Organisation for Economic Co-operation and Development
Directorate for Education
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THEMATIC REVIEW OF TERTIARY EDUCATION

MEXICO
COUNTRY NOTE

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This report is based on a study visit to Mexico in March 2006, and background documents prepared to support the visit. As a result, the report is based on the situation up to that period.

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1: INTRODUCTION

Purposes of the OECD Review

1. This Country Note on Mexico forms part of the OECD Thematic Review of Tertiary Education. This is a collaborative project to assist the design and implementation of tertiary education policies which contribute to the realisation of social and economic objectives of countries.

2. The tertiary education systems of many OECD countries have experienced rapid growth over the last decade, and are experiencing new pressures as the result of a globalising economy and labour market. In this context, the OECD Education Committee agreed, in late 2003, to carry out a major thematic review of tertiary education. The principal objective of the review is to assist countries to understand how the organisation, management and delivery of tertiary education can help them to achieve their economic and social objectives. The focus of the review is upon tertiary education policies and systems, rather than institutional management and operations, although the latter's effectiveness is influenced by the former.

3. The project's purposes, methodology and guidelines are detailed in OECD (2004a).[1] The purposes of the review are:

- To synthesise research-based evidence on the impact of tertiary education policies and disseminate this knowledge among participating countries;
- To identify innovative and successful policy initiatives and practices;
- To facilitate exchanges of lessons and experiences among countries; and
- To identify policy options.

4. The review encompasses the full range of tertiary programmes and institutions. International statistical conventions define tertiary education in terms of programme levels: those programmes at ISCED[2] levels 5B, 5A and 6 are treated as tertiary education, and programmes below ISCED level 5B are not.[3] In some

[1] Reports and updates are available from www.oecd.org/edu/tertiary/review

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

[3] Programs at level 5 must have a cumulative theoretical duration of at least 2 years from the beginning of level 5 and do not lead directly to the award of an advanced research qualification. Programs are subdivided into 5A, programmes that are largely theoretically based and are intended to provide sufficient qualifications for gaining entry into advanced research programmes and professions with high skills requirements, and into 5B, programmes that are generally more practical/technical/occupationally specific than ISCED 5A programmes. Programs at level 6 lead directly to the award of an advanced research qualification. The theoretical duration of these programmes is 3 years full-time in most countries (e.g. Doctoral programme), although the actual enrolment time is typically longer. These programmes are devoted to advanced study and original research. For further details see OECD (2004b).

countries the term higher education is used more commonly than tertiary education, at times to refer to all programmes at levels 5B, 5A and 6 – as is the case in Mexico, at times to refer only to those programmes at levels 5A and 6. An additional complication is presented by the practice, in some countries, of defining higher education or tertiary education in terms of the institution, rather than the programme. For example it is common to use higher education to refer to programmes offered by universities, and tertiary education to refer to programmes offered by institutions that extend beyond universities. The OECD thematic review follows standard international conventions in using tertiary education to refer to all programmes at ISCED levels 5B, 5A and 6, regardless of the institutions in which they are offered.

5. The project involves two complementary approaches or strands: an *Analytical Review* and a *Country Review*. The Analytical Review strand uses several approaches – country background reports, literature reviews, data analyses and commissioned papers – to analyse the factors that shape the outcomes in tertiary education systems, and possible policy responses. All of the 24 countries involved in the Review are taking part in this strand. In addition, 13 of the tertiary education systems have chosen to participate in a Country Review, which involves external review teams analysing tertiary education policies in those countries.

6. Mexico was one of the countries which opted to participate in the Country Reviews and hosted a review visit in March 2006. The reviewers comprised an OECD Secretariat member, and academics and policy-makers from Brazil, Chile, Germany and Venezuela. The team is listed in Appendix 1.

The Participation of Mexico

7. Mexico's participation in the OECD Review is being co-ordinated by Dr Felicia Knaul, General Co-ordinator for the Administrative Modernisation of Education, Ministry of Public Education (*Secretaría de Educación Pública*) assisted by a team from the Higher Education Undersecretariat (*Subsecretaría de Educación Superior*) led by the Deputy Minister for Higher Education, Dr Julio Rubio Oca. Mexico's Country Background Report (CBR) for the OECD Review was prepared by Ministry of Education staff (details provided in Appendix 2).

8. The Review Team is very grateful to the authors of the CBR, and to all those who assisted them for providing an informative, analytical and policy-oriented document. The CBR covered the background and content of tertiary education reforms; the structure of the tertiary education system; the role of tertiary education in regional development, the research effort of the country, and the shaping of labour markets; the challenges faced by funding, governing, achieving equity in and assuring the quality of the tertiary education system. Some of the main issues identified by Mexico's CBR, and which are taken up in this Country Note, include:

- Achieving the appropriate balance between the governmental steering and institutional autonomy in the pursuit of a better alignment between the system and the nation's economic and social development goals;
- Developing an effective system of institutional monitoring and quality assurance;
- Ensuring that the expansion of enrolments is financially sustainable;
- Improving equity of access to tertiary education among all socio-economic and ethnic groups;
- Strengthening the capability of the sector and agencies to manage the complexities of relationships in the system.

9. The Mexican CBR forms a valuable input to the overall OECD project and the Review Team found it to be very helpful in relation to its work. The analysis and points raised in the CBR are cited frequently in this Country Note.[4] In this sense, the documents complement each other and, for a more comprehensive view of tertiary education policy in Mexico, are best read in conjunction.

10. The review visit took place from 13 to 23 March, 2006. The detailed itinerary is provided in Appendix 3. The Review Team held discussions with a wide range of educational authorities and relevant agencies and visited several institutions of tertiary education in the country. Discussions were held with representatives of Ministries such as education, research and science, labour, and health; tertiary education institutions and their representatives; student; representatives of academic staff; employers; the business and industry community; and agencies responsible for quality assurance and research. This allowed the team to obtain a wide cross-section of perspectives from key stakeholders on the strengths, weaknesses, and policy priorities regarding tertiary education in contemporary Mexican society.

11. This Country Note draws together the Review Team's observations and background materials. The present report on Mexico will be an input into the final OECD report from the overall project. We trust that the Country Note will also contribute to discussions within Mexico, and inform the international education community about developments in Mexico that may hold lessons on their own systems.

12. The Review Team is very appreciative of the generosity shown by their hosts and everyone they met at what was a very busy time of the year for them. The Mexican educational community clearly attached a great importance to the purpose of the visit and the fact that the Review Team brought an external perspective. The meetings were open and provided a wealth of information and analysis. Special words of appreciation are due to the National Co-ordinator, Felicia Knaul, the group from the Higher Education Undersecretariat led by Deputy-Minister Julio Rubio Oca, and the two people who more closely assisted us during the visit – Diego Gaspar (Ministry of Public Education) and José Luís Cuevas (Higher Education Undersecretariat) – for going to great lengths to respond to the questions and needs of the Review Team. We were impressed by their efficiency and expertise and enjoyed their kindness and very pleasant company. It was a great pleasure for the Review Team to encounter first-hand the courtesy and hospitality for which Mexican society is justly famous.

13. Of course, this Country Note is the responsibility of the Review Team. While we benefited from Mexico's CBR and other documents, as well as the many discussions with a wide range of Mexican personnel, any errors or misinterpretations in this Country Note are our responsibility.

Structure of the Country Note

14. The remainder of the report is organised into five main sections. Section 2 provides the national context. Section 3 outlines the key contextual factors shaping tertiary education in Mexico and tries to assist international readers by identifying what is distinctive about tertiary education policy in Mexico. Section 4 then identifies the main strengths of Mexican tertiary education policies together with the challenges and problems faced by the system.

15. Section 5 uses the analysis in the previous sections to discuss policy priorities for future development. The suggestions draw on promising initiatives that the team learned about during the visit. Section 6 has some concluding remarks.

[4] Unless indicated otherwise, the data in this Country Note are taken from Mexico's Country Background Report (Secretaría de Educación Pública, 2006).

16. The policy suggestions attempt to build on and strengthen reforms that are already underway in Mexico, and the strong commitment to further improvement that was evident among those we met. The suggestions should take into account the difficulties that face any visiting group, no matter how well briefed, in grasping the complexity of Mexico and fully understanding all the issues.

2: NATIONAL CONTEXT: THE UNITED STATES OF MEXICO

Geography and culture

17. Mexico, with 103 million inhabitants (and over 11 million nationals who live abroad) is the eleventh most populous country in the world, the fourteenth most extensive in land area (around 2 million km² between its continental land mass and islands) with a coast line of around 9,953 km. Rich in natural resources, its varied climate supports a large number of different live species, flora and fauna. Located between 14º 33' and 32º 43' latitude north and 117º 19' longitude west it is made up of four large ecological zones; arid, principally in the north west; temperate, in the centre; and the humid and dry tropics in the south east and north respectively. The arid zone accounts for around 61 per cent of the land mass followed by the temperate (26 per cent) and tropical (13 per cent).

18. Mexico has a unique American identity and perspectives looking at modernity, as it does, to the north; toward the south to the other American peoples that, like Mexico, are the children of the Spanish Conquest and their conversion by the sword and the cross; and inward to themselves, their own origin and birth as a Mesoamerican civilization.

19. This diversity marks present day Mexico – in the words of Octavio Paz (1978), "a mosaic of nations, tribes and languages" - for it is a multicultural nation with at least 62 different ethnic groups, 10 million people living together with very different traditions and world views. These groups are to be found in 24 of the Republic's 31 states and talk more than 80 languages with various dialects.

20. More than 75 per cent of Mexico's population lives in urban areas dominated by the mega agglomerations of Mexico City (estimated 20 million inhabitants), Guadalajara and Monterrey, although over the last decade medium-sized and satellite cities have been growing strongly. While mega cities bring well known challenges, so too do Mexico's rural areas particularly in terms of service delivery. They are highly fragmented with 75 per cent of around 150 thousand rural localities with less than 100 inhabitants. This dispersion is closely linked to poverty which in turn is linked to geographical conditions making both services supply and community development very complicated.

Transitions

21. For the last half of the twentieth century until the present, Mexico has been involved in a complex and multifaceted process of modernization which encompasses its demography, economics, social structure and politics.

22. The demographic pattern began to change during the 1970s when Mexico's gross birth rate reached its maximum level of 7.3 children per female. In 1978 it registered 5 children and fell to 4 children per female by 1985 and today it stands at 2.4 children per female. So between 1950 and 2000, the population quadrupled, from around 25 million to more than 100 million people. Those in the 19-23 age group, when

most students attend higher education, are now 9 million and are expected to increase to 10.7 million by 2012.[5]

23. Mexico's economic policies, in common with other Latin American countries, embraced international integration and export-based growth after a long period of import protection and substitution. The export sector has grown substantially as a proportion of gross national income with the result that Mexico is the world's tenth largest economy but the 68th in terms of income *per capita* (converted using purchasing power parities, PPP), placing it in the World Bank's upper middle income group classification.

24. The country's social transformation is illustrated by the increasing participation, at all levels, of civil society; energetic public discussion and the affirmation of civil liberties; the multiplication of non governmental organizations and of movements and interest groups promoting specific rights together with the much broader female participation, particularly in the labour market, a rate which has doubled over the last thirty years.

25. In politics, the previous closed and authoritarian Mexican system has evolved to a strong electoral democracy, with groups competing and alternating in power, and greater legislative and judicial independence.

Economy

26. The OECD's 2005 Economic Survey of Mexico notes that since the 1995 financial crisis, the economy had made substantial progress not only in terms of macroeconomic stabilization but also with reforms to open up the economy, improve the functioning of product markets and strengthen the financial sector. Real GDP grew by an average 3.7 per cent between 1995 and 2004, almost one per cent above the OECD average. The economic macro environment is stable and Mexico has a young and expanding labour force and benefits from its geographic proximity to the United States of America. Banking and financial sector performance and practice have improved resulting in a much more solid sector. Economic growth has been led by manufacturing exports and current commodity prices, especially oil. The OECD expects that overall economic growth will increase by at least 4 per cent per annum over the next two years (OECD 2005b).

27. Mexico has developed a number of innovative and relatively successful social anti-poverty transfer programmes which are well regarded internationally (e.g. *Oportunidades)*. However growth and compensating social programmes have not been sufficient for Mexico to match average OECD country social indicators. While there have been undoubted gains – for example longer life expectancy, reduced infant mortality and diminishing illiteracy, almost 15 per cent of the population lives with less than US $2 per day (The World Bank, 2005a) and there is a highly unequal distribution of income. While 10 per cent of the highest income earners obtain 43.1 per cent of all income, the lowest 10 per cent receives only 1 per cent (The World Bank, 2005b). And if unemployment has been relatively low over the last decade more than 12 million people – or 28 per cent of the labour force - are employed in the informal sector.

Government

28. Mexico is a democratic federal republic made up of 31 states and a federal district (*Distrito Federal* or D.F.), which is the political and administrative capital. The Constitution is based on the separation of executive, legislative and judicial powers. The President, who is responsible for the executive branch, is elected for six years by universal secret ballot but without the right to re-election. The 1990s witnessed the renewal of decentralized federalism at all levels.

[5] Although the estimated official figure for 2012 is disputed (Rodríguez Gómez, 2006).

29. The Congress, responsible for the federal accords, is made up of two houses – Deputies and Senators. The political system is multiparty. Citizens can choose between different parties and coalitions to represent them in the Federal and the state congresses. The three principal parties are the National Action Party or PAN (*Partido Acción Nacional*), the Democratic Revolution Party or PRD (*Partido de la Revolución Democrática*) and the Institutional Revolutionary Party or PRI (*Partido Revolucionario Institucional*). State governments follow the same electoral procedures as the federal government and both have relatively flexible powers to make laws and allocate public expenditures, as well as to set social programmes and sectoral development. The Judicial Federal power is based on the Supreme Court (*Suprema Corte de Justicia de la Nación*) for the administration of law while in the states each has its respective Higher Tribunals for Justice (*Tribunales Superiores de Justicia*).

Strategic Challenge

30. The key challenge, in the medium term, is to sustain growth by expanding and deepening the reform process and to improve the population's living conditions, particularly of those living in poverty. *Vision 2025,*[6] which sets out long term national goals, expects that by this date Mexico will be a fully democratic state, will have reduced extreme social inequalities and offer its citizens' opportunities to expand their individual development and fully be able to exercise their democratic rights. Reaching social standards of developed countries requires strong and sustained growth. However, as the OECD (2005b) report points out, any convergence in living standards requires faster growth over a long period. To meet this challenge improved quality of labour inputs, greater physical capital endowments, more advanced technology and the more efficient use of resources are required.

31. There is an overwhelming consensus that future growth depends on giving educational performance a better and more consistent priority. Mexico's human capital, measured by years of schooling is one of the lowest in the OECD area and the educational system is generally agreed not to be performing well enough. Mexican children spend comparatively fewer years in formal education than those of other OECD member countries (and as well as those of other Latin American countries) so that weak educational attainment is reproduced from one generation to the next and so the potential to reduce poverty is weakened.

32. The Federal government recognized this risk in the introduction to the National Development Plan 2001-2006, which made education its central priority as

> *"…a great national enterprise…The knowledge explosion and the increasingly rapid steps to a society and economy based on and constructed around it, requires that the assumptions of the educational system are rethought and that social organization is re-examined in terms of learning and knowledge use for all society".*

Education

33. Mexico's education system has experienced a true revolution by growing from less than one million in 1950 to more than 30 million students in 2000. This growth continues in a context of tight budgets, rapid growth of the school age population, great linguistic diversity, sizable internal and cross border migration, and a considerable proportion of the population – 15 per cent – living on less than US$2 per day (The World Bank, 2005a). The net enrolment rate is now 99 per cent for primary and 60 per cent for secondary education, which are, it should be noted, at the average level of upper middle income countries (91 per cent and 68 per cent respectively). Adult educational attainment continues to be low when compared to the OECD average (Table 1).

[6] Presidencia de la República, "La visión del México a que aspiramos: Plan Nacional de Desarrollo 2001-2006" http://pnd.presidencia.gob.mx/index.php?idseccion=28

Table 1
Educational attainment of the adult population (2003)

Distribution of the 25-to-64-year-old population by highest level of education attained

	Pre-primary and primary education	Lower secondary education	Upper secondary education			Post secondary non-tertiary education	Tertiary education			All levels of education
			ISCED 3C short	ISCED 3C Long /3B	ISCED 3A		Type B	Type A	Advanced research programmes	
Mexico	53	25	a	6	b	a	2	14	c	100
OECD mean	14	17	3	16	22	3	8	15	1	100

Source: OECD (2005a), Table A1.1a.

Notes: (a) Does not apply; (b) Included under "Lower secondary education"; (c) Included under "Type A".

34. In addition, the quality of education, defined as the system's impact on students' academic, economic and social capabilities continues to be disappointing. This is illustrated by indicators such as repetition and dropout rates, as well as the results of national and international achievement tests such as the Program for International Student Assessment or PISA (2000). Argentina, Brazil and Chile for example achieve similar results with larger levels of enrolment (and so more diverse student populations). Education's low achievement has deep social roots. According to the PISA 2000 survey, 70 per cent of students at the lowest level (level 0) have mothers who did not go to school or at best finished primary school, while 59 per cent of those who achieved between levels 2 to 5 have mothers who completed basic education. 85 per cent of those who spoke an indigenous language were at level 0 and none achieved level 4 or higher. Evidence from INEE's *(Instituto Nacional para la Evaluación de la Educación*) national evaluations of basic education confirm the unequal results and their association with social factors: students in rural, indigenous schools (where children from the poorest backgrounds are enrolled), and *tele-secundarias* perform the worst (Guichard, 2005; Backhoff Escudero, 2005).

Higher Education

35. Mexico has a long tradition and history of higher education.[7] The country claims to have the first university in the Americas, namely the Royal and Pontifical University of New Spain, founded in 1551 and closed in the 1860s at which time it was said to have three faculty members and less than twenty students, all studying theology. A number of professional schools were created in the following decades and which either became universities or joined others. It was in 1929, when the National Autonomous University of Mexico (UNAM, founded in 1910) was given autonomy that the importance of higher education was fully confirmed.[8] In the post revolutionary period, the following state universities, among others, were founded: Michoacán (*Universidad Michoacana de San Nicolás de Hidalgo*) (1917); Sinaloa (1918); Yucatán (1922); San Luís Potosí (1923); Guadalajara (1924); Nuevo León (1933); Puebla (1937) and Sonora (1942).

36. The Federal government set up the National Polytechnic Institute (IPN) in 1938 with the idea of providing higher education for workers and peasant farmers. This example was used, particularly after 1948, as a model for similar federal state institutes although by then, according to Ornelas and Levy (1991), little was left of the earlier purpose of attracting workers and increasing social mobility. The first private higher education institutions appeared around this time. Mexico's industrial leaders, located in

[7] Based on three sources: Secretaría de Educación Pública, Subsecretaría de Educación Superior e Investigación Científica (SESIC) e Instituto Internacional para la Educación Superior en América Latina y el Caribe (IESALC) (2003); Ornela and Levy (1991), Ibarrola (1992).

[8] It was given national status in 1944.

Monterrey, established the Technological Institute of Monterrey, ITESM (*Instituto Tecnológico y de Estudios Superiores de Monterrey)*, in 1943 to prepare qualified engineers and administrators to run their businesses. In contrast to public universities, ITESM was organized into departments and divisions and not faculties and became the model for other private universities.

37. It was in the early 1940s that the Rectors and Directors of higher education institutions began to meet informally, to exchange information and examine common problems. By 1944 these informal meetings had become the National Assembly of Rectors (*Asambleas Nacionales de Rectores*) and by 1948 it was agreed to make it a permanent body which would include not only higher education institutions but also upper secondary schools or equivalent level institutes. This was constituted in 1950 and was to become the National Association of Universities and Higher Education Institutions or ANUIES (*Asociación Nacional de Universidades e Instituciones de Enseñanza Superior*).

38. However, it was during the second half of the twentieth century that Mexico experienced the unprecedented explosion of higher education – in the number and variety of institutions, students, faculty and research. As Table 2 shows, the Mexican higher education system had become complex and highly differentiated.

Table 2: Number of Higher Education Institutions, students and faculty, 1960-1999

	1960	1970	1980	1988	1999
Institutions					
Public					
Universities	25	28	37	44	45
Technological universities					*36*
Technological institutes	9	36	81	110	147
Teacher education institutions	5	9	25	240	220
Other					67
Total Public	39	73	143	394	515
Private					
Universities	9	17	40	54	168
Institutes	6	20	69	157	171
Centres					140
Schools					71
Teacher education institutions	3	6	17	121	137
Other					48
Total Private	18	43	126	332	735
Total	57	116	269	726	1.250
Students (first degree studies)	77.033	208.944	731.147	1.078.191	1.481.999
Faculty (first degree studies)	10.000	25.056	69.214	105.058*	158.539

Source: Institutions: 1960-1988, Ibarrola (1992); 1999, ANUIES (2000).
http://www.anuies.mx/servicios/d_estrategicos/documentos_estrategicos/21/index.html
Students: 1960, Ibarrola (1992); 1970 - 1999, ANUIES (2000).
Faculty: Antón (undated).
http://www.uv.mx/iie/Download/3.%20el_OFICIO_ACADeMICO_EN_MeXICO_Manuel_Gil.doc
* 1990

39. The relationship between the State and higher education has been shaped by two dynamic forces - university autonomy and the State's active pressure. Autonomy is enshrined in the constitution and is reflected in UNAM's statutes while the incorporation of higher education by the state can be illustrated by

the reopening of the University of Guadalajara as a state university (1925). Neither of these forces can be underestimated – an author describes their interplay as “the functional integration of higher education into State projects and the transformation of Mexican society” (Fuentes Molinar 1983:47).

