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# OECD Review of Financing and Quality Assurance Reforms in Higher Education in The People's Republic of China

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## FOREWORD

Large participation in tertiary education is a common feature in the OECD area and led the OECD Education Committee to undertake a "thematic review" of the first years of tertiary education, the findings and conclusions of which were published in *Redefining Tertiary Education* in 1998. The importance of the issues addressed in this review and the relevance of its conclusions led China to request a similar exercise within the framework of the OECD-China programme of dialogue and co-operation. The first results of this work were included, under the title "managing the rapid expansion of tertiary education provision", in the OECD publication *China in the World Economy: the Domestic Policy Challenges* released in 2002.

China and the OECD subsequently decided to continue their co-operation in this area by focusing on two interrelated issues: how to assure both the *financing* and the *quality* of higher education in a context of increased participation. These are indeed some of the most daunting challenges facing China as well as OECD member countries. An unprecedented expansion in opportunities for higher education took place in China in the 1990s. With it, however, have come some major questions of policy and practice, such as how to balance expansion and quality, how to properly share administrative authority, how to regulate private initiatives, and what is fair and feasible in the sharing of cost between government, institutions, individuals and other organisations. This publication presents the results of an in depth study of these issues, based on well established OECD methods of work involving fact-finding missions and peer to peer dialogue. It will be further discussed at an OECD-China seminar in Beijing in April 2004.

The document includes a thorough assessment, based on ten analytical criteria, of the Chinese higher education reform programme, and a discussion of quality management policies and practices in Chinese higher education. It also presents a series of forward looking and concrete policy alternatives for consideration by Chinese policy-makers as higher education reforms proceed over the next decade. The document is not only intended to serve the needs of policy-makers in China. It is hoped that the wealth of analysis and information produced by this joint China-OECD project can also help others learn from the impressive experience of China in the last quarter of the century and contribute to improving higher education in other countries including OECD countries. This review was carried out within the framework of the China Programme of the OECD Centre for Co-operation with Non-Members (CCNM) and was supported through grants from the British Council; the Federal Office for Education and Science, Switzerland; the Department for Education and Skills, United Kingdom; with additional support from the Ministry of Education, Science and Culture, Austria.

Members of the OECD study team were: Douglas Windham (Rapporteur), Emeritus Distinguished Service Professor, University at Albany, State University of New York; Norman Roderick Darroch Begg, former Secretary of the University of Aberdeen, former Director of Alumni Relations, former Chairman of the Heads of University Management and Administration Network in Europe (HUMANE) and the European Association for Institutional Research (EAIR); Lichia Saner-Yiu, Co-founder and President of the Centre for Socio-Eco-Nomic Development (CSEND) in Geneva, visiting faculty member at Columbia University, St. Gallen University and National Chengchi University; and Ian Whitman (OECD Secretariat).

The China team was headed by Mr. Zhang Li, Director of the National Centre for Education Development Research; Mr. Fan Wenyao, Deputy Director of the National Centre for Education Development Research; and Ms. Yang Xiuwen, research specialist of the National Centre for Education Development Research

This report is published on the responsibility of the Secretary-General.

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**Introduction**

Over the last fifty years, the People's Republic of China has, in the face of dramatic social, political and economic challenges, made enormous strides in developing an educational system, from pre-school through post-graduate levels, that attempts to deal with the dual responsibilities of the equity of educational access and the effectiveness and relevance of the teaching-learning process. In the last decade, this education system has been further challenged to adapt to the special and dynamic demands of a market-oriented economy operating within a socialist political system. Many concerns remain with the education system and significant reforms are still being considered. However, the Chinese educational system deserves enormous credit for what it has accomplished for the citizens of the nation.

Perhaps no tension is greater in modern China than that between the desire to provide increased access to education at all levels and the equally strong desire to maintain and increase educational quality to "world-class" standards. In resolving this tension, the People's Republic of China will face a serious set of policy questions. Among the most pressing issues will be the following:

- Reduction of locational (rural-urban and province-to-province) and income/social class inequalities in the provision of quality education at all levels.

- Improved retention of female, low-income and minority pupils within the system to the end of at least the compulsory cycle.

- Greater equalisation of the fiscal capacity to support education among the provinces and local authorities with central authorities emphasising a policy formulation, quality monitoring and resource equalisation role.

- Increased utilisation of instructional technology, especially where necessary to offset lower levels of teacher preparation or other instructional disadvantages.

- Improved relevance of skill training in secondary and post-secondary "professional education" and greater freedom of informed choice by higher education students in their selection of specialisations and careers.

- Greater reliance on student tuition, improved loan systems and private education alternatives to finance increased participation at the post-secondary level with the objective of freeing central and provincial/local funds to be used more for development of advanced post-graduate training, improving quality assurance activities, and equity concerns.

- Closer monitoring of employment patterns and creation of effective feedback of this information into both government and private educational decision making.

- Continued focus on quality development in higher education's "211" (to develop 100 world-class institutions during the 21st Century) and "985" (from May, 1998, a further expansion of assistance for excellence involving a broader group of institutions as well as those in the "211" project) of projects in higher education, but with more emphasis on the second tier of quality institutions than has occurred over the last 5 years.

None of these policy concerns are unfamiliar to the educational professionals of China. What is needed, however, is a more ***systemic*** analysis of how these policy options interact with one another. For example, the large growth in private higher education has helped to pacify social demand at the first-degree level but is creating a greater future demand for places in graduate education. Similarly, increased success

in retaining students through compulsory education will create greater demands for both professional education and traditional higher education. For the foreseeable future, every education policy "solution" will create its own set of special new demands on the educational system. China potentially has the human and financial capital to meet these challenges, but immediate attention and effective response to these policy concerns is essential.

This OECD review of Chinese higher education is generally restricted to assessing the current higher education reform programme and specifically to the policies and practices of financing and quality assurance within Chinese higher education. However, the education system is an organic whole and policies and procedures at one level of education inherently affect and are affected by other levels of the system. So, while the emphasis here is on the higher education sub-sector, attention will be directed at times to relationships with the other parts of the education system.

***The Chinese Context and the OECD Review***

Since the programme of economic reform within China was initiated in 1978, the nation has evolved into a major economic force, regionally and world-wide, and rapidly is becoming the major locus of Asian redevelopment efforts for the new century. China is the world's seventh largest economy and the second largest recipient of direct foreign investment. Liberalisation of internal and external economic relationships (the latter marked most clearly by China's membership in the World Trade Organisation) has allowed the enormous economic potential of the nation's natural and human resources to begin to be more fully realised. Economic growth has averaged almost 10 percent per year over the last quarter century, reducing the number of citizens living below the poverty line by one-half – a monumental accomplishment for a society of 1.3 billion persons.

China's aggregate accomplishments, however, do not remove the concerns with the sharp differentials that exist among provinces and regions, between urban and rural areas, and within and between social classes. The focus of government policy for the next decade is to ameliorate these gaps and to assure that the benefits of the nation's development successes are shared more equally within the nation.

Higher education policy underwent a major change in the 1990s. The main characteristics of this reform were:

- A dramatic shift from elite towards mass higher education;
- Increased decentralisation of governmental responsibility and authority from the Central to Provincial and Municipal levels;
- Facilitation of private sector initiatives in higher education; and
- Introduction of a cost-sharing system that places increased responsibility on students and their families for the financing of higher education.

The result of these reforms has been an unprecedented expansion in opportunities for higher education; with this increased opportunity, however, have come some major questions of policy and practice. For example, how to balance expansion and quality, how to properly share administrative authority, how to regulate private initiatives, and what is fair and feasible in the sharing of cost between government, institutions, individuals, and other organisations.

During the Ninth Five-Year Plan (1996-2000), higher education in China went through major structural changes and expanded its intake of full-time students substantially. Structural changes took place

at two major levels. First, regulatory control and financing of higher education was modified and, second, comprehensive universities were created through merger of single disciplinary higher education institutions (HEIs) and professional HEIs. As part of the modifications, HEIs were given greater autonomy to manage their own resources and operations. The overall goal of structural reforms was to rationalise the education system and to improve its performance so as to meet the social and economic needs of the country.

Coupled with structural reforms, policy regarding higher education has gone through a major reorientation, shifting away from an elite-based education system to a mass-oriented education system by enlarging the total number of enrolments. The enrolment within HEIs doubled during this period compared to 1990. By 2005, it is expected that 16 million students will be enrolled in universities or equivalent educational institutions, compared to the 11 million plus students enrolled in the year 2000 – representing 15% of the total school students in the country (Yang, 2002). While the structural realignment and the streamlining of the regulatory function have no doubt helped improve the effectiveness of the education system, the dramatic increase of student numbers may exert a negative influence on the quality of education and may, in turn, hinder the stated goal of improving the human capital resource base of China.

In tandem with the structural reforms and enrolment expansion, financing of higher education has also gone through a dramatic change. Presently, higher education institutions are classified into different categories of status and accordingly receive financing and other provisions from different sources, namely, from national, provincial, or local governments. Of the total of about 1 300 HEIs, only just over 100 are now under the direct supervision of the MOE. The rest are supervised and funded by provincial or municipal governments. A comprehensive funding formula has been devised for budgetary purposes. Between 1995 and 2000 the Government (central, provincial, and local) share of higher education revenue in public institutions has declined from 70% to 56%. Even though the absolute level of government financing continues to increase, the current levels of per student government expenditure cannot be maintained if the system is to expand as quickly and as responsively to societal and employment demand as higher education planners wish. For example, the gross enrolment rate (enrolment relative to the 18-22 year old cohort) is expected to climb from 11.3% in 2000 to 45.0% in 2020. This is an increase in total demand unprecedented in higher education, anywhere in the world.

Between 1995 and 2000, the per capita expenditure in higher education and the per capita current cost have almost doubled while the government share has declined relatively (Hu and Chen, 2002). Over this same period, the average tuition and fees have been tripled to help offset this. In 2000, 22.2% of total expenditure and 27.7% of current expenditure per capita were financed by student tuition and other fees (compared to 13.5% and 17% respectively as recently as 1995).

In a detailed financial survey of public degree granting institutions (reported by Hu and Chen, 2002), conducted in 1997, the sources of current fund revenue were as follows:

| | |
|---|---|
| Central Government | 11.0% |
| Provincial Governments | 35.6% |
| Local Governments | 3.9% |
| Tuition | 19.0% |
| Sales and Services | 22.2% |
| Other Sources | 8.3% |

Since 1997, the share of government contributions has continued to decline and the dependence on institutional sources (including tuition) has grown significantly to offset this. This financing arrangement, based as it is on reducing the share of government responsibility while simultaneously substantially increasing aggregate enrolments and increasing quality, will have a direct and dramatic impact on the

teaching capacity and capability of individual HEIs, and might inadvertently exert a negative impact on the effectiveness of the higher education programmes.

This systemic vulnerability to significant variations in quality within Chinese higher education is made more apparent when one considers the targeted resource allocations made to key universities and key disciplines for special project funding and other preferential treatment. These effects, combined with the already existing locational advantages and disadvantages of individual HEIs, pose the greatest challenge to equitable quality enhancement and financing efficiency for the coming years.

Other components of the on-going higher education reform consist of investment reform, recruitment and job placement reform, and the "inner-institute" management reform in addition to the teaching reform. These individual reforms directly and indirectly affect the quality of the final outcome of higher education. They will be discussed in more detail in the section on quality management, presented below.

These and related questions of quality and finance have formed the framework for this OECD Review. The initial visit of the review team took place in October 2002. Visits were made to governing organisations and institutions in Beijing, Shanghai, and to Shaanxi Province. The team consisted of professionals with experience with Chinese higher education and the visits were supplemented by a wide variety of written materials. Even so, the review team is aware that it is especially heavily indebted to the large number of Chinese professionals who shared their time and insights with them (see Annex). This report is a product of that continuing collaboration.

The report is organised around the following three major topics:

- Key aspects of the Chinese reform of higher education;
- Quality management in Chinese higher education, and
- The financing of higher education in China and the rationale for its support.

Part One of the report will assess the current reform programme for higher education in China in terms of ten major criteria. The quality management discussion in Part Two will assess the current situation in China and will briefly review the quality effects of the recent structural and financial reforms. Next, the review team report will appraise the quality effects of the financial self-responsibility system. The quality management discussion will conclude with a contrast of the recommended institutional-specific and system-wide management practices.

Part Three of the review team report will touch on the following topics:

- The definitional distinction between "costs" and "financing" of higher education and key definitional issues;
- The rationale for public versus private support of higher education activities and the future role of private higher education in China;
- The current policies of tuition and loans; and
- Revenue enhancement opportunities for Chinese higher education institutions.

The review team report will conclude in Part Four with a presentation of three major alternatives for policy and practice that may be considered by the government in the coming decade. A major product of

this joint Chinese-OECD effort should be to share experiences, both for China to learn from the lessons of the OECD countries and for these same countries to learn from the dramatic experiences of China over the last quarter century. In this way, the review team report is a foundation for international and inter-institutional co-operation to improve higher education in the world, not solely in the People's Republic of China.

# PART ONE:
# ANALYSIS OF CHINA'S HIGHER EDUCATION REFORM PROGRAMME

## Background

The reform of higher education within the People's Republic of China over the last decade has dealt with the need for increases in quality (including relevance of the education provided) and the means for mobilising adequate financial resources to meet both quality and expansion objectives. As was noted above, the reform programme has been characterised by four major actions:

- A shift from a primary emphasis on elite higher education to more concern with increased access;
- Decentralisation of institutional affiliations of higher education institutions from central to provincial and municipal authorities and greater attention to institutional autonomy;
- The allowance for, and even facilitation of, private higher education which previously was disallowed; and
- Introduction of a cost-sharing approach through greater reliance on student tuition and other fees to finance higher education costs.

While the government remains concerned with elite higher education (as indicated by the special funding for the best institutions to acquire and maintain "world-class" status), it has recognised the need to meet the aspirations of the rapidly growing population of secondary school graduates who wish to continue their education to the tertiary level. Recognising the limits on central government financial and human resources, China has decentralised dramatically. From 1990 to 2000 the number of higher education institutions affiliated with central ministries and agencies declined from 354 to 111 and the number affiliated with provincial and municipal authorities increased from 721 to 1 114. As of 2003, less than ten percent of the institutions of higher education are directly affiliated with a central agency (of course, because the central institutions are larger on average, the proportion of higher education students in these institutions is still proportionally greater).

Whereas no private institutions existed in 1990, over 100 are active in 2003 and the private sub-sector of education is the fastest growing part of higher education, both in terms of numbers of institutions and total enrolment. A second form of educational privatisation has taken place within certain public institutions where selected disciplines within a public university or college may operate as a private or quasi-private unit of the institution. Another important form of privatisation has occurred in that tuition and other fees are now charged to many students within the public institutions. This cost sharing is both necessary (to finance the desired improvements in quality and access) and equitable (in that students, the major beneficiaries of the higher education experience, are expected to pay some share of the costs of their own education).

To assess the appropriateness of the current higher education reform programme in China, this OECD report will apply a group of key analytical themes to the higher education policies and activities that the reform programme is using. These themes will attempt to assess how appropriately the reform is meeting the individual and collective development needs of China. The term "appropriate" here refers to the match

between education and training inputs, processes, outputs, and outcomes to China's intra- and inter-sectoral priorities and to the social, cultural, and environmental uniqueness of the nation. Both the national priorities and the selection of key analytical themes must reflect an appreciation for what can be afforded and what can be sustained by the Chinese economy and its government. Similarly, the administrative capacity of social and private sector institutions will act either as a facilitating mechanism or as a constraint on higher education and training activities. Thus, the selection of OECD team's key themes must emphasise the "preconditions" for successful societal development and implementation of China's unique form of social and economic environment.

The policies and programme activities in China's higher education sector may be evaluated in terms of the following ten attributes (which also represent design criteria for further reform activities):

- Appropriate political foundation and support for the higher education reform process.
- Equity in access, attainment, and achievement.
- Flexibility in the planning and implementation process.
- Support for an interactive planning model involving co-operation among national, local, and institutional levels.
- Incorporation of inter-sectoral and intra-sectoral co-ordination.
- Development of appropriate regional, national, and international emphases.
- Affordability.
- Sustainability.
- Efficiency.
- Encouragement of supplementary resource mobilisation.

Not every component of China's higher education reform will emphasise all of these themes, of course, but each part of the programme can be assessed in terms of the degree to which it relates to this checklist of desired effects. Each of the themes is discussed briefly below in terms of the current condition of implementation of the reform programme.

