars and workshops.

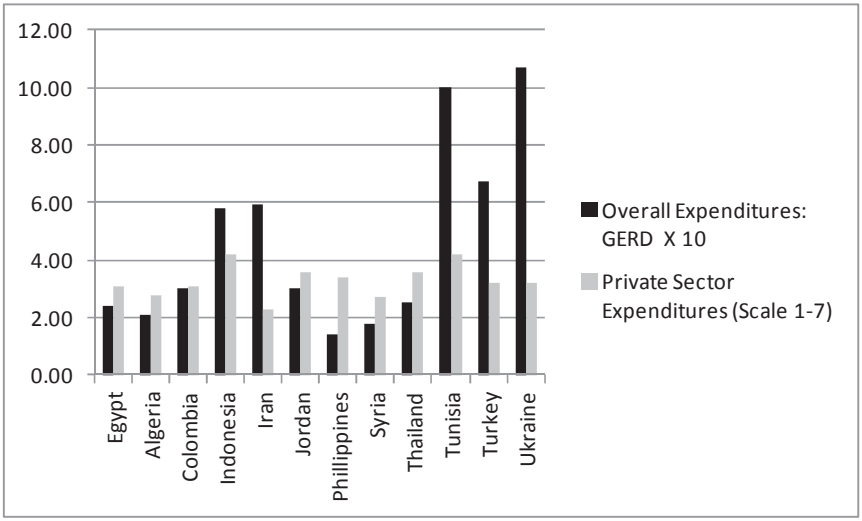
Monitoring and evaluation of RDI institutions and initiatives

The activities funded by this component are intended to monitor and evaluate the outcome of the various initiatives funded by the two above-mentioned programmes and compile the lessons of experience and best practices learned from such evaluations.

Comparative analysis of Egypt's performance in RDI

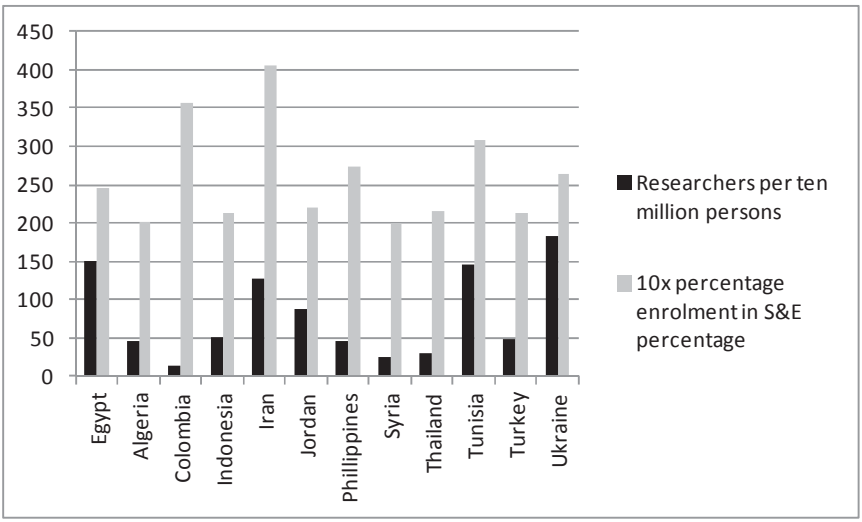
The countries selected for the comparative analysis are mostly lower and middle income countries, from various regions of the world including the Middle East, South America, Eastern Europe and Asia. They are Algeria, Colombia, Indonesia, Iran, Jordan, Philippines, Syria, Thailand, Tunisia, Turkey and the Ukraine.

Figure 7.5 **Input Indicators: Gross expenditures on R&D as percentage of GDP**



Source: World Bank Knowledge Assessment Methodology 2007 and World Economic Forum WEF data.

Figure 7.6 **The number of researchers per ten million persons in the population, the relative enrolment in science and engineering programmes in higher education**



Source: UNESCO Statistical Database, 2007.

Input indicators

- *Gross expenditure for R&D as percentage of GDP (GERD):* All public and private expenditures on RDI including fundamental and applied research and experimental development work leading to new devices, products, and processes.

- *Private Sector Spending on R&D* based on a score on a 1-7 scale, drawn from a large sample of enterprise management personnel in a particular country responding to the question of whether companies spend heavily on research in their country. (1= do not spend, 7 = spend heavily relative to international peers).

The data for Egypt and the comparative countries for GERD and private R&D expenditure are outlined in Figure 7.5. It is evident that the overall expenditures on RDI as percentage of GDP is low in Egypt, and lower than most of the comparator countries except for Algeria, the Philippines and Syria. However, the level of expenditures of the private sector in Egypt is closer to the level in the comparator countries except for Indonesia and Tunisia.

- *Researchers per ten million persons in the population:* The total number of researchers engaged in R&D, per ten million population for Egypt and the comparative countries.

- *Science and Engineering (S&E) enrolment ratio:* This includes enrolment in the fields of science (except social science), engineering, manufacturing and construction as percentage (scaled by a factor of 10) of total enrolment in higher education.

The data for Egypt and the comparator countries for the two above indicators are outlined in Figure 7.6. The data indicate that the relative supply of RDI workers and the relative enrolment in science and engineering programmes in Egypt compares well against the selected countries. However, as outlined earlier, a large segment of RDI workers in Egypt are engaged in activities unrelated to the RDI agenda.

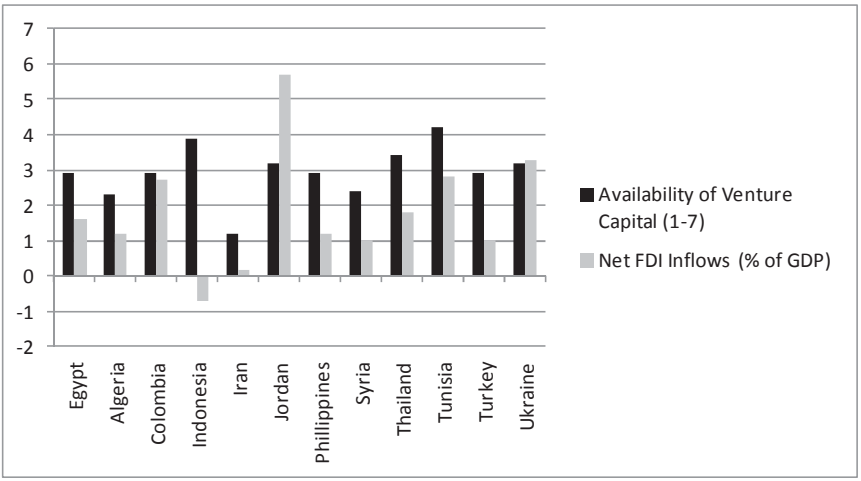
- *Availability of Venture Capital*, based on World Economic Forum (WEF) Global Competitiveness Report scored on a scale of 1 (minimum availability) to 7 (venture capital readily available).

The performance of Egypt and the other comparator countries with respect to venture capital and foreign direct investment are shown in Figure 7.7. Egypt has a similar level of access to venture capital as Colombia, the Philippines and Turkey, lags behind Jordan, Indonesia, Thailand, Tunisia, and the Ukraine, and fares better than Algeria, Iran and Syria. Egypt's performance with respect to the net inflows of foreign direct

investment (FDI) lags behind Colombia, Jordan, Thailand, Tunisia and the Ukraine, while it exceeds those of Turkey, Indonesia, the Philippines, Syria, and Turkey.

- *Net FDI Inflows as percentage of GDP,* comprising foreign direct investment capital provided (either directly or through other related enterprises) by a foreign direct investor to an enterprise resident in the economy.

Figure 7.7 **Availability of venture capital and the net FDI inflows**



Source: UNESCO Statistical Database, 2007.

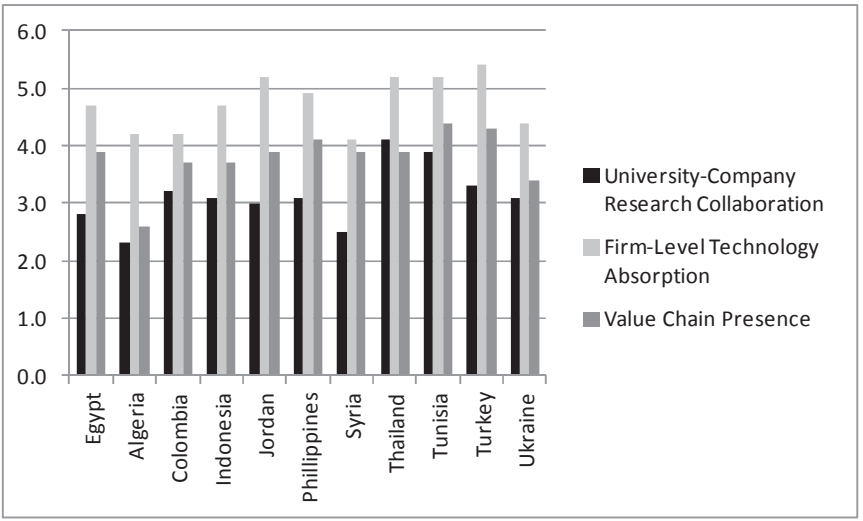
Process indicators

- *University-company RDI collaboration,* based on a score on a 1-7 scale of a large sample group in a particular country responding to the question of whether companies' collaboration with local universities in research and development activities in their country is (1= minimal or nonexistent), and (7= intensive and ongoing).
- *Firm-level technology absorption,* based on a score on a 1-7 scale of a large sample group in a particular country responding to the question of whether the companies in your country are (1= not able to absorb new technology, 7 = aggressive in absorbing new technology).

- *Value chain presence,* based on a score on a 1-7 scale of a large sample group in a particular country responding to the question of whether exporting companies in your country are (1 = primarily involved in resource extraction or production, 7 = not only produce but also perform product design, marketing sales, logistics, and after-sales services).
- *Manufacturing trade as percentage of GDP,* the total volume of manufactured exports and imports over the total GDP.
- *High-Technology exports as percentage of manufactured exports,* products with high R&D intensity, such as in aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery.

The performance of Egypt with respect to the first three RDI process indicators is outlined in Figure 7.8. Egypt compares unfavourably with the other countries, lagging all except Syria and Algeria with respect to university-company co-operation and firm-level technology absorption.

Figure 7.8 **The performance of Egypt and comparator countries in three RDI process indicators scores**[1]

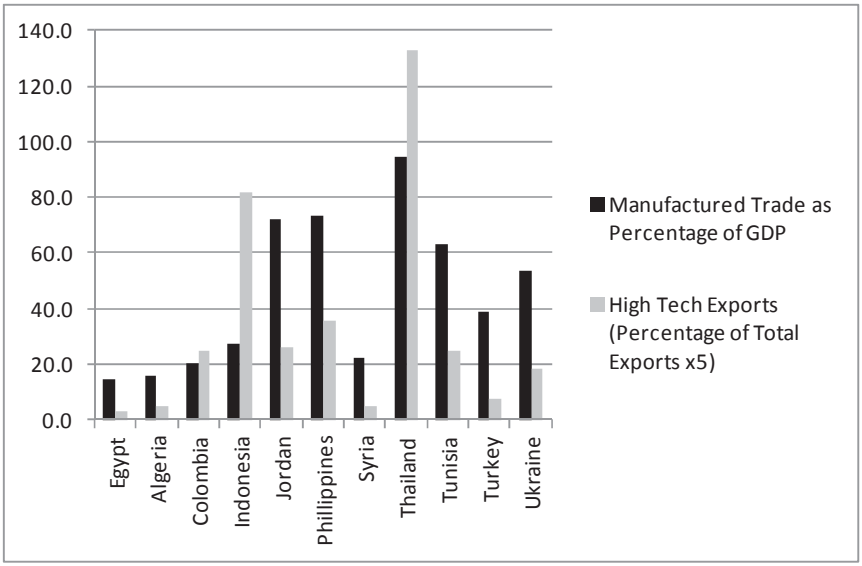


Note: [1] 1: Very low to 7: Very high
Source: WEF Global Competitiveness Report 2007-2008.

Figure 7.9 shows the comparative performance of Egypt and the comparator countries with respect to the above indicators. Again it is

apparent from these figures that Egypt's performance in comparison with the selected comparator countries is poor, where it lags all other countries in both the manufactured trade as percentage of GDP, and in the percentage of high tech exports as a percentage of all manufactured exports.

Figure 7.9 **The performance of Egypt and comparator countries in two RDI process indicators**

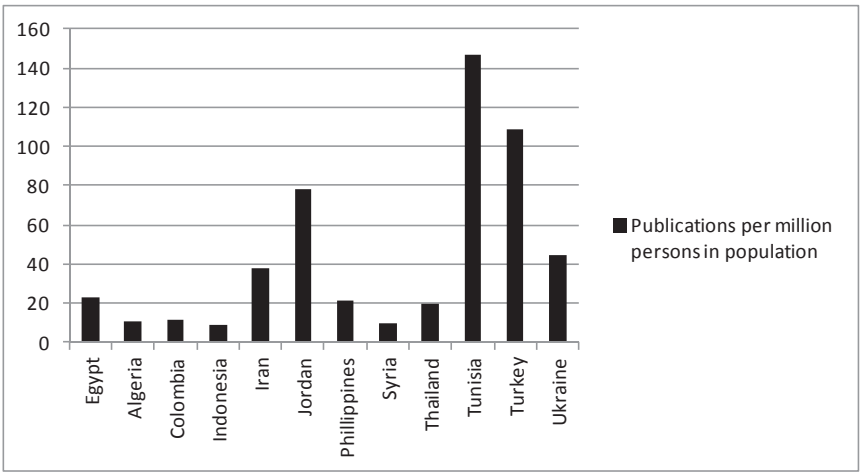


Source: WEF Global Competitiveness Report 2007-2008.

Output indicators

- *Scientific and technical journal articles per million persons in the population:* **S**cientific and engineering articles published in the following fields: physics, biology, chemistry, mathematics, clinical medicine, biomedical research, engineering and technology, and earth and space sciences weighted by million population. The data for Egypt and the comparator countries are outlined in Figure 7.10.

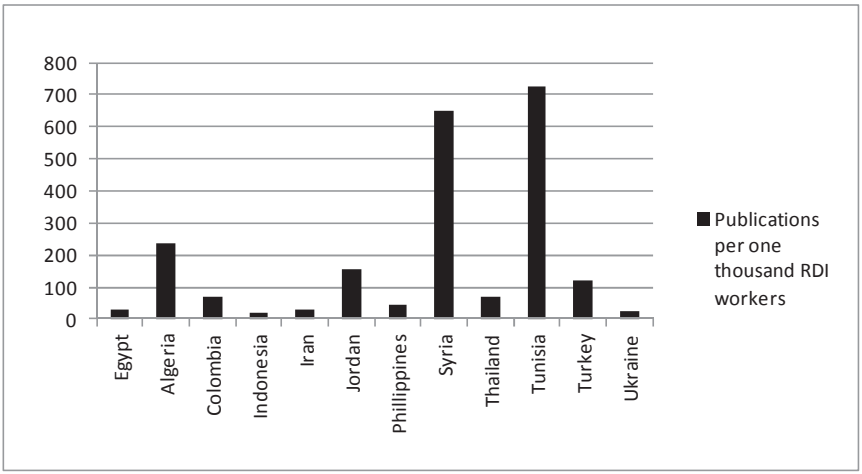
Figure 7.10 **Scientific and technical journal articles per million persons in the population**



Source: UNESCO Statistical Database, 2007.

- *Scientific and technical journal articles per one thousand RDI workers:* This indicator, while similar in nature to the previous indicator, demonstrates the productivity of the RDI workforce in the country. Figure 7.11 outlines the comparative values of this indicator for Egypt and the comparator countries.

Figure 7.11 **Scientific and technical journal articles per one thousand RDI workers**

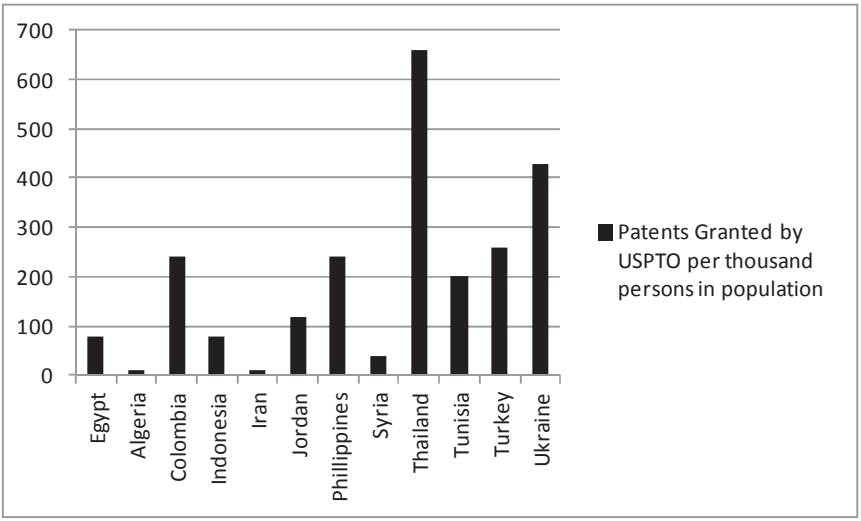


Source: UNESCO Statistical Database, 2007.