40. Today, higher education is conceived as one of the principal ways by which Mexico is to be modernized – a national enterprise to create human capital and greater social integration to stimulate and ensure long term economic growth and greater youth participation in education. Indeed in the last half century the higher education attendance rate has increased from 1 to 26.2 per cent of the 19-23 age group.

3: CONTEXT AND MAIN FEATURES OF TERTIARY EDUCATION POLICY

3.1 Governance, planning and regulation

41. During the last two decades, relations between the State and tertiary education have undergone various successive transformations, demonstrated by government policies, increasing system differentiation, the development of various types of institutions, the formation and consolidation of a private sector, changes in public sector finance, and the adoption of different planning and regulation mechanisms, in addition to quality evaluations (Acosta Silva 2000: 87-99).

Institutional subsystems

42. Presently, the most important feature of the system is institutional heterogeneity and its dynamic relationship to the government's co-ordination, planning and regulation. In practice, the Mexican tertiary education[9] system is made up of 11 different subsystems, themselves very different in size, nature and composition (Table 3).

Table 3
Mexico's Higher education system
Number of institutions and students by subsystem, 2005

Subsystem	N° of institutions	%	Enrolment	%
Public federal universities	4	0.2	307.778	12.1
Public state universities	46	2.4	785.917	31.0
Public technological institutes	211	11.2	325.081	12.8
Public technological universities	60	3.2	62.726	2.5
Public polytechnic universities	18	1.0	5.190	0.2
Public intercultural universities	4	0.2	1.281	0.05
Public teacher education institutions	249	13.2	92.041	3.6
Private institutions (universities, institutes, centres and academies)	995	52.6	776.555	30.6
Private teacher education institutions	184	9,7	54.267	2,1
Public research centres	27	1,4	2.801	0,11
Other public institutions	94	5	124.609	4,9
Total	1.892	100,1	2.538.256	100

Source: Country Background Report (Secretaría de Educación Pública, 2006), Table 2.1. and Section 2.3.

[9] According to the Higher Education Co-ordination Law (*Ley para la Coordinación de la Educación Superior*), December 29, 1978, higher education is that provided after a secondary school graduation certificate (*bachillerato*) or equivalent, and consists of teacher, technological and university education including short professional careers and study periods leading to an undergraduate degree, master or doctorate degrees as well as upgrade and specialist courses.

National policy

43. Government tertiary education policy strongly emphasizes economic development and social integration and seeks to achieve three objectives: (i) expanding coverage with equity; (ii) improving the relevance and quality of the provision of tertiary education; (iii) coordinating the tertiary education system and its greater integration, while taking into account the principle of institutional autonomy as well as active State and government presence at both the federal and state[10] levels.

44. These statements are to be found in the introductory section on higher education of the National Education Program, 2001-2006 (*Programa Nacional de Educación* - PRONAE).

> *Higher education is a strategic means to increase the human and social capital of the nation and the individual and collective intelligence of Mexicans; to enrich culture with the contributions of the humanities, arts, sciences and technology; and to contribute towards an increase in competitiveness and employment required by a knowledge based economy. It is also a factor for national economic growth, cohesion and social justice, the consolidation of democracy and national identity based on our cultural diversity, together with improving the income distribution of the population […]*
>
> *National development requires a higher education system with greater coverage and better quality, ensuring equity of access and geographic distribution of educational opportunities. To increase coverage with equity, it is not only necessary to expand and diversify educational supply, but draw closer to social groups with fewer opportunities so their participation in higher education becomes increasingly greater among the population and to ensure that educational programmes are of good quality for all Mexicans, with institutional independence so that those who decide to study, can rely on real possibilities of obtaining a satisfactory training […]*
>
> *The transformation of the present closed educational system to one that is open, the increase in the rate of coverage with equity, the expansion and diversification of educational supply and better geographic distribution, requires new structures for the national and state planning and co-ordination. In consequence, this will encourage a reorganization of the current higher educational planning system and the establishment of work plans for the regular and efficient functioning of the participating organizations. The consolidation of the national evaluation and accreditation system will be promoted to assist improvements in educational supply.*

System Governance

45. Tertiary education governance, co-ordination and regulation take place at the federal and state levels. At the federal level, policy is established by the Ministry of Public Education (*Secretaría de Educación Pública* - SEP), specifically through the Higher Education Undersecretariat (*Subsecretaría de Educación Superior* - SES). Its mission is to "facilitate, through policies and support programmes, the conditions necessary for Mexican society to receive, by means of higher education institutions, quality education which plays a key role in the training of professionals and which significantly contributes to the country's development and a just society". Quality education is understood to be "…equitable, relevant, flexible, innovative, diversified and with ample coverage". [11]

46. At the state level, tertiary education co-ordination is the responsibility of respective state ministries of public education, through different administrative units (e.g. higher education departments or general directions of higher education).

[10] To avoid confusion note that State with a capital 'S' refers to the legal force of the whole society, while lowercase 's' refers to states (*entidades federativas*) of the United States of Mexico.

[11] Official SES web site: http://www.sep.gob.mx/wb2/sep/sep_Que_es_la_SES

47. Studies pursued within the educational system are valid across the Republic. Institutions issue certificates or grant diplomas, titles, academic grades or other documents to persons that have concluded their studies subject to completing institutional requirements.

Institutional autonomy

48. University autonomy is guaranteed by the Constitution (Article 3, Subsection VII). But the governance of tertiary education institutions is very diverse.

49. Public federal and some state universities enjoy autonomy and self government according to their respective laws; those of federal institutions are approved by the National Congress and those of state institutions by state congresses. Within these institutions, governance is collegiate with bodies which define policies, approve development plans, institutional budgets and expenditures, new academic units and programmes. They appoint the Rector and other leadership positions responsible for policy execution and institutional administration. For these institutions the respective federal or state laws grant immediate official recognition to their study programmes. They can also recognize – by incorporation – the curricula of private institutions.

50. On the other hand, a second group of public institutions – non-autonomous state universities; technological, polytechnic, and intercultural universities; and state and federal technological institutes – do have non-autonomous status. They report directly to the federal and/or state government (through SEP and/or states' Department of Education)[12] but do benefit from significant autonomy. Institutions in this category decide appointments, promotions and academic tenure, for example. Another of their characteristics is the extent to which representatives from business and social sectors, from their respective regions and local councils are involved in their activities. These institutions' curricula – often focused on regional development – are defined by federal or state authorities.

51. The governance of private institutions differs from that of federal and state institutions and among themselves reflect, in different ways, the purposes of the founders and the organizations to which they are related. Their management is subject to a different set of rules.

52. First, although education freedom is a principle enshrined in the Constitution, which states that "private institutions can impart education of all types and modalities", it is the State that authorizes and regulates (awards and withdraws) official recognition of studies undertaken at private institutions (*Reconocimiento de Validez Oficial de Estudios* - RVOE[13]). So private institutions need RVOE approval for each study programme if they wish that the respective degree becomes part of the national educational system and valid across the Republic.

53. Second, the SEP and authorized federal institutions can grant authorizations and the RVOE to study programmes of private tertiary education institutions located in all states of the country, while the state government authorities and state public higher education decentralized organizations can only do so for study programmes of private institutions located in the respective state.

[12] The Ministry of Public Education (SEP) alone establishes the governance rules for non-autonomous federal institutions while those for non-autonomous state institutions are agreed jointly between state and federal authorities.

[13] "Authorization" is understood as specific prior agreement by the educational authority which allows a private entity to offer primary and secondary education and primary teacher education courses. "Official recognition of studies" is the recognition of the validity of private tertiary education programmes (*Bases Generales de Autorización o Reconocimiento de Validez Oficial de Estudio*s; Diario Oficial de la Federación, 27 marzo, 1998. http://www.sep.gob.mx/work/resources/LocalContent/14275/1/04.pdf)

54. Third, both the authorizations and the RVOE are granted when private institutions meet the conditions established by law in relation to staff, infrastructure and study programmes.[14]

55. Fourth, the granting authority is responsible for supervision and oversight of the educational services that they have authorized and recognized. The programmes with a RVOE can be the subject of one-off inspections by the granting authority to assess whether the agreed conditions for provision are being respected. Such inspection can result in the removal of the RVOE.

56. Fifth, in 2000, the SEP brokered an agreement (Agreement N.279) to ensure that federal RVOE is granted on the basis of standards similar to those developed for public institutions under the Faculty Enhancement Programme (*Programa de Mejoramiento del Profesorado* – PROMEP), which strictly defines the requirements that the teaching staff should meet. Currently, Agreement N.279, which defines stricter requirements to receive a RVOE, is not binding for authorities conferring non-federal RVOEs.

Policy design

57. At the federal level, the government undertakes the following functions[15]:

- To promote, encourage and coordinate institutional and inter-institutional tertiary education planning with objectives, policies and priorities taking national integration into account;
- To support and assist the promotion and application of agreements which encourage the coherent development of tertiary education among the Federation, the states and local governments;
- To promote tertiary education evaluations with the participation of institutions;
- To support tertiary education by allocating federal public resources.

58. The SEP, through SES, is responsible for the design and execution of national tertiary education policy. These responsibilities include[16]:

- Program co-ordination among public autonomous, technological and private universities and tertiary education institutions;
- The co-ordination with state educational authorities;
- The administration of the Comprehensive Programme for Institutional Strengthening (*Programa Integral de Fortalecimiento Institucional* - PIFI), introduced in 2001, and which is supported by the Fund for the Modernization of Higher Education (*Fondo para la Modernización de la Educación Superior* - FOMES) and the Investment Fund for State Public Universities with Evaluated and Accredited Programmes (*Fondo de Inversión de las Universidades Públicas Estatales con Evaluación de la ANUIES* - FIUPEA); the Fund of Multiple Contributions (*Fondo de Aportaciones Múltiples* - FAM); the University Development Support Programme (*Programa*

[14] For RVOE granted by federal authorities, these conditions are described in Agreement N. 279 which establishes the documentation and procedures for Higher Education degree recognition, *Diario Oficial de la Federación*, July 10, 2000. (http://www.sep.gob.mx/work/resources/LocalContent/14275/1/12.pdf)

[15] The Higher Education Co-ordination Law, article 12.

[16] See Secretaría de Educación Pública, Subsecretaría de Educación Superior e Investigación Científica (SESIC) e Instituto Internacional para la Educación Superior en América Latina y el Caribe (IESALC) (2003).

de Apoyo al Desarrollo Universitario - PROADU)*;* the Programme for Administrative Normalization (*Programa para la Normalización Administrativa* - PRONAD) and as part of the academic environment, the Faculty Enhancement Program (*Programa de Mejoramiento del Profesorado* - PROMEP);

- The publication of tertiary education national statistics;
- The promotion of higher education evaluation and quality enhancement policies;
- The issuance of professional certificates or documents;
- Relations with the Nacional Council for Science and Technology (*Consejo Nacional de Ciencia y Tecnología* - CONACyT), ANUIES, the Federation of Mexican Private Higher Education Institutions (*Federación de Instituciones Mexicanas Particulares de Educación Superior* – FIMPES), the National Association of Technological Universities (*Asociación Nacional de Universidades Tecnológicas* – ANUT) among other agencies;
- Maintain the Register of Author's Copyright.

59. The SES carries out these tasks within five departments: the General Directorate for University Education (*Dirección General de Educación Superior Universitaria*); the General Co-ordination of Technological Universities *(Coordinación General de Universidades Tecnológicas*); the General Directorate for Technological Higher Education (*Dirección General de Educación Superior Tecnológica*); the General Directorate for the Higher Education of Professionals of Education (*Dirección General de Educación Superior para Profesionales de la Educación*) and the General Directorate of Professions (*Dirección General de Profesiones*). It also is responsible for the National Institute for Author's Copyrights and the National Pedagogical University (*Universidad Pedagógica Nacional* – UPN). Two other units play a co-ordination role within the SEP: the National Co-ordination of Polytechnic Universities (*Coordinación General de Universidades Politécnicas*) and the General Co-ordination of Bilingual Intercultural Education (*Coordinación General de Educación Intercultural Bilingüe*). The government cannot intervene in autonomous universities, nor influence the appointment of senior staff nor participate in programme development, but promotes tertiary education policy through a range of instruments to promote national development priorities.

Funding

60. The Federation allocates resources to public educational institutions for teaching, research and cultural dissemination. Institutions are allowed to develop programmes for resource generation. Resources that belong to the Federation's Budget Expenditures are allocated to tertiary education institutions to support national priorities and to strengthen their participation in the tertiary education system, through institutional planning, upgrading academic programmes and administration, as well as normal operating costs (for a more detailed account see Section 3.2 below).

61. The Ministry of Finance and Public Credit (*Secretaría de Hacienda y Crédito Público* - SHCP) is responsible for the national budget using detailed proposals from different Ministries and Departments. Thus the SEP negotiates public tertiary education investment levels with SHCP which are then tabled by the Executive as part of the Federation's Budget Expenditure proposals in the House of Deputies of the National Congress. Similarly, state congresses approve the amounts that state governments spend on state public tertiary education institutions.

62. In addition to block grants the SEP, by way of SES, provides additional resources using competitive funds for educational quality upgrading and expanding public institutions' physical infrastructure and equipment. So too, CONACyT contributes to tertiary education with competitive funds for high level research and post graduate training (Sections 3.2 and 3.6).

63. Public federal institutions receive an annual block grant from the Federal Government. Public state universities are funded through the combined contributions of the Federal Government and the corresponding state government, in variable proportions. SEP subsidizes the federal technological institutes using a range of criteria. Support for technological, polytechnic, intercultural, state non-autonomous public universities and the state technological institutes (created after 1997), are shared equally between the federal and the state governments.

64. The Federal Government contributes to science and technology research (Law on Science and Technology, June 5, 2002). These resources, a component of the Federation's annual expenditures, are to build public higher education's scientific, and technological research capacity according to the criteria set out in the law (Sections 3.6 and 4.6).

Planning at the federal level

65. Modern higher education planning originated in 1978/79 with an agreement between SEP and ANUIES to establish a National System for Permanent Planning of Higher Education (*Sistema Nacional para la Planeación Permanente de la Educación Superior* - SINAPPES) and was initially made up of 117 institutions, 31 State Commissions for Higher Education Planning (*Comisiones Estatales para la Planeación de la Educación Superior* - COEPES), 8 regional councils (*Consejos Regionales para el Planeamiento de la Educación Superior* - CORPES) and one national co-ordinating council (*Coordinación Nacional para la Planeación de la Educación Superior* - CONPES). In general, this planning process had a mixed impact and was replaced in 1988 by a scheme which emphasized strategic planning, evaluation and results. Most importantly, it relied on federal funding instruments to promote change in public sector higher education (Rodríguez Gómez, 2002). As the SEP recognized in 2000,[17]

> *For two decades federal and state governments and institutions have established policies and mechanisms for higher education planning and co-ordination. The SINAPPES planning process has been characterized by phases of high productivity and valuable definitions but also by periods of inaction and ineffectiveness.*
>
> *The National Coordinating Council for Higher Education planning (CONPES) has worked irregularly and state planning agencies which should lead higher education strategic planning in the states, have not consolidated themselves nor operated consistently.*
>
> *Further, when faced with the current challenge of higher education, the SINAPPES structure has been inadequate. The challenges are to create and manage a new higher education planning and co-ordination scheme, permitting greater integration of states into the national system, revitalizing planning and execution and to make it an instrument that makes governments, institutional and social actions more cohesive.*

66. At the federal level, the key reference point for tertiary education planning is the National Education Programme 2001-2006 (*Programa Nacional de Educación* - PRONAE). This sets out strategic and specific objectives and policies, action programmes and benchmarks for the tertiary education system. It is an obligatory framework for the federal public administration and decentralized institutions and provides a

[17] SEP, Programa Nacional de Educación 2001-2006, Capítulo 3.

powerful influence for state governments, their decentralized organizations and public autonomous and private tertiary education institutions.

67. For this period the strategic objectives proposed by PRONAE are:

- Expanding coverage with equity;
- High quality education; and
- Better integration, co-ordination and management of the tertiary education system.

68. The policies associated with the third group of objectives are those which are expected to open up tertiary education and provide better co-ordination with other educational levels, science and technology, arts and culture programmes. More specifically, the policies are to promote greater institutional integration leading to a more diversified and flexible tertiary education system; further educational federalism by broadening and consolidating state tertiary education systems; strengthen relations between tertiary education institutions, economic sectors and society; encourage cooperative networks and interchange among national and international academic bodies and institutions; increase the federal funding of public tertiary education to ensure expansion and demonstrate social accountability by operations and results.

69. While respecting institutional autonomy and state responsibilities, the PRONAE establishes the following policies:

- To promote the tertiary education diversification and educational federalism;
- To assist states, when requested, to upgrade tertiary education planning agencies and technical groups;
- To establish mechanisms to revise and renovate decentralization, based on careful technical processes and negotiations to achieve a consensus which would allow the transfer of educational services that have not been 'federalized';
- The development of new planning methods, co-ordination, management and integration of tertiary education national and state systems;
- Effective consultation with and participation of the academic community and interested social actors.

70. Within the PRONAE framework, tertiary education development planning is complemented by a series of support initiatives. SES's Comprehensive Programme for Institutional Strengthening (*Programa Integral de Fortalecimiento Institucional* – PIFI), introduced in 2001, has been highly successful in strengthening programmes in public state universities, technological universities and polytechnic universities (equivalent programmes exist for both federal and state technological institutes (Institutional Programme for Innovation and Development - PIID) and for teacher education institutions (Programme for the Institutional Improvement of Public Teacher Education Institutions - PROMIN)).

71. A number of programmes, supported by SEP, CONACyT and ANUIES, have contributed to public universities improved planning capacity. They include the Fund for the Modernization of Higher Education (FOMES), the Programme for Administrative Normalization (PRONAD), and the Academic Personnel Upgrading Program (*Programa de Superación del Personal Académico* - SUPERA). Equally important and influential have been the Faculty Enhancement Program (PROMEP), with a ten year perspective

(1996-2006), CONACyT's academic, science and human resources support programmes, the National Programme of Scholarships for Higher Education (PRONABES) and a special support programme, launched in 2001, for public autonomous state universities which tackled pension shortfalls. In addition the Integrated Programme for the Strengthening of Graduate Education (PIFOP) has worked with PIFI to improve post graduate programmes' educational quality with the aim of being listed in the SEP-CONACyT National Registry of Graduate Programmes (*Padrón Nacional de Posgrados* – PNP), a prestigious recognition.

Decentralized co-ordination and planning

72. The 1978 Higher Education Co-ordination Law (*Ley para la Coordinación de la Educación Superior*) sets out the different functions of the Federal, state and local governments for tertiary education policy and their economic contributions. The law refers to the establishment and evolution of tertiary education institutions and their interrelationship taking into account national, regional and state priorities together with the different teaching, research and outreach programmes. The State is responsible for tertiary education across the Republic and is expected to ensure appropriate standards and the resource allocation of public funds by consensus. Co-ordination is to be achieved by direct consultation with tertiary education institutions and professional or interest groups by the appropriate level government agency.

73. Since 1979, in addition to their respective ministries of education, states were encouraged to create a State Commission for Higher Education Planning (COEPES), although their functions are not uniform and differ in strength and scope. Until 1997 they were considered to be ineffective but SES's introduction of a new framework – Procedures for Conciliating the Supply and Demand of Higher education in Federal entities ("*Procedimiento para la Conciliación de la Oferta y Demanda de Educación Superior en las Entidades de la Federación – Propuesta de Refuerzo de la Misión de las COEPES*") revitalized their mission (Sections 3.5, 4.1 and 4.5).

74. That policy paper proposed a new organizational structure, together with procedures and criteria for expanding tertiary education supply and the creation of new institutions. With this framework, the federal government met with state governments in 1998 to discuss their five year tertiary education plans and their financial implications. The expansion of coverage by current programmes and the creation of new programmes and branches (*sedes*) – must now be backed by COEPES' technical evaluation and with the state government's formal commitment to provide fifty per cent of operational costs.

75. In addition, the National Council of Educational Authorities (*Consejo Nacional de Autoridades Educativas* - CONAEDU) was constituted in 2004 by the Federal government and the representatives of the 31 state and regional educational ministries, and is chaired by the Federal Minister of Education. SES officials believe it has strengthened educational planning co-ordination and decision making among the different government levels.

3.2 The Resourcing System

3.2.1 The financing of the tertiary education system

76. In 2002, public expenditure on tertiary education (both on institutions and subsidies to households) stood at 1 per cent of GDP, the twentieth highest percentage among the 28 OECD countries for which data are available (see Appendix 4).[18] This level of spending amounted to 4.7 per cent of total public

[18] This percentage is above that of any other Latin American country for which comparable data are available in the framework of OECD data collection (Argentina, Brazil, Chile, Paraguay, Peru and Uruguay). See OECD (2005a), Table B4.1, p. 205.

expenditure (the third highest share among 26 OECD countries, see Appendix 4). These figures include both federal and state-level funding, with federal expenditure on tertiary education institutions reaching 0.85 per cent of GDP in 2002 (Secretaria de Educación Pública, 2006). Public spending on tertiary education grew 72 per cent in real terms between 1995 and 2002. The result was that, despite the substantial growth in enrolments of 42 per cent, public spending per tertiary student increased by 21 per cent during that period (see Appendix 4). The latter stood at US$ 6,074 in 2002, slightly above half of the OECD average level. This per-student expenditure in tertiary education institutions corresponded to 3.4 times the level in secondary education institutions, the largest such gap among OECD countries (OECD, 2005a, Table B1.1, p.172).

77. In 2002, public spending on tertiary education was distributed between direct subsidies to institutions (94.9 per cent), student loans (2.3 per cent) and scholarships for students (2.8 per cent). The share of financial aid to students in public tertiary expenditure (5.1 per cent) was the 4th lowest among the 27 OECD countries for which data are available, and considerably below the figures for Brazil and Chile, 11.9 and 31 per cent, respectively (OECD, 2005a, Table B5.2). In Mexico, another aspect which stands out is the proportion of spending on tertiary education coming from private sources: in 2002, 29 per cent of expenditure on tertiary education institutions reflects private household expenditure (7th highest share for the 27 OECD countries for which data are available, see Appendix 4). This principally reflects enrolment levels at private institutions.