**Appropriate political foundation and support**

Higher education, like all education and training programmes, has the ability to affect the lives of the Chinese population profoundly. Because of this, a natural conservatism exists in that change can rarely occur without some fear of loss or uncertainty of the specific results. The Chinese higher education reform has attempted to make clear why changes are required in the higher education system and the manner in which individuals, groups, and society will be affected by these changes. In this way, the proposed policy or programme reforms in higher education have gained sufficient political and popular support to be implemented and sustained. While much of the work of the reform process is inherently technical in nature and content, ultimately the higher education reform programme is a political and administrative process that requires broad acceptance (inside and outside the higher education system) to be effective. The reform appears to have been designed with appropriate attention directed to, and sensitivity shown for, the political, cultural, and social considerations involved in the various reforms at both the governmental and

institutional levels. However, in the area of cost-sharing, the need for “social marketing” of these policies will become more critical as the share of total costs borne by students and their families increases. Similarly, support for loan programmes for students will require that both students and their families be “educated” about the benefits and the risks of debt-financed educational opportunities. Finally, the legal framework for the effective operation of private higher education needs to be more fully elaborated (from such basic concerns as land ownership to difficult matters of intellectual property rights – the latter an issue for all research-oriented institutions, public or private).

**Equity in access, attainment, and achievement**

"Equity" refers to judgments about the *fairness* with which higher education opportunities are provided to individuals and groups. The major access/equity issue traditionally identified for China is the difference between locations (among Provinces and urban versus rural) and social classes (an issue even in a previous "classless" society). While these remain major sources of variation in opportunities for higher education in China, government also is concerned with the increasing variation in opportunities **among and within** the urban and rural areas.

Equity issues may be analysed in terms of access, retention, and graduation as well as for learning achievement and the opportunities for employment. Equity assessments also can be made in terms of access to funding and to specific resources such as qualified instructors, appropriate instructional materials, and other learning resources (including necessary laboratory facilities and information technology equipment). At present, the higher education management information system is not strong at this level of detail and it is extremely difficult to measure and monitor resource equity in any but the crudest forms.

A special equity concern in all societies is gender equity; in terms of educational access and retention for women, China has a strong and improving record. However, it is necessary to determine whether achievement or programme selection (especially in some more overtly vocational and technical areas) represent a systematic pattern of inequality for women. In addition, the employment opportunities for women may be examined to illustrate the extent to which the gains in gender equity apparent in China’s higher education and tertiary training systems are actually translated into fully equitable employment opportunities for female graduates.

As was suggested above, equity assessments can be limited to questions of aggregate participation but are more appropriately measured by actual access to appropriate facilities, teacher quality, and the availability and proper use of instructional materials as well as by output measures such as graduation and employment. In the quality discussion in Part Two and the financing discussion of Part Three, equity will remain a paramount concern with the review team’s assessment of the higher education reform programme.

**Flexibility in planning and implementation**

The higher education reform programme in China has been designed to encourage recurrent analysis and policy adaptation. Planning steps are reconsidered periodically (at least once per year) and adjusted to fit the emerging realities of China’s social and economic environment. The OECD review team feels China should continue to incorporate the current approach of phased implementation that will allow the reform programme's activities to be slowed, accelerated, or redirected depending on experience, resource availability, and new competing demands. It is impossible to predict how long China’s current economic prosperity will continue; a flexible programme of reform will mean that whatever opportunities or challenges are faced, the government and the individual higher education institutions will be able to maximise their advantages and minimise any potential difficulties. Since the ability to predict is always

less than perfect, the flexibility to adapt is the key determinant of system and institutional success in higher education.

**Support for an interactive planning model**

The reforms encouraged by China for the higher education sector should be co-ordinated with the more general reorientation of social planning in the nation. An "interactive" planning model would have the Central Government issue broad higher education planning guidelines; the provincial, municipal and institutional administrators would then respond with comments, criticisms, and alternative suggestions. The central authorities could then develop more detailed proposals and, following further review by sub-national officials, the revised proposals for higher education could be implemented. Central responsibility for key decisions will be retained but an even greater opportunity will exist for local participation and review. Such an interactive model is already being used to some extent in the higher education reform in China and the review team feels strongly that this approach should be strengthened and expanded to include greater participation by the private sector. Even if only in an advisory capacity, suggestions from the private sector institutions and from employers can only strengthen the overall implementation process for the higher education reform.

**Inter-sectoral and intra-sectoral co-ordination**

The location of higher education responsibility within different government agencies at the national and sub-national levels continues to have the potential of fragmenting the planning and implementation processes for the sector (this is especially true for scientific-technical and post-graduate higher education where opportunities to exploit economies of scale may be wasted). All higher education activities, in whatever ministry or agency they are conducted, also should attempt to co-ordinate with the activities of other sub-sectors (an obvious example would be co-operation between the education and labour ministries). Similarly, better co-ordination should be encouraged for higher education institutions with activities outside the public sector (including international institutions operating alone or in concert with domestic institutions). As has been well recognised in China, higher education development will depend on the larger economy to provide funds for support of education, training, research and development activities and to employ or otherwise utilise the graduates that are produced. This close linkage between education and the economy must continue to be recognised and steps taken to bring progress in higher education more in congruence with the needs of the larger Chinese society.

**Development of a regional, national, and international emphasis**

The size and complexity of the Chinese nation requires that both a regional and a national orientation would be appropriate for many higher education programmes. Institutions in all parts of the nation should attempt to incorporate curricular and other adaptations to meet the specific needs of their regional communities and potential employers while at the same time producing graduates who have national and international employability as well. Public and individual interests in China will be best served by making the large majority of higher education programmes more effective regional and national resources for development. Programmes that serve these societal needs will also be serving the needs of the individual citizens.

Finally, Chinese specialists in research, administration, evaluation, and curriculum must have the resources and other support necessary to form strong international networks. The nature of higher education development is not limited by national boundaries, but each nation must have the capacity to examine the costs and benefits of each new development and decide whether it is appropriate for their own society or culture. Adaptation, more than simple adoption, of international progress will be the key for the Chinese institutes of higher education. Similarly, as the higher education reform programme continues to

progress in China, Chinese experts should increasingly be prepared to share their findings and advances with international colleagues through publications, seminars, workshops, and other forms of dissemination. The review team feels very strongly that both China and its international partners have much to learn from one another.

**Affordability**

China has paid close attention to an obvious but too frequently ignored criteria for evaluation of higher education reform activities: the reform programme activities must be affordable within the budget levels assigned to them. Too often, a large gulf exists between a reform programme's goals and its realised effects because the programme was designed for a budget level substantially greater than that finally realised. Affordability must continue to be a criterion for higher education programme design in China or else it will just become an explanation for why a particular reform programme activity has not succeeded. A prior concern for China, of course, has been whether the higher education development programmes are receiving an appropriate priority within the government budget. While the review team has concluded that higher education, and education in general, is deserving of a higher share of the government budget, this issue must be reviewed and ultimately resolved through inter-ministerial discussions that assure that cost levels in higher education are justified in terms of their benefits to society.

Of greatest concern, perhaps, are the capital investment demands that will be required over the next 20 years to realise the quality and enrolment objectives of China’s higher education reform programme. Hu and Chen (2002) estimate that of the 300 million CNY (1 Yuan Renminbi = 0.11 EUR) supplemental capital fund needed for a single university, government sources will only be available for one-third. Institutional sources, including tuition and fees from students, will have to be stressed much more than at present. While this estimate of requirements may be imprecise, it is certain that massive capital investment funds will be needed for Chinese higher education over the next two decades.

"Affordability" is always a joint function of financial capacity, costs, and potential effectiveness (*i.e.* it is easier to justify financing a higher education activity that is effective). Affordability issues within higher education in China are especially of concern because the rapid development of individual academic fields means that expensive investments can be made in technologies or activities that quickly become outdated or irrelevant. Flexibility (discussed above) and sustainability (discussed immediately below) are essential to assure effective use of monies invested in higher education programmes.

**Sustainability**

"Sustainability" refers to the ability of the higher education reform programme activities to continue efficient operation after the initial phase of government support is over. This is an especially crucial consideration for government higher education projects that involve short-term financial assistance and for private sector higher education activities that involve government subsidisation that is for a finite period only (including the example of provision of land or other property). In both cases, the critical question is whether the positive effects of the short-term higher education project can be sustained after government assistance comes to an end. If not, then one must question the value of an education intervention that will cease or be dramatically reduced after the project period is concluded. Because of the aforementioned rapid evolution of knowledge in the higher education technology fields, China must be prepared to monitor and adapt their higher education projects (such as “211” or “985”) to promote sustainability as well as immediate effectiveness.

Obviously, there is a need to consider the Chinese Government's own capacity to assure sustainability. The structure and personnel of the responsible ministries and agencies should be assessed as part of a general management audit within the higher education system. Such an assessment will help identify the

required structure and personnel for the responsible ministries to fulfil their responsibilities under the higher education reform process and to identify the recruitment and training necessary to make the administering organisations increasingly effective in the long run in fulfilling their higher education responsibilities.

**Efficiency**

Any higher education activity, whether part of the reform programme or not, should be internally efficient in its own operations and have as one of its intended effects the increase in the general efficiency of the higher education sector. "Efficiency" refers to the least-cost means of achieving a specified objective or the maximisation of objectives given a specified level of costs. Efficiency is the most generic of all education criteria. It includes costs and benefits and the monetary and non-monetary components of each. "Internal efficiency" refers to the least-cost production of attainment levels or cognitive or non-cognitive changes in participants and can be related to changes in inputs (measures of resource availability) and processes (measures of resource use) when it is not possible to measure outputs directly. Internal efficiency is often measured by cycle cost in years or in financial terms. "External efficiency" encompasses the least-cost production of the full range of educational impacts: economic, socio-cultural, political, institutional, and environmental. While the time and data limitations do not always allow for extensive calculations of efficiency indicators, the efficiency criterion should still inform all of the analysis which forms the basis for identification of issues and selection of policy and practice options. External efficiency is more difficult to quantify than is internal efficiency in simple terms; normally it involves an assessment of whether costs can be reduced to produce the same level of external effectiveness or whether external effectiveness can be increased for the same level of cost. These terms and concepts are dealt with in more detail in the finance section of this report.

**Encouragement of supplementary resource mobilisation**

All projects in a higher education reform will require financial and human resources. While some of these interventions, because of their nature, cannot be self-financing, all do have the responsibility of exploring ways in which additional resources might be generated for their support. For example, activities to expand computer availability in universities and colleges should stipulate how the new costs will be shared among the central and provincial governments, local communities, private companies, and individuals. Training in computer skills could be financed in part through the utilisation of existing facilities made available on a part-time basis by the private sector; and training workshops should prepare local government administrators and private sector personnel to deal with citizens and private sector companies to generate supplementary funds for their education and training activities. Over time, an increasing share of the costs of higher education development and dissemination in China may become the responsibility of the private sector and of individuals. While initially the Chinese Government must play a major role in financing as well as co-ordination, the long term comparative advantage of the central government is in facilitation, co-ordination, quality control, and information management of higher education activities – not just their finance.

# PART TWO:
# QUALITY MANAGEMENT WITHIN CHINESE HIGHER EDUCATION

## Introduction

This section of the OECD review team report will focus on the issue of monitoring and assuring quality of education at higher education institutions in China and its policy implications. The issue of the quality of higher education is complex and controversial. In the context of China, the quality debate is further complicated by the four modernisations (in agriculture, industry, science & technology, and defence) concomitantly occurring at the macro-social level. Faced with constant changes in the social, economic and political environments, higher education is being forced to balance the need to adapt to the continuous changing requirements of professional competencies, to maintain academic/scientific rigor in research, to keep pace with the scientific developments of the world, and to serve the nation's political and social objectives.

This section of the review report will examine one of the central issues related to the development of higher education, *i.e.*:

> *How do China's current reform measures impact the quality of higher educational outcomes in general and the quality of the learning process in particular and how can this relationship be improved?*

Reflection will also be offered briefly regarding the financial policies currently in practice and their implications for the quality objectives of higher education. However, more detailed discussion of the financial issues of Chinese higher education will be presented in Part Three of the review team report.

## Current Situation

### *Structural reform*

The higher education system prior to 1998 was characterised by fragmentation in its regulatory functions and centralisation in regard to its operational responsibilities. Central departments and local (including provincial and municipal) governments provided education separately. They also directly administered single disciplinary HEIs and professional HEIs.

The current structural reform of the Chinese higher education system is primarily geared towards rationalising and strengthening the policy and regulatory functions of China's educational system. Regulatory control of the education sector is now centralised within the Ministry of Education (MOE). Previously, 24 different line ministries supervised and administered their own colleges and universities each of which offered specialised professional degree programmes. For example, Ministry of Foreign Trade and Economic Co-operation (MOFTEC)[1] had its own university specialising in international trade and economics, while the Ministry of Agriculture had a University of Agriculture specialising in agricultural sector management and technology. Similar structures permeated down to the provincial level.

1. now the Ministry of Commerce (MOFCOM).

With overlapping disciplines and lacking adequate economies of scale, too many of these single disciplinary and professional HEIs suffered from relatively high unit (per-student or per-graduate) costs, low efficiency in resource mobilisation and utilisation, and stagnation in terms of educational quality.

At the national level, this decentralised service delivery structure also caused sub-optimal use of scarce educational resources, human and financial. This situation resulted in the establishment of diverse, and often inconsistent, educational and professional qualification standards, and hampered the desired scientific research and technological development within the higher education institutions. The oversight authority given to the Ministry of Education under the former structure was limited, inadequate to its perceived responsibilities and, ultimately, ineffective in monitoring or assuring quality in inputs, process or outputs. Instead of functioning as a central policymaking organisation, MOE was more akin to a multi-level administrative unit attempting to co-ordinate the higher educational activities across departmental and functional boundaries.

The structural streamlining and centralisation of the regulatory and management responsibilities to one central organisation, *i.e.*, the MOE, improves the opportunity for more effective utilisation of educational resources and allows for the establishment of unified qualification standards for learning outcomes and accreditation for granting degrees. It also allows the MOE to become more of a monitoring, facilitating organisation and less of a regulatory enforcement mechanism. This structural reform seems to have created a much more favourable environment to ensure greater effectiveness of the higher education system in China and the necessary conditions to achieve higher quality of college and university education.

***Financial reform***

In the former financial administrative system, the government was responsible for all HEIs and their provision. A new management system has been established wherein the government takes major responsibility in providing educational services at all levels with the active participation of society and individuals. Non-governmental colleges and universities (known as *min ban)* have been created across the country and have become a distinguishable force in providing expanded access to professional and higher education. For instance, some are even accredited for granting bachelor degrees. Other forms of societal and international involvement in the higher education sector are also evident. With WTO membership, China will most likely experience an even greater participation of the international education providers (*i.e.*, foreign universities and higher professional schools) in its domestic educational market. This could be a positive trend, as long as the educational products fit with the demands of the Chinese job market and support China's long-term sustainable development ***and*** consumers (students and employers) are provided adequate information about the true costs and benefits of these courses and programmes.

Greater participation from the non-state actors in providing higher education helps complement the limited national education budget which amounts to a relatively low 3.41% of GNP (OECD average is 5.8% of GDP), at a time when the demand for infrastructure development within most of the HEIs remains high in China. With the exception of a limited number of key universities or key disciplines that benefit from special project budgets such as Project "211" or Project "985," most of the existing HEIs are in need of substantial new investments in upgrading their teaching facilities, living conditions for students, research capacities and, in quite a few cases, the quality of their instructional faculties.

Classic lecture-dominated teaching methods and passive learning environments are simply inadequate to achieve China's current higher education development objectives. This is particularly the case when the learning objectives of today's higher education go beyond fulfilling the immediate career ambitions of the students and the competence requirements of the employers. For example, higher education must also attempt to teach and develop the students' ethical values, self-learning capacities, and aptitude for innovation. Modernisation of the HEIs will require major infrastructure and personnel investments.

Although the annual budget for education has steadily been increased, the demand for capital improvements for more than 1 000 HEIs remains daunting. A stratified approach has been adopted by the Chinese Government to endow approximately 15% of the 1 300 universities with the potential to become provincial, national and world-class education and research institutions. However, all institutions are expected to improve their ability to serve student and societal needs.

Of the universities visited by the OECD review team in Beijing, Xi'an and Shanghai, most were equipped with modern teaching facilities and state-of-the-art learning technology, such as Internet connections and on-line library references. However, these universities are not representative of the norm since they tend to enjoy the status of key universities either at national or provincial/municipality level. The level of development of these HEIs seemed to be positively correlated with the economic development of their localities. In other words, significant discrepancies regarding teaching capacities exist between HEIs belonging to the rich coastal provinces and HEIs belonging to the less- or under-developed inland provinces and regions. Comparisons of "quality" of education in this context will be hard to define in terms of instructional "value-added" given that the starting points and social conditions vary dramatically.