Egypt's performance with respect to the number of publications per million persons in the population ranks in the middle of the comparator countries comparable or better than Algeria, Colombia, Indonesia, the Philippines, Syria and Thailand but lags behind the other half, as Figure 7.10 indicates. However, when the productivity of RDI workers is considered (the number of scientific journal articles per one thousand workers) as Figure 7.11 indicates, Egypt ranks poorly along with Indonesia, Iran, the Philippines and the Ukraine.

- *Number of patent applications granted by the United States Patent and Trademark Office (USPTO) per million people,* the number of United States patent documents (*i.e.* utility patents, design patents, plant patents, reissue patents, defensive publications, and statutory invention registrations) granted, and weighted by million population. The data for Egypt and the comparative countries is outlined in Figure 7.12. Egypt's performance is on a par with Indonesia's, but well below most other comparator countries except for Algeria, Iran and Syria.

Figure 7.12 **Number of patent applications granted by the USPTO per thousand persons in the population**

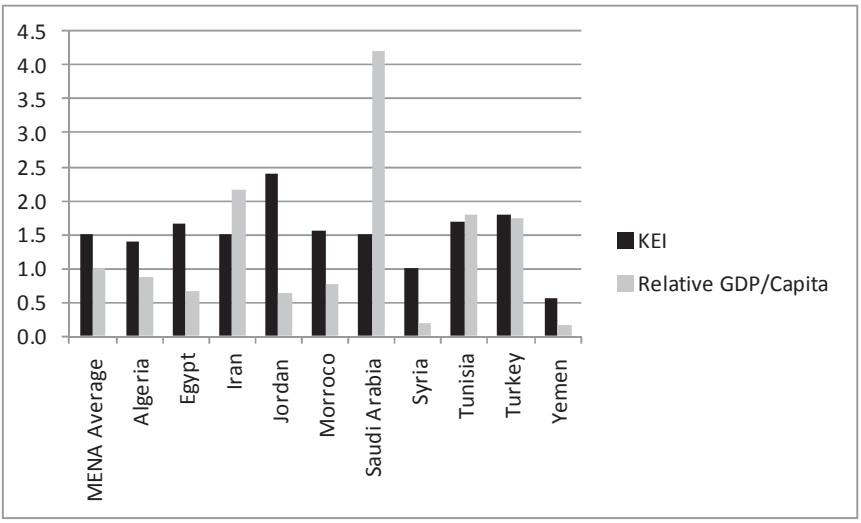


Source: USPTO Database, 2007.

The Knowledge Economy Index (KEI)

The normalised results of the KEI and the GDP per inhabitant in 2007 for selected Middle East and North African (MENA) countries are shown in Figure 7.13. The analysis indicates that with respect the readiness for the knowledge economy, Egypt along with Algeria, Iran, Morocco, Saudi Arabia, Tunisia and Turkey rate as countries in Class 2 (with 5 being highest) readiness. The others including Yemen and Syria are rated as Class 1 and Jordan and Kuwait as Class 3.

Figure 7.13 **MENA countries' readiness for the knowledge economy and relative GDP per inhabitant**



Source: World Bank Knowledge Assessment Methodology, 2007.

Strengths, weaknesses, opportunities and challenges of Egypt's RDI system

The policy and governance dimension of the RDI system

Strengths: A sizeable number of the institutions in the system have, despite their narrow disciplinary focus, considerable capacity that can be harnessed to contribute to knowledge generation in a reformed RDI system.

Weaknesses: The organisation and policy frameworks for the RDI system are based on an outmoded dichotomy between institutions belonging

to the production sectors of the economy (*e.g.* agriculture, manufacturing, and military production) and those belonging to the service sectors (*e.g.* health, housing, and transportation). The fragmented institutional nature of the RDI system, with its narrow discipline orientation is not well suited to the cross-disciplinary nature of contemporary knowledge development. The universities do not have a meaningful role to play in the RDI enterprise, partly because of lack of financial incentives. There is no framework for the development of joint RDI initiatives between universities and other institutions. Research institutions work within different organisational and administrative settings, are funded under dissimilar rules and lack standards and criteria for measuring performance. The lack of a coherent framework for planning, funding and accountability results in co-ordination failures.

Opportunities: The Government has recognised that the current governance structure of the RDI system is bureaucratic, bloated and not conducive to reform. A recent report (El-Shafei, 2006) on the reorganisation of the RDI system singles out the Academy of Scientific Research and Technology as "an organisation suffering from rampant corruption, and inefficient operation with 2 200 administrators". The Government has adopted a "Green-Field" approach to its reform, moved on most of its administrators, and redefined its role as essentially a policy development body.

The new governance and organisational framework emerging from the Government's reform policy for the RDI sector, recognises the importance of institutional autonomy and accountability processes of RDI institutions. The role of Higher Council for Science & Technology has been defined as to: (a) establish a vision and define the mission of Science & Technology and the RDI system in Egypt; (b) approve the national strategies of Science & Technology in Egypt, including determining priorities specifying objectives, and creating a national plan for Science & Technology; and (c) articulate the vision and values for Science & Technology development in Egypt.

Challenges: It will be a major challenge to develop a comprehensive policy and governance framework that builds on the existing capacity of RDI institutions and addresses the limitations of the existing system, including the development of a framework for the monitoring and evaluation of the outcome of RDI initiatives through the use of internationally recognised indicators.

The organisational structure of the RDI system in Egypt

Strengths: Egypt has a well established institutional infrastructure developed over the years, that bears the legacy of the traditional continental European and some of the Soviet era approaches that separated scientific research from the system of higher education. The recent establishment, in July 2007, of the Higher Council for Science and Technology (HCST) chaired by the Prime Minister with participation of eight relevant ministers, world-famous Egyptian expatriate scientists, and representatives of civil society gives recognition to the importance of RDI in the economic development of Egypt. First steps towards the adoption of a new governance structure for RDI have been taken.

Weaknesses: The RDI system has been highly dependent on over-regulated, top-heavy centralised command, with many bureaucratic layers and little co-ordination among its stakeholders. The RDI system is bloated with a large number of RDI workers working in large number of government PRIs characterised by lack of a clearly defined RDI strategy, poor management, and inadequate funding. In 2005, a UNESCO Science Report pointed out that although Egypt was still considered a leader in RDI among Arab States, and was only second to South Africa in the African Continent, its RDI system exhibited major deficiencies and short comings including fragmentation, duplication and lack of co-ordination of RDI initiatives among institutions of the National Research Council (NRC), those belonging to the line ministries, and the universities.

A top-heavy bureaucratic management of RDI public institutions, particularly apparent in the Academy of Scientific Research and Technology (ASRT), which employed more than 2200 workers, most of them engaged in meaningless bureaucratic assignments. The lack of a clear strategy for university-based RDI initiatives, and links to the better funded public institutions of NRC, the Ministry of State for Scientific Research and the line ministries such as agriculture and health.

Opportunities: To implement the reform programme that has been set in motion, the new organisation of the RDI system needs careful strategic planning to develop a manageable strategic plan for RDI in Egypt. The strategic plan for RDI has to be clearly supported by the proposed shift of the bulk of RDI work from public government institutions to the universities, and to the private sector. Such a shift will not be possible without the implementation of the proposed reforms to the governance of universities granting them more autonomy, but also expecting more accountability for decision making.

Challenges: There is a need to strengthen the newly reorganised RDI system and the newly established HCST by clearly developing its mandate

and establishing an effective change management process to engage all stakeholders and gain their understanding and support. It will be necessary to give effect to the following principles outlined in the official Ministry of Scientific Research strategic document: (i) creating a Science & Technology awareness in Egyptian society that emphasise its importance as a national priority; (ii) creating viable linkages between industry and RDI institutions to promote new knowledge products; (iii) establishing clear funding mechanisms for science and technology that particularly support innovation; and (iv) forming strong international collaborations in science & technology to support local scientists and industry. Additionally, there is a need to adopt a tested method for translating the proposed organisational restructuring of the RDI system into clearly defined plan with well-defined and measurable strategic objectives that reflect the expectations of the diverse stakeholders.

The relevance, quality and impact of RDI initiatives and programmes

Strength: Notwithstanding scarce resources devoted to RDI, Egypt has an output (articles published in international journals) that has doubled between 1996 and 2007, from 2 720 to 4 564,[2] although its participation rate within the ME Region has decreased from 15.8% to 12.7%.

Weaknesses: Overall research production (articles published in international journals and patents) is low in comparative terms, although it has been increasing during the last ten years. Among government research centres, cited articles are highly concentrated in the institutions of the National Research Council (NRC). In the case of universities, three of them (Cairo, Ain Shams, and Mansoura) produce around 50% of cited articles. Lack of well defined research priorities tends to produce research results that are only weakly aligned with national objectives. Lack of common evaluative procedures and performance indicators for research tends to result in low productivity and inefficient use of scarce resources.

Opportunities: There is now the possibility of introducing both priorities and a common evaluative framework for research and performance indicators, thus creating a more stimulating environment for research institutions and researchers. The Government has signalled its intention to establish performance-based funding mechanisms for research both in universities and government dependent research institutions.

Challenges: The introduction of new performance assessment tools linking incentives to performance will inevitably meet resistance from many stakeholders, especially RDI workers in PRIs and university researchers who have never been subjected to such a situation. The Government has to

put in place an effective change management system to ensure the success of the new approach.

Public funding of RDI programmes

Strengths: The recent establishment, in July 2007, of the Science and Technology Development Fund (STDF) to provide demand-driven additional funding for RDI initiatives on a competitive basis will be the first competitive funding mechanism of its kind in Egypt. This represents additional funding that will slowly increase Egypt's overall expenditures on RDI from its present level of 0.24% of GDP in 2008 to a projected level of 0.5% of GDP by 2012. The establishment of the Research, Development and Innovation (RDI) Programme by the Ministry of State for Scientific Research (MOSR) and the European Commission in October 2007, with the specific aim of strengthening the link between RDI and industry and enhancing the participation of Egyptian research institutions in the European Research Area.

Weaknesses: The comparative analysis provided in the previous section, clearly shows that, at present, the level of public expenditures on RDI is quite low in comparison with other countries at the same level of economic development. The lack of institutional autonomy in the governance and management of universities will hinder the ability of the STDF to effectively introduce and manage competitively-funded projects. More than 75% of the expenditures on RDI take place in the over-staffed RDI institutions affiliated with various ministries. The Academy of Scientific Research and Technology has until very recently employed more than 2 200 workers, most of them in administrative and care taking positions not directly related to RDI activities. University research activities are underfunded – both in terms of infrastructure and facilities and project funding – thus hindering the full utilisation of universities' research capacities. The funding contribution of the private sector to RDI initiatives in Egypt is low. Most of its work is in the area of technology transfer, development of a proof of concept, and technology prototyping.

Opportunities: Developing a detailed master plan for the administration, effective management of the STDF and monitoring and control of its funded projects. The State Ministry of Scientific Research has embarked recently on a programme for restructuring of the ASRT and other RDI entities and institutions that, if implemented vigorously, will result in a more robust and efficient RDI system capable of effectively allocating and managing RDI resources. Development of RDI-related tax incentives for Egyptian enterprises in the private sector would contribute to the increased contribution of the sector to RDI initiatives.

Challenges: Integrating the STDF master plan into the proposed reform to the governance of universities and research institutions, will require careful stewardship of by the MOSR and MOHE. Incorporating RDI-related accountability performance indicators in the overall STDF master plan will also require serious change management effort on the part of MOSR. Establishment of a special fund for university research-infrastructure investment, favouring those projects that are aligned with national priorities and guarantee open access for different research groups.

Management of RDI human resources

Strengths: The Ministry of Scientific Research reports that Egypt has a significant number of RDI workers exceeding 170 000 persons working in its various institutions, and over 2 500 government funded PhD candidates in overseas institutions. Egypt has also a prominent number of expatriate Egyptian scientists, engineers and researchers in Europe, North America, Australia, as well as in Arab countries that could be effectively mobilised, and included in joint international RDI initiatives.

Weaknesses: The number of RDI workers reported above is misleading because of two factors. First, almost 30% of those workers have only a first degree in science or engineering. And, second many of the university professors and assistant professors in Egyptian universities are in their late fifties or early sixties, and have not been engaged in serious RDI initiatives for many years. Many university professors have also elected to accept part time teaching assignments in private universities and other institutions of higher education, and their contribution to RDI is insignificant. Potential researchers in universities lack the facilities and adequate funding and incentives to engage in research activity.

Opportunities: The planned introduction and eventual adoption of reform to the employment and promotion code for university faculty that provides clear incentives and awards for their active participation in RDI initiatives will go a long way to correcting the current situation where, once a faculty member reaches the rank of assistant to full professors, he/she has no more incentive for continuing to use his/her RDI knowledge and skills in the pursuit of new initiatives. The signing of new bilateral and multilateral RDI initiatives with multinationals such as IBM and Microsoft as well as with the EU are very positive initiatives that will promote a new culture of international co-operation in RDI.

Challenges: The Government must engage all stakeholders to ensure their support and reduce the resistance from some of them to the changes to the employment conditions in the universities and RDI institutions (PRIs) where as large segment of the older staff has to be grandfathered.

Lessons from international experience

The reform agenda that the Egyptian Government has begun to put in place needs to take into consideration a number of factors that can have a major impact on success.

The knowledge economy imperative: A modern knowledge economy involves the growing participation of diverse groups of stakeholders including the private sector, professional associations and civil society in both funding RDI initiatives, as well as in using the knowledge produced in public research institutions. The voices of these stakeholders should be represented in the reformed RDI governance structures, notably the Higher Council for Science and Technology (HCST). The need to safeguard the capacities of the RDI institutions in the system will require more than modest incremental changes in the structures and processes of the new governance bodies. Revitalised public RDI institutions, including universities, should, however, be given a broad margin of autonomy in the implementation of their research agendas.

Effective governance of the RDI system: Effective governance should be pursued within the context of the necessary changes in the balance between modes of funding institutional infrastructure and competitive project modes of funding, as well as the need to develop strategies to improve efficiency, performance and flexibility of public research bodies. A shift to more demand-driven competitive project-based funding can help improve the responsiveness of public research to socio-economic needs, and improve the quality of RDI initiatives. However, institutional modes of funding remain important to safeguard the long term capacities of the public RDI institutions. More performance-based institutional funding may be needed to ensure accountability for public investment in RDI infrastructure.

The role of the centres of excellence: Knowledge creation is an increasingly multidisciplinary in nature. The older discipline-focussed RDI institutions that prevail in Egypt are no longer appropriate vehicles for achieving the country's RDI goals. The establishment of flexible networks of centres of excellence, involving the participation of the private sector can be an effective approach to address this challenge. The criteria for funding these centres of excellences cannot use the older discipline-based paradigms and have to adopt a more flexible, outcome-oriented criteria to reflect the multi-disciplinary nature of the endeavour.

Public-private partnerships: These partnerships will be needed and should be encouraged in areas in which the knowledge advances depend on the intellectual contribution of the private sector, which cannot be secured with traditional public procurement mechanisms. Public-private partnerships

have been pursued by many countries and it usually involves the leveraging of public investment in private RDI initiatives through co-patenting and collaborative RDI initiatives.

The mobility of RDI workers

The availability of RDI workers is essential for the long-term sustainability of the RDI effort. Particularly important is the ability to attract and keep young RDI workers, and the mobility of such workers among the public RDI institutions, the universities and the private sector partners. Such mobility has been very limited in Egypt, but the new initiatives started by MOSR and the Science and Technology Development Fund (STDF) to hire and support the career development of young researchers is a step in the right direction.

Restructuring the RDI system and its institutions

The role of non-university public research institutions relative to universities in most OECD countries, as well as in middle and lower-middle income countries has substantially diminished since the turn of the century. Analysis of the RDI performance in OECD countries (OECD, 2003) suggests that the effects of publicly funded RDI on productivity growth are larger in countries that devote more of their public RDI funds to universities rather than public non-university labs. This result, the report argues, reflects the fact that in some countries the very nature of the RDI mission entrusted to government labs limits the generation of economic spillovers. Furthermore, public labs, in many countries, face common problems of ageing staff, lack of access to graduate students, and relative isolation from the main avenues for knowledge exchange.