Funding Institutions

78. Institutions derive their revenues from four major sources: federal subsidies, state subsidies, student tuition fees and external sources of income (e.g. research contracts, provision of services, industry training). No systematic data are available regarding the relative importance of each of these sources. The proportion of each varies considerably from one institution to another not only as a result of its status (federal, state or private) but also as a result of the relative commitment between the federal and the state governments. It can generally be said that for public institutions funds raised through tuition fees or funds from external sources are secondary in institutions budgets.

79. Public subsidies are not allocated to tertiary education institutions on the basis of a widely-agreed funding framework covering the entire system. Federal public universities are publicly-funded by the federal government only. Autonomous state public universities receive mixed public funding from both the federal and the state governments whose relative contributions are the subject of an agreement between them and the individual institution. This led in 2005 to considerable variability in the relative contribution of the federal government to the ordinary subsidy of state public universities: from 47 per cent (*Universidad Veracruzana*) to 88.6 per cent (*Universidad Autónoma de San Luís Potosí*), with an average of 66.5 per cent across the system. The federal technological institutes are funded at federal level by the SEP. For technological universities, polytechnic universities, intercultural universities and state technological institutes the public subsidy is equally shared between the federal and the state governments. For the non autonomous state public universities created after 1997 the same scheme support is applied. The differences in the relative contributions of federal and state governments to the funding of state institutions have an historical root and result from agreements made before 1997. After this year, any new offering of tertiary education at state level receives an equal financial contribution from the federal and the state governments. This reflects the aim of increasing the financial commitment of states for the expansion of their tertiary education sectors. From 1995 to 2005 while federal subsidies to tertiary institutions grew by 37.4 per cent, state subsidies expanded in 55.6 per cent. Private institutions do not receive direct ordinary public subsidies but they can apply for some programme-specific funds.

80. The federal subsidy has three main components: (i) ordinary subsidy; (ii) extraordinary subsidy, which can be classified as targeted funding; and (iii) a subsidy linked to the annual expansion and diversification

of the educational supply. In turn, the state subsidy has two components, an ordinary subsidy and a subsidy related to the expansion of the educational supply.

81. The ordinary subsidy covers current expenditure related to the regular activities of institutions. It is broadly based on the *authorized*[19] size of the academic body but more often than not reflects historical trends or the lobbying power of the given institution. The ordinary subsidy concentrates about 90 per cent of the total public subsidy for tertiary institutions and includes the basic funding for research. No quality-related indicator is used in determining the ordinary subsidy. Also, the ordinary subsidy is adjusted for cost increments such as salary rises or newly-created social benefits. The size of the state ordinary subsidy relative to the federal subsidy is determined as explained above.

82. The extraordinary subsidy conferred by the federal government allocates resources to institutions on a targeted basis with an emphasis on the improvement of the quality of educational services. Allocation of these funds is undertaken through a series of programmes such as the Faculty Enhancement Programme (PROMEP), the Comprehensive Programme for Institutional Strengthening (PIFI) and its two funding components (FOMES, Fund for the Modernization of Higher Education and FIUPEA, Investment Fund of State Public Universities with Evaluation by ANUIES), the University Development Support Programme (PROADU), the Fund of Multiple Contributions (FAM), the Quality Fund for Technological Institutes, the Programme for the Institutional Improvement of Public Teacher Education Institutions (PROMIN, *Programa de Mejoramiento Institucional de las Escuelas Normales Públicas*) or the National Programme for Strengthening Postgraduate Education (PFPN). These programmes address a range of dimensions such as the quality of the academic staff, the introduction of innovative programmes, tutoring programmes for students, the improvement of the infrastructure or the enhancement of management practices. The extraordinary federal subsidy represents on average 11 per cent of public subsidies received by state public universities but can be substantially more important for some institutions.

83. The subsidy linked to the annual expansion and diversification of the educational supply results from the COEPES plan established for the expansion of tertiary education in the state. These funds allow for the creation of new places for students and new infrastructure, requiring a formal tripartite agreement between both the federal and state governments and the specific institution. For federal institutions, the expansion of educational supply is reflected in the ordinary subsidy.

84. Tuition fees are charged in both the public and private subsystems. In the public sector, fees are low and in some cases purely symbolic - the proportion of tuition revenues relative to current expenditure is less than three per cent (Garcia-Guadilla 2006). Public institutions autonomously decide the level of their tuition fees. The large majority charge tuition fees but their level varies widely across the system. Many set fees at an almost symbolic level, a significant group of institutions charge between 500 and 2,000 pesos monthly (representing 2 to 10 per cent of their annual budget), and a few charge up to 7,000 pesos monthly (constituting up to 20 per cent of their annual budget). Few but some significant institutions (e.g. UNAM) do not charge tuition fees. Overall it is understood that tuition revenues are to be used to improve the working conditions of both academic staff and students. By contrast, tuition revenues are the primary source of funding for most private institutions. In this subsystem, depending on the size and prestige of the institution, the level of fees ranges from 500 to 10,000 pesos per month.[20]

[19] The subsidy is based on a number of academic staff the public authorities are willing to fund. However, institutions are free to hire extra staff using their own resources.

[20] The exchange rates on 15 October 2006 were 1 Euro = 13.56 Pesos and 1 US$ = 10.85 Pesos.

Student Support

85. Students rely on four principal sources to finance their studies: assistance from their families; scholarships; student loans and part-time and vacation employment. The student financial aid system is relatively recent in Mexico. It consists mostly of a programme of means-tested student scholarships (PRONABES), a range of other scholarships plans and some embryonic loan schemes.

86. The largest system of student financial aid is the National Programme of Scholarships for Higher Education (PRONABES), launched in 2001 by the federal government in collaboration with state governments and public tertiary institutions. It is a means-tested scheme targeted at promoting the participation of Mexican students from lower socio-economic backgrounds in undergraduate tertiary programmes (in 4-5 year degree programmes - *licenciatura* – or two-year degree programmes - *técnico superior universitario*). Students are eligible if they are enrolled in a public institution and the family income is not higher than four times the minimum monthly salary in the region where the tertiary institution is located.

87. The recipient of the scholarship receives 12 monthly allowances whose amount depends on the academic year attended. In 2005 this was 750 pesos for first-year students and 830 pesos, 920 and 1000 pesos for subsequent years of attendance with the largest amount given to 4th and 5th year students. The scholarship is intended to assist with living expenses, tuition fees and costs of study materials. Institutions which receive recipients of PRONABES scholarships are required to put in place special tutoring programmes to follow their academic progress. Renewal of the scholarship is subject to satisfactory academic progress in the programme of studies (attendance and approval of all required courses and a grade point average above a given threshold). The PRONABES programme is subject to a budget constraint, that is, if the number of eligible students goes above the number of students the given budget can cover, then recipients are selected on the basis of the following criteria: financial need; whether the institution is located in an indigenous, rural or disadvantaged area; whether the student previously benefited from the poverty-related *Oportunidades* programme; the previous academic performance, and whether the study programme has had its quality recognised by quality assurance bodies (Section 3.3).

88. In 2004-05, 138,000 students received PRONABES scholarships, corresponding to 5.8 per cent of all undergraduate students and to 8.5 per cent of such students attending public institutions. After an initial 44,422 scholarships awarded in the initial year of operation (2001-02), the number of new scholarships granted stabilized around 65,000 in the three subsequent years (2002-03 to 2004-05). The federal and state contributions to PRONABES reached 1,665 million pesos in 2004-05, equivalent to about 2.5 per cent of total federal expenditure on tertiary education (excluding research), an investment similar to that of the previous year. In 2004-05, 89 per cent of applicants were granted a scholarship and the renewal rate stood at about 70 per cent.

89. The PRONABES is operated under the responsibility of the state governments and the federal public institutions in accordance with the rules of operation defined by the SEP. Technical committees in each state or federal institution are responsible for the administration and delivery of PRONABES scholarships. In federal public institutions, these committees are formed by representatives of the institution and the ANUIES. In each state, this committee comprises representatives from the state government, the public institutions in the state, the SEP and the ANUIES. States can give priority to specific study areas when granting scholarships which often leads to a distribution of scholarship recipients per area of study different from that of tertiary students overall.

90. In 2005, PRONABES scholarships made up 64 per cent of newly-granted scholarships for undergraduate students. This programme is complemented by other scholarship schemes funded by the federal government. These include merit-based scholarships (23,736 newly-granted in 2005, corresponding

to 11 per cent of all scholarships newly-granted to undergraduate students) and transportation scholarships (21,907 and 10.2 per cent) both awarded by the SEP, scholarships for teacher education students to assist their traineeship and social service, and scholarships given by federal public institutions such as the UNAM (3,254 and 1.5 per cent), the *Instituto Politécnico Nacional* (IPN) (10,742 and 5 per cent) and the *Universidad Pedagógica Nacional* (UPN) (876 and 0.4 per cent). Separate public schemes exist for graduate students. In addition to the public schemes, the National Scholarship Fund (FONABEC), established in 2001 and run with private funds, has thus far granted a total of 10,200 scholarships, mostly to students enrolled in technological universities. It is also typical for public institutions to devote own resources to financial aid of students. Public institutions often grant scholarships and fee reductions or exemptions to needy students. Interestingly, by law, private institutions whose programmes are granted recognition through the RVOE, are required to confer scholarships on a need-basis to at least 5 per cent of their students.

91. Loan schemes remain underdeveloped but are likely to expand in the coming years. At the end of 2005, the federal government signed an agreement with the World Bank to launch the Higher Education Student Aid Programme (*Programa de Asistencia a Estudiantes de Educación Superior* - PAEES) which seeks not only to expand the PRONABES programme but also to financially underwrite loan schemes developed by individual states. Thus far, nine states have joined the programme. The objective is to enlarge the coverage of students receiving financial aid and diversify its nature by mixing allowances with loans. At present, individual states such as Sonora, Hidalgo, Tamaulipas, Guanajuato and Quintana Roo maintain individual loan schemes for tertiary students. Several other initiatives exist, namely in the private tertiary sector. An example is the Society for the Promotion of Higher Education (*Sociedades de Fomento para la Educación Superior* - SOFES), an association established in 1997 by a group of private tertiary institutions, which grants loans to both undergraduate and graduate students.

92. Given the incipient development of the student financial aid system, the assistance from the families remains the main means through which students cover their study costs. Part-time and vacation employment is a limited but growing means of supporting studies.

3.2.2 Human Resources Management / Academic Career

93. The primary responsibility for defining the terms and conditions of employment in the tertiary education sector lies with the tertiary education institutions. This is certainly the case in autonomous universities and predominantly so in other institutions, although the latter have to observe a wider range of regulations defined by federal or state educational authorities. Aspects mostly defined by institutions include recruitment and appointments; performance and career management; professional development; research and teaching obligations; and leave entitlements. Staffing policies are in general negotiated by institutions with representatives of their staff.

94. There is no formal career structure at the national level although the broad features of the academic profession's organization are shared among institutions. As a rule, there are three different categories (Full Professor, Associate Professor and Assistant Professor) in the academic career each with three distinct levels (A, B and C). This structure was proposed by the SEP once institutional funding became linked to the number and categories of academic staff. Within this broad framework, institutions establish the profile to be associated with each of the categories/levels (e.g. academic qualifications, experience as a teacher, accomplishments as a researcher). Even if these profiles differ across institutions, typically to become an Assistant Professor of any level or an Associate Professor of level A, an undergraduate degree is needed (*licenciatura*); to reach levels B or C of the Associate Professor category, holding or being a candidate for a Masters degree is necessary; and a PhD is required to attain the category of Full Professor.

95. Institutions manage human resources within some constraints. For purposes of funding, educational authorities define the number of "authorised" academic places for each category and level. Institutions are allowed to recruit extra academic staff on the proviso that those additional places won't receive public funds. Similarly, promotion decisions by institutions can only be made following the approval of the necessary public funding by educational authorities. Also, institutions define the evaluation mechanisms necessary to operate their performance-based reward scheme but need the approval of the SEP to guarantee the corresponding funding. Criteria for promotion of academic staff differ across institutions but are typically based on competence in three areas: teaching, research and/or professional practice, and public service. Academic staff can only apply for promotion when the matching funding has been secured.

96. In the academic year 2004-05, institutions of tertiary education reported the employment of 248,782 academic staff, 62 per cent in public institutions and 38 per cent in private institutions. This compares with 134,357 academic staff in 1994-95, corresponding to an increase of 85 per cent, which is fairly aligned with the rise of around 79 per cent in student enrolments over the same period. In 2004-05, for the public system, 38.5 per cent of academic staff were employed full-time, 7.5 per cent either half-time or with a 75 per cent assignment, and 54 per cent on an hourly basis. The equivalent figures for the private sector were 10.2 per cent, 5.9 per cent and 83.9 per cent. The discrepancy of these figures between the public and the private sector might be explained by a combination of factors: the education supply of the private sector, less scientific- and more practice-oriented; more attention to keep costs low; and, to some extent, the reliance on staff who have their full-time appointment in public institutions.

97. As regards the qualifications of academic staff, for the same year of reference, 8.3 per cent held a PhD degree (9.8 per cent and 5.9 per cent in the public and private sectors, respectively), 33.6 per cent another postgraduate degree (32.9 per cent and 34.7 per cent for each of the sectors), 56.3 per cent an undergraduate degree (*licenciatura*, 55.1 per cent and 58.2 per cent for each of the sectors), and 1.9 per cent a two-year degree (*técnico superior universitario*, 2.2 per cent and 1.2 per cent, respectively). This reflects a gradual improvement from the qualification levels observed in 1994-95, when 4.8 per cent of academic staff held a PhD degree and 26.1 per cent held another type of postgraduate degree.[21]

3.3 Quality assurance

98. At present, a great variety of approaches exist in the Mexican quality assurance system including different accreditation and assessment procedures, quality improvement programmes, standardised examinations and registers of high quality institutions, study programmes and researchers. Overall, the quality assurance system is characterised by its many actors, limited direct intervention by the SEP, its voluntary nature, and its narrow link to institutional accountability.

99. Mexico does not have a single national quality assurance agency. Responsibilities for quality assurance activities are shared between the SEP, the Inter-institutional Committees for Higher Education Assessment (CIEES), the Council for the Accreditation of Higher Education (COPAES) and its 23 authorised accrediting bodies, the CONACyT mostly through the National Registry of Graduate Programmes (PNP) (in conjunction with the SEP) and the SNI, the FIMPES through its system of institutional accreditation, the National Centre for Higher Education Assessment (CENEVAL) through its standardised student tests, the supervisory entities of the states, and the institutions of tertiary education.

[21] If only full-time academic staff are considered, in 2004-05, 19 per cent held a PhD degree (19.1 per cent and 18.7 per cent in the public and private sectors, respectively), 42.3 per cent another post graduate degree (41.9 per cent and 45.2 per cent for each of the sectors), 36.9 per cent an undergraduate degree (*licenciatura*, 37.4 per cent and 34.4 per cent for each of the sectors), and 1.7 a two-year degree (1.6 per cent and 1.7 per cent, respectively). In 1994-95, 10.2 per cent of full-time academic staff held a PhD degree and 48 per cent another post graduate degree.

Institutional and Programme Quality Assurance

100. As regards programme quality assurance, a number of complementary approaches exist. First, institutions typically engage in self-assessments and develop internal quality assurance systems to assist with their strategic planning, programme development and external assessments. However, internal quality assurance systems are not subject to any external validation and practice across institutions varies widely.

101. Second, institutions can submit, on a voluntary basis, their programmes and institutional practices to an assessment by the Inter-institutional Committees for Higher Education Assessment (CIEES). The CIEES, created in 1991 as a non-governmental body, is granted with responsibilities at two levels: (i) the quality assessment of tertiary programmes and some institutional functions; and (ii) the accreditation of programmes and academic units. However, it has never engaged in accreditation procedures and currently limits its role to quality assessment. It is mostly self-financed (institutions cover the cost of assessments) but receives some funds from the SEP. It is composed of nine committees, seven of which take responsibility for programme quality assessment in a given disciplinary area (e.g. Health Sciences, Engineering and Technology), and two of which focus on the assessment of two particular functions of institutions (Institutional Management and Administration; and Cultural Diffusion). The assessment includes a self-evaluation component and a visit by an external team composed mostly of academic peers from other Mexican institutions. Foreign peers are not involved in these evaluations.

102. The evaluation of a given programme results in a categorization according to three quality levels, specifying whether accreditation can be expected in the short (level 1), medium (level 2) or long term (level 3), and a number of recommendations for programme improvement. The result of the evaluation of an educational programme does not impact on the authorization for its provision or whether or not it receives public funding. Institutional motivation to submit a programme for evaluation relates, for the most part, to the prospect for public recognition of its quality and the opportunity to receive advice for improvement. The results of programme evaluation are generally not made public. The exception is the disclosure of those programmes which reach "level 1" of CIEES programme evaluation.

103. Until recently, the CIEES mainly focussed on the undergraduate programmes of public universities. From 2004, the CIEES has also engaged in evaluation of programmes in technological universities, federal technological institutes and some private institutions. From 1991 to July 2006, the CIEES assessed 2,910 programmes, roughly 20% of the programmes offered in the country. The number of programmes included in "level 1" of the quality categories has grown in recent years.

104. Third, institutions can also submit, on a voluntary basis, their programmes to accreditation by the Council for the Accreditation of Higher Education (COPAES). The COPAES, created in 2000, is the non-governmental body recognized by the SEP as having the competence to entrust the accreditation of undergraduate programmes offered by Mexican institutions, whether public or private, to a number of delegated bodies. In mid 2006, there were 23 subject-specific private bodies to which programme accreditation in the respective subject was delegated for a renewable period of five years. The subject areas covered by these bodies encompass around eighty per cent of tertiary undergraduate programmes in the country. The COPAES and the accrediting bodies are self-financing. The governance of the COPAES includes representatives from the SEP, ANUIES, FIMPES and several professional organizations.

105. As with the quality assessment by the CIEES, the accreditation decision by the COPAES is dissociated from the authorization for programme operation, whether the programme receives public funding or not, or the public recognition of the associated degree. A programme is "accredited" in the sense that it reaches a given quality threshold established by COPAES' quality standards. Gaining public recognition for achieving certain quality standards for its programmes is the main institutional driver. Only positive results of an accreditation are made public. The accreditation of a programme is valid for a

renewable period of five years. From 2002 to July 2006, the COPAES accredited 881 academic programmes, making up less than seven per cent of all programmes in the country (thirty per cent of which in private institutions).

106. Fourth, at postgraduate level, programme-wide assessments are carried out since 2002 by the SEP and the CONACyT in the framework of the National Registry of Graduate Programmes (PNP). Programmes with a positive assessment are listed in the registry into two categories: as "of international quality" or "of high quality". Until mid 2006, 661 programmes in 48 public and private institutions were listed in the PNP. The PNP is part of the National Programme for Strengthening Postgraduate Education (PFPN).

107. Fifth, specifically for private tertiary institutions, official approval of study programmes is granted through the Recognition of Official Validation of Studies (RVOE), which can be awarded either by the SEP, state education authorities (for institutions in the respective state) or some authorized public tertiary institutions (Section 3.1). Until mid 2006, the SEP had conferred the RVOE to a total of 7,759 programmes offered in 498 private tertiary institutions (for a total of 995 institutions). For private institutions, there is also the option of institutional accreditation through the Federation of Mexican Private Institutions (FIMPES). To date, 32 private institutions have been granted the accreditation by FIMPES, which permits them, if the additional requirements established by Agreement N.279 are met, to access SEP's Programme for Administrative Simplification and to be included in the Register of "Private Institutions of Academic Excellence" (14 institutions have taken these options). The creation of programmes by private tertiary institutions is not subject to compulsory external approval or monitoring. However, any documentation and advertisement of programmes without RVOE must state that the programme offers "studies without recognition of official validation" (access to professional certificates typically requires a RVOE).

108. Sixth, the Technological Universities subsystem engages periodically on external system level assessments which inform policy developments. These have been organized every 3 years since 1996 by a group of foreign experts (Universidad Tecnológica de la Sierra Hidalguense and Secretaría de Educación Pública, 2004).

109. Authorisation for the formal introduction of new study programmes depends on the type of institution. Autonomous institutions do not have to submit new programmes to external approval. Non autonomous public institutions follow rules specific to their subsystem. This normally entails the inspection of a number of basic conditions (e.g. infrastructure, qualifications of teaching staff) either by the SEP or state authorities and an assessment of relevance by the concerned COEPES. Private institutions are the subject of external monitoring only if they wish to obtain the RVOE (the RVOE can be removed as a result of one-off inspections). Overall, the quality assurance system does not provide for quality appraisals to be initiated by an external agency.

Academic Staff

110. There are also instruments for quality assurance and quality enhancement of academic staff, in particular of professorial staff. A part of this is requesting students to respond to questionnaires concerning the quality of teaching and the quality of the staff. However, direct evaluations and specific expert reports are the most important instruments used; this happens when individual teachers request them, for example to apply to a position or to be granted a performance-related reward (Section 4.2).

Students

111. Standardised examinations taken by students, designed and applied by the National Centre for Higher Education Assessment (CENEVAL) are a further instrument used in quality evaluation. A growing

number of institutions use such examinations at the admission to different levels of tertiary education (EXANI II for undergraduate programmes and EXANI III for postgraduate programmes), as well as at the completion of a given study programme (EGETSU for *técnico superior universitario* and EGEL for the *licenciatura*) in order to assess whether their programmes achieve their objectives. In 2005 some 61,000 students took CENEVAL's EGEL (*Examen General de Egreso de la Licenciatura*) amounting to more than 20 per cent of the total number of the students granted the *licenciatura*. The more than 21,000 students who took CENEVAL's EGETSU (*Examen General de Egreso del Técnico Superior*), make up almost all the graduates of technological universities. For this test, the proportion of satisfactory grades rose from less than half in 2000 to more than two thirds in 2005. Surveys are also conducted in some institutions among graduates to assess the quality of learning in relation to the praxis requirements of the world of work.