***The role of social sector and foreign participants***

Resources from the social sector as well as from the private sector (companies and individuals) have been mobilised to fill part of the gap for some of the less advantaged institutions. Exceptional *min ban* universities, such as Huang He University in Zhanzhou, and professional colleges, such as Xi'an Fanyi University in Xi'an and Sanda College in Shanghai, also have developed impressive infrastructure and learning technology. However, it is not clear how many other *min ban* HEIs are equipped with comparable educational capacities (hardware) as are those mentioned above. Similarly, in the state-owned universities visited, teaching staff of an international standard are said to remain scarce. This is a particularly challenging situation since *min ban* HEIs tend to use more part-time (often, staff who have full-time positions at a state institution) or retired faculty personnel. Excessive use of such personnel can curtail opportunities for student-instructor interaction outside the classroom and could restrain the development of resident knowledge centres needed for academic excellence and development.

Although *min ban* universities and schools receive no state subsidies and are not eligible for research funding, they are provided with royalty-free land use and tax exemption. All *min ban* HEIs visited reported financial self-sufficiency and enjoyed a certain degree of financial success, even to the point of generating a surplus of income over costs. Again, this should not be generalised since those private institutions visited represented a non-random sample.

More than ten years after the establishment of the first *min ban* schools, the participation of non-state and non-Chinese actors in the Chinese education market remains limited in scope and still "experimental". Laws concerning the ownership of educational properties are currently under discussion. The Law on the Promotion of Non-State Schools was issued on December 28, 2002 and will take effect on September 1, 2003; the intent of this legislation is to clarify the rights and responsibilities of these institutions. Public perception of these non-state HEIs is mixed and therefore provides additional motivation for these HEIs to strive for excellence and recognition. One trend, nevertheless, seems to be clear: the participation of the non-state sector in providing higher education services will continue to increase, probably proportionally as well as in absolute numbers. Presently, there are 10 major *min ban* HEIs out of a total of just over 100 private HEIs. This number of prominent *min ban* HEIs will most likely change rapidly once the law governing private sector provision of higher education is more clearly established.

Foreign teaching universities are increasingly gaining a high profile in China, especially in the field of management studies. International providers have been allowed to recruit students for their undergraduate or graduate level programmes conducted abroad or inside China by establishing partnership arrangements

with local HEIs. The number of foreign schools delivering educational programmes in China seems to have increased substantially in the past few years. Although foreign HEIs bring in a needed transfer of know-how, this will be of time-limited benefit. Quality issues arise here as well since these programmes can grant degrees accredited by governments of another country and do not necessarily invest in developing locally specific expertise and content.

Both the *min ban* universities and colleges and the foreign HEIs supplement and extend the existing higher education capacities in China. Their presence also adds an element of competition that could be positive in uplifting the quality of education and in increasing higher education access of the student population as long as a stringent qualification system is applied when granting degrees. *Min ban* HEIs have to be sensitive to the needs of the students and the employers and continuously need to redefine their programme and curricula in order to survive financially. Thus, there is a high likelihood that these *min ban* HEIs would come up with some innovative curricula (products) which combine a multidisciplinary approach targeting specific job profiles. An example of this is the international accounting programme at Xi'an Translation University. This programme aims to develop young professionals who are equipped with English proficiency to work for the accounting departments of foreign companies located in China. Foreign participation in this sector could also help to invigorate the management of HEIs and to increase performance pressure on these institutions by offering international quality benchmarks. The need however remains for ***external*** monitoring of the quality of the learning process and for on-going feedback regarding competency attainment of graduates. Self-reporting in this regard is at best insufficient, at worst deceiving.

***Quality effects of the financial self-responsibility system***

State subsidies no longer cover all the operational costs of HEIs. Instead, HEIs have to generate approximately 50% of the funds needed to cover their recurrent costs and research. On the budgetary side, HEIs are encouraged to establish collaboration with industry. Such collaboration is considered to be mutually beneficial and could help to reinvigorate the HEIs and facilitate innovation. This university-industry collaboration should also provide additional revenue for the HEIs. HEIs have been given autonomy to distribute their revenue (including a recent announcement on intellectual property rights) as management sees fit, such as supplemental compensation for the faculties and staff, research activities, infrastructure development, etc.

The degree of success in this respect seemed to vary among different HEIs. Prestigious HEIs with substantial intellectual capital and accumulated technical know-how appeared to enjoy great success in obtaining corporate sponsorships and research contracts and in offering continued education programmes and executive development. Does this financial self-responsibility system spur innovation and quality improvement within HEIs? There seems to be no clear-cut answer to this question. In pursuit of financial benefits, HEIs could potentially neglect the basic teaching and research activities for which they were created and focus instead on the more lucrative consulting and training activities. In this case, innovation could still be possible but the institutions' regular students might not be the beneficiaries and could even have their interests placed at risk.

On the other hand, partial financial self-responsibility has generated the needed momentum for management reform within institutions and for product and curricula development. Accompanying the partial financial autonomy, consumers of educational products (students and employers) are increasingly conscious of the differences in product quality offered by the various HEIs. Financial reform in the education sector is gradually achieving its intended objectives to reduce the relative financial burden of education investment on the state and to use financial levers to improve the management of HEIs and their instructional and research performance.

Have the recent financial reforms helped to improve the quality of education? It is impossible for the review team to make a definitive assessment based on limited samples in relation to the total number of public Chinese HEIs. The individual HEIs exist in very diverse economic contexts that represent different challenges and supports. From the interviews and discussions carried out by the review team, it seems that introduction of market mechanisms in managing the higher education sector has been positive in terms of more optimal utilisation of educational resources and in improving the academic standards and scholarship of the HEIs visited by the review team. However, it is less clear whether market mechanisms have improved the actual learning process or closed the gap between job requirements and personal competencies of the graduates of HEIs. Experiences from other countries show that market mechanisms alone are not sufficient to meet all the challenges regarding quality assurance of higher education. The market mechanisms need to be coupled with sound regulations and feedback mechanisms in order to ensure proper functioning of HEIs and quality of educational experience and outcome. In this regard, more could and needs to be done; encouragingly, the MOE recognises this need and is taking steps to initiate further quality monitoring and assurance reforms, including providing more information to consumers.

***Reform of internal institutional administrative mechanisms to promote quality.***

The key to this aspect of quality reform lies in the restructuring of the personnel management and salary systems within HEIs. Both changes introduce new decision-making criteria for personnel matters concerning job responsibilities and post adjustments, performance evaluation and the allocation of performance bonuses. However, the reform also encompasses the whole spectrum of other personnel matters, ranging from selection, staffing, evaluating, remuneration and promotion, akin to the human resource management system that was introduced and adopted generally in the Chinese public administration. While the State Council promulgated the general law governing these issues, MOE has adopted these legal directives into sectoral specific regulations and HEIs have executed the new rules accordingly. The decentralisation of the personnel management function to the individual HEIs provided the institutional administrations with the needed managerial leverage to strengthen their performance management.

This new approach to personnel management has had a profound impact on the performance of individual faculties and of HEIs. For example, instead of appointing individuals based on their political credentials, emphasis is now placed more on professional qualifications and academic achievements. Instead of distributing the performance bonus according to the "rights of the employee," the actual bonus is determined on the bases of performance results and on the level of individual contributions. Increasingly, income from bonuses and other supplementary sources for the high performers has surpassed the actual base salary itself and now constitutes a major part of the total personal income for instructional and research staff.

The current income structure of the personnel at public HEIs consists of the following elements, namely, the *basic salary* (which is promulgated jointly by the Ministry of Personnel and the Ministry of Education), and the *university supplement, college supplement and department supplement* (the major part of these last three components of the staff member's personal income are directly tied to the individual HEIs "business" activities outside of the regular teaching programmes). Revenue generation, thus, has become a major driving force in the development of this sector. As a direct result, motivation of personnel is described as much improved, innovations abound, and the education sector is booming, especially in the sphere of adult education, continued education and executive education domains. Major resources have also been poured into the development and upgrading of the existing curricula, content, teaching material and teaching staff.

A potential pitfall that could deflect the educational reform from its course, however, is the emergence of "profit"-seeking behaviour and short-term opportunistic choices on the part of both individuals and

HEIs. Profit-seeking and short-term, opportunistic behaviours can be fundamentally detrimental to more basic scientific innovations and breakthroughs, and could also undermine the quality of teaching and learning. In recent years, Chinese consumers of educational services have been driven by personal career objectives rather than societal objectives and consumers have not always had the information or the incentives to be particularly selective. In the past, the higher education "market" was supply driven and highly regulated; this led to the production of graduates and research that did not necessarily coincide with society's needs (in type, quantity or quality). However, a demand-driven, unregulated market also will not automatically or inevitably encourage efficiency or innovation of the education outputs. A teaching staff, busy with various official teaching assignments, involved in special training courses for part-time students, and occasionally employed by more than one institution, will find it hard to invest the time and effort required to improve their teaching materials and teaching methodology. Management is more than motivation – it must consider what institutional goals staff are being motivated to achieve.

***Existing system-wide quality management instruments and practice***

The Academic Degrees Committee (ADC) of the State Council is responsible for defining the different standards for the degrees of Bachelor, Master and Doctor. The Higher Education Department of the MOE has established a Disciplinary Guidance Committee whose task is to define the academic standards of Bachelor Degrees in all disciplines (curricula and content) for recognition of academic titles and certificates. A pool of 700 experts is involved in defining the specific requirements for all disciplines of higher studies.

A Committee for Accreditation, supported by the Educational Development and Planning Division, defines the qualification procedures for assessing the educational capacities of individual HEIs in order to grant permission for establishing Higher Educational Institutions. Requirements for accreditation purposes focus on the specific areas of faculty composition, research, quality of teaching and facilities (including key laboratories and library volumes). Both HEIs and research institutes can be accredited to offer academic degrees of postgraduates recognised by the government. The Academic Degrees Committee (ADC) of the State Council is responsible for examining the qualifications of the higher educational institutions and research institutes to offer academic degrees as well as what disciplines enjoy the qualifications to offer the degrees of Bachelor and Doctor.

In addition to the initial accreditation, a system of operational monitoring and assessment has also been put in place. HEIs are subject to periodic appraisal and evaluations of their academic programmes and rights to grant degrees. An objective of this systemic quality control process is to raise the level of general education provision requirements and to improve the overall quality of HEIs and of the wider schooling system of China. The assessment and evaluation of education is organised at two levels reflecting the difference in administrative responsibilities. The MOE deals with policy matters and establishment of the rules and regulations, while the provincial education authorities are responsible for the operationalisation and implementation of these policies.

Mechanisms exist to allow for recurrent assessments of the quality of HEIs. As a consequence the HEIs' accreditation to grant academic titles is either renewed or cancelled (the latter is rare). Depending on the gravity of the situation, HEIs could be put on different stages of probation, such as warning, or suspension, or be removed from the recognised programme registrar at MOE. Approval of doctoral and professional programmes is given by the MOE. The Provincial Education Commissions have the authority to decide on the establishment of Master-level and undergraduate programmes. This division of labour is part of the educational structural reform and should improve the effectiveness and efficiency of the assessment and evaluation function. Another objective of this decentralisation is to ensure the responsiveness of the HEIs to local development needs.

Although standardised assessment procedures and criteria exist already, and have been put in practice since the 1980s, the popular perception persists that some HEIs offer superior quality of education while others are perceived as being "diploma mills" which provide sub-standard education. This perception is partially supported by the employment records of graduates from different categories of HEIs. Market perception continues to be reinforced by the admission criteria based mostly on the universal entrance examination scores. Lastly, the distinction of "nationally accredited" versus "provincial" or "local" HEIs continues to have direct implications in terms of the perceived and actual quality of teaching staff and educational capabilities since better endowed schools attract higher quality teachers. A rigorous application of education assessment would help to ensure the minimum conditions and quality of education, no matter what type of higher education institution and wherever located.

Substantial improvements seem to have already been made wherever local resources, including financing, could be mobilised. Of the HEIs visited by the review team, major infrastructure developments have taken place and other investments have been made in terms of improving teaching facilities (such as instructional equipment, library and laboratories and to some extent teacher training or replacement). Some of these HEIs are comparable, or even better equipped, then many HEIs of advanced industrialised countries. It is less evident, however, whether the "software" (the intellectual capital, the innovation capacities and motivation, and educational technologies) of these HEIs visited by the review team are commensurate with their world-class infrastructure and facilities; this is especially a concern with the private HEIs. Continuous feedback, through the effective use of third-party appraisal and evaluation could help bridge the gap between the hard and soft aspects of education capacities of all of China's HEIs.

The evolution of higher education assessment in China can be separated into two phases. The Discipline Assessment Phase, focusing on specific disciplines, existed from 1985 to 1994. The Comprehensive Assessment Phase lasted from 1995 to 2001 and consisted of the assessment of educational capacities of HEIs and of the actual teaching process and learning outcomes. During this phase, 20% of the 220 HEIs evaluated were not able to fulfil the required minimum standard.

Starting in 2002, a new procedure, a five-year cycle system, was put in place. Every university is to be evaluated once every 5 to 6 years. Independent assessment bodies will continue to be established to carry out this task. A non-governmental organisation, called the National Evaluation Institute for Degree Granting Education (NEIDGE) was founded in 1994 to pioneer in the development of this procedure. However, reservations were expressed to the review team concerning the viability of entrusting a third-party institution with such a direct policy task of government. To address this concern, MOE might find it useful to consider such quality certification systems as ISO 10015 (International Quality Standard for Training) or the EFQM (European Foundation for Quality Management).

Presently, there are three types of institutional assessment and evaluation for HEIs in China, namely, Qualification Assessment, Excellence Assessment (*xuan yu ping gu)* and Random Assessment. The first qualification assessment is focused on HEIs with relatively weak institutional capacities and less experience with undergraduate education. Excellence Assessment is meant for HEIs with good institutional capacities, high teaching levels and a relatively long history of undergraduate education. Random Assessment is meant for HEIs falling in between the first two categories. The purpose of these assessments is to determine the quality of teaching and to monitor the existing conditions of HEIs. The review team was told that quite large variations existed among institutions regarding quality of faculty, student-teacher ratios, quality of teaching, first time employment of graduates, conditions of graduate employment and infrastructure investment.

The impact of the evaluation process to date is said to have been positive. Actual improvements concerning the administration and quality of education has been observed by the MOE. On the other hand it has become apparent that greater investment needs to be made in parts of the higher education

infrastructure and especially in post-graduate studies. Findings from these assessments have resulted in increased financial appropriations for the higher education system and significant enlargement of the post-graduate level of higher education. Today, a substantial percentage of graduates from the key universities go on to post-graduate studies and pursue academic- and research-oriented career paths at their universities. This will help to boost the future quality of teaching staff and rejuvenate the demographics of the teaching faculty.

This present tradition of graduates remaining at their *alma mater* institution, if continued, could pose a barrier to raising the quality of teaching staff of all HEIs. Not all HEIs are equipped with post-graduate studies. Recruitment of new faculties with top credentials could continue to be hindered by the limited supply of young talents in the market. This phenomenon of self-selection is not new or unique; however, it can promote an unhealthy concentration of talent at a small selected number of HEIs and could lead to an equally unhealthy cycle of instructional impoverishment in the least developed provinces and regions. Academic inbreeding is also unhealthy for the HEIs that retain their own graduates. The lack of intellectual diversity could unintentionally prohibit academic breakthroughs when critical thinking and multiplicity of intellectual approaches are not the norm.

The evolving system of higher educational assessment and evaluation in China has enhanced transparency regarding the actual functioning of the HEIs and created competition among them. Institutional administrators and provincial officials alike take pride in receiving recognition for high performance and are motivated to strive for higher rankings. In the foreseeable future, Chinese consumers of educational products might be able to make better-informed choices regarding their higher educational options and be less driven by the allure of traditional (and often out-dated) reputations alone. There have been suggestions to inform the public of the results of school assessment and evaluation. The planned initial step would only cover a small group of selected universities. Once this initiative is fully implemented, the ensuing transparency will add even more momentum to the Chinese Government's drive towards excellence in higher education. Even though it is unrealistic to imagine that all 1 300 HEIs would or could reach the same level of excellence, sharing of this crucial information regarding quality of schooling at different HEIs could serve multiple purposes in improving the quality of higher education and assuring all students access to a minimally acceptable level of higher education.