In its efforts to restructure the RDI system in Egypt, the Government should be cognisant of important factors that will have major impacts on the selected strategies and processes:

- *Greater government-wide co-ordination of the RDI agenda:* As Egypt moves away from the centralised RDI structure towards a dual model, the Government will find that it will need increased co-ordination of the RDI agenda among different ministries and Government agencies. Two approaches need to be considered: (a) consolidating major research funding within a single department; and (b) development formal structures for interdepartmental co-ordination. Evidence from OECD countries suggest that more than half of its members have a single department responsible for more

than 50% of the overall allocation for the RDI agenda. The establishment of Higher Council for Science and Technology (HCST), under the jurisdiction of the Prime Minister and Technology is an appropriate vehicle for such co-ordination that is used in many countries, notably Japan, France and Denmark.

- *More strategic planning and monitoring by government:* The need for more capacity for strategic planning as the Government moves to define broad national goals for the RDI agenda, and prioritises the allocation of RDI funds to support such an agenda. The planning is also required as a result of the introduction new approaches for the awarding of competitive RDI funds and the monitoring and evaluation of the outcome of such funding.

- *Greater institutional autonomy for RDI institutions:* Evidence clearly shows that the sustainability and vitality of the RDI system cannot be maintained without providing an acceptable degree of autonomy to RDI institutions and workers within these institutions, provided that effective accountability measures are put in place to ensure the integrity of the process, and the achievement of intended outcomes. Such autonomy, however, cannot be achieved without a major reform to the governance and autonomy of the universities if they are to play a key role in the development of the RDI system.

- *Increasing stakeholders' participation:* Many countries have moved to establish formal bodies through which advice from the RDI community can be provided on relevant RDI policies, and strategic goals, Some of these bodies are purely advisory, while others have broader mandate that includes participation in decision making about RDI funding criteria, selection of winning RDI projects and monitoring and control of funded projects. The United States for example has an extensive system of RDI advisory bodies that includes all stakeholders including industry. Independent granting agencies such as research councils, which act as intermediary organisations between the Government and the RDI performing institutions often have dual roles of advisory and funding bodies.

- *Strengthening of intermediate level funding structures:* As countries including Egypt, move away from the centralised bureaucratic model of direct funding of RDI institutions, intermediate funding agencies need to be established and strengthened as independent bodies, at arms' length from the Government. Research Councils are the most common example of such an organisation. The research funding council model provides the RDI system the flexibility and the ability to be responsive to stakeholders concerns about changes

in funding areas and criteria. Among the criteria that countries have considered in developing the terms of reference and mandate of these funding councils are: (i) adoption of strategic outlook to the funding process, (ii) development of comprehensive criteria for funding, and (iii) ensuring participation of all relevant stakeholders.

- *Strengthening the role of universities and HEIs in the RDI enterprise:* The Government should consider moving some or all of the following discipline-specific RDI institutions belonging to the Ministry of Scientific Research to key targeted research-intensive public universities, such as the universities of Cairo, Ain Shams, Alexandria, Assiut or Mansoura:
  - The Egyptian Petroleum Research Institute;
  - The National Research Institute for Aerospace and Geo science;
  - The National Institute for Oceanography and Fisheries;
  - Tudor Belharz Research Institute;
  - The Central Metallurgical Research and Development Institute;
  - The Electronics Research Institute;
  - The Research Institute for Ophthalmology; and
  - The National Authority for Remote Sensing.

The Government has already embarked on plans to allow the proposed Egypt-Japan University of Science and Technology to use the facilities of the Mubarak City for Scientific Research and Applied Technology, in Borg El Arab outside Alexandria to launch its programmes in 2009.

One of the boldest recent reform initiatives is the reform of the *Centre National de la Recherche Scientifique (CNRS)* in France, the world largest public non-university system of scientific research as outlined in Box 7.1. This is turning out to be a contentious exercise, with considerable opposition from the academic establishment and from the leadership of CNRS itself. It is presented here as an illustration of the extent to which it is necessary to rethink taken-for-granted arrangements and practices.

Box 7.1 **The reform of higher education and scientific research in France**

Over the past two years, several changes have occurred in the French system of scientific research and higher education as the country struggled to find ways of modernising a structure that has been forged over two centuries. Change was needed because the French system was mired in numerous idiosyncrasies, including a dichotomy between public universities and specialised public institutions of higher education – the *grandes écoles* which are selective but mainly undergraduate institutions. The other is a research workforce fragmented between universities and government agencies such as the *Centre National de la Recherche Scientifique* (CNRS) for basic sciences and the French National Institute for Health and Medical Research (INSERM); a system that inhibits the flow of professional talent between these institutions. The CNRS, a multidisciplinary centre, created in 1939, is France's biggest research organisation, with 32 000 employees of whom 26 000 are tenured including 11 600 researchers. It has extensive international partnerships, including exchange agreements with 60 countries and 5 000 visiting scientists from abroad. Its budget for 2008 was EUR 3.3 billion (USD 5 billion).

In August 2007, the French Government proposed giving universities more autonomy and a stronger role in defining the research agenda. It is too early to judge whether universities will use their increased, but still limited, freedom effectively. However, several drawbacks remain. Universities are still not allowed to select students on the basis of their abilities but remain obligated to accept all applicants who have passed the *Baccalauréat*. In fields such as mathematics, physics, and chemistry, universities suffer from competition with the *grandes écoles* for attracting the best students, and this will not change. Yet, despite the selectivity of the *grandes écoles*, their students are rarely exposed to research and have little incentive to complete graduate education. In 2007, only 6% of the 42 000 students of the science and engineering *grandes écoles* advanced into Ph.D. programmes.

Although the successes of French research have largely relied on partnerships between the universities and government agencies, some political forces want to abolish permanent nonteaching research positions. Some critics still argue that the decline of these positions within the agencies would result in the demise of French research if it happens before the new organisation of universities has demonstrated their ability to conduct research. The Agence Nationale de la Recherche (ANR), established in 2005, provides research grants on a competitive basis and provides career-development opportunities to young researchers. However, more than 70% goes to programmes with targeted objectives defined *a priori* by the government. The 30% devoted to broader, excellence-based programmes, critics argue, is too small. In addition, the ANR grants support very limited overhead costs. It is short-sighted not to acknowledge the important role

of the infrastructure in which individual researchers operate.

The teaching load of newly recruited professors has increased by 50% since 1983, severely impairing their research capacities. The CNRS has proposed creating five-year chair positions that have no teaching duties for assistant professors, giving them a chance to remain active in research. This is potentially a good idea whose generalisation would be welcome, but only if the hiring procedures at universities improve. However, most scientists believe that the badly needed reinvigoration of the universities cannot be achieved simply by jeopardising comparatively more efficient organisations such as the CNRS. The future of France's research and education system ultimately depends on its ability to attract the best young minds to science and give them the appropriate means to develop their ideas. Their opportunities have improved slightly, but the end of the road is not yet in sight.

Source: Adapted from Science, 7 June 2008, Vol. 320, by Edouard Brézin, a former president of the French Academy of Sciences.

Another impressive initiative, and one that managed to address the political dimensions of concentrating investment on the basis of internationally-referenced excellence, is that of the German Excellence initiative (see Box 7.2) which involved three tiers of funding. Tier 1 involved a selection of "graduate schools" from a fully open competition among Germany's higher education institutions, based on hard evidence of capacity to provide an excellent research training environment for doctoral students. Tier 2 involved a second competition for participation in up to 30 major "excellence clusters" where a university co-operates with industry and other research institutes in particular fields/disciplines, based on evidence of internationally verified research capability. Tier 3 involved identification of up to ten universities with at least one excellence cluster, one research school and a convincing overall strategy outlining how they intend to emerge at the pinnacle of international research. The selected elite universities have the benefit of a supplementary block fund to achieve their goals.

The German approach has been successful largely because the imperative for international competitiveness in research is well understood, the Government's objectives have been clear, the competition was open to all universities, and the processes of selection were transparent, with the exercise backed by evidence and rigorous independent evaluation.

Similarly, the governments of Portugal, Malaysia and Vietnam are undertaking competitive processes for building up research-intensive universities to a scale of quality, in terms of capability and performance, that will be internationally competitive.

Box 7.2 **Germany's Excellence Initiative**

Since 2005 the German Government has increased annual investments in Research and Development by around EUR 3 billion, from EUR 9 billion to EUR 12 billion in 2009. Germany's *Excellence Initiative* is the higher education element of the Pact for Research and Innovation. It aims to strengthen science and research in Germany in the long-term, improve its international competitiveness and raise the profile of the top performers in academia and research. The budget of EUR 1.9 billion for the period 2006 through 2011 is divided into three categories of funding:

EUR 40 million per year will be spent in developing graduate schools, a new concept for German universities, arising in the context of the Bologna Process. In order to receive these funds universities must prove to the Government that they provide doctoral students with an excellent research environment. A maximum of 40 graduate schools will share in this funding. A total of EUR 195 million per year will be awarded to universities which can show they are internationally visible and competitive research and training institutions, co-operating with industry and other research institutes in particular fields/disciplines. Thirty clusters of excellence will be established. A maximum of ten selected universities will share in extra funding of EUR 210 million per year. These universities will have at least one excellence cluster, one research school and a convincing overall strategy outlining how they intend to emerge at the pinnacle of international research. Nine institutions have received extra funding as part of this emerging elite group of German universities to date.

Source: Federal Ministry of Education and Research. "Initiative for Excellence" www.bmbf.de/en/1321.php.

Improving the relevance, quality and impact of RDI initiatives and programmes

Improving the relevance, quality and impact of RDI initiatives and programmes involve priority setting; moving away from the thematic priorities of the past towards more structural and strategic priorities such as developing programmes for training of RDI personnel, or developing balanced funding portfolios.

The challenges of priority setting in RDI

The challenge of priority setting in the RDI system involves consideration of the following:

The balance among RDI priorities: The development of balanced RDI priorities is one the most important challenges facing the RDI community in any country. The dimensions of such balance include the balance between basic versus applied research, core infrastructure funding versus project-based funding and academic freedom of university-based research versus industry-driven and controlled funding.

Autonomy and flexibility: The effectiveness of RDI institutions and relevance of their work depends on their autonomy and ability to be responsive to the needs of the end user of their RDI products. Rigid bureaucratic control of RDI institutions hinders their autonomy and flexibility.

Promoting multidisciplinary approaches to RDI: Successful RDI initiatives in the knowledge economy require a multidisciplinary outlook to the RDI projects and initiatives. Old fashioned narrow disciplinary RDI institutions are inadequately equipped and staffed to deal with this challenge.

Countries vary considerably in their strategies for priority setting. In countries where the top-down approach is predominant, the central government adopts explicit strategies, and sets up priorities for RDI through the use of advisory bodies or inter ministerial committees. The mandate of these bodies can vary from providing advice or recommendations to actually making formal decisions supported by a legal mandate. At the other extreme is the decentralised bottom-up approach favoured by countries that strong local government such as Australia, Canada and the United States, where the advisory bodies are decentralised and serve different government agencies. Many countries, including Egypt fit between the two extremes. In Egypt, the proposed Higher Council for Science and Technology (HCST) can be either directly mandated for setting RDI priorities, or a separate subsidiary body, reporting to the HCST, can be mandated to provide advice to HCST for RDI priority setting.

Technology forecasting: Technology forecasting is a powerful tool used by many governments to stimulate dialogue amongst the RDI stakeholders to help the process of priority setting. A methodology known as Technology Road Mapping (TRM) is a planning process driven by the projected needs of tomorrows' markets. It helps enterprises to identify, select and develop processes and technology alternatives to satisfy forecasted market needs. TRM requires the establishment of public-private partnerships discussed earlier.

The contemporary processes of knowledge production, diffusion and exploitation: The growth of the Knowledge Economy has resulted in general shift away from the narrow disciplinary research, usually referred to as

Mode 1 research, which hinders fruitful synergies across other relevant scientific disciplines, and is carried out specialised RDI institutions, towards more multidisciplinary research (Mode 2) that is more directly responsive to societal needs and is carried out by multidisciplinary teams of researchers. The demand-driven shift towards multidisciplinary research is evidenced in areas such as ICT, biotechnology, nanotechnology, alternative energy, and environmental technology.

Ensuring the long term sustainability of public funding of RDI

Increasing the gross expenditures on research and development (GERD): Increasing the volume of RDI funding or the Gross Expenditure on Research and Development (GERD), as a percentage of the GDP has to be a major priority for the Government. A target of 0.5% of the GDP from its present level of 0.2% within five years, and to 1% in ten years is not unrealistic, and would bring Egypt in line with other lower middle income countries in the region and in other parts of the world.

Restructuring the funding mechanisms: The restructuring of the RDI funding mechanisms in Egypt is essential to the long term sustainability and effectiveness of the RDI system. Reform to the traditional existing institutional funding framework and the introduction of newer project-based competitive mechanisms are essential aspects of the proposed reforms. The elements of a new funding framework include:

- *Institutional funding:* Institutional funding for universities and other public RDI institutions refers to the block grants that governments or funding agencies allocate to RDI institutions annually. In the absence of serious evaluation of the outcome of RDI initiatives in these institutions, they were traditionally free to use these meagre funds in any way they saw fit. While this situation, until recently, prevailed in many countries included in the OECD, there have been recent attempts to introduce measures of accountability in the use of institutional funding. First, the funding has been linked to the development of an overall science policy with priority attached to identified sectors or disciplines. Second, the funding levels have been tied to overall goals. Finally, many countries have introduced performance-based criteria for institutional funding involving research mandate review and/or peer review processes.
- *New foundations and centres of excellence:* This approach to institutional funding provides funds to networks of centres of excellence in targeted strategic clusters through existing funding agencies and/or through new independent foundations with clearly

defined mandates. These new mechanisms often emphasise the participation of the private sector as a key criterion for the funding.

- *Project-based competitive funding:* Public funds are allocated to targeted projects in institutions, or often involving more than one institution on the basis of applications that are submitted in response to a call for tender or request for proposal. The criteria for eligibility are outlined in some details by the funding agencies, and the applications are reviewed by a panel of peers. Project-based funding which was prevalent in the Anglo Saxon countries has been now widely adopted in other parts of the world. In Egypt, the MOSR is planning its introduction through the Science and Technology Development Fund (STDF).
- *Business funding of public sector RDI initiatives:* Over the past decade there has been a trend first observed in OECD countries, but recently in upper and lower middle income countries, of the increasing share of business funding for public RDI initiatives, especially in universities. The Government should consider the introduction of legislation to provide tax incentives for the businesses and enterprises to increase their contributions to the RDI agenda in Egypt.
- *Other sources:* Other sources of funding include the apportioning of funds for tuition fees, income from endowments, and patent and licensing fees can provide additional sources of funding that the universities and RDI institutions are increasingly pursuing.

Energising the RDI agenda

Energising the RDI agenda involves the assessment of key assumptions about relevant issues of priority setting and funding.

- *The balance between basic and applied research:* The debate about the balance between basic and applied research has been at the core of the debate about RDI policy in many countries including Egypt. The blurring of the boundaries between the two and its impact on priority setting and funding decisions in the public and private sectors poses fundamental difficulties for policy makers. While this debate still continues, there is an emerging understanding that any relevant research should include both components; a pure, curiosity-driven (basic) component without particular end use in mind, and the use-inspired (applied) component. The key challenge for policy makers is not to find a new conceptual definition of basic research,

but to define its scope to cover the whole range of research types needed to establish a sound body of knowledge to achieve socio-economic advances. This implies that policies for public sector research need to complement private sector research, and define research priorities, and agendas and funding instruments accordingly. An overall trend observed in OECD countries is that institutions dedicated to basic research are increasingly looking for partnerships with the private sector, and are more committed to the rapid transfer of research results to viable commercialised applications.

- *Securing sufficient funding for the RDI infrastructure:* The funding for centres of excellence programmes and often focuses on funding the infrastructure of the participating institutions in the centres of excellence. An interesting example of such foundation is the Canada Foundation for Innovation (CFI), an independent agency created in 1997 with an initial endowment of CAD 800 million, and later expanded to a total of CAD 3.2 billion. The CFI funds research infrastructure in centres of excellence involving universities, hospitals, colleges, and non-profit research institutes. The CFI typically funds 40% of infrastructure projects costs and the remainder is covered by the participating institutions and centres of excellence.
- *Establishing non-budgetary sources of funding:* Several countries have experimented with methods of financing RDI off budget using income generated from special investment funds established by the government, sometimes in co-operation with the private sector.