Research

112. There are various instruments designed to assure and enhance the quality of research. The National System of Researchers (SNI) is a key instrument for research evaluation. In this scheme individual researchers can apply for the distinction as "recognised researcher" which is awarded by CONACyT on the basis of a peer review, in general, every three years. Also, most research funds are distributed on a competitive basis with research quality as the main criterion used. Special institutional grants are available for the research centres of CONACyT; the selection of the scientists is made on the basis of relevant quality criteria. This applies also to the Centre for Research and Advanced Studies (CINVESTAV), which connects research and postgraduate studies and selects only the most outstanding scientists and students (for a more detailed account see Sections 3.6 and 4.6).

3.4 Equity

113. Equity is one of the three strategic objectives of the 2001-2006 National Education Programme (PRONAE) and is, justifiably, a priority in tertiary education policy. The PRONAE establishes an articulated mandate to expand the tertiary system in such a way equity goals are favoured. Special attention is focused on learners who might not have had the opportunity for success due to various barriers for access to education. For example, indigenous, economically-disadvantaged and female students are some of the groups targeted for equity programming.

114. Mexican tertiary education has taken proactive and positive steps to increase the participation and engagement of underrepresented groups. Two courses of action are prominent in this respect. First, as detailed in Section 3.2, a means-tested scholarship programme (PRONABES) has been created and there is some evidence that shows that it has been effective in attracting disadvantaged groups. Second, there has been a consistent policy to expand the supply of tertiary programmes in such a way the enrolment of underrepresented groups is favoured. The creation of new institutions such as new technological universities, technological institutes, polytechnic universities has taken place mostly in regions less traditionally engaged with tertiary education, often in disadvantaged areas and offering degrees and programmes which attract new groups of students. In this respect, a particularly relevant development has been the recent creation of intercultural universities (*Universidades Interculturales*) which are grounded on indigenous philosophies, cultures, languages and histories. They open up new opportunities for exchange between indigenous and non-indigenous communities.

115. This proactive equity strategy for tertiary education appears to be valued within the various levels of the tertiary education sector. Discussions during the review demonstrated participants' awareness of and engagement with the various country equity principles and policies. Furthermore, working with equity principles necessarily includes engaging with the community: interactively, collaboratively, and relationally with the very people that it purports to benefit. For example, the creation of Intercultural

Universities has been instrumental in engaging the indigenous communities in enacting differentiated and relevant education strategies according to their needs and aspirations. There are also good examples of institutions reaching out to families of disadvantaged students.

3.5 The regional role of tertiary education

116. Revitalized federalism is illustrated by the growth of education outside the D.F. Until the 1970s, 80 per cent of students were enrolled in the capital district. This situation has changed with the different policies of recent governments. However, the metropolitan and mid-south regions still have about 40 per cent of the country's total enrolment. These differences are expressed in the coverage rates for each region. Compared to an average national enrolment rate of 26.3 per cent, the Federal District has a 48.3 per cent participation rate, while at the other extreme Chiapas has only 16.3 per cent, and five states around 17 per cent (Guanajuato, Michoacán, Oaxaca, Quintana Roo, and Mexico).

117. There are institutions with long standing regional vocations, such as the *Instituto Tecnológico de Mérida*, Yucatán, which we visited. The *yucateca* community asked for the creation of the *Tecnológico*, and it was founded in 1961, to satisfy the needs of the area's production sector. However, only in the 1990s was policy specifically aimed at mitigating regional imbalances, boosting growth and better regional distribution of public education.

1990 – 2000

118. As of 1990, SEP established the policy of prioritizing the creation of new public institutions as decentralized entities of state governments, to satisfy the tertiary education demand in several regions of the country. As a result, state technological institutes (*institutos tecnológicos estatales)* were established following the federal model.

119. In 1991 technological universities (*Universidades Tecnológicas)* were created, offering two-year programmes after the model of the French technological university institutes (IUTs) (Villa Lever and Flores-Crespo, 2002). The purpose was to decentralize tertiary education services and provide opportunities to groups that were traditionally excluded from this level, generally middle and lower class segments. Approximately 90 per cent of these students represent the first generation to attend tertiary education of which 40 per cent live in economically depressed regions. About 50-60 per cent of students belong to families with an income equivalent to three minimum wages.

120. The 1995-2000 period continued the improvement of the distribution of educational services in the regions stimulated by the 1997 Government's initiative to reform the State Commissions for Higher Education Planning (*Comisiones Estatales para la Planeación de la Educación Superior* - COEPES). These Commissions had originally been formed in 1979, but their role proved disappointing. Now the COEPES is responsible for ensuring that federal, state, autonomous and private tertiary education institutions are integrated into the different regions economic and social development plans (Section 3.1).

121. The COEPES are responsible for the technical appraisal/approval of the new public institutions or programmes in existing institutions, through feasibility studies which take into account some of the following factors: macro-regional (needs of the region in the national framework); micro-regional (specific needs of the regions); labour market (needs of professional personnel in the respective regions); socio-economic needs and educational expectations, and supply and demand of educational services.

122. In each state, though not all are functioning, *COEPES* membership is made up of Rectors or directors of state public universities, technological universities, technological institutes, private institutions and teacher education institutions, as well as the head of the ministry of education in the states, a SEP representative, and local representatives from the social and entrepreneurial sectors.

2001 – 2006

123. The period 2001-2006 corresponded to the strengthening of the regional-oriented policies with the creation of more technological universities and technological institutes and the establishment of two new types of institutions: polytechnic universities (*universidades politécnicas*) and intercultural universities (*universidades interculturales*).

124. Polytechnic universities, established as of 2002 in twelve states, are intended to promote the innovative application of knowledge, to improve private sector performance and improve the links to regional organizations including the provision of technological services. Bilingual intercultural universities have the purpose of serving Mexico's indigenous population (around 10 per cent), while open to other students.

Further improvements

125. There have also been advances in the organization of university co-ordination, as for example with the Consortium of Mexican Universities (*Consorcio de Universidades Mexicanas* - CUMEX), constituted by a group of public state universities. At least 80 per cent of their undergraduate students attend programmes that have been evaluated and accredited by the national quality assurance system (Sections 3.3 and 4.3).

126. Mexican students in public (and some private) institutions are required to perform public service. Principally established to assist marginal rural and urban communities it has expanded to the productive sector and public, municipal, state and federal sector entities using collaboration programmes and inter-institutional agreements. Social service lasts between 6 months and 2 years, but the duration is in no case less than 480 hours (Sánchez y Mungaray, 2002).

127. The CONACyT has also reinforced its regional policy, with 14 regional offices and shared financing (Sections 3.6 and 4.6).

128. The federal institutions, such as UNAM and IPN, also have regional policies. UNAM provides distance education, offering programmes – graduate and undergraduate - unavailable in the regions. IPN with its social vocation, particularly in relation to the productive sector, is present in 9 states. This institution was the basis for the new technological institutes.

3.6 Research and innovation

129. Tertiary education can only be an important player in innovation systems when certain conditions are present – adequate levels of public expenditure, critical mass of competent researchers, adequate research environment, and the strength of links with other actors in the innovation system.

Limited resources

130. The most recent figure available for Mexico on R&D expenditure to GDP was 0.44 in 2003 (CONACyT, 2005, p.14). This expenditure rate compares unfavourably with other OECD countries, which invest on average close to 2.5 per cent of GDP on R&D (OECD, 2005c). For the same year, Brazil and Chile spent 0.98 per cent and 0.60 per cent of GDP in R&D, respectively. It is also important to note that Mexican R&D expenditure to GDP has been quite stable in the last decade. This seems to be an issue on which policy-makers have not been successful, as there is a government commitment to increase R&D expenditure to about 1 per cent of GDP in 2006 (CONACyT, 2001:70).

131. Mexico is also at the lower end of the ranking of OECD countries as regards higher education expenditure on R&D in relation to the GDP (0.12 in 2001) (OECD, 2005c). Higher education plays a prominent role in terms of research performance, accounting for about 38 per cent of R&D expenditure in the country (see Appendix 4). In relative terms, the higher education sector is more significant for R&D in Mexico than in most OECD countries and demonstrates the weak presence of the private sector (OECD 2005c and Appendix 4).

132. The picture revealed by these indicators was confirmed in the course of the many interviews conducted for this review. Institutions' officials were unanimous in pointing out that a very small part of their budgets could be used to fund research activities, since most of the ordinary funds were committed to teaching activities and maintenance. Thus, R&D activities at institutions are funded mainly from government grants provided by CONACyT and, indirectly, by funds obtained by the institutions in the framework of special programmes created by SEP such as PIFI and PIFOP.

Research personnel

133. There is broad agreement among observers and the individuals the Review Team met that Mexico has a shortage of researchers capable of performing high quality research, even if there are poles of excellence such as the Centre for Research and Advanced Studies (CINVESTAV), which the Review Team visited. Available indicators corroborate this viewpoint. The total number of researchers per thousand total employment in Mexico (0.6) is 10 times smaller than the average in the OECD area. Over 60 per cent of the researchers in Mexico work in institutions of tertiary education, further evidence of their central role for R&D activities.[22]

134. From 1970 to the mid 1990s a massive number of teachers without formal research qualifications were hired as a result of the expansion of the tertiary system. In 1996, of the almost 15.000 full-time teachers in the public universities only 8 per cent had a doctorate and 27 per cent had another type of postgraduate degree. Thus, 67 per cent were just graduates and lacked the necessary training to carry out research, as required of all full-time teachers. In order to tackle this question, the SEP created in 1996 the Faculty Enhancement Program (*Programa de Mejoramiento del Profesorado* - PROMEP).

135. The ultimate goal of PROMEP is to improve the quality of teaching by enhancing the skills and knowledge of teachers. This includes training the latter in research and creating a "desirable profile" for a full-time teacher in the universities. Training needs were addressed by creating opportunities and granting the necessary conditions for the teachers to attend good quality graduate programmes. Thus, PROMEP not only granted scholarships to allow teachers to temporarily relocate to another (national or international) institution to study but also provided funds for the institution to hire a substitute to cover the teacher on leave of absence (Section 4.2).

136. In total, PROMEP awarded almost 10,000 scholarships, of which 4,200 were for doctoral studies. It is worth pointing out that 2,885 scholarships were in the field of engineering and technology and 3,670 were in natural and exact sciences (Secretaria de Educación Pública, 2005:294). Taken together, natural and exact sciences and engineering account for 65 per cent of all scholarships conferred by PROMEP. However it is not clear if this disciplinary focus was a deliberate policy choice. Some authors have argued that research policies in Mexico "have neglected the social sciences in comparison with what is happening in technological research" (Castaños-Lomnitz, 2006:120). No evidence was found in the course of the review.

[22] RICYT (*La Red de Indicadores de Ciencia y Tecnología – Iberoamericana e Interamericana*) – see http://www.ricyt.edu.ar/indicadores/PorPais/MX.xls.

Coherence and complementarities

137. It has been forcefully argued that a problem with the research workforce in Latin American countries is that there are too many social scientists as compared to natural scientists and engineers (Schwartzman, 2001). Data available from RICYT (*La Red de Indicadores de Ciencia y Tecnología – Iberoamericana e Interamericana)* reveal that in 1995, 60 per cent of Mexican researchers were social scientists.[23] In addition, it has been well documented that the massive growth of technological capabilities in Korea and Taiwan has been accompanied by the emergence of a relatively large volume of scientific activities in engineering, physics and chemistry – precisely the fields that underpin a wide range of manufacturing technologies. Thus, it is positive that the institutions of tertiary education are strengthening their research capacity in fields that are important for industrial development.

138. The creation of PROMEP seems to have had an important impact on the Graduate Education System in Mexico. With the increase in the number of participants of PROMEP and the signal that a research degree was important for a position at an institution of tertiary education, it became clear that the number and quality of existing graduate programmes could not meet the demand. To cope with this, the SEP and the CONACyT established in 2001 the National Programme for Strengthening Postgraduate Education (*Programa de Fortalecimiento del Posgrado Nacional* - PFPN), which contains two components. One is the National Registry of Graduate Programmes (*Padrón Nacional de Posgrado* - PNP) which sets criteria for graduate programme evaluation and to classify them according to quality benchmarks. The other, the Integrated Programme for Institutional Strengthening of Graduate Degrees (*Programa Integral de Fortalecimiento Institucional del Posgrado* - PIFOP) aims at creating the opportunities and conditions for institutions to improve their graduate programmes by providing financial and technical support. One important aspect is the coherence and complementarities of the set of policies designed to train new researchers and at the same time improve the quality of graduate programmes. For example, PROMEP only grants scholarships to teachers who attend graduate programmes that are part of the PNP.

Decentralization

139. Another policy goal is to decentralise graduate programmes to the regions, which seems to be a well-grounded decision. There is enough evidence pointing to a strong tendency for basic research to be localized. This means that research collaboration within a country is strongly influenced by geographical proximity – as distance increases, collaboration decreases, suggesting that collaboration often demands face-to-face interaction. "Firms close to major centres of academic research have a major advantage over those located at distance", and this is even more acute for small firms and polytechnics (Salter and Martin, 2001:518). Personal links and face-to-face interactions are essential not only for the research process but also for sharing and transferring knowledge quickly and effectively to other actors of the innovation system.

140. There are, however, risks associated with decentralisation of graduate programmes and corresponding research activities. One is the tendency to create graduate programmes indiscriminately in all scientific fields in all regions as the qualifications of researchers improve. It is very important that each state or region identify needs and vocation for graduate education. Here certainly there is a role for the COEPES and the state agencies for science and technology.

141. Another risk is that some graduate programmes may remain too small in scale for lack of demand and this may be an impediment to becoming effective. Achieving critical mass in a degree programme is important. Most institutions face this dilemma during the early stages of new doctoral programmes, but

[23] See http://www.ricyt.edu.ar/indicadores/PorPais/MX.xls

some foresight must be exercised to avoid this situation lasting too long (Scott and Anstine, 2002). Finally, there is the risk that with low R&D expenditure, as discussed above, the funds will be spread too thin among the regions.

Incentives for researchers

142. A remarkable policy effort has been made in order to stimulate research activities, reward quality performance and make research an attractive career in Mexican tertiary education. Besides the already mentioned PROMEP, PIFOP and PNP, other programmes have created opportunities and an institutional environment conducive to R&D activities. The best known is the National System of Researchers (*Sistema Nacional de Investigadores* - SNI), created in 1984 as a way to retain qualified researchers at Mexican institutions by granting them monetary benefits in the form of a monthly stipend as well as social recognition (Malo, 1992). Admission to the SNI is by peer review which places candidates in one of the three existing researcher categories or levels. Researchers in SNI are subject, as a general rule, to re-evaluations every three years according to procedures that stress publication of papers in international journals (Castaños-Lomnitz, 2006; CONACyT, 2003).

143. In its 20 years of existence the SNI has been subject to much praise and criticism from different quarters of the research community, mostly concerning evaluation criteria. This notwithstanding, there is consensus – confirmed in the interviews for this review - that the system plays a very important role in stimulating research, in defining a desirable profile for researchers and that SNI transformed research into an attractive career. Even when faced with the figure that SNI represents about 25 per cent of expenditures of CONACyT just to complement salaries, there is a general consensus that this should continue to be a priority for public investment in R&D. It is worth mentioning that financial resources for SNI are earmarked by the National Congress.

144. The number of researchers in SNI has increased from about 1,000 in 1984 to over 12,000 in 2005. Also, there has been a decentralisation of access so that the proportion of those working in the public universities in the regions as well as in technological universities and institutes has systematically increased, reflecting the fact that the level of qualifications of researchers in such institutions has also increased (probably an impact of PROMEP and other programmes).

145. The Programme to Support the Basic Sciences (*Programa de Apoyo a la Ciencia Básica*), created by SEP and CONACyT in 2002 has also promoted research activities by granting funds to research projects. This is an important mechanism to promote research because before its existence CONACyT's expenditures were limited to SNI (25 per cent), the graduate scholarship programme (27 per cent) and the support for its research institutes (47 per cent). Thus the joint effort of CONACyT and SEP allowed the establishment of a much needed research grants programme.

146. Strengthening research capacities in basic research is particularly important because countries and companies benefit from basic research performed elsewhere only if they belong to the international professional networks that exchanges knowledge. This requires high quality research training and a strong world presence in basic research. The costs of joining international networks are relatively high. The idea of a "world pool of knowledge" is misleading since it suggests any country can easily draw knowledge from it. In order to appropriate available knowledge, a country must create capacity and invest in basic research (Section 3.8).

University – industry links

147. It is the general opinion that tertiary education institutions in Mexico have, at best, very weak ties with the productive sector in general and with industry, in particular. There are, however, different forms

of interaction between institutions and industry, of which collaborative research and informal contacts are the most important. Collaborative research, as it normally involves funding, is easier to trace. In 2001, the proportion of higher education expenditure on R&D financed by industry amounted to 1.1 per cent (OECD 2005c) – one of the lowest levels in OECD countries. Moreover, as opposed to the tendency in OECD countries, in Mexico there has been a decline in the contribution of industry to R&D in higher education (3.4 per cent in 1993 – OECD, 2005c).

148. The contribution of the productive sector to research funding is negligible based on the data and opinions gathered from institutions visited for this Review. This is true even for technological universities and institutes. Informal contacts with industry in research-related matters are not the norm either, although the technological institutes, the technological universities and the polytechnic universities do maintain contacts with firms to provide professional training for their undergraduate students.

149. The weak interaction between tertiary education institutions and the productive sector may be related to a number of factors. First is the fact that local firms rely primarily on sources of information other than R&D to innovate, such as clients and competitors. Thus, they have little need to interact with the local research institutions. In consequence, local firms do not hire advanced degree professionals and have little or no absorptive capacity[24] to make use of the knowledge generated by higher education. It is well known that the strength of university-industry interactions is dependent on the absorptive capacity of the industry and innovation system. Less than 10 per cent of Mexican researchers work in the business sector, including state-owned enterprises. This means that private firms employ a negligible proportion of the research workforce and therefore lack qualified personnel to interact with researchers in tertiary education institutions.

3.7 The Labour Market

150. Today, the Mexican labour market, when set against that of other OECD countries, is set apart by three major characteristics (OECD, 2006):

- Very high employment rates of men (in 2004, 82.5% of males aged between 15 and 64 were in employment, the third highest figure among OECD countries) in contrast with low employment rates of women (41.3%, the second lowest figure among OECD countries).

- A high proportion of self-employed as a percentage of total civilian employment (37%, 2nd highest share among the 26 OECD countries for which data are available).

- Very long working hours (in 2004, the average person in employment worked 1848 hours in a year, the 7th highest figure among the 26 OECD countries for which data are available).

151. Another major feature of the Mexican labour market is the significance of the informal sector which in early 2006 accounted for about 28% of the population in employment. Individuals who hold jobs in the informal sector are largely economically disadvantaged and have low levels of qualifications. The unemployment rate has been low in recent years, standing at around 3.5% in early 2006. While employment rates of women are comparatively low, they have been increasing in the recent past (the share of women aged between 15 and 64 in employment has grown from 34.2% in 1991 to 41.3% in 2004).

152. Over the last decades, Mexico's economy has moved away from the agricultural sector (14.4% of the labour force in 2004 from 22.6% in 1995) and in 2004 was centred on the service sector which

[24] Absorptive capacity is defined by Cohen and Levinthal (1989) as the firms' ability to assimilate and exploit external knowledge.

employed slightly less than six out of ten workers (59%), with a further 26% in the industry sector. The Mexican labour market has relatively few large employers. The dominant feature of the pattern of enterprise structure is the large number of small and medium-sized businesses, which shapes both the nature of the labour market for graduates and the ways in which much research and development takes place and is funded. Another significant trend has been the increase of the proportion of tertiary education graduates in the labour force: from 8.9% in 1990 to 13% in 2005.

153. The articulation between the tertiary education system and the labour market is made essentially at three levels. First, several mechanisms seek to ensure that new educational offerings and the updating of existing offerings result from their relevance for the economy and the labour market. This is reflected in the 2001-2006 strategy for education (PRONAE), which requires the expansion and diversification of the educational supply in states to be associated with developmental plans designed by each state's COEPES. These reflect, among other things, an investigation of regional labour market needs. Individual institutions, as part of the PIFI programme, are also encouraged to improve their educational supply on the basis of graduate labour market outcomes, feedback from graduates and views of employers. It is significant that, over the period 1994-95 to 2004-05, out of the 290 public institutions created, 164 are part of the technology-oriented subsystems which lay particular emphasis on their links to the labour market (50 technological universities, 96 federal and state technological institutes and 18 polytechnic universities).

154. Second, partnerships between institutions and employers are encouraged. These include internship opportunities for students and teachers in industry, the contribution of professionals from industry to the delivery of programmes in institutions, the existence of offices in institutions to ensure the appropriate liaison with employers and business organisations, and the participation of representatives of employers and businesses in advisory or governing bodies of institutions.

155. Third, detailed information about labour market outcomes is produced and made available to students, employers, institutions and policy makers. In 2005, the Federal Government launched the Mexican Observatory of the Labour Market (*Observatorio Laboral Mexicano*), an internet platform (www.observatoriolaboral.gob.mx) with extensive information about trends and characteristics of a large number of occupations and professions. In addition, most institutions conduct surveys of graduates, receive governmental support to develop these and use the corresponding results to improve the organisation of their programmes.