Provincial and municipal governments, such as Shaanxi and Shanghai, are developing their own assessment and evaluation standards applicable to their respective local HEIs. This move could be very positive and lead to translation of the general national framework into location-specific solutions. Shaanxi Province, for example, ranked 4$^{th}$ nationwide in regard to its comprehensive educational infrastructure and assets. In 2001, there were 6 national, 36 provincial and 10 private HEIs with 370 000 regular students and 330 000 self-study students in Shaanxi. (Non-degree students are not part of the planned quota and therefore not counted in the state budgetary provision; they receive either an institutional degree or a certificate after passing the government organised examination.) Although Shaanxi is one of the leaders in "exporting" higher education services within China, *i.e.*, recruiting a large percentage of out-of-province students to study in Shaanxi, only a small percentage of outside graduates actually stay and work in the province. The establishment of a Technology Park in Xi'an might signal the first step toward retaining these talents and greater utilisation of the intellectual capital reserves of the Province's 52 HEIs. Shaanxi, as the cultural and economic centre for the Western region of China, often sets the benchmark for the rest of the region. Its initiative in developing its own assessment and evaluation standards could potentially set the example for other provinces and autonomous regions in the Western part of China doing the same. This has the potential for making the HEIs of the region more oriented toward serving the local needs and to realise the dual function of higher education, developing the individuals and serving the communities.

Approaches to self-assessment vary greatly from comprehensive assessment systems to more rudimentary instruments. All the HEIs visited have installed some form of self-assessment mechanisms

and assigned specific units to carry out this task. Key concerns of the HEIs were related to the quality of teaching. Evaluation methods that were mentioned to the review team involved end-of-the-course evaluation by students, peer reviews, and in-class inspection. More external oriented methods were also mentioned such as obtaining inputs from the employers and the alumni. These discussions and feedback were used for curriculum development, to check on quality of teaching and to provide direction for future research. Some HEIs also mentioned benchmarking themselves against schools from the United States and/or Europe by using the data provided by MOE through informational links provided by OECD and other international organisations.

Quality assurance at the HEIs visited by the review team involved different measures. One of the most commonly used approaches was to upgrade the level of educational attainment of the faculty through hiring new staff or by providing continuing education to present staff. It is hoped that by increasing the number of PhDs or Masters on the faculty list, this would automatically increase the quality of teaching. This would be a valid assumption if the quality of teaching depended solely on the knowledge and cognitive capacity of the teacher. Less concern seems to have been given to issues of pedagogy and to the learning process design. Other HEIs provide staff with financial incentives to encourage continued learning. Faculty members are given financial rewards for their research projects and publications, including writing of textbooks. This would no doubt add "reputational" value to the school and to the faculty member. It is less apparent though how these rewards directly improve the teaching process in practice and the teacher-student interaction.

At the inter-organisational level, partnerships or twinning arrangements have been established to strengthen the teaching capacities of weaker HEIs. Partnerships, such as "co-operative education provision entities" (numbering 277 in 2001) between HEIs, could be a meaningful mechanism to foster cross-fertilisation and seem to have worked well. Reliance solely on the HEIs to monitor their own quality (for instance, student evaluation and peer review) and periodical assessment from the MOE are the first steps toward true quality control and quality assurance. However, both measures are insufficient by themselves to achieve the desired outcome, especially for those HEIs that are positioned at the lower rank of the strata and operate in more impoverished social and financial circumstances. HEIs with long histories of success and substantial existing institutional capacities seem to be most enthused by the autonomy given to them and have made major progress in institutional transformation. Supported by an organisational culture of "excellence", self-regulation regarding teaching quality with periodic verification by the MOE would work the best with this group of HEIs. HEIs in the lower tier (and with long histories of less than excellent performance) might be more problematic. Spot checks from MOE or provincial authorities might not be sufficient to change the entrenched norms or to provide impetus for self-improvement in light of the possible collective resistance to change by various institutional interest groups. Instead, a comprehensive and documented total quality management system verifiable by an independent third party would probably work better. The MOE's new initiative of mandating independent assessors could be a very appropriate first step.

So far, all the assessment and evaluation activities appear primarily to focus on knowledge acquisition and related performance. Output measures tend to focus on the number of PhD dissertations, research papers, projects, awards etc. Little has been said about students' emotional intelligence, creativity and ability to cope with stress, etc. These are all attributes important in today's work environment. The question requiring an answer from HEIs most urgently is:

> *What happens to the soft targets of learning, such as personality development, critical thinking, and individual creativity, which require more than classroom learning but mentoring and teacher-student interaction?*

Additional learning outcome measures need to be considered to deal with these learning dimensions. It has been mentioned by many HEIs that the employment rate of their graduates is used as an indicator of superior quality of a university. Both the central and provincial governments have started to publish statistics on the employment conditions of graduates from HEIs as performance measures. This development reflects a growing problem of the labour market structure and the imbalance of demand and supply of qualified human resources. The employment situation of the class of 2000 graduates with different levels of educational attainment and from different categories of HEIs is reported in Table 1. Generally speaking, graduates from prestigious key universities have few difficulties in finding a job or being assigned a job immediately after graduation. In contrast, graduates from local HEIs in general have much greater difficulty in finding employment quickly.

The government forecasts that the number of higher education graduates seeking employment will increase from 1.15 million in 2001 to 2.50 million in 2004, more than doubling in just three years. Employment is more than an aggregate problem of finding jobs for so many new employees, however. A serious structural problem exists in that the graduates have often prepared in specialisations for which there is not sufficient demand. The current extraordinary growth of the Chinese economy will help government deal with this in the short run, but in the long run plans must be made to attack both the aggregate and the structural problem.

Table 1: **Employment Rates of the HEI Graduates in 2000**

I. Graduate Schools

| PhD holders | Master Degree holders |
|---|---|
| 95.8% | 95.8% |

II. Universities

| Graduates of 4-year HEIs under MOE | Graduates of 4-year HEIs under other Central Ministries | Graduates of 4-year HEIs newly transferred to MOE | Graduates of 4-year HEIs under local governments |
|---|---|---|---|
| 90.12% | 76.2% | 81.6% | c.a. 70% |

III. 2 or 3 Year Higher Professional College

| Graduates of 2- or 3-year HEIs under MOE | Graduates of 2- or 3-year HEIs under other Central Ministries | Graduates of 2- or 3-year HEIs newly transferred to MOE | Graduates of 2 or 3-year HEIs under local governments |
|---|---|---|---|
| 44.9% | 45% | 55.7% | c.a. 30% |

*Source:* China Youth Daily, 12 October, 2000, cited in Zhang, L. 2001, *2001 Green Paper on Education in China*, Beijing: Educational Science Publishing House.

It should be understood that it is not only the graduates living in the economically depressed areas who have difficulties in either being assigned or finding a job. About 10% of the university graduates in Shanghai, one of the most prosperous coastal cities, are unemployed in the first 12 months after graduation. In response to this change of labour market conditions, HEIs are more concerned about employability of their students.

Sub-optimal utilisation of higher educated talents represents both economic and social challenges. In a society where university graduates are still relatively rare in supply and where the economy continues to grow and the need for skilled work force remains high, why then is it that an average of 20% of the university graduates and 50% of the graduates from non-degree colleges cannot find jobs? The review team was told that this was partially due to the migration from the countryside to the cities, from the periphery to the economic centres. Graduates who moved to major cities are in general reluctant to return to their hometowns. Instead they look for employment in the cities, thus adding to the high unemployment rate and long job-search periods of new graduates. Some Chinese specialists view that the fit between higher education and the competence requirements of the current labour market might be another contributor to this mismatch. To encourage the HEIs to take greater interest in the future career opportunities of their students would help to partially mitigate sizeable unemployment of HEI graduates.

In this context, incorporating the employment rate of the HEI by the MOE as one of the outcome assessment criteria would make an impact on the HEIs educational objectives and curriculum design. This could help create a better fit between education outputs and labour market demands, in turn fostering a more optimal use of limited education resources through full utilisation/employment of the graduates. Seen from a management point of view, both educational planning at the local level and at the local HEIs need to be more market and practice oriented in order to ensure higher return on investment. Both need to do more to tailor their professional education programmes to fit local economic needs.

**Summary and Conclusions**

In summary, the review team was impressed with the recent developments in the area of higher education quality management. Successive reforms have changed the landscape of higher education substantially. The most important change witnessed by the review team was the heightened awareness of the educational market and the drive for innovation both in teaching and in research.

However, one needs to keep in mind the tremendous pressure of the increasing demands for expanded student enrolments in China. This pressure exists not only because the economic growth and development necessitates an increasing demand for an ever-larger number of highly skilled talent. Pressure exists also because of the coming of age of the largest cohort of Chinese population by 2008. Because of the success of the primary and secondary education reforms of the past, more young people than ever will soon be eligible for higher education and will demand a greater amount and better quality of higher education and professional training. In this context, managing the available educational resources efficiently is the pre-condition in facing the coming demand.

At the same time, larger student populations should not be allowed to become a justification for poor quality education. Hence, the review team proposes an internal quality management system and audit procedure as a policy option to strengthen the management capacity of HEIs and the organisational capacity to continually improve its own educational process, resulting in improved quality of education and better use of resources.

Continued expansion of HEIs' enrolment capacity will be essential. The structure of the labour market demands the right combination of human resources with different levels of educational attainment and competencies. Therefore, a decision on how to strengthen and enrich the curricula at the higher professional level and at the non-degree HEI level would need to be part of the educational planning of MOE. To accommodate the concurrent demands of aggregate expansion and quality enhancement will require Chinese higher education to mobilise new financing for higher education and, at both the system and individual institutional level, develop an improved ability to use these new resources efficiently. Part Three of this report addresses this twin challenge.

## PART THREE:
## THE "COST" OF HIGHER EDUCATION AND THE RATIONALE FOR ITS SUPPORT

It is important to recognise that, despite its crucial importance, finance is a secondary issue. The primary issue is *what* will be financed and *to whom* will the benefits accrue. For example, if one is considering the financing of a form of education that has not proven effective or that benefits only a socially advantaged group of people, the question of whether government should pay for it is quite different than if the form of education produces needed graduates and the participants represent individuals who are capable of educational success but cannot afford the costs of education at this time. The common problem found in all countries, and this includes China and the OECD Member-countries, is that higher education is often financed as if it were a homogeneous whole and as if it did not matter what individuals benefit from government subsidisation. There is no single answer as to who should pay for higher education. Politicians and government and institutional administrators will have to establish and enforce criteria that specify what forms of higher education qualify for government support and whether the assistance should go to the institution or to the individual student or both.

This section of the report will present the logical case that can be made for continued government financial support for higher education in China. It will also, however, present the logic that supports the case for mixed financing (government-individual and private-public) in the higher education sector. The objective of this section is to assist the Chinese higher education reform programme in developing a consistent, efficient, and equitable approach to allocating the Government's increasingly sought after funds for the support of higher education activities.

### Clarification of the Terminology of Higher Educational Finance

It is important at the beginning of any discussion of higher education finance to define the critical terms so as to avoid confusion in the analysis of who benefits from higher education and who should pay for it. The term "cost," for example, refers to "how much" one must pay for something and in what forms the expense may appear (capital versus recurrent cost, for example, or personnel versus equipment costs). The major concern with cost issues is one of measurement. Where direct expenditures occur (paying rent for a classroom building or laboratory) the measurement issue may be quite simple. However, calculating the real cost from using a building one already owns (normally defined as the interest [or foregone rent] and depreciation) may be difficult both as a concept and as a measurement problem for higher educational administrators and planners.

Economists define costs in terms of the opportunities foregone. For example, funds spent on expanding higher education or increasing its quality, could have been spent elsewhere in the higher education sector, on other forms of education or training, on other forms of social sector investment, on other government activities outside the social sector or even left in the hands of individuals through reduced taxation. Obviously, one does not attempt to measure all the alternatives to which higher education resource may be applied. However, the higher education planner and administrator, within the limits of available information, should consider the opportunities foregone for each major higher education expenditure and be satisfied that the expenditure chosen represents the best utilisation of that government expenditure. Even within the higher education sector or an individual institution choices will have to be made between capital and recurrent costs, among programmes, between access facilitation and quality enhancement, and between equity and aggregate benefits. Conceptualising of higher education cost in this

way will help policymakers and administrators make better expenditures in the allocation of the relatively scarce resources available to Chinese higher education.

Finance issues, in contrast, take cost measurement as a given (usually in monetary terms), and attempt to determine who should pay the cost and in what form (is it payable immediately or delayed; if delayed, how is future payment assured?). In higher education the critical issue is how responsibility for the costs of higher education will be allocated between the government (and within its various levels) and the institution and the participants (students, their families, present or future employers, and their communities).

In addition to the important distinction between cost and finance, five other major analytical concepts will be used in the discussion of the higher education sector and of the overall higher education reform programme. These are equity, internal and external effectiveness, and internal and external efficiency.

***Equity***

Equity refers to judgments about the fairness with which higher education opportunities are provided to individuals and groups. As has been noted, the major access/equity issues traditionally identified for China are locational (rural-urban and among the Provinces). While this remains a major source of variation in opportunities for education and employment, government's interest in equity issues also extends to the increasing variation in opportunities *within* the urban areas and *within* the economically more advanced provinces. While recognising location as an important factor in access to higher education (and to levels of higher education quality), the MOE also has shown concern with improving equity in all contexts. Even in an advantaged area, there will be disadvantaged students who require special assistance.

Equity issues can be analysed in terms of access, retention, and graduation as well as the opportunities for employment. A special equity concern of government in China is initial access to higher education, since attrition is low and almost all students, once admitted, graduate. Equity assessments also can be made in terms of access to funding and to specific quality resources such as qualified teachers, textbooks, and other learning resources (including necessary facilities and equipment).

***Effectiveness***

The effectiveness of higher education refers to how well the higher education institutions and the system overall achieve their established goals. *Internal effectiveness* refers to the success of the education activity in achieving its immediate educational output goals. Such goals include cognitive achievement (language, mathematics, reasoning ability, etc.), and non-cognitive achievement (including both psychomotor [physical] skills and affective change [modification of attitudes, values, and behaviours]). *External effectiveness* refers to the longer-term outcomes of educational activities in terms of economic, socio-cultural, political, institutional, and environmental impacts.

The internal effectiveness of educational projects can involve a wide range of criteria. While cognitive achievement is often the most common internal effectiveness criterion (and the only one measured by most standardised tests), certain education activities may be concerned with effectiveness as measured solely by access, retention, and graduation (attainment measures) or by changes in one of the areas of non-cognitive development.

Another form of educational effectiveness measure is the aforementioned concept of equity. This criterion may be incorporated within effectiveness analysis by defining a desired effect of an educational activity as being the achievement of some specified level of equity in learning, attainment, and non-cognitive development among individuals and groups. A special equity question for China is the fairness and validity of the national examination used for admission to higher education.

Internal benefits are those directly produced by the activities of a higher educational programme or the desired "secondary results" of the programme. Examples of the former are found in activities that produce direct benefits to learners in the cognitive or non-cognitive areas. Examples of the latter can be found in activities such as university and college construction and instructor training programmes. The direct effects of the programmes simply may be more buildings or increased numbers of professors and/or professors with better instructional skills. However, there may be no broader educational effectiveness directly produced in such activities unless these outputs (the buildings and professors) are then used properly. The eventual internal effectiveness is dependent upon the programme outputs (new/better schools or teachers) contributing to the levels or the equity of learning attainment, cognitive achievement, or non-cognitive development.

The concept of external effectiveness is based on the belief that the outputs produced by education programmes will themselves produce impacts on the larger society. A programme can be internally effective and still have no positive external effects. For example, a higher educational activity could be very effective (even cost-effective) at producing a certain form of learning achievement for participants. However, if there is no beneficial economic, socio-cultural, political, institutional, or environmental impact from such cognitive achievement, the project has no external effectiveness. For example, even if a higher education programme produces a form of engineer inexpensively, there still must be a need for such engineers in the immediate or future market, or some other beneficial effect from this training, before the training can be considered externally effective. A programme can be externally effective only if it is internally effective; however, internal effectiveness does not assure external effectiveness. Internal effectiveness is thus a necessary but insufficient condition for external effectiveness.

***Efficiency***

The basic analytical structure proposed here is commonly referred to as *efficiency analysis*. *Efficiency* refers to the least-cost means of achieving a specified objective or the maximisation of objectives given a specified level of costs. Efficiency is the most generic of all education criteria. It includes costs and benefits and the monetary and non-monetary components of each. *Internal efficiency* refers to the least-cost production of attainment levels or cognitive or non-cognitive changes in participants and can be related to changes in inputs (measures of resource availability) and processes (measures of resource use) when it is not possible to measure outputs directly. Internal efficiency is often measured crudely by a unit cost, cost per student or cost per graduate. The problem with these measures is that they say nothing about the extent and quality of learning. Efficiency is sometimes confused with low levels of expenditure. In fact, nothing is less efficient than allocating less money to a higher educational activity than is required for the activity to be successful. This is just waste. In China, many higher education institutions require more funds for their research and instructional programmes before they can make them efficient. Too often, “efficiency analysis” has been used improperly as an excuse for reducing budgets. The effect relative to cost, not the cost level by itself, determines if a higher education activity is efficient.