Evaluation and assessment of funded RDI initiatives

The call for increased funding for RDI is naturally linked to the introduction of more rigorous processes of evaluation and assessment of the outcome of these initiatives and the accountability of the use of publicly allocated resources. Traditional evaluation procedures such as *ex ante* peer reviews for grants and projects, which are common in many developed countries, have not been widely used in Egypt and their introduction should be included in the Government agenda for reforms. Other forms of evaluation and assessment are on-going and *ex post*.

Balanced assessment of RDI outcomes: The most commonly used RDI indicators involve the traditional indicators of scientific excellence such as the number of publications in internationally refereed journals, citations, patents and awards. There are many initiatives underway to develop a more

balanced approach for the assessment of the outcome of RDI that includes criteria and measures of quality and relevance to socioeconomic needs of society that include:

- Continued relevance of the RDI programme to its original stated objectives;
- Programme results and the achievement of objectives;
- Impacts and effects of the programme on its stakeholders; and
- Cost-effectiveness of the programme.

Effective Management of RDI human resources: The education, training and development of human capital for the RDI system are very critical to the continued growth and vitality of the system, and investment in improving the stock and quality of that capital is crucial to Egypt's economic development.

Increasing and maintaining an adequate supply of RDI personnel: The challenge of increasing and maintaining an adequate supply of RDI personnel in the Egyptian system is shaped by a number of weaknesses identified in the SWOC analysis earlier. They include:

- *The effective training of young masters, doctoral and post doctoral students:* At present the separation of public research institutions from the university and the lack of strong links and co-operation between the two hinders the ability of universities to effectively provide training for adequate number of masters, doctoral and post doctoral student because most of the physical infrastructure for RDI now exists outside the universities in institutions such as the National Research Centre, and the Agricultural Research Centre (ARC). A Policy of shifting more of the physical RDI resources to the universities would be in line with the trends that has taken place in many countries over the past decade, and would contribute to substantially increasing the supply of young qualified RDI personnel.
- *Providing incentives for RDI initiatives in universities:* At present, the employment framework for university faculty does not provide meaningful incentives for professors, assistant professors and teaching staff to engage in RDI initiatives. The proposed reform to governance and finance of higher education should, therefore, include meaningful incentives for faculty members to engage in RDI initiatives and attractive rewards for publishing the outcomes of their initiatives.

- *Repatriation schemes for post docs and scientists and leveraging immigrant and diaspora networks.* The propensity of PhD graduates to immigrate has always been a challenge for developing countries including Egypt. It is estimated that there are more than 6 500 Egyptian PhD holders working as faculty members and researchers in universities in Europe, North America and Australia. The Government should consider the establishment of funds to ease the return to Egypt of expatriate Egyptian RDI Workers and scientists and/or create networks for a closer and permanent interaction between Egyptian researchers working in Egypt and abroad. The Government should also support the establishment of overseas networks of RDI scientists, which can provide meaningful input and support and co-operation to RDI institutions in Egypt.

Main findings and conclusions

In general, Egypt lacks a well-defined RDI strategy; its capacity for basic science is weak, its RDI management is under-developed and uncoordinated, and there is inadequate investment in R&D. Consequently Egypt has a low level of readiness to be competitive in the global knowledge economy.

The recent establishment of the Higher Council for Science and Technology provides the basis for high-level co-ordination and prioritisation of R&D aligned with national development goals and strategies. The new Science and Technology Competitive Fund and the EU-Egypt Innovation Fund provide incentives for raising research quality and linking research activity with industry development needs.

One major structural impediment to the development of future capability (infrastructure + talent) is the separation of research from university education and knowledge exchange. This fragmentation, which derives from centralist periods and influences, does not suit the contemporary character of knowledge formation and diffusion, gives rise to loss of synergies, constrains cross-disciplinary work, and yet does not enable the development of critical scale.

Egypt's high dependency on full-time personnel in dedicated research institutes is inefficient and exposed to several risks: the continuing predominance of a supply-driven approach to research and innovation; under-performance and loss of dynamism; and difficulties attracting and nurturing young talent.

Another structural weakness is the high dependency on input-based funding, and the associated low use of competitive research funding. Over-staffed research institutes affiliated with various ministries account for more than three-quarters of RDI expenditure.

Recommendations

Through the Higher Council for Science and Technology, chaired by the Prime Minister, the Government of Egypt might commission an industry performance and foresight project, and an associated mapping of Egyptian R&D capacity to serve identified development needs and opportunities.

The Government might continue to build on the recently established Science and Technology Competitive Fund to provide demand-driven funding for RDI initiatives on a competitive basis.

Gross expenditure (public and private) on R&D should be sharply focussed on areas of internationally benchmarked research strength and national research priorities.

The Government should provide incentives for linking centres of research excellence with leading universities in cognate fields, including joint researcher appointments, collaborative supervision of doctoral and post-doctoral students, and joint participation in international research collaboration schemes.

The Government might provide incentives for research collaboration involving universities, research institutes and enterprises in Egypt. Consideration should be given to a competitive process along the lines of the German Excellence Initiative, to integrate research into university education in key centres and graduate schools.

Over time, the Government could undertake a major programme of strategic investment in state-of-the-art research infrastructure.

The Government should cause to have produced annually a national report on the state of Egypt's RDI system, comparing Egypt's capacity and performance with international comparators.

Notes

1 Estimate based on interviews with the presidents of several universities.

2 Scopus Country Ranking. The figure indicted here come from a different data base than that used in Figures 11 and 12.

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Chapter 8. Finance

This chapter examines the availability of financial resources for higher education and the challenges faced by Egypt as it seeks to expand enrolment and improve quality in a financially sustainable way. Financing is discussed from the viewpoint of resource mobilisation, allocation, utilisation, and equity impact. The chapter closes with a series of findings and recommendations, including recommendations on the need to mobilise additional resources for higher education and implement performance-based allocation mechanisms to stimulate effective and innovative management practices.

Introduction

The Government's ability to carry out its master plan to expand the higher education system while improving quality hinges, to a large extent, on the deployment of financial resources. In recent years, the country has implemented a number of reforms affecting higher education financing, including encouraging the growth of private universities and institutes, and allowing public institutions to charge some groups of students tuition fees despite the Constitutional guarantee of free education at all levels. The main challenge in the years ahead is to scale up these measures and implement complementary policies to ensure a sustainable financing strategy in support of higher education development.

To assess the present funding situation and prospects for long term financial sustainability, this chapter examines the following dimensions:

- *Resource* mobilisation: is Egypt investing sufficiently at the tertiary education level?
- *Resource allocation:* are public resources distributed in a manner that encourages innovation and rewards performance?
- *Resource utilisation:* are available resources used efficiently and effectively?

- *Equity:* are public funds distributed among various population groups in the Egyptian population in an equitable way?

Resource mobilisation

Public funding

At first glance, higher education appears to be generously funded in Egypt, considering the large proportion it represents in the overall education budget. As Table 8.1 shows, it has oscillated between 26% and 29% since 2000.

Table 8.1 **Government expenditure on education**

Year	Government budget as % of GDP	Public expenditures on education as % of GDP	Education as % of government budget	Higher education as % of education budget
2000	n.a.	n.a.	14.7	28.9
2001	n.a.	n.a.	14.7	27.8
2002	n.a.	6.0	14.3	27.3
2003	30.1	4.7	17.9	27.7
2004	30.0	4.3	16.3	27.7
2005	33.6	4.1	13.2	26.1
2006	30.4	3.8	12.6	28.1
2007	28.8	3.7	12.7	

Note: n.a. = not available.

Source: Ministry of Higher Education, Master Plan for Higher Education in Egypt 2007-2022, 2007, p. 26. EdStats Database from the World Bank (2008).

This proportion tends to be on the high side compared to many OECD countries, as indicated in Table 8.2.

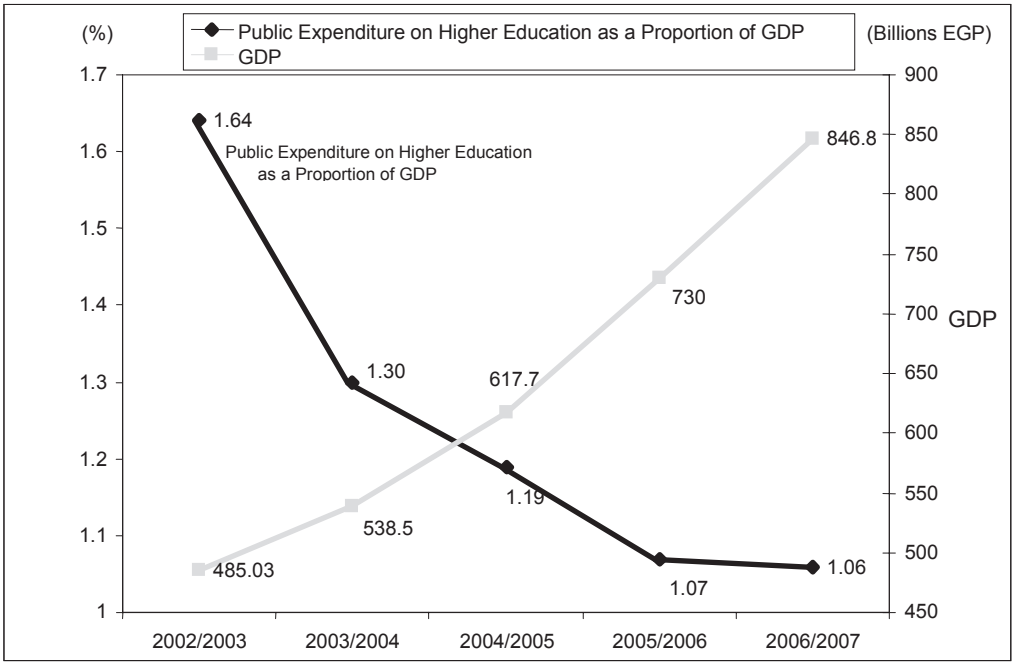
Table 8.2 **Higher education as a proportion of the education budget in selected countries**

Country	Higher education as % of education budget
Denmark	23.0
Finland	29.0
Germany	21.4
Ireland	25.3
Korea, Rep. of	33.5
Sweden	25.5
United Kingdom	21.6
USA	37.1
OECD Average	24.2
Egypt	**28.1**
Russia	21.1
Jordan	36.3
Turkey	26.0

Source: UNDP Reports for Egypt and Jordan (2007); *Education at a Glance* (OECD, 2008).

However, despite the favourable treatment of higher education in the education budget, the actual volume of funding has decreased steadily because both the share of education in the national budget and the proportion of the government budget in GDP have gone down in the past few years, from 18% to 13% and from 6.0% to 3.7%, respectively (Table 8.1). The net result is that the proportion of public funding for higher education in the GDP has followed a worrisome downward trend since 2002, as illustrated by Figure 8.1.

Figure 8.1 **Share of public expenditure on higher education in GDP (2002-06)**



Source: Ministry of State for Scientific Research (2008).

Seen in the international context, the present level of public funding for higher education in Egypt is equivalent to the OECD average, but way below top performers such as Denmark, Finland and Sweden. In the Arab world context, Egypt is faring slightly better than most comparators, except Tunisia which spends 50% more to develop its higher education system (Table 8.3).

Table 8.3 **Public expenditures on higher education (2006)**

Country	Higher education expenditures as % of GDP
Denmark	1.6
Finland	1.7
Germany	0.9
Ireland	1.0
Korea, Rep. of	0.6
Sweden	1.5
United Kingdom	0.9
USA	1.0
OECD Average	1.1
Egypt	**1.1**
China	0.8
India	0.7
Jordan	0.7
Malaysia	2.6
Morocco	0.9
Russia	0.8
Tunisia	1.5
Turkey	1.2

Source: OECD (2008), Education at a Glance 2008; UNESCO (2005) from Global Education Digest 2005; Egyptian Ministry of Higher Education Statistics (2006).

This evolution is reflected in the relatively low level of per student expenditures, as shown in Table 8.4 below.

Table 8.4 **Per student expenditures in public higher education institutions**

Year	Current Egyptian Pounds	Constant Egyptian Pounds	USD equivalent
2003/04	4 381	4 381	711
2004/05	4 609	4 179	695
2005/06	3 989	3 581	623
2006/07	5 200	4 990	874

Source: Ministry of State for Scientific Research (2008); World Bank (2008b).

As a result, public universities are overcrowded and severely under-resourced in terms of faculty, infrastructure, equipment and learning materials. There is widespread recognition that the combination of rapidly increasing enrolment and lack of resources has led to further deterioration of quality in most public higher education institutions.

A key indicator of educational quality is the ratio of students to teachers. The increase in student / faculty ratio was larger in Egypt than in any of the other major North African and Middle Eastern countries, as shown in Table 8.5.

Table 8.5 **Student-teacher ratio in higher education**

Country	1990	2002
Algeria	14.1	11.8
Egypt	21.3	29.7
Iran	22.5	20.4
Jordan	23.1	29.3
Lebanon	15.8	12.9
Morocco	13.7	18.7
Tunisia	15.1	20.4
MENA Average	15.9	20.9

Source: World Bank (2008a).

To address the growing demand for higher education despite the low level of public funding, the Government has adopted a resource mobilisation strategy involving the following two elements: (i) encouraging the growth of private higher education; and (ii) allowing public institutions to enrol

students in special programmes where tuition fees are charged (*Intisseb* and programmes taught in foreign languages).

Financing technical and vocational education and training

Government financing

Public sector TVET is financed from Budget allocations (recurrent costs through Chapters 1 and 2 of the Budget and capital costs through Chapter 3). The latest data available indicates that the unit cost of a full year student in technical and vocational schools is about EGP 225 while the unit cost of a full year student in Technical College is a little under EGP 1 125. The unit cost in Vocational Training Centres (VTCs) also appears to be about EGP 1 050 - 1 250. However, the VTCs referred to here cover all the training centres discussed in Chapters 2 and 5, including those such as the Productive Family Scheme that provide only short, informal courses for people already in the labour market. A more appropriate comparison with the costs of the other two types of institution would be the unit cost *per full year equivalent* trainee.

Given that the VTCs in total train only some 30 000 to 40 000 full year equivalent trainees a year, the cost per full year equivalent would be more like EGP 4 500. Budget allocations are based largely on the previous year's allocations and are determined by input measures such as numbers of students and staff rather than by outcomes. Even so, overall budget constraints led to allocations to VTCs being curtailed in the years prior to the current round of reforms.

Payroll levies

An example of this relatively new concept in Egypt is a small programme used to finance a fund managed by the Ministry of Manpower and Emigration (MOME). The fund, based only on state-owned enterprises, was established in the early 1980s but has been successively reduced over the years and now collects less than EGP 20 million a year. In April 2003, the People's Assembly amended the Labour Law, which among other things now mandates a Training Finance Fund (TFF) that will be financed by a 1% levy on the net profits of establishments (subject to the provisions of the law) employing more than ten workers.

The levy is expected to yield between EGP 300 million and EGP 400 million a year. The TFF is also intended to be a mechanism for managing other funds such as *ad hoc* Government allocations or finance

received from international donors and partners. The passage of the amended Labour Law follows substantial discussion in recent years about the viability of a national training fund. The need for a sustainable means of financing TVET had emerged as a priority out of the SCHRD's *Policy Statement on Skills Development in Egypt*. The Government's *Report of the Employment, Education and Training Sub-Committee* (May 2000) had recommended that options for alternative financing of TVET should be developed.

Although the report did not single out the possibility of a training levy, it did present an indicative financing model under which a fund (however it might be financed) could be used as the direct source of funds for training institutions, re-focusing operations on demand-driven criteria rather than the current supply-driven (budget-financed) model. Subsequent to this, the International Labour Organisation (ILO) was invited by the Government to submit a detailed proposal for a national training fund based on international experience, which they did in early 2001. The ILO proposal also stressed the need for any fund to be used to provide finance on a competitive basis to projects meeting labour market demands. The ILO concluded its report by noting the importance of establishing training funds properly. Based on its own knowledge and experience of training funds elsewhere, the inherent risks identified by the ILO and included in its report to the government were the lack of: (a) active participation by employers; (b) focus on priorities with funds spread too widely and thinly; (c) objectivity and professionalism in allocating funds; (d) strict evaluation of results and learning from the results achieved; and (e) efficiency, especially through cumbersome administration and needless bureaucracy.

New initiatives

Two resent Government projects could give some guidance to the new ***Training Finance Fund***. In the first, the Government, using its own and World Bank financing, has established a pilot Skills Development Project, which has a small fund, somewhat like the indicative model proposed by the *Report of the Employment, Education and Training Sub-Committee*, to experiment with operational methods for a fund. The second, the European Commission (EC) financed TVET reform project, will establish partnerships between industry and training centres at a local level. These partnerships are intended to be potential clients of the Fund.