3.8 Internationalization

156. One component of the government's tertiary education policy is the promotion of internationalization. By 2025, according to the National Education Programme 2001-2006, tertiary education institutions "…should form part of a co-operative network for national and international academic exchanges to support both teachers and students". So too ANUIES proclaims that international co-operation has acquired growing weight and become a strategic part of Mexican public universities (ANUIES, 2005).

Policies

157. The government has sought to promote internationalization in practice through PROMEP and different CONACyT programmes and, more generally, by a number of policies and actions that support capacity building and competitiveness of tertiary education institutions; promote inter-institutional agreements allowing student mobility; encourage cooperative projects to support academic interchanges and national and external networks; and seek international funds for co-operation and academic exchanges between Mexican and foreign institutions.

158. The SEP, through PROADU, has encouraged public universities to incorporate an international dimension in their programmes. Between 1995 and 2005, around 440 million pesos were transferred to public sector institutions for trilateral and bilateral academic exchange programmes, international congresses (organized by scientific bodies) as well as other activities of public sector teachers and researchers.

159. International agreements also play an important role: for example, under trading agreements such as the North American Free Trade Agreement (NAFTA); as part of a larger initiative like the European Union's ALFA programme; and with bilateral arrangements such as with the United Kingdom through the British Council, with Germany through the German Academic Exchange Service, and with France through the French *Institut de Recherche pour le Développement*.

160. The Mexican Association for International Education (*Asociación Mexicana para la Educación Internacional* - AMPEI), founded in 1992 and with a membership of around 200 Mexican tertiary education institutions, plays also a key role in promoting internationalization of tertiary education. Among other activities, it organizes an annual meeting on education and international co-operation, with seminars and workshops to train and update members on internationalization, and publishes *Educación Global*. AMPEI has also conducted research, surveys, and questionnaires, including a census of foreign students in Mexico (1994–98); created profiles of departments responsible for academic exchange in Mexico; and published a directory, *EduMexico*, to promote Mexican tertiary education institutions abroad. Thanks to AMPEI, Mexico is represented in a number of international forums on internationalization and international co-operation. It participates in the annual meetings of the National Association of International Educators (NAFSA) in the United States and the European Association for International Education (EAIE). One feature that distinguishes it from the majority of organizations of this type in Latin America - such as the Forum of Brazilian Universities for Consultation on International Affairs, the Colombian Network for International Co-operation in Higher Education, and the Commission of International Relations of the Council of Rectors in Chile - is that it is an non governmental organization that is independent of the organizations which represent institutions of tertiary education. Its structure is similar to that of international associations of international education, such as NAFSA and the Association of International Education Administrators in the United States or EAIE in Europe (Garcel–Ávila, 2005).

161. Mexico is an active participant in the Higher Education Common Area of the European Union, Latin America and the Caribbean (*Espacio Común de Educación Superior de la Unión Europea, América Latina y el Caribe* - ALCUE) which encourages networks and exchanges; the recognition of degrees, grades and other titles; student, researcher and teaching staff mobility as well as common criteria for evaluations, quality assurance and codes of good practice. In addition, Mexico is involved in the Latin American Tuning Project which is based on a successful European project of the same name. Its aim is to develop comparable grades and titles; programme convergence in specific subject areas and profiles of professional competencies based on generic skills specified by area.

162. The existing repatriation programme plays an important role for it facilitates the incorporation of Mexican scientists working abroad into research being carried out by Mexican tertiary education institutions. CONACyT provides funds for salaries, pensions, research scholarships and other items to the hosting institution in the initial year as well as the researcher and dependents' travel costs. The hosting institution takes responsibility for those costs after the initial year. In 2004, 71 proposals were approved.

Institutions

163. For the tertiary education institutions themselves, internationalization has principally involved signing student and academic exchange agreements with foreign universities for joint research projects and involvement in international networks. According to the 2002-03 ANUIES survey of international co-

operation, internationalization consisted mostly of bilateral and to a lesser extent trilateral or multilateral agreements (92 per cent). The principal areas were in the Social Sciences and Education (23 per cent each), Engineering (20 per cent), the Natural Sciences (15 per cent) and Health (13 per cent). Of the 3,486 academic staff and students who were reported as developing activities abroad, 46 per cent were in Europe (mainly in France, Spain, Germany, Italy, Sweden and Austria), 33 per cent in the United States of America and 17 per cent in Latin America. Visiting academic staff and students came principally from institutions in the United States of America (37 per cent), Europe (34 per cent), and Latin America (18 per cent).

164. Of all tertiary education institutions ITESM's international activities are particularly interesting for it has branches in 8 Latin American countries and representative offices in Canada, France and the United States. It offers 15 Masters programmes via the Internet and has attracted around 50 thousand Latin American students. The Autonomous University of Hidalgo has a branch in Salamanca, Spain and offers postgraduate courses in Mexican history, while UNAM has two units in the United States of America and one in Canada for the diffusion of Mexican culture and the Spanish language.

165. The technological institutes have also been involved in internationalization, principally by sending their academic staff abroad, agreements with prestigious foreign institutes, particularly technological institutes, and the cooperative programmes with a number of Latin American countries for student training.

4: STRENGTHS AND CHALLENGES IN TERTIARY EDUCATION POLICY

4.1 Governance, planning and regulation

166. As the tertiary education system grows in size and complexity, public policy has to face the challenge of creating a governance mechanism which meets the goals of: first, expanding student numbers with equity; second, improving quality and relevance while, third, managing the system in the context of national development goals. Moreover these goals require policy instruments that take account of a highly differentiated and heterogeneous institutional base, itself composed of different subsystems.

167. The Review Team's field visits and interviews (at federal and state levels, with academics, students, and educational researchers) show that current efforts are positively evaluated. While noting progress, respondents also called attention to limitations and weaknesses. The Review Team agrees that there has been visible progress while challenges remain.

168. A key issue, given tertiary education's present development, is the transition from what has been described as "benevolent support" (*patrocinio*) – where the government provides resources and autonomous institutions decide their use, sometimes with little concern about their performance, quality, efficiency and results - to a more exacting and transparent co-ordination. Here, public authorities define tertiary education priorities and strategy using agreed policy instruments, particularly resource allocation, to promote greater co-ordination and rationalization, improved quality, efficiency and results (García Guadilla 2006; Jongbloed 2004). As in other countries, this transition process is the cause of an intense

debate in Mexico (shown by the varied and ample literature[25]) about the roles of government, institutions and markets and their respective weights in tertiary education co-ordination (Clark 1983: ch.5).

Private institutions

169. The explosive growth of private institutions in tertiary education has an important place in this discussion. They now represent more than half the institutions that make up the overall system, with a third of all enrolments and financed principally by fees paid by students and their families. While there are a number which have achieved an important level of development, prestige and public recognition, so too there are an important number of smaller institutions of apparently poor quality which cause concern (Secretaría de Educación Pública, 2006).

170. On the other hand, private institutions can obtain official recognition for their programmes through the RVOE, submit their programmes for evaluation by COEPES or CIEES, and be accredited as an institution by FIMPES. In the latter case they can join the Programme for Administrative Simplification (*Programa de Simplificación Administrativa*) and be included in the Register of "Private Institutions of Academic Excellence" (*Registro de Instituciones de Excelencia Académica*). This speeds up RVOE approvals and raises institutional prestige. Only 14 private institutions have obtained these benefits.

171. In summary, it seems clear this sector's regulation should be improved, by stricter entrance requirements for private providers and more efficacious ways for granting RVOE. The SES recognizes these needs. The PRONAE 2001-2006 guidelines advocate "improving the requirements and procedures for granting RVOE for advanced studies and strengthening the federal government's technical capacity to analyze requests and supervision". A first step could be the requirement that non-federal entities granting the RVOE adhere to Agreement N.279 (Section 3.1) – such agreement, only binding for federal granting authorities, provides for stricter conditions for an institution to be granted a RVOE.

Benefits of governmental programmes

172. In general, it is agreed that SES has improved its human, material and technical capacities for better tertiary education co-ordination, planning, promotion and evaluation. In particular it can call on sufficient instruments – usually programmes – to guide the system from a distance and encourage the development of national priorities and objectives. For example, PIFI and PIFOP are two outstanding programmes which anticipate a potential reorganization for government-institution negotiations; a first intent to make the relationship more contractual and standardize the criteria to which the relationship is to be subjected. During the Review visits and interviews, institutions referred to PIFI's positive effects especially on development planning and internal institutional procedures.

173. In particular, ANUIES (2005) has evaluated PIFI and its associated programmes positively in the following areas: (i) Laboratories and workshops: equipment and reorganization; (ii) Equipment: acquisition, renovation, and modernization; (iii) Academic programmes: evaluation and redesign of the curricula, curricular innovation, development; (iv) Libraries: expansion of library stock, modernization of library information and document services and infrastructure; (v) Educational practice: improvement, consolidation and expansion of educational innovations; development and strengthening of teaching; (vi) Distance education: support for and operation of new communication and information technologies for learning, consolidation of distance education programmes; (vii) Graduates: follow up and graduate tracer studies; (viii) Research: improved research practice, strengthened academic body, strengthened post graduate degrees, consolidated link between teaching and research; (ix) Quality: consolidation of

[25] See Malo (2006), Rodríguez and Casanova (2005), Acosta Silva (2000), Rodríguez (2002), Didriksson, Fuentes and Palma (2004), Rodríguez Gomez and Sosteric (1999).

educational programme quality, improvement in academic teaching and research quality; (x) Academic networks: strengthening of networks; (xi) Administration and Management: application of ISO standard 9000, the development of information modules about university administration, personnel and financial management; (xii) Accreditation: accreditation of educational programmes, greater attention to recommendations of the accrediting bodies; (xiii) Linkages with employers to strengthen educational processes; (xiv) Academic personnel: upgraded qualifications of teaching staff, and full time professors using the PROMEP profile, some of whom joined the SNI; (xv) Computing: upgraded computer technological base; (xvi) Communications; (xvii) Legal framework: better legal framework and definitions of institutional rules, organization restructuring and rule making.

174. The report concludes by noting that "... to strengthen a 'planning culture' at the heart of public universities, policies and diverse operational programmes have improved institutional purposes, among which are broadening and diversifying educational supply with equity; and improved functions and institutional performance linked to the range of social actors".

175. Between 2001 and 2005 the SEP promoted the establishment of 84 new public tertiary education institutions and an additional unit of the Metropolitan Autonomous University (*Universidad Autónoma Metropolitana* - UAM) in Mexico City; opened 387 new different level programmes at 107 public and technological universities; and contributed to an expanded enrolment capacity of around 1,700 programmes at 48 public state universities. This has broadened regional access to and enrolment in tertiary education consistent with local development needs. The same holds true for the public intercultural universities.

Some queries

176. But these initiatives have also raised questions about the governance, study plans and academic appointments of non-autonomous universities which are, to recall, controlled by state governments. The expressed fear is that "over-regulation and centralized federal control of all substantive and procedural matters dampens entrepreneurial behaviour and places institutional administrators outside the reach of state policy makers" (Richardson and Kent 2002:26).

177. The nature and effectiveness of decentralized planning – that is by the states – presents serious challenges for consolidated tertiary education planning and co-ordination nationally. The key instruments are the COEPES, with performances that vary from one state to the other. This was demonstrated to the Review Team on various occasions and is confirmed by the following examples (Richardson and Kent 2002)*:*

> *In Guanajuato, collaboration between the government and the higher education institutions laid the groundwork for a successful state planning commission (COEPES), following federal guidelines. The commission received full endorsement by the governor (an ex-rector of the state university) and proceeded to establish itself legally as an independent organization. This process of institutionalization boosted the legitimacy of the commission paving the way for incorporating representatives from all institutional sectors and for a relatively smooth operation. The commission has produced a 25 year plan for higher education. It publishes data on higher education and is developing a series of performance indicators. The commission is also moving ahead with the critical issue of inspecting private institutions and reforming criteria for authorizing new establishments in this rapidly growing sector. The state government also created a council for science and technology (CONCYTEG) to promote collaboration between higher education and business and to fund applied research.*
>
> *The story of the state planning commission in Jalisco is quite different, as it has been a bone of contention between the government's attempt to integrate the higher education system under a single authority and the University of Guadalajara's defense of its autonomous state-wide campus network as a separate entity based on the belief that the university is responsible for public higher education in the*

state. The commission was created on paper but never got off the ground and for all practical purposes collaboration between the government and the university is non-existent in Jalisco, although communication and collaboration among the technical institutes has improved in response to the leadership of state policymakers. There is no statewide information system in Jalisco, such as the system that Guanajuato is building. Jalisco did create a science and technology council with the mission of promoting university-business partnerships for R&D, although its infrastructure and personnel are limited and it has no funds of its own to support research.

178. In spite of the gains achieved, there appear to be gaps in programme design and evaluation of the federal and state planning processes. In particular there is little information and data about institutional performance in different subsystems particularly internal efficiency, the cost effectiveness of teaching different types of programmes, as well as national and state professional and technical human resource requirements. These are essential building blocks for tertiary education planning and development.

179. The central and decentralized tertiary education systems can rely on other government instruments for co-ordination, support and evaluation, particularly fiscal resource allocations to public institutions together with quality assurance for teaching. Both are discussed in more detail below (Sections 4.2 and 4.3).

4.2 Resourcing the tertiary education system

4.2.1 Financing of the tertiary education system

180. The funding of tertiary education in Mexico presents a number of positive developments. To begin with, the extraordinary subsidy conferred by the federal government on a targeted basis and through specific programmes is instrumental in aligning the mission of institutions with the overall strategy for tertiary education (as embedded in the 2001-2006 PRONAE). It targets particular needs such as: the enhancement of the quality of academic bodies (e.g. PROMEP); the improvement of the quality of educational programmes, the introduction of innovative curricula, the development of tutoring schemes for students, the improvement of management practices (e.g. PIFI, PIID, PROMIN); the expansion and upgrading of the infrastructure (e.g. FAM); the development of national and international collaboration of academic staff (e.g. PROADU); or the strengthening of postgraduate education (e.g. PFPN). These programmes also encourage the strategic planning of institutions. In particular, the participation in programmes for institutional strengthening (the PIFI for public state universities, technological universities and polytechnic universities; the PIID for both federal and state technological institutes; and the PROMIN for teacher education institutions) entails, for each institution, the development of a strategic document providing objectives and a strategy to reach them in a period of five years. This grants an opportunity to reflect on the specific mission of the institution in light of regional, state-level and national needs.

181. Another significant development in the states is that the extra funds provided for the annual expansion and diversification of the educational supply comes from a state level assessment of the extra offerings being funded. COEPES is responsible for the assessment of the regional relevance of new programmes partly on the basis of labour market needs. This reflects the further positive development of a growing financial commitment on the part of state governments in funding tertiary education. After 1997, it was agreed that any new supply of tertiary education at state-level would be equally co-financed between the federal and the state governments.

182. A further positive feature of institutional funding is that the ordinary subsidy is delivered directly to institutions as a block grant and institutions decide on their internal allocation of resources. This gives institutions more flexibility and autonomy than line-item arrangements in determining a distribution of funds compatible with the particular mission of the institution.

Striving for equity

183. One of the most significant developments has been the establishment and expansion of the national-level scholarship system, the PRONABES. It was launched in 2001 by the federal government in collaboration with state governments and public tertiary institutions consistent with one of the three main objectives of the 2001-2006 PRONAE, "Expand the system laying emphasis on equity". The mean-tested nature of this scholarship system promotes access to tertiary education by more vulnerable groups, in particular those with greater financial need. In 2004-05, 61 per cent of recipients were from families with an income lower than twice the minimum salary in the region where the institution was located, 56 per cent were women, and 89 per cent were attending a *licenciatura* programme (the remaining 11 per cent were attending a two-year degree programme). Furthermore, 45 per cent of scholarship recipients lived in rural or disadvantaged areas, 46 per cent had previously benefited from the *Oportunidades* programme, and 5 per cent were indigenous students (in Oaxaca the proportion of indigenous students among PRONABES recipients reached 24 per cent).

184. The development of the PRONABES is the best illustration of a new emphasis of tertiary education policy on equity, which is to be applauded. The programme is broadly supported by stakeholders. It is recognised as filling a gap in the system and its transparent design provides a clear understanding of how responsibilities are shared (Observatorio Ciudadano de la Educación, 2005). An external evaluation (Bracho, 2005) concluded that the policy impact of PRONABES has been significant; it benefits disadvantaged groups which would not otherwise attend tertiary education; it is successful in promoting the completion of studies; and its design is widely supported. Particularly positive features include the requirement that institutions put in place tutoring programmes to follow the academic progress of scholarship recipients and that renewal of the scholarship is subject to satisfactory academic progress in the programme of studies.

185. Another initiative with merit is the requirement that private institutions grant need-based scholarships to at least five per cent of their students, so giving opportunities to disadvantaged students to access a wider range of institutions. By contrast, it is more difficult to understand the rationale for not making students who attend private institutions eligible to receive a PRONABES grant.

Policy questions

186. Despite these strengths, Mexico's financing of tertiary education faces important challenges. A first matter for concern is whether the current heavy reliance on public money is sustainable. Even if, notably, the principle of cost-sharing between the government and users has been introduced, the extent to which (more affluent) students contribute to the costs of their tertiary education seems to be fairly limited. The low or almost symbolic level of tuition fees leads the government to bear a disproportionate share of the costs of an individual's tertiary education. This happens at a time when not only the tertiary education system continues to expand but there are also growing pressures to contain public spending.

187. Other priorities such as increasing spending on pensions, medical care, or combating social exclusion impose pressure on the education budget. From 1995 to 2002, in nominal terms, while public spending on education grew threefold, that on social protection and regional development increased by factors of 5.6 and 3.9 respectively. As a share of public spending, education lost in importance from 44.8 per cent in 1995 to 40.4 per cent in 2002 while both social protection and regional development reinforced their position - from 14.5 per cent to 24.9 per cent for social protection and from 9.7 per cent to 11.4 per cent for regional development (Didriksson *et al*., 2004). This trend is likely to accentuate as pension systems in Mexico mature and more funds are invested in reducing regional inequities. In addition, within the education system, tertiary education competes with school education and two sectors likely to require more public resources in the years to come: early childhood education and care, rightly to receive more

public funding and the training of the current workforce (continuing education). In 2002, the Congress decided to make pre-schooling for children aged 3 to 5 compulsory, a policy currently under implementation. Furthermore, as pointed out earlier, Mexico is the country within the OECD with the largest gap between tertiary education and lower levels of education per-student expenditure. In light of the challenges Mexico currently faces at the pre-tertiary level (OECD, 2005b; OECD, 2004c), there is growing pressure to shift some resources from tertiary education to school education.

188. The tertiary education system will continue to expand. On the one hand, the proportion of individuals in a given age-cohort who enter tertiary education is considerably lower than the OECD average. In Mexico, in 2003, about 30 per cent of an age-cohort could expect to enter some form of tertiary education, against a proportion of 69 per cent across the OECD area. In addition, the population aged 20-29 is expected to grow in 4 per cent from 2002 to 2012 (see Appendix 4). It is therefore likely that a growing number of individuals will seek tertiary education. Limited public funds can have two types of consequences for tertiary education. Where the number of places available in tertiary education is to be limited by available funds, the consequence is that some qualified individuals will be excluded from it. Where student demand determines the size of the system, the funding restrictions will mainly impact on the quality of educational services as a result of reduced expenditure per student.

189. Finally, in light of the firm evidence of the significant private benefits of a tertiary degree in Mexico, it can be argued that graduates should bear a greater share of the cost of the services offered by tertiary institutions. In Mexico, tertiary education attainment leads to a 20 percentage point increase in the employment rate relative to people with upper secondary education (from 63 to 82 per cent, OECD 2005a). Statistics on earnings by educational attainment are not readily available but there is evidence that professionals earn substantially more than non-professionals (see Chapter 3, Secretaría de Educación Pública 2006).

Concerns about allocation of funds

190. A second major area for concern is the current basis for allocating public funds to individual institutions. As described earlier, public subsidies are not allocated to tertiary education institutions through an agreed transparent framework clearly outlining the basis for funding. Most often both the federal and the state subsidy are the historical prolongation of dated individual agreements with institutions and/or a result of the political influence of the rector in negotiating the budget with both the federal and state governments.

191. The lack of coherence of the funding framework leads to considerable discrepancies in public subsidies per student across institutions. In 2004-05, the average annual subsidy per student in federal public universities was twice that received by state public universities, 2.6 times that received by technological universities and 3.4 times that received by technological institutes.[26] There is also wide variation within subsystems. For instance, in the subsystem of state public universities, the average annual subsidy per student varied between 22,090 pesos and 79,120 pesos for that same year. These differences can only partially be explained by the research role of individual institutions. On this basis, there must be a question about whether the allocations are equitable. Similarly, there is no rationale to explain the considerable variability in the relative contributions of the federal and the state governments to the public subsidy received by public universities.

[26] The average annual subsidy per student corresponds to the sum of the ordinary and extraordinary public subsidies divided by the total number of students in the institution. This information can be obtained from the Ministry's website: www.ses.sep.gob.mx

192. Another source of concern related to the allocation of funds is that the ordinary public subsidy received by institutions has no relation to indicators of the quality of the services provided. This is in contradiction with the goals and objectives of the current tertiary education strategy (PRONAE 2001-2006) which stresses the need to improve quality. As a result, the ordinary subsidy, which constitutes the largest share of the public funding received by institutions, does not provide any incentives for the strengthening of quality.

Scale of student support

193. The third main area for concern is, despite the significant recent efforts, the narrow scale of the student support system. As revealed earlier, the share of student financial aid in public expenditure on tertiary education is only 5.1 per cent (2.8 per cent for scholarships and 2.3 per cent for loans), the 4th lowest among the 27 OECD countries for which data are available. This suggests that the ability of the system to facilitate the participation of academically qualified students who do not have the financial means to access tertiary education is still fairly limited. Even if tuition fees are low, living costs and giving up a salary make it particularly difficult for disadvantaged students to attend tertiary education. The scholarships currently offered are not sufficient to cover realistic costs of living and loans are hardly available to provide financial liquidity at the time of attendance.