*External efficiency* encompasses the least-cost production of the full range of educational impacts: economic, socio-cultural, political, institutional, and environmental. While the current personnel and data limitations faced by the MOE do not allow for extensive calculations of efficiency indicators, the efficiency criterion should inform all of the analysis which forms the basis for identification of issues and selection of policy and practice options for the continuing reform of higher education. External efficiency is more difficult to quantify than is internal efficiency in simple terms; normally it involves an assessment of whether costs can be reduced to produce the same level of external effectiveness or whether external effectiveness can be increased for the same level of cost.

***Key Terms in Higher Education Finance and Management***

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| Effectiveness | *The degree of goal achievement* |
| Internal Effectiveness | *Goal achievement in terms of immediate educational objectives (language, mathematics, reasoning ability, etc.).* |
| External Effectiveness | *Goal achievement in terms of longer-term educational objectives (economic, socio-cultural, political, institutional, and environmental impacts).* |
| Internal Efficiency | *Internal Effectiveness / Cost* |
| External Efficiency | *External Effectiveness / Cost* |
| Equity | *A subjective determination of "fairness"* |

Rate of return and social benefit-cost analyses have been used to quantify external efficiency but the results are often highly misleading and subject to great variation depending on the quality and coverage of available data and the expertise and time of the analyst. An argument may be presented for the case of viewing the justification for financially supporting higher educational demand as derived from the uses to which university and college graduates apply their education. Simply put, government finances higher education not because it wants students but because it wants graduates with knowledge and skills to make life better for themselves, their communities and their nation. This topic will be extended in the next section.

**The Rationale for Shared Government – Private Financing of Higher Education in China**

The oldest and most basic rationale for collective finance is that the beneficiaries of a programme should pay for these benefits. However, this simple rationale ignores two very critical considerations of public finance:

*Can the beneficiaries afford to pay for the benefits they receive?*

*Are the direct and immediate beneficiaries the only ones benefiting from the programme?*

First, the beneficiaries of a programme may not have the financial capacity to bear the costs. If government is providing food or housing or medical care to the poor, it would hardly be realistic to expect the beneficiaries to finance their own assistance. Where the financial inability of beneficiaries is only temporarily limited, government may elect to provide loans so that the immediate assistance provided by government will be repaid in the future, thus providing more funds to assist a new group of individuals in the future. The loans provided in such a circumstance may be "full-cost" (meaning the recipients pay full interest charges) or subsidised by government. Multiple forms of subsidisation exist including government assumption of all or part of the interest charges or postponement of initiation of the repayment with government bearing the costs in the interim.

In higher education it has been argued that students, while direct beneficiaries of the government subsidisation of their education, are not the sole, or even the most important beneficiaries of higher education expenditures by government. "Social benefits" exist from the education of university and college students and these benefits accrue, not to specific individuals, but generally within society.

Increasingly, higher education planners and administrators in all countries have been under pressure to justify investments in education, not in terms of direct educational outputs, but rather by means of the

effects of the educational outputs on larger societal outcomes such as economic performance (employment, wages, and productivity), social change (attitudes, values, and inclusion of disadvantaged populations), or political development (values, participation, and an informed acceptance of political legitimacy). In the terminology discussed above, there has been a shift from a concern with internal efficiency (the production of educational effects relative to costs) to external efficiency (the production of societal effects relative to costs).

Greater evidence of the ability of higher education activities to promote larger societal purposes (external effects) can protect the sector from erosion of present funding and serve as a basis of larger funding whenever the aggregate economic conditions permit. One must recognise that higher education programmes and projects increasingly are in a very competitive situation, both relative to programmes of security and defence, other social sector activities (notably health and nutritional concerns) and to larger societal initiatives in the political, economic, institutional, and environmental domains. To provide evidence of a higher education activity's ability to facilitate development in any one of these domains – to be an *instrumentality* rather than an end in and of itself – is to strengthen the higher education sector's ability to serve its more traditional functions of individual and societal development and social inclusion.

The list of potential *economic benefits* from higher education activities can be quite extensive. The most critical would appear to be the following: increased employment and earnings, enhanced general productivity, improved consumption behaviour, facilitation of cost reduction or revenue enhancement in the private sector, improved fiscal capacity (through increased tax revenue and/or reduced demands on social services), and promotion of intergenerational effects in terms of better social, ethical, and economic attitudes, motivation, and behaviour among children, youth, and adults.

The *political domain's effects* can include specific political values and attitudes as well as more general changes in the way individuals or groups participate in the political process, development of a belief in participatory democratic structures, adaptation to a rule of law, and evidence of an acceptance of the political legitimacy of the existing system. The last two effects can be critical in creating a level of political stability sufficient to encourage economic and other developmental effects to occur. Other political effects include identification with the nation and development of common beliefs. All of these effects will be valued differently by different individuals or groups. In fact, political effects are rarely objectively bad or good; the classification of a political effect basically depends upon an individual's own political values and goals.

*Social effects* relate primarily to the impact of higher education activities on group status or mobility and collective welfare. The extent to which social inclusion (opportunities for the poor, the handicapped, and other disadvantaged groups) and participation are encouraged by the Chinese society will determine the social value of these benefits. A belief in the possibility of individual and group mobility can be an important determinant of social (and thereby national) peace and stability. Education and training are powerful vehicles for promoting such increased inclusion, participation, and mobility.

*Cultural effects* include the transmission of values, beliefs, and traditions within society. At this time of a shift in China to an economy less dominated by government and of greater market-based activity, the question of values becomes an even more critical component of the higher education curriculum. Too often, individuals confuse the introduction of greater free market activity with a reduction in collective responsibilities. Citizens must understand the legitimate functions of the government and the proper responsibilities of private sector firms. It is a key objective of the education system to help promote the values and understandings that will help both government and the private sector fulfil their responsibilities within Chinese society. The preservation of Chinese culture and the development of a modern Chinese society, although possibly seen as contradictory objectives, must be accomplished simultaneously, and this will require concern and sensitivity.

A final example of a higher education effect that influences social and cultural concerns (and, ultimately, economic ones) is the change that takes place in health and population attitudes and practices because of the college and university experience. In a nation with China's historic concern with population growth, population education is essential. But, to be effective, such programmes must be designed to be acceptable within the cultural values of society. Similarly, health education in China cannot and should not ignore the traditional attitudes and beliefs of people, even as it may try to modify their behaviours.

The effect of higher education activities on the *institutional domain* has not been as closely studied as, for example, economic, political, or social impacts. The major forms of institutional effects include improvement of institutional structures, enhancement of personnel capacities (not just by training but by creating organisational structures that facilitate the use and further development of these capacities), encouragement of co-operation and co-ordination among development-related agencies or institutions, expanding policy dialogue and promoting an environment for administrative reform, and strengthening informational resources and utilisation to promote better decision making.

Finally, recent years have seen an increased focus on the *environmental effects* of higher education activities. This is an especially critical issue in a nation with such strong social and cultural links to an agrarian environmental base. Even with the recent emphasis on environmental concerns within the curriculum, this remains the least discussed domain of education effects. There are three major forms of environmental effects: the promotion of environmental consciousness and action; the changes in resource utilisation resulting from higher education programmes; and the heightened demands on community facilities (*e.g.* roads, water, sewerage) because of higher education activities. It is important to note that the energy and community facility effects can be negative; these concerns speak to the need to design higher education activities to minimise these potential "costs" while promoting other positive effects, including instruction that alerts university and college students to critical environmental issues.

In China, there is no danger to the higher education sector in making explicit the relationship of education to these various effects. Higher education advocates, inside the Government and out, should stress the wide range of potential benefits to be derived from higher education in justifying their requests for public and private support. Also, the effect of education on the economy, society, culture, institutional structures, and the environment should be a design consideration in formulating the financial strategies of the higher education reform programme.

**Government Responsibilities for Private Higher Education**

A special point should be made about the role of government relative to the private sector higher education institutions in China. Students at these schools are not directly subsidised by government although land and physical facilities have sometimes been provided to such institutions. Government has two critical responsibilities for these institutions:

- to establish minimum standards for licensing; and
- to provide potential consumers (students, families and employers) with information so that properly informed choices can be made.

The first of these responsibilities is being fulfilled as part of the MOE's higher education reform programme and quality assurance activities, as discussed in Part Two of this report. The second is less well developed for private institutions but can be incorporated within the activities of the National Information and Career Centre for University Students (NICCUS). NICCUS operates under the MOE's Department of University Student Affairs. The role of NICCUS is to:

*…integrate and develop the data information provided by the Ministry of Education on enrolment in higher education institutions, on formal schooling record management and on graduates' employment, thus serving the society and educational decision-making.*

The major constraint on the ability of NICCUS to serve future information needs of higher education consumers at private institutions is that the MOE's own higher education management information system is at present insufficient to provide the detail on costs, employment (job search periods, initial and long-term wage prospects), and further education possibilities for students and graduates of private higher education. A recommendation for expanding MOE's higher education management information system to incorporate such information is included in Part Four of this report.

A special concern exists with the role of proprietary (profit-making) institutions. No such institutions are presently allowed but this policy may change in the future. It should be recognised that the present private institutions are "profit-making" in that they have a surplus of income over costs. The real distinction is that proprietary HEIs would allocate these surpluses to their investors while the existing private, not-for-profit HEIs **reinvest** their surpluses in their own institutions, including the provision of financial assistance to needy students. However, this fiscal situation will need to be monitored to assure that private institutions are not charging more than is necessary for legitimate current and capital costs. These are the same forms of cost auditing that should be implemented at the government HEIs.

In many of the OECD nations, private universities are among the very best institutions that exist. Proprietary institutions, however, while they may serve a legitimate role in the higher education market, tend to be of lower quality and rarely provide research and societal service to complement their instructional function. At some time in the future, China may decide to provide "portable" grants or loans to students that allow them to use these funds at any licensed institution of higher education, private or public. In this case, it will be essential that the quality monitoring and licensing of private HEIs be at least comparable to that for government institutions. Portable grants and loans make maximum use of private preferences and decision making, but, to be protective of individual and societal benefits, these choices must be more fully based on accurate information about costs and benefits at the institution and department level.

A final point should be made about a critical link that exists between public and private HEIs. This link is the increasingly common practice of public university personnel teaching or (less commonly) engaging in research at private universities. The quality discussion and the financing discussion both note that this practice raises some problems of quality and equity in financing. It must be recognised that a "symbiotic" relationship exists between the two universities that "share" a faculty member. The public university that allows its faculty to teach at private institutions, may be able to retain personnel that otherwise would leave the higher education sector altogether. Although faculty salaries have increased substantially, they do not match the market value for many individual teachers and researchers. If the option of supplemental income from teaching at private institutions did not exist, these individuals would only have the option of resigning and moving full-time to commercial employment. So, whatever threat to quality and equity may exist from the practice of multiple employment, it may be less than the threat that would exist from not allowing this practice.

The advantage to the private university is more obvious. They are able to recruit qualified faculty personnel without having to pay their full cost (wages and other benefits such as housing, etc.) This is one reason why it has been possible for many of the private institutions of higher education to operate at a surplus of revenue over costs. Analysts should consider this fact in comparing unit cost or other efficiency measures between the private and public sectors of Chinese higher education. The public institutions depend on the private institutions to supplement the public HEIs' staff's income and the private institution

depends on the public university for quality staff that the private HEI otherwise could not afford or could afford only at much higher costs.

**China's Tuition and Loan Policies for Higher Education**

The OECD review team believes that the resources necessary for the universities and colleges of China to sustain their current student numbers and to meet the demands for quality enhancement can only be achieved if there is a major increase in the level of aggregate financial support. If the number of participants is to increase, as appears likely, even more funding will be required. Because of competing demands on government from within and outside the education sector, this increased financial support can be achieved only if tuition and related fees for instructional support, board and housing become a more important component of total higher education financing. With this additional support, more students can be granted higher educational opportunities and a better quality level of instruction, research and service to society can be realised throughout the higher education system. However, to avoid inequities, to prevent placing a prohibitive burden on the families of the least advantaged, and to help all students and their families to utilise the financial capital market properly, this increase in tuition and fees must be supported by the development of an expanded student loans scheme, to assist students and their families in meeting these higher charges.

***The present situation***

Significant levels of tuition fees and widely available student loans are both relatively new concepts in China. Higher student charges were introduced in 1994 (when fees of 1000s rather than 100s of CNY were first charged), and a broad loan scheme was started only in 1999, concomitant with the current administrative reforms in higher education which are still being implemented. These two innovative funding mechanisms – tuition and loans – should be allowed to evolve together. The very significant increases in the levels of tuition fees required to fund the greatly expanded higher education system can only be borne by students and their families if a much more flexible student loans scheme becomes available. A loan scheme, that is more widely applicable, is vital – particularly to avoid deterring the children of poorer families from taking advantage of the opportunities provided for full participation in higher education.

At present, public universities and colleges are funded through four broad income streams (each of which has several components):

- A *per capita* payment made to the institution by the central or provincial government, against an agreed quota of students.

- Additional government funds provided (mainly) to the top universities, under the "985" and "211" project schemes. These are non-recurrent project grants, usually available primarily for capital projects.

- Tuition fees that are fixed by provincial governments on the basis of educational costs and "affordability". These fees are currently set at about 25% of actual cost levels ("cost levels" are determined by an algorithm developed by the MOE).

- Additional income that universities and colleges are able to raise through supplementary teaching, research and other activities.

All public institutions receive the per-capita grants. The top research-oriented universities receive significant sums from the "985" and "211" projects and often generate significant levels of additional

income. More instructionally-oriented universities and colleges have to rely almost entirely on tuition (from quota and non-quota students) to supplement their per-capita allocations. Increasingly, however, even the less elite institutions have begun to engage in a variety of entrepreneurial activities to complement their government and student sources of income. Private universities are financed from a combination of tuition and entrepreneurial earnings.

A trial student loans scheme was introduced at the time tuition fees were first raised to significant levels. At the time these charges were seen to present the danger of deterring able – but poorer – students from entering higher education. However, this scheme is taken advantage of at present by a very low proportion of students (about 10 to 15%) and often those who do participate are from advantaged or middle-class families rather than from the least advantaged.

The main features of the loans scheme are:

- Students in financial hardship may be loaned sums of up to the cost of their tuition fees and residential charges, during their courses of study.

- The loans are made by the national banks.

- While they are studying, students are charged only half the interest due on these loans, and the other half is paid by the government.

- On completion of study, the loans become liable for full interest and normally are scheduled to be repaid over the following 4 years (*i.e.* in 7 or 8 years in total from initial debt). However, extension of the repayment period to 6 or even 8 years after graduation, may be granted in certain circumstances, such as if the student proceeds to postgraduate study (however, students who receive such extensions must pay the full interest rate during this time of extension).

These provisions, while better than no loan programme at all, are much more restrictive than found in most OECD countries and less generous and flexible than found elsewhere in Asia.

***Alternative methods of funding higher education***

It is essential for China to identify new sources of funding for higher education to support both its quality and its enrolment expansion objectives. Also, it is obvious that the costs of this quality/expansion effort must be shared among those who benefit from it, individually as well as collectively. Those individuals who receive higher education qualifications are the main beneficiaries, through improved employment prospects and higher future income. Accordingly, it would seem logical that graduates in employment should be asked to make a greater contribution in the future to their higher educational costs. In some cases, employers should also be asked to make a contribution – perhaps by meeting the costs of their employees who undertake further (postgraduate) study to enhance their professional skills.

However, the State should remain a major source of funding, because it:

- Has a direct interest in ensuring that China’s higher education participation matches that of its national economic competitors.

- Needs to ensure that the workforce of the future is equipped with the range of skills and attributes required to undertake the country's essential roles.

- Has a responsibility to ensure that – for all citizens – access to opportunities to benefit from higher education is socially just.

- Needs to secure the economic and cultural benefits that higher education can offer the whole country.

For these reasons, it is essential that the government – over the long term – ensure that spending on higher education increases at least proportionally with the growth of Gross Domestic Product.

A student support system should, as far as possible, be equitable and encourage broadly based participation; it should expect those with the means to do so to make a fair contribution to the costs of their education; and it should be easy to understand and administratively efficient. However, although most graduates will receive a good financial return, some will experience extended job searches, periods of unemployment, some will need to take career breaks (*e.g.* for family reasons) and others will have low paid but socially meritorious jobs. If graduates are to be asked to make an increased contribution, they need the reassurance that they will not be expected to face financial burdens that they cannot afford. There must be repayment mechanisms that relate annual repayments to the graduate's income – that is, "income-contingent" contributions.

Examples of income-contingent schemes include:

- A Graduate Tax, which only graduates who have received financial assistance from the government with their higher education costs would be liable to pay, as a supplement to their regular income tax.

- A deferred contributions scheme.

- A loan scheme, under which individuals who cannot pay their tuition fees as they arise, can take out loans to pay these fees, repayable after graduation.