Both projects are administered through the MITD, which will put a premium on ensuring co-ordination and co-operation through the SCHRD. It remains to be seen, then, how the relevant sections of the amended Labour Law will be implemented. Consultations among ministries and with industry

leaders are taking place and numerous alternatives are likely to be considered. In addition, the SCHRD will need to consider the future of the levy that is still imposed on state-owned enterprises and that is used by MoME. It will also need to consider how funds from international sources should be directed. A number of donors directly finance individual ministries (discussed later in the paper). Some donors also finance the Social Fund for Development, which, in turn, is a source of funds for TVET-related projects through its Human Resource Development Programme (HRDP) and its Community Development Programme (CDP).

Fees for goods and services

Vocational Training Centres may sell training services (contracted training courses, for example), goods (student production, for example) or materials (particularly curricula and curriculum materials). Some ministries and authorities have special arrangements through which a percentage of the net revenue (that is, after expenses such as production costs or staff salaries) from these sales can be used to pay incentives to staff. But the greater part of the net revenue must, by law, revert to the Ministry of Finance (MOF) with no *net* return to the centres themselves.

An analysis by the Social Fund shows how significant this type of revenue could be in the following areas:

- ***Public sector VTCs providing pre-service training:*** earned about EGP 12 million (almost 90% from training services), equivalent to almost 30% of the EGP 42 million budget provided to these centres in 2000. Only 15% of the earnings remained with the centres. Another 5% went to trainees. 80% was absorbed as expenses or reverted to the MOF.
- ***VTCs providing in-service training:*** earned about EGP 6 million (almost entirely from training services, although some public enterprises and centres run by the Ministry of Agriculture had significant sale of goods). This was equivalent to about 33% of the EGP 18 million budget provided to the centres that year. About 54% of earnings was retained by the centres, 9% by the trainees and 37% was absorbed as expenses or reverted to the MOF.
- ***VTCs providing training for disadvantaged groups:*** earned almost EGP 8 million (almost entirely from the sale of goods) equivalent to almost 90% of the EGP 9 million budget provided to these centres that year. About 37% was retained by the centres, 3% by trainees, and 60% absorbed as expenses or reverted to the MOF.

The second issue usually referred to by training centres; the lack of adequate training resources and equipment in the centres of raining providers, is more problematic. Unlike staff costs, the cost of equipment is addressed through capital allocation in budgets rather than recurrent budgets and it is questionable if this is really a restriction. International donors and partners, for example, have proved willing to invest in capital and have from time to time re-equipped or upgraded training centres although this can result in piecemeal investment with equipment not necessarily being distributed effectively. Because of inadequate recurrent budgets, VTCs find it difficult to maintain adequately the equipment and supplies. They also find it difficult to ensure that equipment is used efficiently and to its full capacity, especially because of the difficulty of making sure instructors are fully trained in its use.

In an effort to address the challenge of the high cost of investment in training equipment the Government has embarked on an innovative project to create Integrated Technical Innovation Clusters, with each cluster to include: (a) technical secondary school to graduate second level technicians; (b) industrial education or advanced technical education college to graduate technical trainers or 3rd level technicians; and (c) a Vocational Training Centre (VTC) to provide in-service training. The benefits of creating such cluster include sharing the high cost of investment in expensive equipment and creating mutually beneficial synergies among TVET providers.

Private funding of higher education

Until the 1990s, the Egyptian higher education system was almost exclusively public, the American University of Cairo (AUC) remaining for a long time the only exception since its foundation in 1919. In 1992, however, a new law (Law 101) was passed to authorise and regulate the establishment of private universities. Four new universities opened their doors in 1996, followed by five additional ones in 2000 and another batch of six private universities in 2006. Most of them are located in Cairo or its periphery. Additionally, a number of private higher institutes have been allowed to operate for several decades, even in the absence of an appropriate legislative framework. These are mostly internationslly-backed institutions that operate according to the norms of academic institutions in developed economies.

Private higher education institutions are tax exempt. Their business model has relied almost exclusively on student fees to cover operating expenditures, in the range annually of EGP 30 000 to 40 000 in the top private universities, and on part-time faculty from public universities to reduce teaching costs. Unlike AUC, the new private universities have essentially an undergraduate focus. As the new National Authority for

Quality Assurance and Accreditation of Education (NAQAAE) starts to function and implement stricter rules about minimum numbers of full-time teaching staff, the private institutions may have to adjust their financial sustainability plans.

Student enrolment in the private sector represents about one-fifth of total enrolment in the Egyptian higher education sector (Table 8.6). Most of it is concentrated in the higher institutes which have a more professional mission than the universities. Enrolment in private universities is still marginal, at less than 2% of the total university population.

Table 8.6 **Private sector institutions and enrolment (2006/07)**

	Number of Institutions	Enrolled Students	Share in Total Enrollment (%)
Universities	17	48 329	1.9
Higher Institutes	121	428 211	16.8
Technical Colleges	22	34 241	1.4
Total	160	510 781	20.1

Source: Strategic Planning Unit, Ministry of Higher Education (2008).

Many private providers observe that the existing regulatory and incentives framework is not conducive to rapid growth of private higher education. Significant government control, cumbersome regulations, lack of transparency in decisions about course openings, and the absence of financial incentives, including student aid, are commonly mentioned as impediments to further expansion of the private sector.

Cost-sharing

In theory, public universities are not permitted to charge tuition fees as Article 17 of the Constitution specifically guarantees that education is free at all levels. Students pay only small registration and other administrative fees, amounting to about EGP 120 per year. However, several forms of cost-sharing have appeared in recent years in the form of programmes taught in foreign languages, and partnership programmes for special students (*Intisseb*). Additionally, private tutoring offers supplementary educational services to institutional provision even though the income from private tutoring does not flow through to the educational institutions directly.

Foreign language programmes. With encouragement from the Government, several faculties in public universities have opened special sections where the students are taught in English or French. Access to these programmes is quite competitive because of their perceived value in terms of labour market prospects. They enrol a limited number of students to provide a better-quality teaching and learning environment. The academic requirements to access these programmes are similar to the regular courses, but the students pay tuition fees up to EGP 5 000 a year. There were 47 such programmes in operation in 2006/07, found mainly in the faculties of engineering, commerce, agriculture and law. Three universities, Ain Shams, Cairo and Alexandria account for about half of these programmes. However, the number of students involved is still relatively modest, about 5 000 in total.

Intisseb programmes. More significant in terms of student numbers has been the development of parallel programmes in public universities, which take in high school graduates with lower academic qualifications than the regular students. In exchange, the students enrolled in these "partnership" programmes (*Intisseb*) pay some fees which are not as high as those charged in the foreign language programmes, but still considerably more than what regular students contribute. Statistics for 2006/07 indicate that a total of 343 000 students participated in these programmes, representing about 23% of overall enrolment in public universities. There seems to be some variation in the way each university treats these special students. In some cases they attend classes just like any regular student; in others they study in distance education mode. In theory, the top 5% of students among the *Intisseb* students are allowed to transfer to the regular, non-fee programme at the end of the first year of study, but the field visits did not enable the review panel to verify the actual extent of transfer.

Private tutoring. Hiring private tutors to complement the academic preparation of secondary school students has become common practice in Egypt among middle-class families. While private tutoring is not as widespread at the tertiary education level, it does happen in some faculties in the larger public universities in Cairo and Alexandria. A variation of this phenomenon is the sale of textbooks written by faculty members, especially in the technical institutes. Experience in other countries has shown that these practices can carry a risk of corruption when professors are more lenient to their "private" students or in the way students are "encouraged" to buy the textbooks to increase their chances of success.

Table 8.7 below summarises the available information on the distribution of students based on the type of fees and payments they make, and presents estimates of their relative financial contribution. It shows clearly that students and their families are already making significant direct

payments for higher education. The equity implications of this situation are analysed in a later section of the chapter.

Table 8.7 **Private direct contributions to higher education spending**

Category of Institution	Number of Students	Average Annual Payment (EGP)	Total Financing (EGP million)
Private Universities	48 329	12 500	604.1
Private Higher Institutes	428 211	2 500	1 070.5
Private Technical Institutes	34 241	2 000	68.5
Sub-Total Private Institutions	510 781	3 413	1743.1
Public Universities (undergraduates)	1 698 740	50 – 120	84.9 – 203.8
Public Universities (postgraduate)	199 929	500	100.0
Intisseb Students	343 003	400	137.0
Foreign Language Programme Students	5 000	1 000 – 5 000	5.0 – 25.0
Private Tutoring	100 000	500	50.0
Sub-Total Public Universities	2 246 672	210	472.0

Source: Field visits and Country Background Report, MOHE, 2008.

Table 8.8, which shows the level of fees in selected Arab nations, reveals that Egypt stands apart from all the other countries for which data are available. It is the only country with a dual tuition fee policy. While the majority of countries still offer free public education at the tertiary level, those where tuition fees are charged apply the rule to all students, unlike Egypt with its special programmes.

Table 8.8 **Tuition fees in public universities in selected Arab countries (2007)**

No Fees	Algeria, Egypt (regular students), Morocco, Tunisia, Syria, Yemen
Less than USD 500	Egypt (special programmes)
Between USD 500 and USD 1 000	Palestine
More than USD 3 000	Jordan, Lebanon

Source: Field visits by Jamil Salmi.

Resource diversification in public universities

In recent years, the Government has actively encouraged public universities to diversify their income sources beyond the limited tuition fee payments allowed in the special programmes (*Intisseb*, foreign language professional programmes, etc.). This has led the universities to seek additional resources through donations, contract research, consultancies, continuing education and other miscellaneous activities. It is estimated that, in total, the public universities manage to cover about 10% of their resources through self-generated income. At Ain Shams University, for example, income generation contributes 6.5% of the salary envelope and 76.3% of non-salary expenditures.

Despite the growth in the number of students who pay fees of some sort and the public institutions' efforts to generate additional income, the Egyptian public higher education system continues to be funded by the State budget for the larger part of its resources.

Research funding

As indicated in Chapter 7, notwithstanding increasing government recognition of the importance of science and technology for Egypt's economic competitiveness, funding for university research is also very low, limiting the universities' ability to play an important role in the generation and dissemination of knowledge. As Table 8.9 illustrates, the share of government expenditure on scientific research has slightly decreased over the past few years.

Table 8.9 **Expenditure on scientific research**

Year	Value (USD million)	Expenditure as % of GDP
2003/04	245	0.27
2004/05	251	0.25
2005/06	299	0.26
2006/07	314	0.23

Source: Ministry of State for Scientific Research (2008).

R&D expenditures represent a very low proportion of GDP, as discussed in the previous chapter and shown at Table 8.10 below. At 0.2%, Egypt spends ten times less than the best OECD performers, and is only at half the average level of expenditures in the Arab region.

Table 8.10 **Gross expenditures on R&D as % of GDP**

Countries	R&D as % of GDP, 2005 or latest available year
Finland	3.5
South Korea	2.6
USA	2.6
OECD Average	2.2
China	1.4
Russia	1.2
Ukraine	1.2
Hungary	1.0
India	0.9
Poland	0.6
Egypt	**0.2**
Arab region average*	0.4
Malaysia	0.39
Morocco	0.14
Turkey	0.58

Note: * UNESCO (1998).

Source: OECD (2006), Science, Technology and Industry Scoreboard 2005; UNDP Human Development Index, 2005; Higher Education in Egypt: Country Report (2008). Data from MASTIC for Malaysia: Eurostat data for 2006.

Formulating a sustainable funding strategy

A five-pronged strategy is proposed to attain the 2022 targets set by the Ministry of Higher Education: (i) mobilising a greater share of public expenditures for education in GDP, with a proportional increase in spending on higher education; (ii) increasing resource diversification in public universities and institutes, including higher levels of cost-sharing coupled with appropriate student suport; (iii) removing barriers and incentives for further growth of the private sector; (iv) enlarging participation in shorter-cycle and more practically-oriented para-professional and technical programmes; and (v) establishing cost-effective distance education modes for a significant proportion of the student population.

Increasing public funding

Egypt needs to significantly increase public spending for education in general, and for higher education in particular, not only to cover a larger proportion of capital and recurrent expenditures, but also to boost investment in university research. While there is no ideal formula to decide the optimal level of public funding, it would be advisable for the Government to allocate at least 20% of the national budget for the education sector, up from the current 13%. Considering that the share of the education budget going to higher education is already high (about 28%), it would not be necessary to modify the present proportion. If anything, the Government might want to reduce it to around 25% to achieve a better balance across all education sectors. These adjustments would still result in a 40% net increase in the overall education budget.

However, given the parlous condition of many public higher education institutions, consideration might be given to a one-off major capital injection and capacity building investment programme. Such a programme could be implemented over the decade 2010-20, preceding the next demographically-driven enrolment surge into post-secondary education. The focus of such a programme could be on upgrading the material base of the public institutions, including their buildings, libraries and teaching and research equipment, as well as curriculum renewal and management improvement.

Increasing resource diversification

Although public funding remains the main source of support for higher education in most countries in the world, as is the case in Egypt, public universities everywhere have sought to complement their revenues in a variety of ways, including generating business income from institutional

assets, encouraging donations from companies and philanthropists, offering continuing education programmes, participating in consultancies and research contracts, and other income generation mechanisms. Annex 8A provides an overview of the various income diversification mechanisms that Egyptian universities could pursue, in addition to those already practised.

In that perspective, the Ministries of Finance and of Higher Education could consider implementing a programme of financial incentives to encourage the public universities to generate additional resources above and beyond what they manage to mobilise presently. These financial incentives could take the form of matching grants for donations and research contracts and budget increases embodied in the funding formula that will be discussed in the next section on resource allocation mechanisms.

At the same time, it is important to note that, with the exception of the Scandinavian countries and Switzerland which have very high taxation levels, no country has been able significantly to expand its higher education system, while at the same time improving its quality, without requiring a significant financial contribution from students and their families to the cost of studies. Australia introduced universal tuition fees in 1989, initially covering 25% of course costs, rising to 40% on average by 2007. China introduced universal fees in 1997 (equivalent to 20% of unit costs in undergraduate education), followed by the United Kingdom and the Czech Republic in 1998, and Austria in 2001. Tuition fees have doubled in Canada during the 1990s. The elite engineering and management schools in India charge about USD 3 500 a year, equivalent to 7.2 times the country's per capita GDP.

In a recent public speech, Egypt's Prime Minister made a statement in the press to the effect that "free education is not a right for everyone but only for the needy". There is a regressive aspect of a situation where students from advantaged backgrounds tend disproportionately to access the better tertiary institutions and obtain higher remuneration as graduates yet rely on less-advantaged general taxpayers to fund their education. Financing of higher education would indeed be much more equitable if students from high and middle income families would contribute a larger share of the cost of their education and if all students were subject to the same rules in all public institutions and departments within these institutions.

The Ministry of Higher Education would need to define a clear legal framework for cost-sharing and issue appropriate regulations to redress the current complexities in this area. As will be discussed in the forthcoming equity section, appropriate student aid mechanisms would need to be put in place to protect academically qualified students coming from low-income

families and give more students the option to attend a private tertiary education institution.

It would be very important to take the political sensitivity of raising tuition fees into consideration to avoid any backlash. This can be addressed through participatory meetings and communication efforts to create ownership among the various stakeholders (students, families, faculty) and mobilise support for the proposed measures. The purpose of these consensus-building activities would be to establish a clear linkage between increased cost-sharing and the likely improvements in teaching and learning conditions that additional financial resources would enable. The Government and leaders of higher education institutions should rely for that purpose on the demonstration effect of fee-charging programmes which are able to offer a better learning environment for students.

Box 8.1 **Consensus building and cost sharing in northern Mexico**

The Mexican constitution provides for free public education at all levels, and cost sharing has always been fiercely resisted by the professors and students of the country's largest public university, the National Autonomous University of Mexico (UNAM). In 1999 the university was closed for almost a year by a strike supported by the majority of its 270 000 students after the rector suggested a USD 100 increase in tuition fees, from USD 8 a year.

In northern Mexico, by contrast, the rector of the public University of Sonora was successful in introducing cost sharing after initiating, in 1993, a consensus-building process to explain to the staff and students the need for supplementary resources to maintain the quality of teaching and learning. After some initial resistance, including a widely publicised 2 000-kilometer march by protesters from Hermosillo to Mexico City, the students accepted the principle of a yearly payment to generate supplementary resources. A participatory process was undertaken to determine the allocation of these resources to equity and quality-improvement initiatives. Since 1994, the students have been paying an annual contribution of about USD 300 for this purpose. A joint student-faculty committee administers the funds, which are used to provide scholarships for low-income students, renovate classrooms, upgrade computer labs, and purchase scientific textbooks and journals. A poster is prepared every year to disseminate information on the use of the money collected at the beginning of the academic year.