194. The funding approach also raises equity issues. In 2000, 45 per cent of individuals aged 18 to 24 who lived in cities and who were from middle- and upper-income families attended tertiary education. By contrast, only 11 per cent of those living in poor urban areas and 3 per cent of those living in poor rural areas attended tertiary education. The 2000 Population Census also revealed that 37 per cent of young adults aged between 20 and 24 abandoned their studies for financial reasons. The participation of young adults in tertiary education is twelve times less likely for individuals from the lowest decile of the income distribution than that of individuals from the highest decile of the same distribution. Several studies also indicate that the system is regressive, that is, public subsidies for tertiary education favour middle- and upper-income over lower-income families (The World Bank 2004; Kent 2005). Some individuals benefit more from the system than others. The degrees of mainly better-off people are paid for by people who on average are less well off. In addition, while some graduates perceive a higher private financial benefit from a tertiary degree, all students are subsidized at similar levels (given that both fees and scholarships are low). What's more, some individuals decide not to undertake tertiary studies as a result of a given disadvantaged background (e.g. financial poverty, less well-informed about the benefits of tertiary education, poor school education). Overall the system seems to favour *high earners* graduates and penalizes *low earners* graduates and non-tertiary-graduates. It is also clear that the heavy reliance on public money for funding public tertiary education institutions together with the pressures to contain public spending gives little room for the expansion of the student support system.

195. Three other aspects make the management of institutions particularly challenging. First, inadequately designed pension systems are putting at jeopardy the financial viability of some public institutions. For some state autonomous public universities, pension systems are designed at institutional level (as opposed to the adherence in most institutions to the national pension scheme managed by the Mexican Social Security Institute - *Instituto Mexicano del Seguro Social*). In these institutions, as a result of the significant expansion of academic bodies in the seventies, the recent wave of staff reaching retirement exposed the inadequacy of the previously agreed pension plans. This could lead to a major financial crisis of the affected public institutions, inevitably affecting their development and even existence. During the period 2001-02, the SEP and ANUIES investigated the extent of the problem and encouraged the renegotiations of pension plans so they become viable. Second, the share of funds in the tertiary budget going into infrastructure is very limited. At the tertiary level, only 2.7 per cent of spending on tertiary education goes to capital expenditure, compared with an OECD average of 11.6 per cent (see Appendix 4). Third, by law, funding decisions are made annually when the budget is negotiated between

the institution and both the federal and state governments. This leads to a lack of predictability of funding which causes difficulties for the long term planning of institutions.

196. Another concern is that institutions do not seem very dynamic in seeking external sources of funding. There is a growing but still incipient tradition of providing services such as industry training or serve as consultants to businesses or public authorities. Resources raised externally by institutions typically represent less than ten per cent of their budgets.

4.2.2 Human Resources Management / Academic Career

197. The Review Team met many able and committed academic staff in Mexican institutions. In part, this derives from the fact that the system has been effective in maintaining the traditional values of academic freedom and institutional autonomy. The academic career is given considerable flexibility and there are instruments to provide recognition to individual academics. There are also considerable efforts to strengthen the research capacity of academic teams and sound initiatives to promote networking and collaboration among them. We also formed the impression that most institutions have put in place mechanisms to respond to underperforming teachers, making growing use of student evaluations, reflected in the overall satisfaction of students about the extent to which their concerns are addressed.

Faculty improvement

198. A major positive development has been the substantial effort to improve the quality of academic bodies. The main instrument in this effort has been the Faculty Enhancement Program (PROMEP, *Programa de Mejoriamento del Profesorado*) established by the SEP in 1996 in collaboration with the CONACyT and the ANUIES, initially targeting state autonomous public universities and federal technological institutes.[27] The objective of the PROMEP is twofold: (i) improve the qualification levels of full-time academic staff in public institutions; and (ii) foster the development of academic bodies with the capacity to undertake relevant research and disseminate innovation.

199. The PROMEP awards scholarships to full-time academic staff for the completion of postgraduate degrees, and for the preparation or completion of postgraduate theses, and promotes other initiatives to improve the quality of academic bodies. Among these are the incentives provided for the formation of networks of academic teams so synergies are created between more and less mature research groups, tutoring is provided to newly-established researchers, and new research projects in strategic areas are jointly launched. During the period 1997-05, the PROMEP awarded full-time academic staff 5,635 scholarships in state public universities and 4,269 in federal technological institutes for completion of postgraduate studies in good quality programmes in Mexico or abroad.

200. The PROMEP has had a significant impact on the profile of full-time academic staff, likely to improve the quality of the instruction and the aptitude of those staff to undertake research activities. In state public universities the proportion of full-time academic staff with a postgraduate degree reached 72 per cent (22 per cent with a PhD degree) in 2005, following an improvement relative to such proportion in 1998 (35 per cent with a postgraduate degree, including 8 per cent with a PhD degree). Similarly, between 2002 and 2005, the percentage of academic staff with a postgraduate degree in technological institutes grew from 30.8 per cent to 37.5 per cent. The number of researchers admitted to the National System of Researchers (SNI) rose from 5,879 in 1994 to 12,094 in 2005. Also, a greater number of researchers are now located outside the *Distrito Federal* (55.6 per cent for SNI members in 2005) improving the research capability of a wider range of regions in Mexico (Section 3.6).

[27] Subsequently, the UAM, UPN, non-autonomous public universities, technological, polytechnic and intercultural universities joined the PROMEP.

201. This effort has been accompanied by other initiatives such as the creation of new academic posts in institutions. In state public universities, during the period 1996-2005, 8,406 new posts were created for the recruitment of academic staff with at least a Masters degree and preferably a Doctoral degree. Other measures include extra funds for the reintegration of PROMEP beneficiaries into their original institution following their graduation, and financial assistance for the creation of research networks and academic exchanges.

202. Another strength regarding the academic career in Mexico is that institutions have autonomy over most aspects of managing their staff. They have some bearing on individual salaries, determine the proportion of time spent by individual staff on teaching and research, design promotion systems, set their own assessment systems and define professional development strategies.

203. There are persuasive examples of institutions making good use in their programmes of experts from business and industry (as with professional practice fields in technological universities and technological institutes) and from community leaders (as in intercultural universities). This enriches the teaching by bringing diversity of perspectives and by exposing students to the application of the ideas they are being taught.

204. Another significant feature of the academic career in Mexico is the existence of merit-based reward systems which have been widely recognised. This gives some discretion to institutions to differentiate salary levels among academics on the basis of the excellence of their work. Institutions develop their own evaluation mechanisms and obtain funds for rewarding excellence through the Programme for Encouraging Academic Excellence (*Programa de Estímulos al Desempeño del Personal Docente*) launched by the federal government in 1992. Access to such funds is granted to federal and state public universities and technological institutes and can be used to reward full-time academics in the categories of Associate and Full Professor. The financial reward is given for a fixed period of time (typically one year) and the participation in the reward programme is on a voluntary basis. If additional funds are available, institutions might include part-time staff among the eligible academics. These programmes offer the potential to improve the performance of academic staff and align the activities of individual academics with the overall objectives of the institution. This exercise also has the merit of leading to the development of evaluation arrangements in the context of a bureaucratic academic system (Altbach, 2003).

Persistent problems

205. Some studies, however, suggest that these systems might have become rather rigid and no longer provide evaluation based on merit. According to Altbach (2003), some of the reward schemes might have simply become a way to supplement inadequate base salaries, with entitlements given to all but the weakest. Another concern is the narrow scope of assessment criteria with, for instance, little weight given to teaching accomplishments and service to the community. This might create disincentives for staff to undertake valuable activities such as quality teaching, community service, technology transfer, and dissemination activities. Some of the schemes might have also become quite costly with the creation of numerous evaluation committees and boards.

206. There are a number of other concerns. During the review visits, academic staff and their representatives often expressed the view that expectations and demands placed upon academics have been rising. The pressure to respond to the needs of a increasing number of students, the growing levels of accountability, the mounting competitive environment, while delivering at three levels – teaching, research, and service – have possibly led to higher levels of stress and heavier workloads (for a description of demands on the academic profession in other countries, see Huisman and Bartelse, 2001).

207. A serious concern is the very low level of the base salary of academic staff in Mexico. Remuneration typically comprises three components: the base salary; the merit-based component (which requires a voluntary application by the academic); and a supplement if you are a member of the National System of Researchers (SNI). The SNI is a network organized by the CONACyT of the most productive scholars and researchers in all of the disciplines who are given significant remuneration supplements in recognition of their work. In 2005, only about 17 per cent of Mexican full-time academics had achieved SNI membership.[28] There are no data widely available on salary levels. For those who are members of SNI, the base salary might represent only about 30 per cent of the overall remuneration. For the others, the merit-based supplement still represents a significant proportion of the remuneration. The base salary is considered too low to sustain a middle-class lifestyle and is perceived as not competitive with the private sector, especially in the early stages of the career. In turn, part-time academic staff, that make up a majority in Mexican institutions, receive only a modest payment for each course they teach. A further problem is that pension benefits are generally linked to the base salary only, which results in little incentive to retire given the expected huge drop in remuneration levels.

208. Despite the recent remarkable efforts to improve the qualifications of academics, concerns about the quality of academic bodies persist. In 2005, about 58 per cent of academic staff had at most a 4-5 year undergraduate degree as their highest qualification. The proportion of full-time academic staff remains low (27.7 per cent in 2005) and fairly constant since 2000, when it stood at 27.6 per cent. In 2005, the ratio of total enrolments to full-time academic staff stood at around 37, with wide dispersion across institutions. The high proportion of part-time academic staff might be detrimental to the functioning of institutions as a result of their lesser engagement in the overall life of institutions, including their governance. It is also not clear why technological universities and state technological institutes do not participate in the Program for Encouraging Academic Excellence, clearly hindering their opportunities for offering a merit-based reward system to their staff. There are also signs that the academic workforce is ageing in some institutions, particularly the more *traditional* ones. This is the combined result of the lack of creation of new posts in *traditional* institutions (such as federal universities) and the lack of incentives for academics to retire.

209. There is also the general recognition that there is very limited mobility of academic staff in Mexico. Typically, an individual starts a career in a given institution and remains there throughout his or her career. This is without doubt not made easier by career structures that are defined at institutional level.

210. Some individuals also expressed some concern at the level of casual and fixed-term employment agreements in the sector. In some cases, there is high reliance for teaching on casual staff on short-term contracts. In some cases, the short-term contracts have been rolled over on a repeated basis. In the longer term, excessive reliance on short-term staffing poses a quality risk since temporary work provides little opportunity to receive training.

4.3 Quality assurance

211. The Mexican tertiary education system is facing the challenge of building a new culture of evaluation and of making quality assurance an integral part of its operation. There are some strengths on which to build. First, there is a growing awareness of quality as an essential dimension at the institutional level. Although there are some mixed views on the relevance of the various procedures and evaluations conducted, the academic leadership, staff and students at the institutions demonstrate agreement on the need for continuous attention and work related to keeping up and improving academic standards.

[28] Only full-time academics are eligible for SNI membership. Selection occurs through a peer review system and maintaining membership is based on continuing productivity. The assessment of productivity focuses mainly on publications and external grants while teaching at the undergraduate level and service are not considered relevant criteria.

212. Second, a range of instruments and mechanisms are in place in the Mexican quality assurance system. Institutions typically establish internal quality assurance mechanisms. Even if in some cases some criticism was expressed to the Review Team about the follow up of teaching evaluations, most departments within institutions have put in place processes needed to foster and implement improvement in the quality of educational services. It is a wide practice to conduct regular appraisals of teaching staff by students. There are also different accreditation and assessment procedures, quality improvement programmes, standardised examinations and registers of high quality institutions, study programmes and researchers. Overall, the use of these instruments has increased significantly over the past few years. For example, the number of programmes accredited by bodies recognised by the COPAES grew from 156 in 2002 to 881 in 2006 and the number of programmes assessed by CIEES expanded from 1288 in 2001 to 2910 in 2006, a meaningful trend in light of the voluntary nature of these exercises.

213. There are also some established practices serving as instruments to ensure a certain degree of accountability likely to lead to quality improvement. For instance, compensation packages for academic staff involve a component related to performance. Similarly, promotion in the academic career is associated with accomplishments of staff, particularly in research. In addition, the increasing allocation of research funds on a competition basis has the potential to promote excellence in research.

214. Third, there are various programmes aimed at enhancing institutional quality: PIFI is targeted at public state universities, technological universities and polytechnic universities; PIID at technological institutes; PROMIN at teacher education institutions; while PIFOP focuses on postgraduate level and PROMEP on improving the quality of academic staff. These programmes provide extra funding for institutions to enhance the quality of their programmes. It is beneficial that some links between the outcomes of some quality assurance procedures and these quality improvement programmes are established. For instance, the access to FIUPEA, one of the funding components of PIFI, is only granted to programmes which received the COPAES accreditation or reached "level 1" of the CIEES assessment. This provides a clear incentive for institutions to voluntarily engage in external assessment. Another useful link is the requirement that institutions take account of the recommendations made by both COPAES and CIEES in their respective assessments when submitting their projects to PIFI funding.

215. As in other countries, however, Mexico needs to raise its game. To do so, several challenges will need to be addressed. Overall, it can be said that quality assurance practices in Mexico are still dispersed into a number of components which do not make a coherent whole. The current system of quality assurance, as seen from a system perspective, is complex and does not yet provide sufficient accountability to the Mexican society. The fact that there are so many bodies involved, with various tasks and procedures, results in little oversight from an outside perspective. The risk for discrepancies between the quality standards used by the different agencies involved, and the lack of a more unified approach in how to disseminate information and knowledge on quality to external stakeholders are the two most pressing issues in this respect. For those knowing the system, the current system is more understandable, but for other external stakeholders such as future students and employers, the current system is less clear.

216. There is also incipient co-ordination across the agencies in the system. This is illustrated by the absence of a formal requirement for the CIEES and the COPAES to co-ordinate their activities, some of which overlap. Each operates independently of the other. Recently there have been efforts, mostly at an informal level, to share information about evaluation results and to find more common elements in quality instruments and criteria.

217. Learning within the system is not enhanced due to the high numbers of bodies responsible, and the separation of quality assurance responsibilities. Although the agencies involved are in the process of improving their co-ordination and collaboration, and with evidence emerging as to the positive learning effects of such collaboration, learning across organisational borders is not a dominant feature in the current

system. To identify and spread good practice is essential for organisational learning, but the possibilities for institutions to pick up on new practices and innovations, today seems to be more limited.

218. The exclusive voluntary nature of the current system also raises concerns. As no quality assurance procedures can be initiated by an external agency, the system has limited ability to address the most critical cases of deficient quality. Programmes are not required to go through any quality assessment once they are established which precludes the quality assurance system, on its own initiative, to offer advice for improvement or, if needed, to impose sanctions such as the removal of public funding or the prohibition for the programme to be offered. The exception is the possibility for the entity which confers a RVOE to a programme offered in a private institution to conduct one-off inspections to assess whether the agreed conditions for the programme provision are being respected. In the same way, the current system draws by and large on internal quality assurance systems which, nevertheless, lack legitimacy as a result of not being validated by an external body. These circumstances are in contrast to the considerable autonomy enjoyed by some institutions (autonomous institutions).

219. There is also limited impact of the outcomes of existing quality assessment procedures. The results of programme assessments by either CIEES or COPAES do not bear any relation to the authorisation for provision or whether or not public funding is to be provided. This is the natural consequence of the voluntary nature of these exercises. Institutions' motivation to engage in external quality assessment relates mostly to the opportunity to advertise the good quality of their programmes and to enhance their involvement in programmes such as PIFI or PIID.

220. The extent to which the quality assurance system holds Mexican institutions of tertiary education accountable is also hindered by not bringing the results of the assessments currently taking place into the public domain. For now only positive results, from both CIEES and COPAES evaluations, are published. Also, foreign peers are not involved in evaluation teams and some stakeholders, such as employers or graduates, are not visible in the quality assurance system. Another limitation is that the existing COPAES accrediting bodies do not cover about twenty per cent of tertiary education programmes in the country as a result of not covering the entire range of subjects being offered in Mexican tertiary education.

4.4 Equity

221. It is highly significant that equity concerns lie at the heart of expansion of the tertiary system, as assumed by the first strategic objective of the PRONAE. This priority emerged only in the 1990s when international assessments showed the extent to which the Mexican tertiary system was inequitable (OECD, 1997). Serious concerns persist in this area but there has been considerable progress. The proportion of 19-23 year olds enrolled in tertiary education grew from 14 per cent in 1995 to 26.2 per cent in 2005. Enrolment rates in tertiary education grew 34% between 1995 and 2003, which is a rate of growth still below that of the average for the OECD area (43 per cent) (see Appendix 4).

222. The strategy to expand the access to tertiary education and to make it more equitable relies into two main strategies:

- Financial assistance for low-income students, especially for those from rural and marginalized urban areas, through PRONABES and other programmes such as the ones described in Section 3.2. As described in Section 4.2, these initiatives have been successful.

- Diversification of supply of programmes, with the creation of institutions in states and regions with low coverage rates (e.g. regional decentralized technological universities, technological institutes, intercultural universities).

223. These policies have had a positive impact in expanding access for the most vulnerable individuals and regions. This is observed in the new institutions – especially the technological universities and intercultural universities - which have been created in economically depressed areas, and focus on low-income sectors. According to the board of directors of the National Association of Technological Universities (ANUT), these universities are located in lower-middle to low income areas, where 50 per cent to 60 per cent of families earn the equivalent or less than three minimum wages. Ninety per cent of students of technological universities represent the first generation to access tertiary education.

224. This has also resulted in the improvement of the geographical accessibility to tertiary education. The expansion of tertiary education in Mexico has led to the establishment of tertiary education institutions in all states of the country. As a result, participation rates of students have grown at higher rates outside the capital city. From 2000-01 to 2004-05, while the participation rate in tertiary education grew from 42.9 to 43.9 in the D.F., it grew from 17.9 to 32.4 in Baja California Sur, from 15.5 to 21.6 in Hidalgo, from 20.8 to 26 in Puebla, or from 19.6 to 24 in Yucatán.

225. A major positive development has been the recent creation of five intercultural universities (*Universidades Interculturales*) which are grounded on indigenous cultures and languages (Schmelkes, 2005). This grants a means to respond to the needs and aspirations of indigenous communities, influential to the ongoing development of all Mexicans. The argument is that engaging in principles and practices of equity and linking with the community does make a difference in affecting the economic, social, and employment outcomes of the designated groups and bridging relationships between all Mexicans. It represents a pathway to empowerment, less dependency, and more active engagement and participation in planning, policy and research. A strategy for sustainable development, with a focus on building human and social capacity in areas such as education and research, provides one mechanism for empowerment. There is also an ethos of working together to support economic and educational development of regions.

226. Equity policies in Mexico, as in other countries, have traditionally emphasised equity of access. However, an increasing focus on equity of outcomes has emerged. More emphasis is being placed on student progression throughout tertiary studies with special support and follow-up measures to assist those students which reveal more difficulties. This is reflected in the wide availability of tutoring programmes in Mexican tertiary institutions. In the institutions we visited, students' progress is closely followed by a teacher and students whose disadvantaged background has been identified (e.g. recipients of PRONABES scholarships) receive particular attention.

227. Despite these strengths, a number of concerns about the equitable provision of tertiary education still remain. The overall levels of participation in tertiary education remain among the lowest within the OECD area – in 2003, 16 per cent of the population aged 25-34 had a tertiary qualification (tertiary-type A and advanced research programmes, ranking 22nd among the 30 OECD countries). For this same year, the average number of years in formal education was 8.7 in Mexico, the next to last figure among the 30 OECD countries. The percentage of all persons aged 15 and over enrolled in tertiary programmes was 3.2 in 2002, the 23rd such figure among the 26 OECD countries for which data are available. In 2003, around 44 per cent of individuals aged 15-19 were enrolled as students, considerably below the OECD average (79 per cent). For the same year, the proportion of individuals of a synthetic cohort who enter tertiary-type A programmes at one point during their lives (net entry rates) was 27.8, against an OECD average of 52.5 (see Appendix 4).

228. There is evidence that access to and completion of tertiary education differ along a number of dimensions. While, in 2000, 45 per cent of individuals in the 18-24 age group living in cities and belonging to medium and high income families were attending tertiary education, for the same age group only 11 per cent of individuals in poor urban areas and 3 per cent of individuals in poor rural areas were enrolled in tertiary education. Similarly, indigenous students represent one per cent of the tertiary education

population when they represent about ten per cent of the overall population. The tertiary participation of individuals living in families in the lowest decile of the salary distribution is twelve times lower than that of individuals from families in the highest decile of the same distribution. In addition, 37 per cent of the 20-24 age group, drop out of tertiary education as a result of lack of financial resources.

229. Gender disparities have become less pronounced in recent years. In 2003, females represented 50 per cent of enrolments in tertiary-type A undergraduate programmes. Two and a half decades ago, women in tertiary education only averaged 17 per cent (Bustos, 2003). Although there are programmes where men (e.g. engineering) or women (nursing, education, liberal studies) predominate, there are other areas where the ratio has been inverted, such as health sciences (currently 60 per cent women), as well as social sciences and business administration (currently 55 per cent women). However, the reverse has not occurred; that is, in Mexico, the number of men in the so-called "female" careers, such as education and liberal studies has not increased. However, the gender gap in postgraduate programmes persists: in 2003, the percentage of females in these programmes was 39.2, the 22nd such figure for the 28 OECD countries for which data are available. Given the favourable trend regarding women's participation in tertiary education, it can be expected that female representation in leadership positions will also evolve satisfactorily over time. In general, the Review Team was surprised at the little female representation in the interview panels it met during the visit.