The Graduate Tax has many attractions in the long term, but has the major disadvantages that it provides no contribution to the costs of higher education in the short term, and would only start to recover costs after a number of years – when the student has completed the course, graduated and worked for a number of years. Also, the graduate's liability to pay the Graduate Tax is open-ended and, particularly those graduates who are very successful in their careers, might have to pay an amount equal to a multiple of their higher education costs. This may seem inequitable to some while others would view it as an appropriate redistribution of income.

A deferred contributions scheme has graduates pay for their education after they have completed higher education and are employed. This approach has similar disadvantages to those mentioned for the Graduate Tax. Even if students were required to make a commitment, on enrolment for a higher education course, to pay a percentage of their income (above an agreed basic level) until they have paid off all (or an agreed proportion) of their costs, it would be many years before the government saw any income to balance their expenditure. In addition, it could be expected that a significant proportion of graduates would never repay their costs.

Under a standard loan scheme, there would be some immediate contribution to higher education costs, as a proportion of students – from economically advantaged families – would be assessed as able to afford all (or a large part) of their fees and be required to pay these immediately. Also, many (if not most) graduates would be able (and expected) to commence repayment of their fees within a few years of graduating.

The review team recommends, therefore, that consideration be given to a tuition/loan scheme wherein an increased proportion of the costs of higher education – perhaps 50% to 60% – should be recovered by the charging of significantly higher tuition fees that could be afforded by all students as a result of enhancement of the student loans scheme, as set out in Part Four below.

**Revenue Enhancement for Institutions of Higher Education**

Although most universities and all colleges in China will remain principally dependant on government subsidies and tuition and other fee income to meet the costs of teaching and research, a few of the top Universities will be able to secure significant additional income (and all should be able to secure a modest amount) from other sources including:

- Non-degree programmes;
- Research projects;
- Technology transfer;
- Facilities rental;
- Consultancies and other services; and
- Gifts and endowments.

***Non-degree programmes***

As China moves from an elite to a mass higher education system, there will be an increasingly strong demand for further education from able older workers who did not have the opportunity to pursue higher education at the time they left school, and commenced employment. These workers will require specialised teaching to update their skills and knowledge so that they can discharge the roles appropriate to their abilities and experience. Such non-degree courses will be mainly short and concentrated – from a few days to a year. Though some will be provided within normal working hours, many will take place at times (evenings and weekends) when the HEIs' facilities and equipment are otherwise un- or under-utilised. Because such courses will have high value to both employees and employers, high levels of fees – that not only cover direct costs, but also provide significant institutional "surplus" – can be charged. It is important that this surplus is used to benefit the individual teachers and departments involved – as well as the institution – as staff motivation will be crucial in providing such a very demanding form of instruction.

***Research programmes***

Many Chinese HEIs are primarily concerned with the funding of teaching, but it is obvious that many universities and colleges – particularly in the top tier – will be heavily involved in research activities. This may continue to be primarily funded by the Government in the top universities, but there is an increasing worldwide trend towards HEIs securing funding from other stakeholders. These include government itself – seeking research to be undertaken in relation to its other activities (such as health, defence, industrial development, etc). In fact, in many countries higher education research is supplanting that formerly done in government operated specialised research institutes. In China, much could be done by a further integration of research between HEI and research institute personnel.

Other sources for research sponsorship are industry and commerce; charities, trusts and foundations; and individual donors. In the OECD Member countries, most major universities derive a significant share

of their income for research (and a proportion of their income for teaching) from just such sources. The review team was informed of the excellent progress in fundraising for research being made by the top universities in particular, and believes all universities should be encouraged and assisted to develop this expertise.

***Technology transfer***

Research at the very applied end of the spectrum – usually referred to as Technology Transfer – can be a very significant source of institutional income, particularly for those universities and colleges with a strong capacity for science and technology in their disciplinary coverage. All higher education institutions can be more innovative, however, in this area. Industry – including medicine in fields such as clinical pharmacology – depends for its viability, in a competitive world, on being at the forefront of technological innovation. And it is willing to pay well for being given this competitive "edge." While many such private sector organisations will have their own research and technology units, they increasingly contract out technology transfer work to higher education researchers.

University science and technology departments are continuously producing inventions, and other breakthroughs and discoveries that have a potentially high market value. Institutional administrators should be aware of this and ensure that full value is achieved by the "selling" of this knowledge. Here, in particular, the **value** of the service provided may be greatly in excess of its **cost** to produce and, properly managed, a significant net income can be generated. Again, motivation of the staff involved in the sharing of this revenue is vital as is careful contract negotiations to protect the intellectual property rights of the institution and the individual researcher. Institutions, in line with the government's recent announcement that institutions will be allowed to retain intellectual property rights, should develop standard contracting procedures and intellectual property rights policies. The MOE can assist in this by preparing "model" contracts and policies that the individual institutions can use in the development of their own individual institutional approach to these issues.

***Facilities rental***

Universities and colleges own facilities for academic purposes that have spare capacity, and that may have a value as a source of additional income. As was mentioned for non-degree programmes, institutions do not use their facilities to the maximum and space is especially available in the evenings and on weekends. A large lecture theatre or assembly hall may be an ideal venue for a concert; the catering department may have capacity to offer outside services; halls of residence – during vacations – may have a value as low cost holiday accommodation; scientific equipment in an engineering laboratory may be valuable to local industry seeking to test its products or repair its equipment; student sports facilities may be made available to the local community for the public's use during periods of intensive study or vacation, and information technology labs can be used for adult education courses.

Institutions should be aware of the value of their spare capacity and ensure the maximum additional income from its rental. Two caveats exist, however. First, the institution should not become so enamoured of the supplemental income that students and instructors find their own interests compromised. The HEIs first responsibility is to its mission of instruction, research, and societal service. Second, the institution should carefully examine the costs implicit in yielding control over its own facilities. The probability of higher maintenance and repair costs should always be considered.

***Consultancies and provision of other professional services***

Academic staff in a higher education institution are intelligent and well educated individuals with the highest levels of training and expertise. Properly "marketed," their excess capacity – after they have

discharged their teaching and research duties – may be a significant source of additional income both for themselves and their institutions. In providing consultancy services locally, nationally and even internationally, higher education professionals will be helping both themselves and their institutions. Care should be taken to ensure that a clear and fair fee-sharing formula/scheme is in place – reflecting the roles of the individual and the institution in the exercise.

Universities with Medical Schools are particularly well placed to provide services to the local health authorities – perhaps providing pathology or bacteriology testing services. However, there may be scope for other financial opportunities for academic disciplines to provide services for public authorities or private enterprises in this way – and expect to more than cover their costs in so doing. Obvious examples include the Statistics and Education Departments providing statistical services and educational advice to local authorities.

However, there are clear risks associated with these activities, which must be borne in mind. Academics are all too easily induced to focus on consultancy opportunities to the detriment of their own institution's teaching and research obligations. As was discussed above, this is particularly true in China in the case of government higher education personnel teaching for private institutions. HEIs should have in place clear guidelines on factors such as:

- The proportion of time that individual academics can devote to such activities.
- Whether permission is required (*e.g.* by their Heads of Department and Deans) before such activities can be undertaken or if such administrators need to at least be informed of these extra-institutional activities.
- The formula for sharing of the fees earned between the individual, the department and the institution.

In all areas of fundraising to contribute to the income of institutions, care must be taken to maintain a balance between reward of the individual and profit for the institution. It is vital to assure that:

- The charges/fees levied cover all additional costs involved and that these are a first charge on the additional income.
- The academics involved are adequately remunerated for their time and innovation.
- The charges levied bear the above in mind, and leave as high a "surplus" as possible for the institution to fund its infrastructure costs.

This will require the development of a scheme, understood and accepted by the academic staff, that determines how income of all types is to be shared, in as many circumstances as can be foreseen. *Ad hoc* arrangements – whereby the individual has to agree to the fund-sharing formula after the event – should be avoided wherever possible.

***Gifts and endowments***

Although it may be some years before graduates (*alumni*) are in a position to afford substantial giving in support of their *alma maters*, universities and colleges should be aware that they are likely to become donors in the future, and take care to keep alumni informed and involved in the work of the institution. In the meantime, other "friends" of the university should be identified, and solicited for support – for particular projects likely to be of interest to the individuals involved. The review team was impressed to

note that a number of the universities that were visited, including the private institutions, were aware of this and had secured substantial external support – mainly from wealthy businesspersons of Chinese backgrounds. Commonly, these were individuals who had made their fortunes overseas and were interested in supporting the economic regeneration of their "home" country by helping with the development of its higher education system.

While this summary of finance issues may appear daunting, the basic approach to finance within China's higher education reform programme has been well conceived and pragmatic. The scale of the projected levels of enrolment, however, poses an incredible challenge to Chinese planners and administrators for the coming decades. Only an effective partnership among government, communities, individuals and private sector enterprises will allow for an equitable and efficient higher education system that serves the needs of individual graduates and the requirements of a rapidly evolving society. Using the ten criteria presented in Part One of this review report, the MOE can help develop just such an equitable and efficient partnership.

# PART FOUR:
# POLICY ALTERNATIVES

This review report has consisted of three major components:

- An assessment of the Chinese higher education reform programme in terms of ten analytical criteria.
- A discussion of quality monitoring and assurance activities at the system and institutional levels of Chinese higher education.
- An overview of some of the most important issues in Chinese higher education finance.

Within these discussions many references have been made to alternative policies and practices, which the OECD review team feels, are deserving of consideration by the MOE and the higher education institutions as the higher education reform proceeds over the next decade. In this concluding section, three main policy alternatives are presented for immediate consideration:

- An expanded Quality Management System for Chinese higher education emphasising accreditation criteria.
- A revised tuition-loan system to serve expansion and quality needs more effectively.
- A proposal for an efficiency-based management information system.

Obviously, many more proposals could be put forth. However, the review team feels these three policy alternatives incorporate many of the most critical concerns raised in the review report. The team is sure that the experience and wisdom of their Chinese counterparts will allow these proposals to be evaluated properly and to be appropriately revised to serve the real needs of Chinese Higher Education.

## Alternative 1: An Expanded Quality Management System for Chinese Higher Education Emphasising Accreditation Criteria

To reinforce the progress already being made by the existing assessment and evaluation procedures, the review team would like to propose the following policy option. This new policy alternative aims at providing quality assurance throughout the whole process of the higher educational cycle at the micro/institutional level. The recommended policy will give the authority and responsibility to the HEI management to establish a quality management and audit system and would provide earmarked resources for this operation.

The suggested internal quality management system and audit would cover the whole cycle of education planning and implementation within the legal framework established by MOE. It would cover the following phases of higher education in China:

- Defining educational objectives through needs identification (through surveys of participants or deductively from comparing goals with achievements – this point is further discussed below in the discussion of higher educational management systems).

- Defining the requisite teaching curricula and courses.

- Defining appropriate pedagogic approaches and selecting the educational method.

- Conducting teaching.

- Evaluating the whole process.

An on-going monitoring system would also be part of the quality management system to allow for timely correction and continued improvement. Such a policy would stipulate that the establishment of such a quality management system is part of the accreditation requirements for academic titles and recognition. This policy would also stipulate that the required quality management system and audit should be certified on a regular basis by a qualified third party.

Successive education reforms in China have made major positive impacts on the quality of education, but available funding remains insufficient to ensure quality. As discussed in the previous sections of this report, various financial, management and internal administrative reforms have all facilitated improved development of higher education in China. The challenge of the next phase of development is to obtain greater efficiency and effectiveness of the investment already made in higher education institutions and programmes.

Quality control of education concerns more than inputs and outputs. Quality of education should be defined not only as a process issue but also an outcome issue, encompassing broader and longer-term effects of higher education. Questions that need to be answered are:

- Can graduates from HEIs find gainful employment?

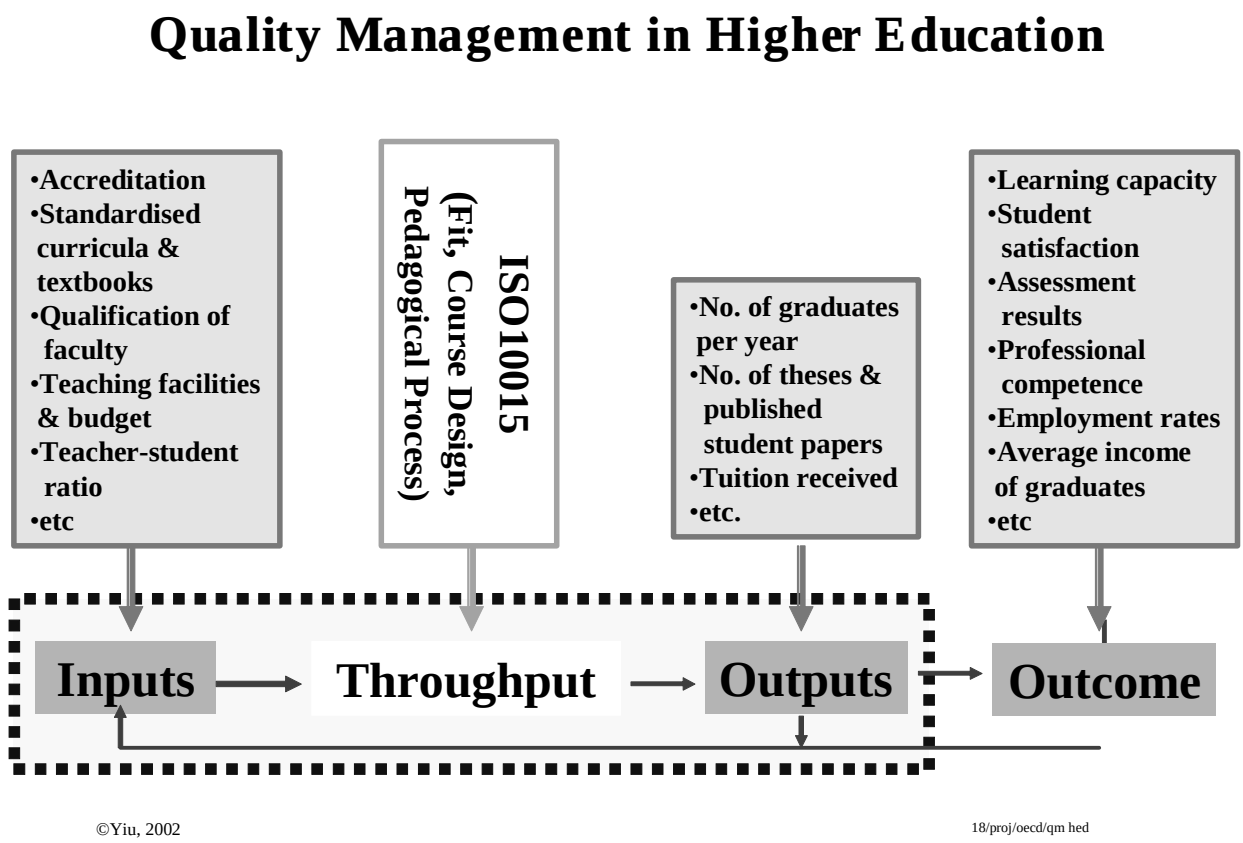
- Can they continue to realise their potentials through work and other involvement in life?

- Can they contribute meaningfully to the development of their community and nation?

These questions all need to be part of the quality of education equation, no matter how difficult to quantify and to measure.

Existing policy instruments alone will not be sufficient in guaranteeing the quality of education, especially when most of the instruments tend to be input-oriented. Applying the systemic model to the education process (see Figure 1), one can see that existing tools are geared to regulate the input requirements (*e.g.*, accreditation) and output requirements (evaluation based on number of graduates, research papers, student satisfaction, etc.), but are less outcome-oriented (*e.g.*, employment rate) and often fail to focus on the actual educational and pedagogical process (in-class observation).

Figure 1 **Quality Instruments Applicable to Different Components of the Higher Education Process**




Legend:

Quality management tools used in China

Quality management tool not used in China

Quality needs to be determined by all the stakeholders, not by the higher education sector alone. Both the government and the individual invest in education and development and both have a stake in the outcome of education. Consequently, both should have or be given the right to co-determine what the quality standards in education will be. While the state focuses mainly on the development of the country, the individual students will focus on employability and career opportunities. HEIs need to satisfy both sets of objectives and by extension, satisfy the needs of the enterprises, also users of higher educational services.

To meet the demands of government, HEIs need to ensure that the choice of academic disciplines offers a response to the current economic conditions of the area that they serve and its future developmental strategy and needs. To meet the demands of the students, HEIs need to ensure that the

teaching fits with the required academic standards and professional competencies of particular academic disciplines and professional applications. Both sets of demands should compel HEIs to look beyond their own domain and engage in dialogues with these stakeholders and their representatives. Some HEIs have started to engage in such dialogues voluntarily. A compulsory requirement would be a better guarantee to make such dialogue as an on-going process and is conducted by *all* HEIs.