Source: The World Bank. 2002. Constructing Knowledge Societies: New Challenges for Tertiary Education. Washington, D.C., p. 87.

Encouraging further growth of the private sector

The Government recognises that public resources alone will not be sufficient to achieve the expansion objectives set forth in its master plan for higher education. Encouraging further growth of private higher education institutions could be a valuable element in the overall financing strategy for higher education. While private expansion has been fast in the technical institute and higher institute segments, expansion in the university sub-sector is much slower. The proportion of students enrolled in private universities actually fell between 2002 and 2007, from 2.2% to 1.9%. Even taking the entire higher education system into consideration, with the larger proportion of private enrolment found in technical institutes and higher institutes, Egypt's private enrolment share is below that of many countries in the region, as indicated by Table 8.11.

Table 8.11 **Private higher education enrolment share in 2003 (%)**

Countries	Share of Enrolment in Private Institutions
Egypt	16.5
Iran	54.1
Jordan	24.7
Lebanon	49.3
Morocco	5.1
Palestine	58.1
Tunisia	5.0

Source: World Bank (2008a).

Two sets of measures can be envisaged to achieve this policy goal of enlarging enrolments in private institutions. First, it would be desirable to remove the legal and administrative hurdles that appear to constrain the development of private higher education institutions. Now that the National Quality Assurance Agency can fully play its role of quality watchdog, there is less justification for tight control from the Ministry of Education itself. Allowing more flexiblity for private higher education institutions in terms of faculty hiring and promotion practices, levels of remuneration, programme and curriculum development, and procurement rules will go a long way towards providing a favorable operational environment for these institutions.

Second, the Government could consider the possibility of offering limited subsidies to the private sector.

For example, private institutions might be given the opportunity to apply for government financial support in areas of high priority, such as engineering or medicine. Subsidies for teacher salaries could also be considered. Another mechanism could be to grant or lease land to private higher education institutions. Financial incentives to stimulate the development or strengthening of quality private higher education institutions can of course be justified only on the grounds that they provide a means of expanding enrolments at lower public cost than by expanding public universities.

Enlarging enrolments in practically-oriented programmes and institutions

Low rates of labour market absorption of university graduates from predominantly social sciences degree programmes suggest the need for structural change in graduate output as well as change in graduate capabilities. Students complain that their studies are overly theoretical and they lack opportunities to develop practical skills. Employers complain that university graduates are not work ready and lack "soft skills" in communication, interpersonal relations, problem solving and team work. Consequently, university graduates are under-employed while the economy faces skills shortages. The outcome appears to represent a major opportunity cost for individuals and a serious wastage of scarce public resources. However, there is an absence of data of the comparative rates of return to graduates of different institutions and programmes. In many countries the returns to academic qualifications exceed the returns to vocational qualifications. In Egypt, it is not known whether, nor to what extent, the returns to generalist university graduates are higher or lower than the returns to specialist graduates from non-university institutions.

Narrowing university education in an effort to make graduates more immediately employable is a risky course. There are models of non-university higher education that can expand access at lower unit costs while producing graduates that fit labour market niches. For instance, the government of Japan has encouraged the establishment of for-profit providers of career-oriented education. A new set of institutions has been authorised, the Professional Training Colleges (*senmon gakko*) to respond to student demand for work-related competencies. In the public sector, Australia has a well-regarded Technical and Further Education sub-sector of vocational education and training institutions. Canada has an effective system of Community Colleges offering shorter duration study programmes than the universities, and with articulate pathways for further adult learning.

Sweden has a particularly innovative approach through its Advanced Vocational Education sub-sector (see Box 8.2).

Box 8.2 **Advanced vocational education in Sweden**

In Sweden, Advanced Vocational Education (AVE, *Kvalificerad yrkesutbildning*) is a form of vocational postsecondary education designed and carried out in close co-operation between enterprises and course providers. The main objective of AVE is to train staff with qualifications in areas of labour market need. Programmes provide advanced theoretical and practical knowledge and skills required to work independently and co-operatively with others in contemporary workplaces. Courses are characterised by theoretical depth as well as links with the workplace. One third of the programme is to be spent at a workplace. The courses are open to those who have recently finished upper secondary school and to people who are already employed and wish to develop their skills in a specific area. The education period varies between one and three years. A course consisting of 40 weeks or more will result in an AVE degree.

Source: The Swedish Agency for Advanced Vocational Education.

The Egyptian authorities might consider promoting the expansion of vocationally-oriented institutions, public as well as private, with employer involvement in curriculum development and work-based learning.

Expanding open education programmes

The fifth pillar of Egypt's expansion strategy could be to develop the type of open universities and distance education programmes that have been found to benefit large segments of population in other parts of the world, such as India, South Africa and Thailand. Thailand's two Open Universities, for instance, have been the government's principal instrument for expanding access and reaching out to students from rural areas and the poorest social stratum.

For this strategy to work in the long term, it is important to maintain clear policies regarding the respective roles of both types of institutions, traditional and open universities. One of the challenges is to dispel the perception that open or distance education programmes are second rate compared to the regular programmes offered by universities. Another challenge, in formulating and implementing a differentiated expansion strategy, is to think through the functional linkages among the various types of higher education institutions. The various types of institutions should not operate as parallel, unrelated sub-sectors, but rather as complementary parts

of a well-articulated system that offers multiple learning paths. In this context, student mobility could be encouraged by removing all the barriers among the segments of the higher education system, among institutions within each segment, and among disciplines and programmes within institutions. The promotion of open systems can be achieved through recognition of relevant prior professional and academic experience, degree equivalencies, credit transfer, tuition exchange schemes, access to national scholarships and student loans, and creation of a comprehensive qualifications framework.

As the Ministry of Higher Education's Planning Unit develops its financial projection models, it will be important to test a series of scenarios around the implementation of these five complementary strategies to establish the viability of the government's quantitative targets to increase higher education enrolment.

Resource allocation

As is common in many developing countries, the Government relies on a traditional historical / negotiated allocation system to distribute the annual recurrent budget among public universities and institutes. The Ministry of Finance and the Ministry of Planning, which decide on the recurrent and investment budgets, respectively, have not yet taken into consideration whether the institutions eligible for public funding are more or less efficient and effective than their peers in managing their resources. The Supreme Council for Universities (SCU) and the MOHE, which are the governing bodies for the universities, have little say in the resource allocation process.

The budget is a line-item budget with eight main categories. The key categories are Line 1 for salaries, Line 2 for non-salary recurrent expenditures, Line 3 for financial interest owed by universities, Line 4 for social expenditures benefiting students (food, dormitories, etc.), and Line 6 for investment spending. There is no flexibility to reallocate resources across budget items.

By and large, the level of public funding that individual higher education institutions receive is not linked to any measure of performance, such as quality or relevance as evidenced by labour market outcomes. There is also no direct connection between the allocation received by each institution and its actual needs. If budget data for each public university were available, it would be possible to document the lack of consistency in budget allocations across universities.

Similarly, there are no clear mechanisms for the distribution of resources within the universities themselves. In addition, since the non-

salary budget is quite small, individual faculties and departments receive about the same allocation from one year to the next.

In contrast to the budget distribution model employed by the Ministry of Finance in respect of recurrent funding and the Ministry of Planning in respect of investment funding, the Higher Education Enhancement Project (HEEP), implemented since 2003 with World Bank funding, has introduced innovative features into the public resource allocation process. HEEP uses a competitive funding allocation mechanism to distribute resources for quality improvement in a transparent and objective manner.

Towards a more consistent allocation system

To stimulate a more effective use of public resources, the Government could introduce a combination of performance-based budget allocation mechanisms that provide financial incentives for improved institutional results in relation to national policy goals. Four main types of innovative allocation mechanisms might be considered separately or in combination for this purpose:

- Output-based funding formulae: output or outcome measures are used to determine all or a portion of a funding formula, for example universities are paid for the number of students they graduate, sometimes with higher prices for graduates in certain fields of study or with specific skills.
- Performance contracts: governments enter into regulatory agreements with institutions to set mutual performance-based objectives.
- Competitive funds: financing is awarded to peer-reviewed proposals designed to achieve institutional improvement or national policy objectives.
- Vouchers: students receive coupons representing a given financial value that allows them to pay for their studies at any higher education institution of their choice.

Output-based funding

A more transparent and objective way to distribute funds for recurrent expenditures uses a formula linking the amount of resources spent on inputs such as the number of students or professors to some indicator of institutional performance such as the number of graduates. Examples of

countries that have built performance into their funding formulae include:

- Denmark which has a "taximeter model" in which 30 to 50 percent of recurrent funds are paid for each student who passes exams;
- The Netherlands where half of recurrent funding is based on the number of degrees awarded;
- South Africa where the funding formula takes both the number of students enrolled and the number of graduates into consideration;
- Australia, where funding for doctoral student places is based on a formula comprising graduations (40%), research outputs (10%) and research income, including competitive winnings (50%).

A recent feasibility study in Malaysia calculated that the Government could save between 10 and 30 percent of the operating budget of the public universities if resources were allocated on the basis of a funding formula using unit costs benchmarked against the better performing institutions (Innovation Associates, 2004).

Performance contracts

Performance contracts are non-binding regulatory agreements negotiated between governments or buffer bodies and tertiary education institutions which define a set of mutual obligations, usually performance targets to be achieved by the institution, sometimes with additional funding provided by the government. The agreements may be with entire systems of institutions or individual institutions. All or a portion of funding may be based on whether institutions meet the requirements in the contracts. The agreements can be prospectively funded or reviewed and acted upon retrospectively.

Examples of countries or regional governments with performance contracts include:

- France which since 1989 has devoted one third to half of the recurrent budget to four-year performance contracts. Payments are made when the contracts are signed, with a post-evaluation to assess the degree and effectiveness of implementation.
- Finland has contracts that set out general goals for the entire tertiary education system as well as specific goals for each institution.
- Denmark uses "development contracts" setting long term improvement goals for the institutions.

- Spain where some provinces have recently developed an interesting variation on this model called a "contract programme" (*contrato-programa marco de financiación global*) as a result of the new decentralisation policy which delegates significant powers to the autonomous regions of the country.
- Chile has introduced "performance agreements" on a pilot basis, whereby four public universities are receiving additional resources to implement a carefully negotiated institutional improvement plan with clear progress and outcome indicators.
- United States has examples of different types of postsecondary education compacts (*e.g.* Maryland, Michigan, North Dakota, Virginia).

Competitive funds

After more than six years of operation, HEEP's competitive fund has proven its strengths and value as an effective and flexible resource allocation mechanism for investment purposes. Building on the positive experience with competitive funding for engineering education reform in the early 1990s, the Higher Education Enhancement Project Fund (HEEPF) has shown its ability to help improve quality and relevance, promote pedagogical innovation, and foster better management – objectives that are difficult to achieve through funding formulae. The Government could seriously consider confirming HEEPF or a similar mechanism as the principal channel for allocating public investment funds to higher education institutions.

As the Egyptian higher education community has been able to experience firsthand, one of HEEPF's principal benefits has been the practice of transparency and fair play through the establishment of clear criteria and procedures and the creation of an independent monitoring committee. One of the added benefits of competitive funding mechanisms is that they encourage universities to undertake strategic planning activities which help them formulate proposals based on a solid identification of needs and a rigorous action plan.

Finally, one of the strengths of competitive funds is that they are more likely to be effective in improving quality than broader-based approaches such as negotiated budgets or funding formulae. Therefore, one way in which HEEPF could continue to improve quality would be to link eligibility for funds to participation in the new accreditation process, either on a voluntary basis as happened in Argentina or in a compulsory way as is the

case in Chile. Another approach would be to use quality improvement as the main criterion in evaluating proposals and selecting recipients.

Vouchers

The purpose of voucher funding is to promote greater competition among higher education providers in response to student interests by giving public support indirectly through the consumers rather than directly to the providers (Salmi, 2006). While many countries use voucher-type arrangements to pay institutions for enrolments driven by student preferences, there are few that use demand-side vouchers in the form of coupons provided to students to pay for recurrent expenses. The most prominent examples can be found in the former Soviet Republics of Kazakhstan and Georgia which began implementing a voucher scheme in 2001 and 2005, respectively. In Kazakhstan, about 20% of the students receive voucher-like education grants that they carry with them to the public or private university of their choice, so long as they choose to study a grant-carrying subject. For the students, eligibility is determined by their score in the highly competitive Unified National Test (equivalent to *Thanaweya Amma*) that replaced the old system of university entrance exams, and their subject choice. For the tertiary education institutions, eligibility is a function of their standing with the quality assurance unit of the Ministry of Education and Science, and the subjects they offer.

Even after only a few years of operation, the Kazakh voucher system appears to be functioning as an effective allocation instrument to reward those institutions that are perceived as better performing and offer national priority subjects. All tertiary education institutions, public and private alike, are very attentive to their ability to attract education grant beneficiaries. The voucher scheme also seems to be a successful tool to promote the growth of the better quality private institutions which have been able to multiply the number of grant beneficiaries within the past three years (OECD/World Bank, 2007).

The recently launched Universities for All programme (ProUni) in Brazil constitutes an interesting variation of a voucher scheme. Under that new programme, the Brazilian government uses tax incentives to "buy" places in private universities for deserving, academically qualified low income students who were not admitted in the top public universities because of the limited number of places. In Colombia, similarly, the Department of Antioquia set up a scheme worth mentioning in this context. A public-private partnership bringing together the local authorities, a group of private universities and a number of private sector employers offers qualified low income students who could not find a place in a public

university the opportunity to study in one of the local private universities. The students get a scholarship equivalent to 75% of the tuition costs and receive a loan from the National Student Loan Agency (ICETEX) for the remaining 25%.

Resource utilisation

One important aspect that the Ministry of Higher Education would need to think about is the size of its public universities. Several of them have more than 100 000 students: Al-Azhar is one of the largest universities in the world, with 365 886 students; Cairo has 267 844, Ain Shams 197 032, Alexandria 175 872, and El-Mansoura 121 738. Many of their faculties are as large as an entire university in other countries. To put things in perspective, it is useful to remember that Peking University, one of China's top institutions of higher learning, has about 32 000 students. Harvard University, considered to be one of the top universities in the world, has a total enrolment of 29 000. From a managerial viewpoint, running very large institutions is more than challenging. Most of the universities visited are far from having implemented modern management practices, starting with relying on a well-developed management information system to monitor operations and make informed decisions.

But the large size of Egyptian universities is even more dauting with regard to educational quality. Combined with a chronic situation of insufficient financial and human resources, the large number of students translates into crowded lecture halls, little direct attention to individual students by faculty, and inadequate learning conditions. This results into a complicated quantity-quality trade off. On the one hand, Egypt is making efficient use of scarce resources to accommodate large numbers of students. On the other hand, it is doubtful that these arrangements are conducive to high quality teaching and learning. Hence the authorities need to think carefully about the cost-effectiveness of the present arrangements when choosing the type of institution and education delivery mode most suitable to implement their expansion strategy.

The size issue is also likely to hinder any attempt to follow the Bologna Process reforms in Egypt, as it would be very complicated and costly to move to the type of academic credit transfer and accumulation system that has been a key element in Europe's efforts to put in place a more homogeneous degree structure to facilitate student and labour force mobility.

A structural feature of the Egyptian higher education system is the long duration of many first degree studies. Besides medicine which lasts six

years, it takes at least five years to graduate in engineering, dentistry, pharmacy, physiotherapy, veterinary sciences, urban planning, fine arts, and even some general science, computer science, language, humanities and law programmes. The fact that their theoretical duration is generally one year and often two years longer than similar degrees in North America or Europe represents a social cost of great magnitude for the country.

At a time when most European countries are moving to a three-year first degree, aligning the duration of Egyptian degrees with international practice would permit the redeployment of a significant proportion of resources currently used in higher education, with resulting savings for the public purse. It is worrisome to observe that this problem is not confined to the public universities, but is also prevalent in the private universities and higher institutes. Because these institutions are tightly controlled by the Ministry of Higher Education, they do not have the freedom to break away from the traditional curriculum pattern enforced in the public universities.

Table 8.12 explores two indicators of institutional productivity: the output of graduates per teaching staff member, and the student graduation rate. With regard to graduate output per teacher, the average ratio for all public universities is 4.4 graduates. The highest output rate is 7.2 at Kafr El Sheikh University, closely followed by Al-Azhar with 7.1 graduates per teacher. The lowest ratios are found at Suez Canal (2.8), Cairo and El Fayoum (3.0), El-Zagazig (3.3) and Ain Shams (3.4). Again, a proportion of the apparent variance is attributable to enrolment distributions by field but the available data do not allow for the cross-tabulations to be constructed.