230. As access to tertiary education is largely determined by outcomes in preceding levels of education, it is important to indicate that a major weakness in the Mexican system are the low rates of completion of upper secondary education. Within the OECD area, in 2003, Mexico had the lowest percentage of upper secondary graduates to the population at the typical age of graduation, with 36 per cent against an OECD average of 78 per cent (OECD, 2005a).

231. It was also clear for the Review Team that the opportunities offered to adults to undertake tertiary studies are underdeveloped. Strategies for promoting lifelong learning are embryonic and there are no provisions to allow attendance on the basis of a person's assessed competencies instead of formal qualifications.

232. As noted in detail in Section 4.2, the student financial support system is still underdeveloped and does not assist adequately those students with financial need. The scholarships currently offered are not sufficient to cover realistic costs of living and loans are hardly available to provide financial liquidity at the time of attendance (Section 4.2).

4.5 Regional Role of Tertiary Education (see also Sections 4.6 and 4.7)

233. Mexico has designed a set of educational policies that have helped greater decentralization and benefited the regions. The coordinating bodies, such as COEPES, which manage tertiary education planning at the regional level are expected to reflect community needs and those of the local productive sector. However, it is evident, from interviews and SEP studies that these policies must be deepened, and some revised, given the limitations described below.

234. The newer institutions, such as technological, polytechnic and intercultural universities, still represent a markedly low proportion of enrolment (2.5, 0.2, and 0.05 per cent, respectively). Although the regionally-based institutions – technological universities, state technological institutes and polytechnic universities, had the highest enrolment growth rates in the period 2001-2006, with 24, 27 and 18 new establishments created respectively, their total enrollment represents only about 15.5 per cent of the total national enrollment.

235. In general, students conveyed their satisfaction at the strong labour market connections of technological universities. In two such institutions visited by the Review Team, students expressed their intention of pursuing further studies in state or federal universities (with which there were transfer agreements), most of whom following a short experience in the labour market.

236. PRONABES scholarships are a crucial factor in the success of the new institutions in regions with high poverty indices; students interviewed referred to the scholarship as an indispensable element for pursuing their studies. PRONABES has established 31 trust funds in the states where it operates. Scholarships have also been important for improving student outcomes, in particular completion rates. At the *Universidad Tecnológica Metropolitana* in Mérida, authorities revealed that 25 per cent of the students had PRONABES scholarships, of whom 100 per cent obtained their degrees.

237. COEPES, the state planning agency is a very positive development but it does not seem to operate effectively in all the states. For example, in some regions, such as Mérida, student enrolment in the private sector is significant. It would therefore be important to find effective ways to actively involve private institutions in the operation of the COEPES.

238. The concept of Student Social Service as a graduation requirement in tertiary education is admirable and has the potential for much impact in Mexican Society. Nonetheless some concerns about the way it is operationalised led to studies about its current impact. The results stress the need for establishing closer links between social service programmes and local development efforts. In general, the survey results show that social service programmes are not responding to the proposed objectives of integrating students into labour markets and community service. The report shows that nationally only 20 per cent of providers are channelled to social programmes in priority areas (Sanchez and Mungaray, 2001).

4.6 Research and Innovation

239. It is common sense these days to say that knowledge is at the heart of development. This notwithstanding, knowledge by itself does not transform economies, nor are there any guarantee of positive returns to investments in research and development or in other products of tertiary education. This is because knowledge use requires a complex system of institutions and practices that interact to configure a well functioning innovation system.

Innovation systems

240. An innovation system consists of a network of social actors – firms, public and private laboratories, institutions of higher education, professional associations, trade unions, grassroots organisations - together with the institutions[29] and policies that influence their innovative behaviour and performance (Freeman, 1987; Lundvall, 1992; Nelson 1993). What really counts is not so much the individual strength of each actor but more the linkages between them.

241. Tertiary education institutions figure prominently in innovation systems, serving a number of functions. First, they train skilled graduates – particularly trained researchers and engineers - and this has been considered by most authors as the most important contribution of institutions of tertiary education to innovation activities (Pavitt, 1998).

242. Secondly, research activities carried out at tertiary institutions increase the stock of knowledge, thus expanding the scientific information available to potential users in the economy and society. Also,

[29] Institutions are understood here as the combined environment of physical organisations and the practised routines, norms, shared expectations, morals, etc. (Edquist and Johnson, 1997).

research activities create new instrumentation and methodologies – laboratory techniques and analytical methods – that are often appropriated by other actors in the innovation system.

243. In addition, researchers in the tertiary education sector are important entry points into national and international networks of expertise and practice. These informal linkages are crucial to successful collaboration between the public and private sectors (Faulkner *et al*., 1995).

244. None of the above functions of tertiary institutions is automatic, or free. Institutions can only play a significant role in innovation systems under specific conditions. These include: adequate levels of public expenditure on research; a critical mass of competent researchers who are able to train new researchers; an environment that stimulates research activities, rewards quality performance and makes research an attractive career; the existence of links with other parts of the innovation system (Pavitt, 1998). Putting these conditions together is a task for public policy, particularly for tertiary education and science and technology policy.

Policies and instruments in place

245. There is a conscience building process in Mexico about the importance of knowledge generation and its value for development, as well as about the role of tertiary institutions in this process. Evidence of this was the number of studies, documents, diagnoses and statistics about the matter that were delivered to the Review Team. Some of these documents have been used to inform policy decision making.

246. As shown in Section 3.6, there seems to be a policy framework and a set of instruments in place to assure the quality of graduate programmes (PNP); improve the quality of human resources in tertiary institutions (PROMEP); reward research productivity and quality (SNI); and to provide research grants on a competitive basis (Programme to Support the Basic Sciences - *Programa de Apoyo a la Ciencia Básica*). Taken together they constitute a sound foundation for stimulating a research environment in tertiary education institutions. In addition there seems to be a strong commitment to evaluate these programmes. There is, for example, quite a number of analyses about the SNI.

247. Evidence that these programmes are valuable is the increase in scientific production – reflected in publications – that took place in the last few years. Although still small in comparison with other OECD countries, Mexican contribution to mainstream world science more than doubled from 1996 to 2004, reaching 0.76 per cent (CONACyT, 2005). This is particularly striking considering that national expenditure in R&D did not increase during this same period, as discussed above. Therefore, the increase in the number of qualified researchers as well as the increase in scientific output was possible because of changes in other variables, probably due to more efficient use of resources that resulted from planning and evaluation activities and from an "internal" dynamics that is triggered when knowledge production systems reach critical mass.

248. The SEP together with CONACyT established a range of programmes to stimulate the research qualifications of teachers in tertiary education (PROMEP), expand the quality of graduate programmes (PNP and PIFOP), and increase productivity and output (SNI). The programmes increased the number of qualified researchers along with their productivity, and improved the quality of postgraduate programmes. They seem to have been able to change mentalities, attitudes, establishing a model of what a researcher is expected to do. They have also stimulated a concern with "quality". The statement of a researcher in Mérida illustrated these changes well: "Mexicans are not exactly writers but, with programmes such as SNI and PNP, we are forced to write or we are out of the system".

249. There are, however, two major challenges still to be faced by policy makers if the tertiary education sector in Mexico is to play a role in the innovation system, namely guaranteeing adequate research funding

and linking tertiary institutions to the innovation system. These two conditions for making the tertiary education a significant player in innovation have not been adequately addressed by the set of policies so far designed and implemented by SEP and CONACyT.

4.7 The labour market

250. There are a number of positive developments regarding the links between the tertiary education system and the labour market. First, notably there is a growing policy emphasis in making educational offerings more relevant to labour market needs. A guiding principle established by the SEP in 1997 is that the expansion of educational offerings is to adhere to the needs expressed by the states in harmony with their development plans and after validation by the respective COEPES. To approve new educational offerings, the latter undertakes feasibility studies which take into account, among other things, the trends in the labour market. In particular, it makes an assessment of current and future needs of graduates per occupation or profession and it outlines the skills and competencies required by employers. Under this arrangement, state tertiary institutions (including autonomous ones) are required to submit their expansion plans (of existing or new programmes) to the approval of the COEPES which, if granted, will lead to the co-financing on a 50% basis by the state. This approach is to be supported. However, the Review Team formed the impression that most often the COEPES falls short in accomplishing the objectives underlying this approach. In some states the COEPES is still gaining shape while in others the instruments available to assess the labour market relevance of educational offerings are still limited.

251. As noted earlier, it is also significant that the creation of new institutions has favoured those which put the accent on their links to the labour market: technological universities, technological institutes and polytechnic universities. During the period 1994-95 to 2004-05, 50 technological universities were created. These offer 2-year degrees of *Técnico Superior Universitario*, directed at the immediate entry into the labour market. The ties with businesses and industry are one of the key principles underlying the activities of technological universities. The participation of businesses and industry is substantiated at three levels: (i) the contribution of employers as external members of governing bodies of institutions; (ii) the design of educational programmes; and (iii) the pedagogical model which includes, for instance, internships in industry. Over the same period, 96 federal and state technological institutes and 18 polytechnic universities were also created. Both these types of institutions offer 4-year degrees in technology-oriented areas with an emphasis on serving the needs of the regions in which they are located. In addition, the creation of 5 intercultural universities in the last couple of years is seen as a major development in responding to the labour market needs of indigenous populations.

252. It is worth pointing out, however, that demand has not met the new supply of technology-oriented programmes to the extent expected. This is particularly the case for the *Técnico Superior Universitario* 2-year degree offered by technological universities. Despite the existence of such subsystem since 1991, in 2004-05 it accounted for only 2.5% of tertiary enrolments. This might reflect the still limited value given by employers to the 2-year degree - possibly because of lack of information - and an overall lack of social recognition of the new degree. Employers tend to prefer individuals with the traditional *licenciatura* if such graduates are readily available.

253. Second, there is rich information about the outcomes of graduates in the labour market. Most institutions conduct surveys of graduates which provide useful information about career paths, views of graduates on their preparation and sometimes employers' assessment of graduates' competencies for work. These have the potential to inform the design of institutions' programmes and put them in better relation with labour market needs. In 1998 the SEP and the ANUIES developed a methodological framework to assist the development of surveys of graduates by institutions. Through the PIFI programme, the SEP is also rightly encouraging the development of such surveys in institutions. However, the extent to which such surveys are developed and used varies considerably across institutions. Some subsystems (e.g.

technological institutes and technological universities), through the SEP, periodically survey graduates and employers and use the results to inform policy making at subsystem level.

254. Another remarkable tool to reduce information gaps in the labour market is the Labour Market Observatory (*Observatorio Laboral*), an internet platform (www.observatoriolaboral.gob.mx) launched in 2005 by the Ministry of Labour which provides labour market trends for a wide range of occupations and professions. It contains a variety of indicators at both national and state level for the last ten years. For a given occupation/profession, indicators include graduates by gender, proportion of graduates in employment, proportion in employment in area of graduate competence, average salary at different stages of career, level of position, status of employment (e.g. part-time or not, whether in self-employment), or employment growth rates. The Labour Observatory represents a key tool in matching the supply of educational programmes by institutions to the demand for programmes by students. It informs students about the labour market, the kinds of jobs available, and the forms of preparation for these jobs. It also informs institutions about potential labour market needs.

255. Third, there are good examples of partnerships between institutions and industry. These can take the form of internships for students and teachers in industry, social service of students undertaken in industry, consulting services, joint research projects, periods of time spent by professionals of industry in institutions, and offices in institutions to strengthen the liaison with industry. The Review Team formed the impression that examples of good practice exist but strong, systematic co-operative arrangements with industry do not seem to be a generalised practice in institutions. Those which are part of the technology subsystems (i.e. technological institutes, technological universities, polytechnic universities) provide among the best examples of partnerships with industry. In these institutions, students are required to undertake an internship in a company, programmes are practice-oriented, and programme content is informed by advisory groups which include the participation of employers. However, there seems to be little evaluation of these partnerships.

256. Fourth, institutions of tertiary education do seem to provide career advice, including assistance to students in finding jobs. Career and placement offices exist in most institutions and are often linked to the offices liaising with local industry and businesses.

257. Despite these strengths, there are still considerable challenges in linking the tertiary education system to the labour market. First, it is not clear whether the current offerings do respond to actual labour market needs. A study by ANUIES (2003) shows that over the period 1990-2000, the labour market mostly absorbed tertiary education graduates – the net supply of graduates was 1.9 million people while the aggregate demand for graduates stood at around 1.8 million people. However, a significant proportion of graduates (45.6%) appears not to have found employment in an area matching the competencies and skills acquired in tertiary education. About half were employed in less specialised areas in which most employed individuals did not hold a graduate degree. This suggests that the supply of jobs requiring tertiary level skills and competencies did not match the number of graduates with such skills. Nonetheless, among the labour force, tertiary education graduates were the ones with the most favourable progression in remuneration during that decade. The Labour Market Observatory also reveals that in 2005 about 30% of graduates were not employed in their area of tertiary training. Another feature of the tertiary system is that a few subject areas seem to concentrate too many of the graduates. In 2005, about 30% of employed graduates studied one of the following three subjects: (i) Accounting and Finance; (ii) Administration; and (iii) Law. This confirms the impression formed by the Review Team of an oversupply of such tertiary programmes. In 2004-05, 43.2% of tertiary education students were studying social and administrative sciences.

258. Second, the input by employers/industry to tertiary education policy appears to be fairly limited. There seems to be no forum at national level where representatives of business and industry could

contribute to the development of tertiary education policy. We also formed the view that there is little tradition of the active involvement of industry in the daily activities of institutions. This is illustrated by the initial expectation that the business community would provide 25% of the funding of technological universities, an expectation not met and which is no longer part of the goals for the overall subsystem. The formal participation of employers and representatives of industry as external members of institutions' governing bodies is a phenomenon in essence limited to technological universities and some technological institutes and polytechnic universities. In other institutions, in particular autonomous institutions, their presence in governing bodies is scarce.

259. Third, it was clear for the Review Team that lifelong offerings of tertiary institutions are underdeveloped and the needs of adult learners do not seem to be a focus of tertiary institutions. Strategies for promoting lifelong learning are incipient which is, for instance, reflected in the limited supply of training for company employees. The opportunities for adults to undertake tertiary education after an experience in the labour market are also hindered by the absence of policy provisions to allow attendance on the basis of a person's assessed competencies instead of formal qualifications.

260. Fourth, the absence of a national qualifications framework hinders the articulation between the demands of employers, the expectations of students, and the offerings of tertiary institutions. Such a framework could be used to bring together the skill needs of employers, the design of tertiary programmes to prepare students with these skills, and the information about the competencies needed for given occupations.

4.8 Internationalization

261. As noted in Section 3.8, Mexican tertiary education is becoming more open to the world, particularly North America, the European Union and Latin America. The federal government has programmes in place that support internationalization. Tertiary education institutions - particularly federal universities, some public state and private universities and research centres – have developed a range of activities for student and academic mobility, joint research projects and participation in networks. However, the tertiary education internationalization process could go further given social needs, an economy the size of Mexico and its declared interest in global competitiveness.

262. The Country Background Report (Secretaría de Educación Pública, 2006) notes that the great majority of institutions have no clear strategy, with objectives and benchmarks, consistent with an institutional internationalization policy. International activities are carried out with little reference to institutional development plans and are not sufficiently detailed to cover internal needs. Neither is there a clear definition of financial budget categories dedicated to internationalization. The main activity continues to be the signing of international agreements of which very few appear to have an impact. According to one recent study, 82 per cent of the around 2,200 agreements signed by Mexican private and public universities are inactive (Garcel – Ávila, 2005:253).

263. Student mobility is the exception as much as the rule; the number of foreign students is marginal to total enrolment although recent data has not been reported to the OECD. Mexican students going abroad are only 0.9 per cent of tertiary education enrolment, considerably below the average for OECD countries (4 per cent). The majority study in the United States of America (63 per cent), followed by Spain (11 per cent), and 16 per cent in the United Kingdom and France.

264. A very limited number of programmes or courses are offered in English, placing Mexico among those OECD countries - Austria, Belgium, Greece, Italy, Portugal and Spain – with no or nearly no education programmes offered in English (OECD, 2005a: 255). Mexico's tertiary institutions have only

rarely been involved in the export of educational services and do not compare, for example, to Australia, Canada and New Zealand.

265. The Science Citation Index (SCI) and the Social Science Citation Index (SSCI) record Mexico's international scientific output, for the period 1988-2003, to be 33,600 articles compared to 70,511 for Brazil and 86,765 for Korea. Mexico's knowledge production was calculated as 0.2 per cent (1988) and 0.5 per cent (2003) of world output while that for Brazil was 0.4 and 1.2 per cent with Korea's contribution increasing from 0.2 to 2.0 per cent respectively for these dates. Only one Mexican university – UNAM – is to be found in the Shangai Jiao Tong index of leading 500 world universities while Korea has 8 and Brazil 4.

266. In summary in spite of some institutions' efforts and progress to incorporate an international dimension, there is no comprehensive internationalization policy.

5: POINTERS FOR FUTURE POLICY DEVELOPMENT

5.1 Planning, co-ordinating and regulating the System

267. The strengths of and challenges to the governance of the tertiary education system have been analyzed in Section 4.1 which showed, first, the progress achieved in the administration of a highly complex and varied institutional base and second, the role of policy co-ordination at the federal and state levels in order to align institutions with national development objectives. This progress, however, needs to continue, as future challenges require a sustained effort to consolidate current reforms and project them into the future. Four policy areas, in particular, need renewed effort.

General – current tensions

268. First, the public policy focus will have to improve the balancing of the system's critical tensions. These are between public and private providers; federal or central planning and decentralized, principally state planning; enrolment expansion, access and equity; support for a large academic body and the recruitment of quality staff; academic research and its integration into innovation policy and the needs of the productive sector; institutional funding (supply) and student financial support (demand). In sum, between planning orientated to the future and the dominance of short term market incentives.

269. How these tensions are managed and the manner in which they are resolved will constitute key decisions for future tertiary education policy. And it will demand imagination, design capacity and skilled application from those responsible for their formulation and implementation. Their approach will be decisive in: finding ways to increase public expenditure for the system (including more R&D funding) (Section 5.6); allocating resources that encourage greater efficiency (Section 5.2); establishing schemes that contribute to the more equitable distribution of opportunities for tertiary education both regionally and for disadvantaged socio-economic groups (Sections 5.2, 5.4 and 5.5); and improving the effectiveness of system quality assurance (Section 5.3).

Private providers

270. A second area of concern is the regulation of private participation in tertiary education. While the benefits are undeniable, their explosive growth would appear to have swamped both the policy framework and existing regulations. A tertiary education market, just as any other public goods market, can only function well under clear rules which guide competition toward social ends, assure transparency and correct for asymmetry of information and promote institutional solidity and quality together with the rights of students (Brunner, 2006).

271. More, the market needs the guidance of public policy in co-ordination with the efforts of the federal and state governments to plan the expansion and diversification of the system. One way of proceeding would be the mandatory accreditation of private institutions and their programmes together with the strengthening of the rules for granting RVOE. These are unsatisfactory, at present, to assure the quality of new programmes offered in the sector (see also Section 5.3).

Strategic planning

272. The third area is the strategic planning itself. The limitations of the current co-ordination mechanisms and the overall incoherent application of policies across subsystems (Section 4.1) suggest the need for the creation of a comprehensive body, such as a National Council or Forum of Tertiary Education, to assist with the integration of strategic leadership, policy planning and co-ordination among the main actors. It should be a wide-ranging body with the participation of the main stakeholders in the system, including: government representatives; the associations which represent the institutions in the sector (e.g. ANUIES, FIMPES, ANUT); student representatives; the teaching staff and the scientific community; representatives of state educational authorities; and private sector and civil society representatives. Such an organization would develop agreements among the main stakeholders on the medium and long term strategy for tertiary education, leaving the policy formulation and implementation to the SEP and state educational authorities. This might also be replicated at the state level: similar bodies would feed their results into national decision making while consolidating the strategic framework at the local level. Possibly the COEPES could undertake this task provided that they are redefined and their functions are actively used in all states. In any event their work would be an important input to any discussion about Mexico's long term educational challenges.

273. The mission of this proposed Council or consultative Forum would be to discuss increasingly global challenges, build agreement about the medium and long term priorities among the main actors and offer views on how they might be tackled. The focus should be on constructing a common vision for the system avoiding a concentration on resourcing issues, although any sensible discussion requires an understanding of resources and constraints. One of our concerns at the origin of this proposal is that all sectors expect more and growing funds without a common forum to discuss trade-offs and establish priorities.

274. We recognise the magnitude of the challenge associated with the formation of such Council, in particular the definition of its membership and mode of operation. The process of the creation of the Council is likely to be decisive and should therefore require enough time and patience so broad consensus among stakeholders is gathered before it starts operating. The exact model for the Council is to be the subject of political discussions and is not to be provided by this Review. Possible suggestions are:

- A broad plural membership consisting of government, educational (public and private) and non-educational stakeholders, as suggested above. The membership should represent, as far as possible, Mexico's rich heritage and broad interests.

- A manageable size for its membership, preferably not exceeding 30 members. In line with the objective of decentralizing policy making in tertiary education, states should be well represented but not necessarily individually. The entire group of COEPES or a body such as the CONAEDU could appoint a few individual (say up to ten) COEPES to sit in the Council as representatives of state-level tertiary education. As described earlier, the individual COEPES could replicate the Council at state level and therefore ensure a voice for local stakeholders.

- The Council should have a small Secretariat, led by an Executive Secretary, to organize focused meetings, write documents and link with international agencies and domestic governments at all levels.

- The Council, through the Executive Secretary, should commission research (possibly but not necessarily by competition) and produce policy relevant papers and an annual report on a specific topic – for example, policies to address secondary school drop-outs or the teaching of mathematics in schools – which would then be subject to a fuller national discussion.