Chinese higher education requires a quality management system that guarantees consistency of education process. Quality of education should not suffer from individual variations. The same subject matters taught by two different professors in the same HEIs at least, for example, should not have too much divergence in content, methods and emphasis. Deviation should be easily detected and corrections made. It is not enough to just rate professors' performance at the end of the semester (*i.e.*, student evaluation) and use this feedback to decide on the bonus for the teacher. Quality assurance is not solely about serving the needs of the university administration but also about meeting the needs of the students and the communities.

It is not sufficient to avoid a wide variation in the quality of teaching between HEI departments. For instance, students should not be punished just because they have different interests or have different entrance examination scores. Therefore, a HEI-wide quality management system would eliminate the chance factor seeing from the student's point of view and potentially remove the weak departments/disciplines that could not be improved. This quality management system would become the platform to integrate different appraisal systems that are currently in use and strengthen their impact.

A third party certification of the proposed quality management system and internal audit would prevent it from falling into entropy over time. It would prevent or minimise the inevitable social pressure to be lenient or to give special consideration to exceptional cases. In order to maintain the integrity of the quality management system and its credibility, third party certification would be the preferred choice. An independent educational assessment and evaluation network is being established under the auspices of the MOE. Besides carrying out its intended function, it could also develop the necessary know how and competence to conduct external audit in this regard. No additional institutional infrastructure needs to be established as the result of this suggested new policy.

As indicated in Table 2, by the year 2000 the total number of enrolment in the tertiary educational institutions exceeded 11 million students. The number of students doubled compared to the number of students enrolled in 1990. The enrolment rate reached 11% in general, while in the economically advanced areas, such as Beijing, Tienjin, Shanghai, Jiansu etc., the gross enrolment rate is even higher, reaching 15%.

The trend continues towards an ever-larger student population and will only start to decline in the mid 2010s. Between 2006 and 2010, the population of the university age group from 18 to 21 years old will reach more than 110 million per age group. With a gross enrolment rate of 15%, this would mean the total number of students enrolled between 2006 and 2010 will reach approximately 66 000 000. This will represent a 12 times increase in real numbers. An expanded quality management system, which takes into account the crucial link between employability and employment opportunities at different levels of the economic system in China, should be installed as soon as possible. Furthermore, such a quality system should allow for monitoring the adequate choice of pedagogy, actual learning processes and assure the efficient and proper use of resources. Similar to the rationale of the current practice of repeated evaluation of HEIs at 5-year intervals, the quality management system within individual HEIs needs to be reviewed on a regular basis to ensure its proper functioning and continued use. A third-party certification process, specifically ISO 10015, is recommended to avoid the inevitable inertia of any self-regulated quality management approach.

Table 2. **The Number of Students Enrolled in Different HEIs between 1990 and 2000 in China**

| Year | 1990 | 1995 | 1998 | 2000 |
|---|---|---|---|---|
| Overall enrolment rate in higher education* | 3.4 | 7.2 | 9.8 | 11.0 |
| Post graduate students (in thousands) | 93.0 | 145.4 | 198.9 | 301.2 |
| Students enrolled in the degree programmes of regular colleges and universities (in thousands) | 2 062.7 | 2 906.4 | 3 408.8 | 5 560.9 |
| Students enrolled in the degree programmes of colleges and universities of continuing education (in thousands) | 1 664.4 | 2 570.1 | 2 822.2 | 3 536.4 |

*Overall enrolment number includes post-graduate students, students of regular colleges and universities, students of tertiary continue education institutions, students of military academies, students who registered for the diploma examinations, students of TV universities, students of self-study programmes.

*Sources*: China Annual Educational Statistics: 1990-1999, Renmin Education Publisher, 1991-2000. 2) Educational Statistic Report, 2000, Development and Planning Division, Ministry of Education, vol.1. Cited in National Research Institute of Educational Development, *2001 Green Paper on Education in China*: *Annual Report on Educational Policy in China.* Beijing: Educational Science Publishing House. P.11.

**Alternative 2: A Revised Tuition-Loan Scheme to Serve Equitable Expansion and Quality Needs More Effectively**

The review team proposes that the tuition fees be increased substantially, in some cases to cover full costs, and that the funding currently made available to universities and colleges as the *per capita* payment (and some of the additional project funding) be redistributed. A proportion of the government funds should be diverted to meet the major costs associated with a greatly extended student loans scheme, the main features of which would be as follows:

***Increasing participation in the loan programme***

All students unable to afford the increased tuition fees should be eligible for student loans to cover (as a maximum) their tuition fees and residential charges, based on their financial needs. It would be expected that students from very poor families would qualify for full loans, and that most (*i.e.* all but the children of the most advantaged families) would qualify for some assistance with payment of their tuition fees. The main characteristics of the repayment scheme are:

- Loans would be interest free during the period of study.
- Loans should be liable for only half the normal rate of interest for a period (say 5 years) after graduation.
- Thereafter, loans should be liable for full interest.

Though loans should be liable for interest, as above, they should only become liable for **repayment** when graduates achieve a level of income when they can afford to do so. The objective would be to avoid requiring graduates to start to repay loans until they have demonstrated that their "investment" in higher education is "paying a dividend". If this income level is never achieved, or the loan is not fully repaid by the time the graduate reaches retirement age or dies, repayment of the loan (or the balance outstanding) should not be required, and the outstanding balance should be paid by the government.

The objective of the scheme would be – in part – to transfer responsibility for the costs of higher education from the families of the students, to the students themselves. A student loan would not be a privilege available only for a poor student, but an investment by the state **and** the students (and their families) in their higher education.

As will be obvious, the financial provisions of such an enhanced loan scheme will be considerable (particularly initially – in the 8 or 9 years until full interest becomes chargeable – and until loans start to be repaid). Thereafter, the costs will stabilise. However, it should be possible to divert from the *per capita* and project grants sufficient funding to meet these initial costs.

This funding would be required to meet two principal costs: (a) the interest charges during the "interest free" and "subsidised interest charges" periods, and (b) the loans that are not repaid as a result of the graduate never achieving the income "threshold" for repayment, or reaching retirement age, dying or otherwise failing to repay (*e.g.* by leaving the country without paying) while the loan is still outstanding. There might also be costs associated with those who fail to complete their courses or default on interest charges, as the banks would certainly expect these losses also to be underwritten.

However, overall, there would be significantly more funding available to enhance higher education provision because (i) those whose families can afford it would be paying the full costs of their higher education, and (ii) those who cannot afford it at the time, but who come to be able to afford it by achieving well-paid employment after graduating, will pay for their higher education in due course. Effectively, the government will only be required to subsidise students who cannot afford the full costs of their higher education, and then only while this continues to be so.

***Setting tuition levels***

Tuition fees are currently set for each university and college, and for each course, on the basis of a 25% estimate of average costs. The team understands that this is calculated to be between 3 000 and nearly 10 000 CNY *per annum* (the latter figure for only a few very expensive courses, like fine arts). The team proposes that a structured tuition fees scheme be developed, with universities and colleges divided into 3 or 4 categories, and courses into 4 or 5 broad bands (based on actual average costs). Such a structure would involve the setting of 12 to 20 fee levels (3x4=12; 4x5=20) – and revising these each year – ranging from the lowest cost band in the colleges to the highest cost band in the top tier of universities. [A simpler or more complex structure would, of course, be possible with fewer or more tiers of institutions and fewer or more bands of costs.]

The team suggest that the level of tuition fee should not vary **significantly** to reflect the higher costs of particular courses, as access to expensive programmes should be based solely on academic merit, not financial means. Indeed, the risk that costs might inhibit study of certain subjects would also apply to disciplines where the courses are **longer** than the norm – such as medicine, teaching and postgraduate study – as length of study increases the total costs of higher education. Accordingly, as the actual costs for some courses in the top tier of Universities are extremely high, the team proposed that full cost recovery should apply only to the very lower bands, and that tuition fees in the higher bands be set at less than full cost recovery levels (to avoid deterring able students from following these courses because of doubts about their ability to repay the substantial loans that would be involved).

For example, if the actual costs were as indicated in column A below, the tuition fees charged might be those in column B:

| Fee band | A | B |
|---|---|---|
| Low cost courses | 10 000 CNY | 10 000 CNY |
| Medium cost courses | 15 000 CNY | 12 000 CNY |
| High cost courses | 25 000 CNY | 14 000 CNY |
| Very high cost courses | 40 000 CNY | 16 000 CNY |

The same principle should apply in relation to the ranking of universities, as a student should not be deterred from studying at a top university, just because its fees are higher. For example:

| Level of institution | A | B |
|---|---|---|
| Provincial colleges | 10 000 CNY | 10 000 CNY |
| Provincial universities | 20 000 CNY | 12 000 CNY |
| National universities | 50 000 CNY | 14 000 CNY |

Thus, a student securing a place at a top university would be expected to pay a slightly higher level of tuition fee. This would be acceptable, as the prestige of obtaining a degree from such a university would be likely to ensure that the graduate would secure a much higher salary and – if this did not happen – the income contingent repayment scheme would ensure that the graduate was not financially disadvantaged as a consequence.

For this reason, the review team proposes that the objective of the tuition fees scheme should be to recover 50 to 60% of the actual costs. Appropriate *per capita* funding, relating to agreed quotas of students in the higher band courses, should continue to be granted to the universities and colleges involved, to compensate them for tuition fees not covering the full costs for these courses. As proposed above, the government funding "saved" should be diverted to support the enhanced student loans scheme.

***Continuation of special funding for the top universities***

As was reported above, government funding has been provided to the top universities in China for the last few years under the "985" and "211" schemes. The objective of the former scheme has been to protect a small handful of the very top universities from the dilution of their quality of education and research likely to follow the recent substantial increase in student numbers and teaching load. The “985” scheme has been provided to support a small group of universities to achieve and sustain a position of "world class". The “211” scheme has been provided to support a larger number of universities (over 100), to ensure that the highest academic standards are maintained and enhanced in a small number of elite universities in every province. Under these schemes, funding has been project based and (mainly) linked to specific capital objectives – such as construction or renovation of academic buildings. The review team observed that facilities in most of these top universities are now of a very high standard and – as the government objective of 15% of the age-group in higher education will soon be achieved and student numbers will now start to stabilise – it may be possible in the near future to reduce government funding for new building projects, thereby releasing funding for the enhanced student loans scheme and other educational priorities, such as the preservation of academic standards in these top universities.

It is important to recognise that enhanced facilities have to be supported by increased running costs. New buildings – especially for science disciplines – require more expensive support staff and have demanding equipment needs. Whereas tuition fees in the top universities (to a limited extent) will be set to

reflect this, continuation of certain elements of the "985" and "211" funding streams will be required to further enhance the facilities in these top universities and meet their increased running costs.

With the levels of tuition fees indicated above, the top universities would recover a lower proportion of their costs from fees, and special funding would continue to be required to meet this "shortfall." For such a scheme to operate satisfactorily, the Government would have to agree with all universities and colleges – and review this annually – about an acceptable level of full teaching **costs** for each category of institution. Thereafter, by setting the acceptable level of fees to be recovered from students, government would be agreeing the "shortfall" funding it would be liable to pay.

By these mechanisms, government would be setting each year:

- The number of students to be admitted to each university and college for the range of courses it offers.
- The level of tuition fees to be recovered from students at each institution and on each course.
- The acceptable costs to be incurred by each university and college to be paid from its government and tuition fee income.
- The annual expenditure on higher education by the government.

***Promoting regional development***

The enhanced loans scheme would provide an opportunity for the government to help in solving the acute problem of attracting well-qualified professionals to fill key posts in the poorer provinces, such as teachers in the schools and lecturers in the universities. Graduates concerned about their abilities to repay their student loans could be given the opportunity to "redeem" their loans by service in these key posts. For example, a graduate taking such a post for ten years might be excused the payment of interest during this time, and granted exemption from the requirement to repay the loan at the end of his/her contract. Lesser rebates could be granted for shorter contracts.

Providing a very high level of primary, secondary **and** higher education in the poorer (Western) provinces of China, the review team believes, should be a very high priority for government. The alternative strategy – of providing places in the top universities located in the centres of high economic activity such as Beijing, Shanghai and the Eastern provinces for able students from poorer provinces – may well fail to meet its objectives. Even with appropriate positive discrimination in relation to entry standards (and targeted loans and scholarships schemes) to secure entry for such students the government may fail in the principal objective of this strategy – to improve the poorer provinces' economic and educational performance. It has been demonstrated that many such students do **not** return home to serve their local communities, but prefer to secure (significantly better-paid) employment in the city/province where they received their higher education.

In this connection, it is the experience of European higher education systems that graduates seek their first paid employment within 50km of the city in which they have studied. This observation has – for example – motivated The Netherlands to establish a prestigious new university (Twente) in the economically depressed region of the east of the country, and the UK to establish a Medical School at the University of Warwick, in the Midlands of England, which has an acute shortage of doctors.

For these reasons, the key educational objective should be to improve the standards of the local schools and universities (by providing them with the very best buildings, equipment and facilities and by

recruiting the highest quality possible teachers), thereby providing the very best educational opportunities to the ablest students from these regions. The alternative strategy, of providing the best local school leavers with educational opportunities in top universities in the Eastern provinces may merely accelerate the "brain drain" from West to East.

***Fees and scholarships for post-graduate courses***

The present policy is to charge tuition fees for undergraduate courses, but to be highly selective in regard to admission to masters' courses and doctoral study – and then provide this postgraduate education free of charge. The review team recommends that the government should proceed with the change in policy that it is currently piloting in respect of certain market-related postgraduate courses (such as the MBA) and introduce full cost tuition fees for postgraduate as well as undergraduate higher education.

However, this policy should be coupled with a postgraduate scholarship scheme to ensure that the most able students are not deterred from undertaking postgraduate study, with a view to fulfilling the vital educational and other roles that are key to China's continued economic growth and development, and the achievement of the highest educational standards in schools, colleges and universities. Similar scholarship provisions may have to be considered in relation to study on courses that are longer than the norm of 4 years, such as medicine. In addition to extending the interest free periods for the student loans of these students, the most able and the most needy should be eligible for full scholarships covering both tuition fees and residential costs and – for posts in the areas requiring the most support – should also benefit from a loan remission scheme as outlined above.

***Enrolment quotas***

At both undergraduate and postgraduate levels, the quotas set for universities and colleges by central and provincial governments are crucial. Quotas should be set to ensure that the economic objectives of government are achieved – in providing appropriately qualified graduates for the growing number of posts in the public and private sectors of the economy that have high technical and educational skills requirements. The present objective is to increase the proportion of the population entering higher education to 15% by 2005. It is now clear that this objective will be achieved comfortably (partly as a result of the dramatic growth that has been achieved – with government encouragement – in the private higher education sector) – probably as early as 2003 if it has not been achieved in 2002. As indicated above, it is essential to set quotas to contain higher education expenditure (except, perhaps, in areas where full-cost recovery fee levels have been set).

However, there are signs that graduates are not always able to secure the jobs that they believe they are qualified (by their education levels) to undertake. A balance will no doubt be achieved in due course – as a result of the labour market responding to the availability of more highly skilled entrants, and graduates adjusting their employment aspirations to the changing supply of educated manpower and developing labour market. However, any short term oversupply of graduates – particularly if this leads to significant unemployment of recent graduates – would give a very undesirable "signal" to young people considering higher education, with all the implications of high tuition fees and increased "debt" incurred from student loans. They will not feel confident about incurring high student loans, if they do not feel that their **investment** in their own higher education will have the potential for significantly higher earnings (and that they will have the ability to repay their loans, without any financial hardship, after a few years in employment).

The successful introduction of full cost tuition fees and a much more widespread and "user friendly" student loans scheme is crucially dependent on the premise that the much higher sums to be "invested" in personal higher education will produce a handsome "dividend" in the form of significantly higher lifelong

earnings potential. This will not be true in all cases – as not all professions that require university educated staff guarantee the same high levels of remuneration. For this reason, the income-contingent "trigger" for repayment of loans – and the provision for ultimate loan repayment relief on reaching retirement – are crucial features of the reforms proposed.

***Student Loans Agency***

The mechanics of the student loans scheme may require the establishment of a Student Loans Agency, independent of the Ministries of Education and Finance **and** the banks. The Agency would have a long-term relationship with universities and colleges, and with the student/graduate involved, in the discharge of the following responsibilities:

- Assessment of the students' personal and family financial circumstances to determine eligibility for student loans and the level of the loans to be granted (from full tuition fees and residential costs for a few, to a proportion of tuition fees for the majority).

- Monitoring the amount of additional loan to be granted for each year of study, taking account of the students' and their families' changing financial circumstances and the levels of fees due.

- Setting and reviewing the periods of interest free and subsidised interest for graduates following completion of their courses (taking account of progression to postgraduate study).