Table 8.12 also provides an estimate of the gross graduation rate, calculated as the number of graduates in 2005/06 as a percentage of the estimated annual number of students commencing at each university, assuming an average study duration of 4.5 years. In deriving this estimate there are clearly several asssumptions that should be tested, even though the estimates themselves have reasonable face validity. The estimated graduation rate for Egypt's public universities is 75% on averge, a result that is comparable to that in many countries, even though it does not suggest optimal efficiency, esepcially for a relatively poor country. There is one outlier, Helwan Univerity, where the data indicate an apparent graduation rate in excess of 150%, and this instance warrants further analysis. That aside, the highest graduation rate is found at Beni Suef University (95%) while the lowest is at the University of Cairo (50%). Three other universities have graduation rates below the apparent national average: Al-Azhar, Ain Shams and Alexandria universities. With the exception of Al-Azhar, they also have relatively low graduate output per faculty ratios. Broadly, the institutions having the lowest rates of productivity have the highest student enrolments, there being no apparent realisation of economy of scale benefits.

One is inclined to conclude that the very large public universities perform sub-optimally on both the quality and efficiency dimensions.

Table 8.12 **Indicators of productivity in Egypt's public universities, 2005/06**

University	Estimated commencing student enrolments [1]	Teaching Faculty	Graduates	Graduate: faculty ratio	Gross Estimated graduation rate (%)
Cairo	59 520	9 973	29 820	3.0	50.0
Asyout	15 467	3 284	13 190	4.0	85.2
Al-Azhar	81 308	7 335	51 960	7.1	63.9
Tanta	21 218	3 250	17 396	5.6	82.0
Helwan	11 950	4 065	18 253	4.5	152.8
Suez Canal	10 833	3 433	9 734	2.8	89.9
Ain Shams	43 785	9 338	31 878	3.4	72.8
Alexandria	39 028	6 135	26 980	4.4	69.1
El-Mansoura	27 052	4 646	21 974	4.7	81.2
El-Zagazig	22 110	4 799	19 742	4.1	89.3
El-Menia	9 627	2 400	7 886	3.3	81.9
El-Menoufia	17 825	2 810	14 387	5.1	80.7
Ganoub ElWadi	14 583	1 241	7 689	6.2	89.2 [2]
Souhag [3]	n.a.	1 146	5 312	4.6	
El Fayoum	4 887	1 454	4 325	3.0	88.5
Beni Suef	8 157	1 174	7 756	6.6	95.1
Kafr El Sheikh	5 931	693	4 991	7.2	84.2
Banha	13 023	2 835	11 342	4.0	87.1
Mubarak Police Academy	5 708	47	n.a.	n.a.	n.a.
All Government universities	**407 631**	**70 058**	**304 615**	**4.4**	**74.7**

Notes: (1) Total annual enrolments (from Table 6.3) are divided by the estimated average study duration (4.5 years) to produce a proxy commencing cohort.
(2) Including Souhag.
(3) Souhag University separated from Ganoub ElWadi University in 2005/06.

Source: Ministry of Education.

It would also be important to analyse the actual time spent by postgraduate students to complete their degrees. The field visits revealed that the actual time students spend gaining a master's degree or a PhD is often much longer than the notional duration.

The additional cost associated with the long duration of studies in a large number of disciplines is compounded by low internal efficiency in the other programmes. According to the Country Background Report, the average repetition and dropout rates in public universities were 10% and

9%, respectively, in most programmes. The highest rates are observed in the first year of most disciplines. The problem is more serious in the social sciences, with an average wastage rate of 18%, compared to only 6% in medicine. The Ministry's Planning Unit estimated that as much as one fifth of the total recurrent budget goes to waste because of these relatively high repetition and dropout rates. However, Egypt's attrition rates are not excessivley high by international comparison (*e.g.* United States, Australia, Britain), and the highest attrition occcurring in the first year (of the order of 20% of the intake) is not unusual. The main concern in Egypt is that unexpectedly high rates of graduation are found in higher education institutions with low levels of educational quality, and the resulting problems of poor graduate output quality are evident in the high incidence of graduate under-utilisation in the labout market.

Finally, one of the major constraints in ensuring efficient resource utilisation comes from the tight government regulations that the public universities are subjected to. Civil service regulations, especially with regard to human resources policies, financial management and the procurement of goods and services, do not provide much flexibility to use available resources in the most efficient and effective manner.

Table 8.13 outlines how key areas of regulation vary across three types of institutions in the Egyptian higher education system: public universities, private universities and private higher institutes. The information collected confirms that even private institutions are limited in their ability to operate in an autonomous manner.

Trends in governance patterns in OECD countries point to the fact that, in order to promote the development of increasingly complex and diversified tertiary education systems, governments can be more successful by steering from a distance rather than exercising an overly direct supervisory role (OECD, 2004). This governance mode can be achieved through a regulatory framework that encourages and facilitates, rather than controls, innovations in public universities and private sector institutions.

In the case of Egypt, two main areas of change could be envisaged to seek a better alignment with international good practice. First, the Ministry of Higher Education should be less involved in direct management issues. It would focus instead on strategic functions such as vision setting, medium term planning, guidance on development priorities and related training needs, resource allocation to stimulate quality improvements and overcome disparities (along the lines described in the previous section on financing reform), career guidance and information management.

Table 8.13 **Key areas of regulation**

Regulations and Incentives	Public universities	Private universities	Private higher institutes
Own buildings and equipment	Yes	Yes	Yes
Receive part of their regular budget from the State	Yes	No	No
Eligible for HEEP funding	Yes	No	No
Can receive donations	Yes	Yes	Yes
Hire and dismiss faculty	Limited	Yes	Yes
Establish salaries	Limited	Yes	Yes
Set tuition fees	No	Yes	No
Set academic structure and curriculum	No	No	No
Decide size of student enrolment	No	Yes	Yes
Subjected to government financial control rules (*ex ante* controls and audits)	Yes	No	No
Subjected to government procurement rules	Yes	No	No
Can take a long term commercial loan	No	Yes	Yes

Note: Yes means that the university has the power to perform this function autonomously.

Source: The information is based on interviews conducted by the Strategic Planning Unit with present or former presidents of 12 public universities in 2008 and on field visits during the OECD/World Bank mission in October 2008.

Second, in order to facilitate the financing reforms proposed in the previous sections, the Ministry of Finance and the Ministry of Higher Education could grant increased management autonomy to the public higher education institutions. In return, clear performance objectives and accountability channels should be defined and agreed with the leaders of these institutions. The performance of the higher education institutions would be monitored and stimulated through the new accreditation system and the proposed allocation mechanisms linking funding to performance outcomes. These matters are considered further in Chapter 9.

Equity aspects

This final section analyses how equity and financing issues intersect in the higher education system, looking at three principal dimensions: socio-economic origin of students, gender balance, and regional disparities.

Assessing the forms and scope of disparities

In the absence of statistical information about the distribution of students by income groups, it is difficult to conduct a detailed review of the equity situation in the Egyptian higher education system. Notwithstanding the lack of data, it is important to draw the Government's attention to the dangers of the current cost-sharing pattern described in the first section of this chapter. In Egypt as in most countries in the world, it is very likely that one would find a high correlation between the academic results of students taking the secondary school leaving examination (*Thanaweya Amma*) and their socio-economic background. In the case of Egypt, this outcome is accentuated by the existence of private high schools and the widespread practice of private tutoring, both favoring the richer families.

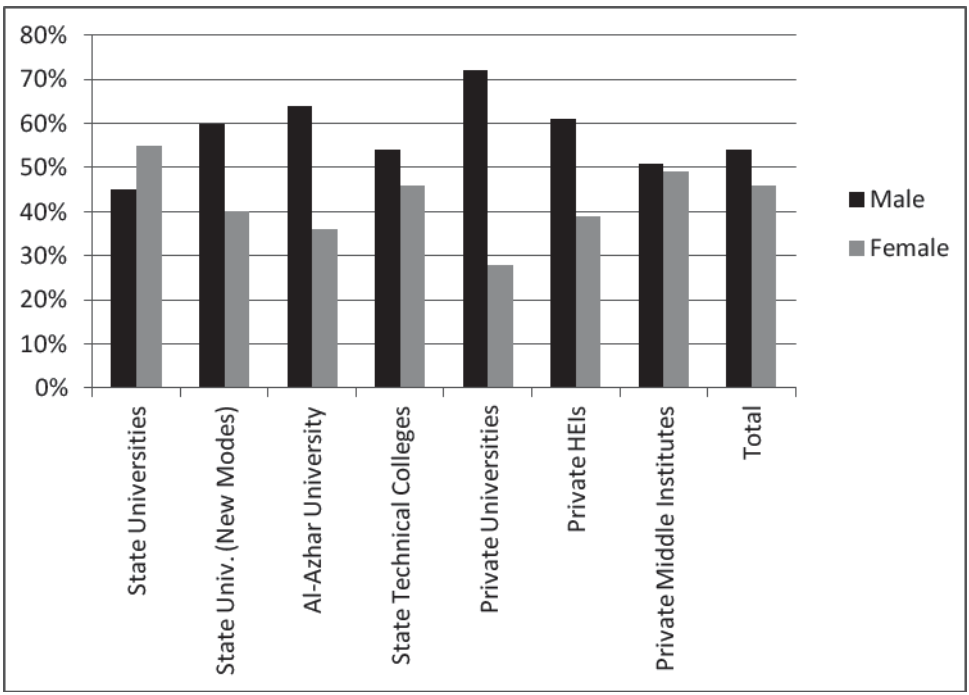
The consequence is that *Intisseb* and open education students, who are admitted with lower *Thanaweya Amma* results and pay some tuition charges, will tend to come from the poorest quintiles of the population. Conversely, those students who are able to afford the higher fees charged in foreign language programmes will generally come from wealthier families. The net result is that the poorest students have a high probability of enjoying less favourable studying conditions while subsidising the richest students. During the field visits, the review team had the opportunity to observe lecture halls filled with more than 1 000 students, especially in law and commerce faculties, while the special programmes would have classes with no more than 50 students. This is a serious equity issue deserving further investigation.

Another element that requires attention is to compare the socio-economic distribution of students in universities and in non-university institutions (technical institutes and higher institutes) and analyse the differential labour market outcomes. In countries for which data are available, students from the lowest income groups tend to be over-represented in non-university institutions and under-represented in the more prestigious universities, and usually receive a lower wage premium after graduating. It would important to establish whether a similar pattern is found in Egypt.

Gender equity is still a major concern, despite significant and steady progress over the past decade. While girls account for 55% of total enrolment in the public universities (excluding Al-Azhar), they are relatively less represented in all other types of institutions. The most recent enrollment data show, for example, that the proportion of female students increased from 45.4% to 46.4% between 2003 and 2006. Gender disparities are most visible in the governorates of Assiut, Luxor, Suez Canal and Aswan. Girls represent only 34% of students in Assiut, for instance. At only 28%, the proportion of female students is particularly low in engineering education.

Female enrolment statistics by type of higher education institution reveal a strong connection between income levels and the probability that parents will be willing to pay for the studies of their daughters. As Figure 8.2 indicates, the proportion of girls is markedly lower in private universities and institutes, as well as in the fee-paying programmes in public universities.

Figure 8.2 **Percentage of enrolment by gender in different types of HEIs (2006/07)**



Source: Country Background Report, MOHE, 2008.

An indication of the disparity in coverage and access to higher education on a regional basis is shown in Table 8.14. Whereas Cairo and Alexandria represent only 38.2% of the total population together they account for 53% of the higher education student population. At the other end of the country, the North and South Valleys, which together account for 24.2% of Egypt's population, have only 11.3% of the student population.

Table 8.14 **Regional disparities in higher education coverage (proportion of students per 10 000 inhabitants in 2006)**

Region	Proportion of Total Population (%)	Proportion of Student Population (%)
Cairo	25.4	42.4
Alexandria	12.8	10.6
Delta	21.8	20.4
Suez Canal	10.8	10.1
Asiut	5.0	5.2
North Valley	12.3	4.9
South Valley	11.9	6.4

Source: Country Background Report, MOHE, 2008,and CAPMAS (June 2008) *Egypt in Figures,* p. 42.

To improve the gender and regional imbalances characterising the higher education system, the Government would need to allocate more resources, on a per-student basis, to those institutions located in underserved regions, including for the construction and operation of dormitories for female students.

Towards an effective equity promotion policy

To be able to address these equity issues, the Ministry of Higher Education needs to put in place a detailed information system that would assess the socio-economic characteristics of all students and identify prevailing patterns of inequity. This is a priority task, without which no solid financial aid policy can be designed and implemented. A complementary measure would be to ensure that the accreditation processes carried out by the new Quality Assurance Agency include close scrutiny of private tutoring practices in public higher education institutions.

In view of the planned expansion of private higher education and the existing cost-sharing practices in public institutions, it will be important for

the Government to put in place a comprehensive scholarships and student loans system to make sure that no academically qualified student is excluded from higher education for financial reasons. This is a *sine qua non* condition to be able to move towards universal cost-sharing, as recommended in the section on resource mobilisation.

To design an effective student loan programme, the Government may want to consider the relative advantages and requirements of the following three models which correspond to the main types of student loan configurations operating today.

Mortgage-type loans provided directly by the State. This system is the most common approach found across the world. The Government funds student loans that are repaid after graduation. The principal drawback of this approach is that large levels of public resources need to be put up to start the scheme and bring it up to scale. In addition, to make such student loan programmes financial sustainable, the administrative costs of operation, the interest rate subsidy and the level of default must be kept at a minimum. Many of these schemes end up being financially unsustainable because of high administrative costs, interest rate subsidy and high rates of default. Administrative costs can be reduced significantly by sub-contracting the management of the scheme to specialised financial institutions, either public agencies or commercial banks.

Shared-risk mortgage-type loans. In these loan programmes, the government works in partnership with commercial banks. The government may offer an interest rate subsidy, and generally provides a guarantee for default; the private banks fund the student loan themselves. This approach presents the great advantage of mobilising private sector resources with limited government financial contributions.

Large-scale programmes of this nature have had a mixed record, however. In 2000, Canada went back from a shared-risk system to a traditional public funded direct loan scheme because the private banks were not very diligent in seeking repayments from graduates and the financial incentives they demanded were too costly. However, in 2006 Chile adopted a shared risk system to expand loan opportunities for students enrolled in the rapidly growing private tertiary education sector, and has achieved a public / private funding leverage ratio of one to seven.

Income-contingent loan system (ICL). Income-contingent loan systems can, in theory, achieve a better balance between effective cost recovery on the government side and risk to the borrower. Administration is generally simpler and cheaper under such schemes because loan recovery is handled through existing collection mechanisms, such as the income tax administration or the social security system. Income-contingent loans are

also more equitable and satisfy more fully the ability-to-pay principle, since graduates' payments are set as a direct proportion to their income. Australia, New Zealand and, more recently, the United Kingdom have implemented an ICL system.

Main findings and conclusions

Overall observation

The Government's ability to carry out its master plan to expand the higher education system while improving quality will hinge, to a large extent, on the availability of sufficient financial resources.

Resource mobilisation

Even though the share of higher education public expenditures in the total education budget is relatively high, public spending on education has decreased in recent years and per student expenditures at the higher education level are relatively low.

As a result, the public universities and institutes are severely under-resourced in terms of faculty, infrastructure, equipment and pedagogical inputs. It is well recognised that the combination of rapidly increasing enrolment and lack of resources has led to further deterioration of quality in most public higher education institutions.

Funding for university research is also very low, limiting the ability of universities to play an important role in the generation and dissemination of knowledge.

Resource allocation

With no performance-based budget allocation mechanisms, public higher education institutions have no particular managerial and financial incentives to be more innovative and use resources more efficiently.

Resource utilisation

The tightly-controlled administrative system and rigid government regulations under which all higher education institutions operate provide insuffiecient incentive and flexibility to use their limited resources in the most efficient and effective manner.

The fact that the duration of a number of professional first degrees in Egyptian universities is generally one year and often two years longer than similar degrees in North America or some European countries represents a major social cost.

Equity dimensions

The increase in private higher education enrolment and the growing segmentation, within public institutions, between students who study free-of-charge and those who pay fees in various forms, could result in serious social disparities in terms of access to higher education and labour market outcomes.Despite significant progress in the past decade, gender and regional inequities still require special efforts.

Recommendations

Overall recommendation

It is highly unlikely that Egypt can achieve its ambitious enrolment expansion and quality improvement goals using the traditional mode of funding public higher education institutions predominantly with budgetary resources. The Government needs to design and implement a sustainable funding strategy that would realistically support its long term reform and development objectives. This would guide decisions about the desirable level of public funding, possible avenues for increased cost-sharing in an equitable way, and more efficient ways to distribute public resources among institutions and students.