- Monitoring the income of each graduate to determine when loan repayment should commence and setting the sum annually to be repaid.

- Monitoring the loans repayments to determine when the loan has been paid off, or the time has arrived (on the death or retirement of the graduate) when any outstanding balance must be "written off" by the government.

The Agency would have direct relationships with the banks to:

- Confirm the loans to be granted to students during their periods of study and to pay the interest due in this period.

- Confirm the tuition fee payments to be made to universities and colleges on behalf of the students whose loans it administers.

- Confirm the maintenance payments to be made to students seeking loans for this purpose, who are assessed as being eligible for this support.

- Confirm the interest to be recovered from the graduates in the period after graduation, and to pay the balance of this due by government in any period of interest free loan, and in the "subsidised interest" period.

- Confirm when the graduate's income has reached the level when repayment of loan should commence, and to confirm the sums to be recovered each year.

- Agree with the banks when the loan has been repaid in full.

- Confirm when the graduate has died or retired, and to repay any balance of loan then outstanding.

The Agency would also have a relationship with the Ministry of Finance to agree its own budget and the budget required to discharge the above activities.

**Alternative 3: A Proposal for an Efficiency-Based Higher Education Management Information System**

***Key criteria***

One of the critical needs to realise the potential of the Chinese higher education reform is an effective management information system. In fact, both of the preceding policy alternatives will themselves depend on an effective information system for their effective operation. The characteristics of such a system is that it supplies data that is:

- Relevant.
- Timely.
- Accurate.
- Understandable
- Cost-effective.

*Relevance* refers to the data being of actual use to decision makers. For example, there will be three main users of a higher education management information system (HEMIS): central administrators (including those at provincial and municipal levels), institutional administrators (including at department and programme levels), and consumers of higher education (including individual students, their families, and potential employers). When one looks at most of the higher education data disseminated in China (or in the OECD countries) it fails to be in sufficient detail or appropriately cross-tabulated to be relevant for decision making at any but the most abstract level. Aggregate enrolment data is presented but rarely does one have access to cost per programme weighted by employment probability and earnings. Gender- and location-specific data are often less available and yet it is exactly such detail that is needed to make the HEMIS relevant for institutional and individual decision-making.

*Timeliness* is another critical concern for management information systems for higher education. Even if the data collected and assimilated is relevant, it may lose that relevancy if it is not disseminated in a timely fashion. To learn two years later of a surge in secondary school graduates will not help the higher education system or its component institutions prepare for the consequent increase in demand for higher education.

*Accuracy* would appear to be an obvious value in educational data but one should recognise that it is not an absolute at higher levels. If dealing with an individual or even a group of individuals at a single institution, one requires a very high degree of accuracy. When dealing with province- or national-level data, the degree of accuracy may not need to be as precise. Fortunately, modern information technology has made it easier to aggregate national or provincial data from institutional and individual data without any sacrifice of accuracy.

*Understandability* is a dissemination issue. Rarely will understandability be a concern among the data specialists. However, when presenting higher education data to administrators, staff or students one must be concerned with their ability to understand what the data means. For example, as more individuals take an achievement examination, average success levels may fall. That does not necessarily signify that

learning is declining. If only the top half of secondary school graduates take an examination the scores will be higher on average than if all students take the examination. To "understand" the data one must understand the context of the data. This is particularly important in a context such as that of higher education in China where conditions are so diverse and change is so rapid.

*Cost-effectiveness* of data is a critical concern. If data is effective (meaning that it embodies the characteristics of relevance, timeliness, accuracy, and understandability), it still must be affordable. Some very useful data may be too expensive to collect every year. The MOE may decide, for example, to collect some data on an annual census basis (meaning data is collected from all individuals or all institutions) and to collect other data less frequently and/or on a sample basis. Traditionally, most HEMISs have been census based and have under-utilised the sample approach. To link location and employability, for example, a sample population will be much more cost-effective than to try to collect the required data from all participants in the higher education system. "Special studies" on select topics can also be conducted to decide if certain types of data and analysis should in the future be included in the HEMIS on a sample or even census basis.

Before discussing the steps in developing the proposed HEMIS, the concept of an "efficiency-based" HEMIS should be clarified. The proposed HEMIS will not look at attainment, achievement or outcome data (employability and income, for example) in isolation. The unifying theme of the proposed HEMIS for China will be to compare effects with costs, thus determining which institutions and programmes are most efficient in their operation. The joint requirement for cost and effectiveness data will encourage all users to recognise that both aspects are necessary to make an informed judgment about the value of a higher education activity.

The development of an efficiency-based HEMIS in China will involve three main steps:

- Determination of data requirements from potential users of the system.
- Design of data collection, assimilation, and dissemination systems.
- Implementation of the HEMIS, perhaps through a phased process.

The MOE will need to convene a conference involving central and institutional administrators (the latter including those from private institutions), students, community officials, and both public and private sector employees. MIS (management information system) experts from China may be supplemented by OECD experts in higher education data management. The purpose of the conference will be to define the data that is desired and to compare this with the cost of providing that data.

From this needs assessment, the HEMIS experts can design systems for the collection, processing and distribution of the data. At least three levels of data security will be required. The highest level will be for individual student and staff information. Access to this data will be very strictly limited so as not to compromise individual privacy. The second level of data will be at the institutional level. The MOE will have to make discrete judgments as to what data will be available linked to names of specific institutions and what other data will be available only to characteristics of institutions. Finally, the lowest level of data security will be for information such as enrolments and course offerings, data already accessible under the present data system. The MOE also will need to decide who can access each of these security levels. HEMIS will not only include information which basically consists on educational statistics, but also information on expected learning outcomes. In other words, learning outcomes expressed in competency profiles of different student populations and disciplines should also be included in the lowest level of data security so that potential employers would not only be informed of the general supply of the available human resources in each field, but also the acquired skill sets of different student groups. It is thus

foreseeable that this information can be connected to the various labour market information systems that China has already developed. The MOE may give maximum freedom of access to its own researchers but provide ad hoc consideration to requests from researchers outside the government (including foreign experts).

Implementation of the HEMIS will require a phased process, probably spread over a decade. This timing is designed to allow for lessons to be learned and applied at future stages of the implementation. Also, as time passes new data needs will be identified and new security procedures will become available. The ultimate goal will be to provide data that meet the five criteria and that serve the decision-making needs of the Chinese officials and citizens.

***The HEMIS context***

The design, use, and interpretation of educational indicators can be properly understood only within the context of the management information system of which they are a key component. A HEMIS incorporates the set of structures and procedures that govern the collection, processing, analysis, presentation, and use of information within an organisation or system. The last decade has seen the emergence of the HEMIS as a key new development in international concerns about higher educational administration and planning. In this report it has been shown how much the analysis and administration of higher education quality and finance concerns will depend upon the higher educational system's procurement and management of data. Five trends have converged to promote this new priority attached to HEMISs:

- The rapid expansion in the physical size and geographic coverage of higher education in China.
- The increased complexity of Chinese higher educational activities in terms of their number and the variety of outcomes pursued.
- The heightened pressure for more efficient use of resources (brought on by increased demand and the aforementioned constraints on China's ability to expand available financial support).
- Greater accountability requirements within the sector.
- The improved availability of relatively low-cost technologies for dealing with large data sets.

Of these five trends, the issue of accountability may be the most central. Because of the increased size and complexity of the education sector and a recent history of constrained financial support, higher educational managers have found it necessary to have more and "better" information upon which to base **and defend** their decisions (including those about quality controls and tuition levels, for example). Because of the greater demands of accountability, more attention is directed to how and why higher educational decisions were made. Data-based justifications are more likely to be accepted both administratively and politically; it is the responsibility of the HEMIS to produce the data, including indicators of higher educational components, processes, and performance, upon which decisions about policies and practices can be effectively based. The importance of HEMIS structures and procedures within educational management can be expected to continue to increase into the next decade as the political struggle over the financing and management of education escalates.

***Component activities of the HEMIS***

Each of the following steps must be designed and implemented properly if an effective HEMIS is to be achieved in China:

- Needs Identification.
- Data Collection.
- Data Processing and Analysis.
- Information Provision.
- Information Utilisation.

*Needs identification*

There are two predominant means for conducting needs identification. The first involves a survey of decision makers to determine what data they currently use and the additional data they would like to have. The second means of data needs identification involves an analysis of a HEMIS conceptual framework (the ideal specification of the key higher education data components and relationships) to determine the most critical aspects of the higher education management decision-making process in China. Neither of these need identification activities is sufficient by itself. The results of a survey of data users is limited by their experiences and imaginations; there may be types of data that would help their decision making, but because of lack of experience with such data, they may not ask for it. Similarly, an idealised conceptual framework for higher education may yield many data items that are impractical or outside the control or consideration of the decision makers the HEMIS is to serve. By combining the practical orientation of the survey of users with the broader theoretical perspective provided by the conceptual framework, data needs identification can be conducted in a balanced manner. Once identified, all proposed data for the HEMIS, including specific higher educational indicators, must be judged in terms of the aforementioned criteria of relevance, accuracy, timeliness in collection, understandability for decision makers, and affordability.

*Data collection*

The data within a HEMIS will originate from one of three main data collection sources. First, day-to-day records of the operation of a higher educational system or institution generate an enormous range of potential data on personnel, clients, and operations. A selected subset of this data may be incorporated into the HEMIS as indicators; for a higher educational MIS this might include course enrolment information of students or expenditure data on personnel, materials, or equipment. Also, additional periodic data may be generated as a part of annual budgets, plans, or evaluations.

Second, a common form of data collection for a HEMIS is for a "census" to be conducted covering all parts of a higher educational system's or organisation's structure. Most higher educational systems or institutions conduct an annual data collection on personnel and pupil characteristics, facilities conditions, the availability of educational materials, and other information deemed necessary for managers. Third, it is becoming increasingly popular to use special data collection exercises to deal with issues of policy or practice for which inadequate information exists from the on-going data collection activities. Often based on sample rather than census structures of data collection, such special purpose data collection activities have the advantage of immediate relevance, greater detail on the given topic, and a reduced lag time between the need for information and its provision.

These internal system data collection activities can be supplemented by incorporating within the HEMIS bibliographic, organisational, and research data bases, even from outside the higher educational system. This "outside" information is critical for defining the context of the system's operation and for facilitating comparisons of organisational performance with other system's or with other aggregate performance standards.

A majority of the simple errors that exist in any HEMIS are introduced in the collection process: however, ineffectual data transcription and coding procedures, inadequate verification procedures, and errors in data storage and retrieval systems can compound these problems. Data will rarely be made more accurate after collection but often can be made less accurate; of equal importance, the ability to access and interpret the data can be so constrained by improper processing that a potentially valuable data set can be rendered either unusable or subject to serious misinterpretations.

Data analysis within the HEMIS basically should parallel the conceptual framework upon which the HEMIS data collection was based; for example, causal linkages posited in the original framework can become the rationale for the interpretation of correlation analysis. Also, if the framework asserts that gender, urban-rural location, age, or other such characteristics are important to higher educational operations and impacts, then the data results may be analysed in terms of these dimensions to determine if the assumed relationships can be confirmed. The HEMIS conceptual framework also will guide the managers of the information system in the construction of indices or other derived indicators of performance that combine two or more pieces of individual data. Computer-based systems and the dedicated software packages for statistical analysis of large data sets greatly facilitate an interactive approach to data analysis. One can now move easily from simple frequency distributions of variables to a complex path analysis of relationships and to a great variety of statistical operations related to specific data attributes.

An inadequately appreciated aspect within certain HEMISs is the need for standardisation of procedures and measures over time. Standardisation of procedures (*e.g.* common coding systems for data input and use of a similarly designed data analysis process) reduces the training costs involved in each new cycle of data processing and analysis and will constrain one major source of data errors. Using the same data measures over time will promote comparability among data for different time periods and also encourage understanding of the data output by the data users. Changes in an HEMIS are often necessary but the benefits of these changes should be obtained while minimising the costs, the constrained comparability, or the reduced understandability of the indicators.

*Information provision*

Most MIS professionals have been quick to appreciate their responsibility for identifying needs, promoting effective collection procedures, and monitoring the processing and analysis of data. There has been a less universal recognition of the need for information provision, to provide data in a manner appropriate to the users – that is, appropriate to their capacities and responsibilities. An example would be the differences in terms of personal capacity and responsibilities that might exist between five possible users of a HEMIS: system planners, institutional administrators, policy makers, students/parents and employers.

System planners are likely to have great facility with data and their responsibilities require them to make use of the available data in their planning design and justification. For these individuals, the HEMIS professionals often may need do little more than provide access to the HEMIS indicator data. Institutional administrators may, because of accountability requirements, have a high perceived need for indicator data but often will not have highly developed data utilisation skills. The administrators may be able to articulate their needs for information, but the HEMIS professionals will have to select, process, analyse, **and** help interpret the data in order to assist the administrators in fulfilling their responsibilities.

Finally, policy makers, especially those in a political or senior administrative position, may be quite far removed from the realities of daily organisational operations within the higher educational system. For these individuals, the HEMIS professionals will need to encourage data use by convincing the policy

makers of the relevance of educational indicators to their responsibilities, and by structuring the data presentation in such a way that it is readily comprehensible.

Similar needs regarding transforming basic data into relevant information are also present for "lay" groups, *i.e.*, students/parents and employers. Students and their parents need to make informed choices about future employment potential and career development by using HEMIS. HEMIS professionals will also have to select, process, analyse and help interpret the data in order to assist students and parents in making these school-related decisions. In a digitalised manner, this data processing sub-system could perform a first step educational and career guidance function.

For employers, HEMIS professionals could organise the data in such a manner that it assist employers in making better human resource management decisions regarding recruitment, compensation and on-the-job training. Hence, the HEMIS data would also need to be reconfigured to provide information regarding the quantity and quality of manpower supply in a given profession at a given time. In this context, HEMIS could potentially make useful links to labour market related information systems.

The general rule for provision of HEMIS results is that the information provided must meet a recognised need of the potential users and be understandable to the users within an "interpretive context" (involving decision maker's goal priorities, organisational responsibilities, and their understanding and acceptance of the HEMIS' conceptual framework) with which the users are familiar. As to the last, an efficiency-based analysis cannot be useful to a higher education decision maker who either does not understand or who rejects efficiency criteria. The data users' interpretive context is a key determinant of what indicator information actually will be valued and used.

*Information utilisation*

There are three alternative examples of information utilisation that may result from operation of a HEMIS. First, the information provided may be extensively used to evaluate existing policies and practices and to compare alternatives for future implementation. This "ideal" form of use is often given as the sole or main benefit of HEMIS operations. Second, the information may be selectively applied to support those policies or practices that already have been determined bureaucratically or politically. In this second case, the HEMIS is not a decision-making base but a decision-justification base; in such a context the MIS indicator results may be ignored if they differ from accepted policies or practices. Third, an extreme case of decision maker indifference would be where the HEMIS is created and operationalised, but the results ignored regardless of the data's support or contradiction of approved activities. However, even in this situation, there may be some long-term benefits derived from the MIS if the indicator data and their analyses and interpretation affect individual perceptions at the technical or lower administrative levels of the higher education system.

In most situations, underutilisation of HEMIS indicator results should force the reconsideration of the HEMIS structure and a determination of whether a revised system – larger or smaller, but certainly one linked closer to information needs – should be instituted. Unfortunately, unless proper remedial steps are taken, the inertia inherent in some bureaucratic structures can lead to the HEMIS continuing to collect, process, and disseminate indicator information without any evidence of the HEMIS output being applied to an effective purpose.

Information use will be the single greatest barrier to effective operation of the MIS. The technical problems of needs specification, data collection, processing, and analysis, and even of information presentation can, with training and appropriate support, be overcome in China. In contrast, the human and organisational barriers to HEMIS use in decision making may prove more daunting. The long-term human barriers to effective use of an indicators system are the training, skills, and adaptive capacity of potential

HEMIS users; the ability of the HEMIS to adjust to these characteristics will determine the ultimate application of educational indicator results. In addition, organisational barriers exist in a resistance to changing roles (a greater importance for the information offices and to those personnel familiar with the new information processing technologies) and a reluctance to forego traditional, non-data-based justifications for decisions. These human and organisational constraints on potential usefulness of the indicator system must be anticipated and adapted to as part of any successful implementation strategy.

In any context, but dramatically so in higher education, the quality of decision making is determined by the availability and use of appropriate data for decision makers whose training and experience qualify them to provide organisational leadership. If the benefits of an educational indicator system are to be obtained for the higher educational system and institutions in China, a greater emphasis must be placed on the informational context: the political and organisational environment and the skills and attitudes of the decision makers. These are the factors that ultimately will determine the contribution of any attempt in China to promote more equitable and efficient learning opportunities through the provision of more and better information.

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## ANNEX

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