Resource mobilisation

A five-pronged strategy is proposed to attain the 2022 targets: (i) mobilising a greater share of public expenditures for education in GDP, with a proportional increase in spending on higher education; (ii) increasing resource diversification in public universities and institutes, including higher levels of cost-sharing; (iii) removing barriers and incentives for further growth of the private sector; (iv) enlarging enrolments in practically-oriented programmes and institutions; and (v) establishing cost-effective distance education modalities for a significant proportion of the student population.

A one-off capital injection is suggested,accompanied by a decade-long programme of capacity building in public higher education institutions, as a

means of raising the quality of public higher education while the private sector expands.

Funding for centres of excellence in universities with demonstrated research capacity needs to increase significantly.

Resource allocation

To promote greater efficiency in the use of public resources, the Government should consider a combination of complementary performance-based funding allocation mechanisms to distribute public resources among higher education institutions, including a funding formula for recurrent expenditures (student-based or graduate-based funding), competitive funding for investment projects, and performance contracts to promote priority policy objectives.

HEEP's competitive fund could be confirmed as the principal allocation mechanism to distribute investment resources.

Most research funding should be allocated to research teams and projects on a competitive basis, with independent peer reviewing of research proposals.

Resource utilisation

To improve the effectiveness of public higher education institutions and create a level playing-field for both public and private institutions, the Egyptian authorities should grant more autonomy to universities and institutes, allowing them to operate with more flexible educational processes, administrative procedures and financial management rules.

Egyptian universities should gradually move towards shorter first degrees in conformity with the worldwide trend and avoid excessive specialisation in early years.

Equity

The Government must accompany the existing and planned increase in cost-sharing with a well-targeted programme of need-based scholarships and student loans to guarantee access for low-income, academically qualified students.

Annex 8A. Resource Diversification Matrix for Public Tertiary Institutions by Category and Source of Income

	Source of income				
Category of income	**Government**	**Students and families**	**Industry & services**	**Alumni / philanthropists**	**International co-operation**
Budgetary contribution					
General budget	X				
Dedicated taxes (lottery, tax on liquor, sales, tax on contracts, tax on export duties)	X				
Payroll tax			X		
Fees for instructional activities		X	X		
Tuition fees		X	X		
Degree/non-degree programmes		X			
On-campus/ distance education programmes	X				
Advance payments		X			
Chargeback			X		
Other fees (registration, labs, remote labs)					
Affiliation fees					

	Source of income				
Category of income	**Gov't**	**Students and families**	**Industry & services**	**Alumni / philanthropists**	**International co-operation**
Productive activities					
Sale of service: Consulting	X		X		X
Sale of service: Research	X		X	X	X
Sale of service: Laboratory tests	X		X		
Patent royalties, share of spin-off profits, monetised patent royalties deal			X	X	
Operation of service enterprises (television, hotel, retirement homes, malls, parking, driving school, Internet provider, gym)			X		
Financial products (endowment funds, shares)			X		
Production of goods (agricultural and industrial)			X		
Themed merchandises		X	X	X	
Rental of facilities (land, classrooms, dormitories, laboratories, ballrooms, drive-through, concert halls, mortuary space, movie shooting)	X	X	X	X	X
Sale of assets (land, residential housing, art treasures)			X	X	

	Source of income				
Category of income	**Gov't**	**Students and families**	**Industry & services**	**Alumni / philanthropists**	**International co-operation**
Fund raising					
Direct donation: Monetary grants (immediate, deferred)			X	X	X
Direct donation: Equipment			X	X	
Direct donation: Land and buildings	X			X	
Direct donation: scholarships and student loans	X		X	X	X
Direct donation: Endowed chairs, libraries. Mascot			X	X	
Direct donation: Challenging/matching grants		X	X	X	
Indirect donations: Credit card, percentage of gas sales, percentage of stock exchange trade, lectures by alumni			X		
Tied donations: access to patents, share of spin-off profits			X		
Concessions, franchising, licensing, sponsorships, partnerships (products sold on campus, names, concerts, museum showings, athletic events)		X	X		
Lotteries and auctions (scholarships)					
Loans					
Regular bank loans	X		X		X
Bond issues		X	X	X	

Source: Compiled by Jamil Salmi.

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Chapter 9. Reform Implementation

This chapter considers the feasibility and possible phasing-in of particular reform initiatives as a means of testing their workability and building support for a more integrated, longer-term reform agenda.

Progressing reform in Egyptian higher education

Taken together, the set of recommendations arising from the considerations of the preceding chapters represents a major programme of structural, cultural and behavioural reform of Egyptian higher education. That reform agenda is envisaged as taking shape over the decade to 2020.

The lesson from major restructuring initiatives around the world is that the reforms will be more effective in the long run if they are preceded by careful planning, capacity building at both the institutional and national/ministry levels, and extensive engagement of and communication with stakeholders. Additionally, the reform process needs to be supported by a well-crafted investment plan with clear performance indicators and monitorable benchmarks.

In Egypt, a platform for progressing reform has been built up over the past several years, the main elements of which are:

- a broad consensus that issues of quality and relevance need to be addressed;
- strengthened quality assurance and accreditation procedures, enabling expansion of private institutions as well as quality improvement in public institutions;
- improved institutional capacity for strategic planning and implementation management, including the articulation of institutional learning objectives as a basis for revising curriculum, pedagogy and assessment, and for reporting on educational outcomes;

- engagement of employers and relevant professional bodies in discussions about education and labour market links, as a basis for improving the relevance of educational programmes and graduate preparedness for employment;
- some follow-up of graduate destinations and contact with alumni, as a basis for evaluating the effectiveness of educational approaches; and
- training and professional development of personnel, as a basis for increasing their capacity to accept wider responsibilities.

Nevertheless, much more needs to be done; but limits to capacity at the system and institutional levels mean that the process of reform will have to be implemented selectively and strategically.

Selection of implementation strategy

In Chapter 3, three broad options were identified for managing the course of higher education in Egypt:

i. *maintaining the status quo*: adding more expectations to an over-stretched, directionless and dysfunctional system;

ii. *transformative change*: radical change to the policy paradigm – taking on vested interests that fail to add value for Egypt, and driving fundamental structural and cultural change;

iii. *incremental reform*: deliberate and phased unlocking of potential through the development of new policy instruments, with clarity of long-term goals and consistency of means to reach them.

The first option is neither appropriate nor affordable, given Egypt's plans for future economic development, because the cost of continuing wastage of human talent would be too great. The second option appears to be unrealistic and too risk-prone, given the width of the gap to be closed between current and desirable policy and operating conditions, the ambiguous nature of community and professional stances on important questions, and the fact that constituencies of support for the more controversial aspects of reform have not yet been built. Hence, a strategy of incremental reform is the most promising approach.

An incremental reform strategy will need to be progressed astutely from three perspectives. First, it will need to have credibility with different

interest groups, particularly the most influential groups. Second, it will need to be structured and sequenced in a way that achieves demonstrable results and builds momentum for continuity. Success with the latter challenge will help build support for the former. The interaction of these two sets of considerations will be important, too, in judging the trade-off between making early gains and making substantive differences. That trade-off gives importance to the third perspective, which considers the intrinsic worth of the reform and its relative value against opposition to its implementation. The subtlety in this respect is whether the immediate reform is more or less important than subsequent changes it may engender, and to what extent an incremental step should be justified for itself or for its eventual systemic impact.

With regard to credibility there are five major sets of interests to be considered: students and prospective students and their families; government authorities; communities served by higher education, principally employers of graduates; and academic and general staff of higher education institutions.

Students may well support some reform initiatives and vigorously oppose others; they may be expected to support wider choice among programmes and institutions, efforts to improve the quality of teaching, facilities and services, and greater relevance in their studies where they believe their job prospects will be enhanced. They can be expected to oppose increases in costs, study loads and testing.

Government authorities and agencies can also be expected to respond variously. Those whose current assumptions and practices will be challenged will seek compelling arguments and evidence for change, but may resist nonetheless. Those seeking efficiency and performance improvement in the higher education sector, with little consequence for themselves, may support strong reform measures.

Employers, a catch-all term for a diversity of views of owners, chief executives, personnel managers and others, typically can be expected never to be entirely satisfied with graduates, but would normally welcome opportunities to influence learning objectives and curriculum. Some can be expected to be more willing and reliable than others in participating actively in consultations and in providing feedback on their satisfaction with graduates.

The personnel of higher education institutions can be expected to respond to proposals for change in non-uniform ways, with some supporting some changes and others supporting none. The most difficult areas of reform affecting academic staff are likely to be changes affecting their employment security and conditions, status, workload and performance assessment. For

institutional faculty and staff to give some support and feel some ownership of the reform agenda, it will be necessary for significant initiatives to be driven and be seen to be driven as much as possible from the bottom up as well as from the top down.

The wider community of Egypt's civil society will seek a reasonable level of confidence that stakeholder relations and change processes are smoothly managed and that "reform" is not implemented in ways that provoke disruption or require unsustainable compromises. The agencies of government, along with higher education institutions, will need to build the capacity for effective change management.

Assuming the Government is inclined to adopt the broad direction of the recommendations set out in this report, even if not in the specific forms outlined, it will be necessary to select those changes which can be delivered early and which are likely to have the knock-on effect of creating conditions for subsequent adoption of change in other areas. Thus, the selection of the initial reforms to attempt to implement is a critical decision. As discussed above, the selection must have regard to real politics, but popular or opportunistic reform does not necessarily achieve worthwhile and sustainable outcomes. It is necessary to consider the sequencing of substantive reforms in terms of their policy coherence as well as their political possibility.

An agenda of initial initiatives

Working from the assumption that the Government will embrace an agenda for reforming the institutional structure of Egyptian higher education provision, and the policy structure of incentives for students and institutions, the following agenda of twelve initial reform initiatives is offered for consideration.

1. Developing a national qualifications framework, with statements of graduate attributes for each type and level of qualification, and linked to the Bologna Process and the ECTS. This is a foundational reform, as it sets the focus on learning outcomes that will drive subsequent reforms to educational practice.
2. Renewing technical and vocational education and training, including enhancing the status of TVET qualifications within a comprehensive national qualifications framework and indicating the pathways for learners through secondary schooling and all forms of tertiary education, upgrading facilities, and marketing the value of technical skills to the community. This is an essential reform for

expanding access, raising learning productivity and improving the fit of graduate supply to labour market needs.

3. Expanding private institutions to cater for a large share of enrolment growth. This is also essential for cost-effectively accommodating future growth in student demand without aggravating the quality problems in public institutions.
4. Investing in the material upgrading of public higher education institutions and their developing their capacity for responsible self-management. This is essential in view of the inadequate condition of many public higher education institutions and their insufficient responsiveness to the changing environment.
5. Expanding the criteria for student access to higher education by developing initially a test of generic reasoning and thinking skills to complement the national secondary school examinations in decisions on student admissions to institutions and programmes.
6. Encouraging students to express multiple preferences in their applications for higher education admission, including by programme and institution.
7. Permitting institutions, within a total student volume cap and funding amount, to determine their own mix of enrolments across fields of study.
8. Introducing an enrolment-based funding formula, having regard to study mix by field.
9. Clarifying the distinctive mission of each higher education institution as a basis for its strategic planning in the context of greater student choice, and formally involving employers and professional bodies in defining learning objectives and providing feedback on their satisfaction with graduates.
10. Establishing a professional careers advising service to help students and parents make informed educational choices.
11. Mapping the research strengths of public universities, as a basis for identifying areas for future investment and inter-institutional collaboration.
12. Undertaking a competitive process for concentrating investment in research and graduate education linked with national economic development priorities.

The above set of initial initiatives implies the deferral of implementation action on a number of other substantive items, including: matters relating to

new national bodies and legislative frameworks for an integrated approach to the management of post-secondary education and training; changes to the conditions of public sector employment insofar as they affect academic and general staff of higher education institutions; and flexibility over institutional enrolment volumes and tuition pricing. However, it would be prudent to begin early the process of consulting over legislation to provide for institutions to achieve more autonomous legal status, as a signal of longer-term policy evolution and an incentive for serious experimentation and demonstration of capacity on the part of institutions to manage greater responsibilities.

These steps may be complemented, as capacity develops, by measures to build the longer-term reform agenda in higher education, including new institutional funding models and student support schemes, while continuing with the important agenda of improving the quality and effectiveness of secondary schooling.

A number of the suggested initiatives could be undertaken initially as stand-alone projects. For instance, following a mapping of institutional research strengths, a number of universities, or faculties or centres within universities, might be invited to apply for a competitive programme to establish graduate schools or research clusters in designated fields. It would be important in such a process to make the competition and the selection process as open and transparent as possible, and to base decisions on the assessments of international experts.

Implementing several elements of the above set of initiatives will require some experimentation and piloting, to test the workability of processes, to demonstrate feasibility, and to build support. For example, a generic reasoning and thinking skills test would need to be designed in consultation with various bodies, professionally constructed and tested, and administered across student samples to validate reliability. In its development and testing phases, selected institutions could be invited to participate, and those institutions could form the basis of a further trial of the use of the student scores to complement examination results for admission.

Similarly, there would be value in identifying a number of institutions to trial an enrolment-based funding formula, with different levels of discretion over the enrolment mix within the volume cap. For some institutions, this approach might be tailored with the trialling of a mission-based compact that specifies performance expectations in relation to funding. Over time, some institutions might roll out a more integrated approach to strategic planning, linking admissions flexibility to funding flexibility and performance reporting. The innovating institutions would play a useful role

in demonstrating the workability and worth of particular changes, and in pressing for an increasingly integrated approach.

For the Government compacts offer potential benefits in opening a bridge to a more sustainable longer-term policy and managing the process of policy reform, by providing: a vehicle for consultation with universities and other stakeholders; incentives for differentiated mission focus; a means of smoothing adjustment from old to new to policy applications; and a way to seed and grow strategic initiatives without having to develop all the detail in advance.

For universities and other institutions, participation in a negotiated model offers the benefits of: enabling them to position strategically for a more competitive future; giving them scope to move into new fields or to meet changes in student demand; giving them room to move out of historical lock-ins that will not add value to their future services.

Informing the debate

The review panel was unable to ascertain the extent to which there are potential champions of the proposed reform direction in the broader Egyptian community, especially among professional leaders and business people. The panel itself had difficulty at times in identifying the evidence needed to support the case for reform in particular areas. As the process of reform unfolds, indeed to begin some aspects of the process, it will be necessary to communicate the case for reform and to draw on information and analysis as supporting evidence.

Improvements to the availability of data would be particularly useful in the following areas:

- labour market requirements: *e.g.* surveys of skills vacancies;
- demand for private higher education, on a regional basis;
- higher education enrolments by year of enrolment, enabling the reporting of student progress rates year on year, and the graduation rate as a proportion of the commencing intake;
- socio-economic status of higher education students;
- disaggregated institutional revenues and expenditures within a consistent accounting framework;
- graduate employment destinations, by occupation and industry;
- graduate rates of return (commissioned studies);

- qualifications of academic staff by institution;
- numbers of non-academic staff by institution;
- international mobility of Egyptian students; and
- international mobility of Egyptian academic staff.

Importantly, there is a need for visible champions of reform to be drawn from various segments of the Egyptian community in support of the path of reform. Engagement with leading employers and professional bodies will be a necessary initial step towards building the momentum required to drive the agenda forward.

Recommendations

Consideration should be given to a staged process of implementing specific reform initiatives through experimentation and piloting, to test the workability of processes, to demonstrate feasibility, and to build support.

OECD PUBLISHING, 2, rue André-Pascal, 75775 PARIS CEDEX 16
PRINTED IN FRANCE
(91 2010 02 1 P) ISBN 978-92-64-07723-2 – No. 57297 2010

Reviews of National Policies for Education

Higher Education in Egypt

In recent years, the Government of Egypt has driven major reforms for modernising the country. While the success of this effort depends heavily on the quality of education and skills of the population, Egypt's higher education system has remained largely unchanged in this context. Without a fundamental reform of the sector the country will face difficulties in improving its competitiveness in an increasingly knowledge-based world, in providing for a larger and more diverse student population, and in reducing social inequalities.

This book represents an independent review of Egypt's higher education system and focuses on areas in need of attention by policy makers and stakeholders, including system steering and institutional governance; student access to higher education; educational quality and effectiveness; research, development and innovation; and finance. It contains an analysis of the system and valuable recommendations which, taken together, represent a major programme of structural and cultural reform of Egyptian higher education over the decade to 2020.

Reviews of National Policies for Education: Higher Education in Egypt will be of interest to Egyptian policy makers and education professionals, as well as others involved in education policy and research.

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ISBN 978-92-64-07723-2
91 2010 02 1 P