- On the basis of the reports and meetings, the Council would make recommendations and provide options for future policy development.

- To ensure independence and autonomy, the Council should have a guaranteed budget.

275. In the Review Team's view the Council would be complementary to the SEP - as it would make recommendations, not develop policy. Indeed it would be crucial that there is a good working relationship between them and other government levels. While there has been some concern expressed about an overlap of responsibilities, the Review team sees the Council's principal task as to identify challenges and provide consensual directions for the medium and long term tertiary education strategy, not to set policies or allocate resources. The Council should attempt to gain political respect but, it must be emphasized, it is not to be a political organization. Maintaining its independence will be a challenge but that can be achieved through the quality of its reports and recommendations and its ability to build consensus among a wide variety of actors representing distinct interests. The goal is to build a better tertiary education system to meet Mexico's development and competitive needs.

276. The size, complexity and dynamism of Mexico's tertiary education system together with its highly diverse institutional base require an organization like this to express strategic vision to senior politicians. If this function is not developed, whether as a Council or in another form, there is the risk that the system's governance - in the sense of future stability and overall consistency with national development – could weaken. The risk is that, in their absence, the strategic direction of medium and long term policies will become the accumulation of short term decisions of different system actors based on little more than the daily demands of their environment and the interests of institutions, corporations, public administration and other organizations.

Critical policy management

277. Last, the management of the enrolment policy and the development of public institutions should be submitted to rigorous impact and cost benefit evaluations. While the policy advances are well known, so are the weaknesses that could grow (Section 4.1). Now would seem an opportune moment to examine achievements and evaluate their effect on the development of the system, critically revising the weaknesses in both the areas of expansion and management and from this basis strengthen the planning of tertiary education.

278. The expansion of supply requires not only greater coherence with greater emphasis on equity but also, at the same time, with economic and labour market criteria. The growth of the Mexican economy, heading towards the greater use of knowledge and technology, must know that it can count on the adequate human capital in key competitive areas as well as the ability to appropriately undertake the transfer of technology and the diffusion of innovations. These represent an important challenge to the planning process and reflect the need to include different aspects of quality and relevance into human capital formation, not least to help the narrower demands of the labour market.

279. The Federal government's promotion of new public institutions in the science and technology fields is to be sustained but should be the subject of an assessment. While there are evaluations of individual aspects, there is a need for a broader, more comprehensive evaluation which examines their impact on the tertiary education system and the economy. Technological universities and technological institutes are a key level in the system yet have not produced a significant shift in student demand, who continue to prefer institutions offering four- to five-year degrees (*licenciatura*). These preferences have long term consequences for equity of access as well as implication for the costs and internal efficiency of these subsystems. The assessment would, for instance, examine why enrolment targets in some technology subsystems have not been reached.

Capacity building

280. These four challenges are likely to require a stronger emphasis on a national framework, managed by the SEP. But this requires change. First, a renewed medium term planning framework will need more timely and sophisticated information. These are vital inputs to achieve any success for this complex task. In particular, a plan should be able to rely on information about the economy and the labour market; the international standing of institutions and research centres; national and state student demand; early graduate employment and occupational patterns; the internal efficiency of public tertiary education institutions; private sector demand for skills, for example in leading export areas etc. If not, there is the risk that immediate demands and pressures will determine decisions, leaving blank the link to overall strategic objectives.

281. In consequence, second, the institutional and technical capacities of the SEP and its personnel should be re-examined and upgraded to better tackle the complex tasks of policy design and implementation, programme management, evaluation and the brokering of the many different interests involved. If broader and more encompassing policies are adopted, they are likely to use a sophisticated range of formulas and incentives – for example, performance contracts, quality evaluations and the dissemination of best practices – which will require SEP staff of very high quality. With imagination, this proposal need not result in more bureaucracy. The SEP might explore, for example, a more systematic association with research centres and evaluation experts; create networks of international and national consultants; and use information technologies more intensively - all as ways of developing capacity to meet a key educational, national and economic challenge.

5.2 Resourcing the Tertiary System

5.2.1 The Funding of the Tertiary System

282. The Review Team considers that three main principles should underlie the funding of tertiary education in Mexico: cost-sharing; on the basis of relevance; and backed by a comprehensive student support system. Given the current state of play, securing these principles would entail the following priorities for policy development: (i) re-assess whether the current cost-sharing balance is sustainable and appropriately reflects the relative importance of private and societal benefits of tertiary education; (ii)

improve the transparency of the allocation of funds to institutions and make it more consistent with the tertiary education strategy; and (iii) significantly expand the student support system.

Cost sharing

283. As the earlier analysis showed, several trends and competing priorities raise serious concerns about the sustainability of the heavy reliance on public money for funding tertiary education. Even if the principle of cost-sharing is widely accepted, the government still bears a disproportionate share of the costs of an individual's tertiary education at a time there are growing pressures to contain public spending. This tradition is largely based on the objective of facilitating access and on the grounds that the derived societal benefits justify the dominant public funding. There are no doubts that tertiary education creates benefits to society such as growth, social cohesion and citizenship values and, as a result, should be financed by public money at least in part. But it does not follow that the public purse should bear a top-heavy share of the costs, especially for those students who can afford the costs of tertiary education.

284. In light of the fact that Mexico is facing rising budget pressures to maintain funding for public tertiary institutions at constant levels (as a result of the likely continuing expansion and the competing priorities), it might prove timely for education authorities to embark on a wide-ranging debate on the current approach to funding tertiary education. This could be organized in the larger context of debating the overall approach to publicly finance the different strands of the educational system. This debate would help clarify crucial issues for the financing of the tertiary sector such as: (i) whether the current heavy-reliance on public money is sustainable; (ii) whether private benefits are as low as to justify the modest levels of private contributions, especially of the more affluent students; and (iii) whether the public savings from greater private contributions of the more affluent students could consolidate the student support system. A key fact to inform the discussion is that in order to facilitate access it is enough to make tertiary education free for the individual while a student, which does not mean free *per se* as most individuals, once they graduate, can afford a retroactive contribution.

Institutional funding

285. As regards the allocation of funds to institutions, while the funding of new offerings on the basis of relevance and the programme-based targeted funding should be supported, there is a need to improve the transparency of institutional allocations and to strengthen the funding on the basis of quality/performance adapted to institutional profiles.

286. A key priority is to move from the traditional negotiations of budgets between governments and institutions to a formula-based allocation that aims to shield allocation decisions against excessive political pressures and encourage desired institutional behaviour. A more transparent formula could provide incentives for institutions to align better with the overall strategy for tertiary education. A guiding principle is to design a funding approach to meet the policy goals sought: equity; quality and relevance; and institutional and system capacity.

287. A first difficulty is the ability to assess the relevance of courses to establish the degree of public funding. There needs to be a better understanding of the public and private benefits from tertiary programmes as well as enhanced ways to identify those offerings which better serve society at large – e.g. those that respond to labour market needs, which foster innovation or serve communities' aspirations. A first significant step in this direction is the procedure established by some COEPES whereby public funds are allocated to new offerings on the basis of assessments of relevance. This is a procedure which needs to gain maturity but should be supported. The approach to ensure relevance is also closely interconnected with quality assurance mechanisms since low quality programmes are unlikely to be relevant, for instance,

for the labour market. For an approach based on relevance to be successful a robust system of quality assurance needs to be in place.

Use of indicators

288. Another priority is to strengthen the funding to institutions on the basis of the quality of outputs. This would support excellence in institutional activities. The experience with performance-based allocation mechanisms in various countries (e.g. Denmark, the Netherlands, Norway, Sweden) suggests that tying funding to results can bring improvements to institutions' efficiency (e.g. through improved degree completion rates or lower costs of provision).

289. Indicators used in performance-based funding systems should relate to aspects to be enhanced in institutions such as internal efficiency (e.g. costs, completion rates) and external efficiency (e.g. quality of graduates). Performance indicators should also reflect public policy objectives rather than institutional needs and trigger incentives for institutional improvement. A wide range of indicators are used in countries which have implemented performance-based allocation mechanisms. Indicators associated with study completion are student graduation/completion rates, number of credits accumulated by students, average study duration, ratio of graduates to beginners, or number of degrees awarded. Other indicators focus on the labour market outcomes of students: employment rates of graduates, extent to which employment is in a field related to the area of studies or student performance on licensure professional exams. Some countries also use stakeholders' views (e.g. employers, student, government, social partners) of programmes' effectiveness, including assessments of the quality of graduates and about the extent to which a range of needs are being met, and degree of graduate satisfaction.

Performance-based funding

290. However, performance-based funding mechanisms should be carefully implemented because they can have undesired effects. For instance, if institutions are funded on the basis of degrees awarded or credits accumulated by students, some may be tempted to lower their standards in order to improve their funding. This would require adequate quality assurance mechanisms in place. Another possible effect is to induce risk-avoiding behaviour among academics and administrators leading to an emphasis on outputs that are easily attainable and measurable (e.g. effort shifted away from hard-to-measure activities such as the development of creativity and problem-solving attitude). There are other instances in which the pursuit of a goal (e.g. improving completion rates by offering remedial courses) may have adverse consequences on another important objective (e.g. research activities or public service activities by academics).

291. One way to address these concerns is to develop a balanced funding mechanism based on a mix of input and output indicators. A typical input indicator used is the level of student enrolments, typically weighted by funding rates which are differentiated by field of study and qualification level. It is important to note that enrolment-based funding may also provide incentives for improving the quality of programmes as a result of having institutions respond to the needs of students who "vote with their feet" as long as some conditions are met (Jongbloed and Vossensteyn, 2001): (i) largely there are no restrictions on (publicly-funded) enrolment numbers in institutions; (ii) students have access to reliable information on programmes; (iii) credit recognition facilitates student mobility between institutions; (iv) tuition fees are high enough to trigger a wise choice of programme; and (v) student support systems allow for student's choice of institution. The more these conditions are met the greater weight should input indicators have in the funding formula. A small share of performance-related funding is sufficient to influence institutional behaviour as long as the conditions above are largely met. However in Mexico some of these conditions are not met: the system is not demand-driven, credit recognition is underdeveloped, tuition fees are low and the student support system does not assist those in private institutions. This suggests that some reliance on output indicators for the funding formula might be needed to ensure the desired institutional behaviour.

It can also be added that, student enrolments as an input indicator has a number of advantages over the number and qualifications of academic staff because of the "vote with their feet" effect, and the more so the more consolidated academic bodies are. However, it might also lead to distortions as it could encourage institutions to favour quantity of enrolments rather than the quality of the courses.

292. Some prerequisites need to be in place for the successful introduction of performance-based funding. First, because gathering information is costly, it is important to use simple measures which are more readily available. Second, it is important that indicators are valid measures of performance and can easily be interpreted. If outcomes are poorly measured or measures are not valid, the goals of output-based funding may not be realized. Third, it needs to be ensured that there is administrative capacity in place to manage and interpret a great deal of information. Fourth, it is imperative to ensure that the measures being used are transparent to all stakeholders involved. This highlights the need to achieve political agreement among a broad range of stakeholders regarding the terms for introducing an output-based component for institutional funding.

293. Next, measures to define levels of funding should account for the particular role and mission of the institution. For instance, if the mission of the institution stresses links to the community, a performance-based approach should consider including indicators such as the number of graduates in areas critical to the region or the number of faculty involved in community-related projects.

Transparency and diversification

294. Mexican authorities recognised the need to move towards a more transparent performance-based funding system, and established a working group with ANUIES in 1998 which culminated with an agreement to introduce in 2006 a new formula-based method to allocate federal funds to public institutions. The new basis for funding, to be gradually introduced, is the number of students in each institution weighted by funding rates which are differentiated by field of study and degree type, multiplied by a "quality factor" which is degree-specific (e.g. undergraduate, Doctorate, Masters levels). There is less clarity regarding the criteria to define the "quality factor". Possibilities which have been raised are tests of graduates (EGEL and EGETSU, currently taken on a voluntary basis after graduation and organized by CENEVAL), grade points averages of students during their course of studies, the proportion of programmes accredited by COPAES, and the proportion of graduate programmes in the National Registry of Graduate Programmes. Notably, the vast information about graduates in Mexico, namely the surveys on their careers, certainly provides a good potential to assess the quality of the training they obtained. However, there should be some care in the use of graduates tests (i.e. EGEL and EGETSU) since these are taken on a voluntary basis and therefore do not cover the totality of the graduates of a given institution and the motivational factors to take the test are not clear. This initiative by SEP and ANUIES is a fundamental step in the right direction to provide more transparency and equity to the allocation of federal funds to institutions. It would be expected that similar initiatives follow at state level to provide similar levels of transparency to the allocation of state funds to institutions.

295. Also, there is a need for institutions to diversify and enlarge their income from sources other than public funds and tuition fees, and which are consistent with their mission. Clear guidelines need to be drawn up by the SEP and bodies representing institutions in relation to how this is to be supported and encouraged.

296. More stability in funding should be provided in such a way that institutions can engage in a strategic approach to their long-term development, consistent with their strengths and capabilities. An allocation mechanism that guarantees funding over several years is preferable to year-to-year allocations. This allows institutions to plan their investments and introduce reforms over the medium term in

accordance with strategic plans. In this context, it is particularly important that efforts to eliminate the financial constraints imposed by pension plans on some institutions are maintained.

Student support

297. The remaining key element of the funding framework, the student support system, needs to be expanded and diversified. It is suggested that it is based on a system of means-tested scholarships complemented with a universal income-contingent loan scheme. It would represent an important component in a system based on the principle of cost-sharing as it would offset the effects of possible higher private contributions for academically qualified students who are financially needy.

298. The looked-for student support system would require the expansion of the PRONABES to cover a greater number of students with a socio-economic disadvantage. It should be the main promoter for the access of the more vulnerable groups, keep its accent on the financial needs of students, and ensure that it is effective and equitable across the different regions of the country.

299. To complement the scholarship system, a far-reaching student support system should encompass the creation of an income-contingent loan scheme at national level. Given the initial massive investment it requires, it could be launched on a means-tested basis but it should become universal (i.e. not means-tested) as it reaches maturity. The availability of the loan scheme would reduce the liquidity constraints faced by a wider range of individuals at the time of study. Its income-contingent nature would address the risk and uncertainties faced by individuals, and improve the progressiveness of the overall system. In such a system the repayments of graduates correspond to a proportion of their earnings. As a result, low earners make low or no repayments and graduates with low lifetime earnings end up not repaying their loans in full. Income-contingent loans protect borrowers from excessive risk as they provide insurance against inability to repay. They also make the system more progressive. Those individuals who derive greater private benefits from a tertiary degree see the level of their public subsidy reduced vis-à-vis that of other students.

300. A number of features could make the loan scheme more effective. If subsidies on interest rates are to be provided, those should be given on the basis of financial need. There should be a maximum number of years during which interest rates are subsidized, an entitlement for students to borrow with a subsidy, and a larger loan entitlement at market interest rates (or the government's cost of borrowing). A risk with loan schemes is that some graduates leave the country to avoid their repayment obligations. An incentive to prevent such exodus, such as interest not charged on loans during the repayment period for graduates staying in the country, should be created.

301. Students who receive scholarships should also be able to take up student loans, with the loan entitlement being abated by the amount of the scholarship. Overall, once the student support system reaches maturity, aid amounts – scholarships and loan entitlements – should be large enough to effectively remove liquidity constraints faced by students. It is also recommended that student financial aid is tied to costs of living across regions if substantial differences are observed. Students who attend private institutions should also benefit, under the same conditions, from the same basic financial support to cover costs of living. This would clearly facilitate students' freedom of choice and enable the development of institutions with distinct approaches and purposes. It might also prove instrumental to create an agency, within or outside the Ministry of Education, to be responsible for the administration and delivery of student loans and scholarships.

5.2.2 Human Resources Management / Academic Career

302. The academic profession in Mexico is struggling with growing external expectations, modest pecuniary recognition, a research capacity still in development, and a significant proportion of its members with low qualifications. This calls for a number of initiatives in the following areas: (i) institutional leadership; (ii) staff development; and (iii) recognition of staff.

303. The Review Team considers that institutional leadership is vital to find modes of operation to balance the external expectations with the traditional values of academic freedom and institutional autonomy. It needs to strengthen processes and systems which provide the frameworks for linking individual work to organizational strategic goals. Leadership needs to demonstrate the advantage of change, establish a systematic forward-looking assessment of organizational direction, and define the requirements and workloads needed to achieve the desired profile. This requires great flexibility on the definition of the roles and workloads of individual academic staff.

304. It is also important to have individual academics assume responsibility for shaping their role and work profile. This will be better achieved if academic staff reaches high standards in their core activities – teaching, research and public service – and are prepared to take responsibility for their learning and to develop professionally by pursuing personal goals that are in accordance with the larger organizational and external environment. For this reason, the current efforts to enhance the qualifications and quality of academic bodies, through a programme like PROMEP, are decisive and should be continued. There should also be an evaluation, institution by institution, on whether or not the proportion of full-time academic staff should be increased.

305. Within this framework, it is important to have in place within institutions mechanisms which support and reward the accomplishments in the interest of the individual, the institution, and the system as a whole. Raising the level of base salaries, especially at the early stages of the career, should be given the priority. Serious efforts should be undertaken to allocate more resources to achieve this objective. This is not to say that merit-based pay should be reduced in importance. As pointed out earlier, the current Programme for Encouraging Academic Excellence (*Programa de Estímulos al Desempeño del Personal Docente*), with a significant weight in academics' compensation packages, seems to have evolved in many institutions into a supplement to inadequate base salaries given to most academics, no longer differentiating on the basis of merit. The new approach could entail an overall lower budget for the overall programme (so funds are freed for better base salaries) but with a distribution of funds strictly focussed on rewarding academic excellence.

306. In addition, more attention needs to go to performance management which defines expectations for staff and provides feedback and development opportunities. While currently there are mechanisms mostly rewarding achievement in research, there are more limited means to reward other activities. The teaching performance measures are sketchy – and currently appear very largely reliant on student evaluations. We favour staff incentive systems to include performance in community service and consultancies alongside performance in teaching and research. Also, academic staff in technological universities and state technological institutes should be embraced by the Programme for Encouraging Academic Excellence.

307. Improvements in academic staff mobility might be generated by enhancing the capacity for collaboration among institutions and between institutions and external organisations. Such interaction has the potential to diversify the professional prospects of many academic staff. Initiatives such as the incentives provided by the PROMEP to create networks of academics are steps in this direction as could also be the creation of joint degrees between institutions. Institutions could also be encouraged to establish agreements which would provide for the mutual recognition of career structures.

308. The system also needs to make a better assessment of the seriousness and potential consequences of both the ageing trend in *traditional* institutions and the existence of casual employment agreements. It could prove useful to launch a major strategic review of the tertiary education workforce which could propose ways to monitor workforce issues in the future and various initiatives to face the identified concerns. A possibility in the short term could be the creation of some new posts in the more *traditional* institutions (such as federal universities).

5.3 Quality assurance

309. The growing stress on quality assurance deserves strong support. Several trends call for the sustained focus on the development of a comprehensive quality assurance system. These include the expansion of the Mexican system, the increasing importance of private provision, a greater diversity of institutional types and educational offerings, the enlarged autonomy of a number of institutions, the internationalisation of tertiary education and the expansion of distance education. Possible policy responses to the current challenges include better alignment between the tertiary education strategy and the domain of quality assurance; organisational restructuring; the introduction of quality assurance elements of a mandatory nature; a combination between internal processes and external quality assurance; and some adjustments in the forms and types of evaluations conducted. These suggestions are elaborated below.

310. A clear strategy for quality assurance in tertiary education needs to be formulated alongside a better alignment between the tertiary education strategy and the area of quality assurance. In light of the current objectives for the system (PRONAE 2001-2006), a well co-ordinated quality assurance system needs to ensure that: each student is provided with quality education; the overall system is contributing to the social and economic development of the country; institutions' activities foster equity of access and outcomes; it contributes to the improvement of co-ordination within and integration of the overall tertiary system.

311. As a response to the rather fragmented organisational structure surrounding quality assurance, there are several arguments for combining some of the existing quality assurance agencies and accrediting bodies, creating a single agency with total responsibility for assuring quality in instructional activities of Mexican tertiary institutions. The activities currently undertaken by CIEES, COPAES, FIMPES and the assessment of postgraduate programmes by SEP-CONACyT (through the PNP) could be brought under the umbrella of a single agency.[30] This would bring better integration and coherence to the system and improve communication and co-ordination between quality assurance activities, the SEP, state authorities and institutions. A single agency would most likely also improve the organisational learning within the system. Another advantage of more organisational integration in quality assurance is that the external accountability function could be further improved. There is room for improving the information on the quality to students, parents, employers and the society in general. A new single agency would in itself result in a more accessible organisational structure for external stakeholders. The single agency should remain independent from the SEP and state authorities and be rooted on a common understanding of purposes and objectives achieved by federal- and state-level educational authorities, institutions (through organisations such as ANUIES and FIMPES), professional organisations, student and employers' representatives.

312. As a general principle, quality assurance needs to serve two major purposes, namely improvement and accountability. From an accountability point of view, it is important that quality assurance provides information to various stakeholders, including prospective students, employers and funders. This includes the general principle of making the results of quality evaluations available to the general public. It is also key that its role as a vehicle for improvement and innovation is valued by academic staff, students and

[30] The evaluation of research quality (including the role of SNI) and the assessments organised by CENEVAL should remain separate.

administrators, avoiding the establishment of a compliance culture. A balance between the two purposes of improvement and accountability is crucial for the effectiveness of a quality assurance system.

313. It is proposed to base the system on a combination of internal quality processes and external quality assurance mechanisms. The interaction between external and internal processes is essential to ensure that the results of monitoring processes are not just temporary adjustments but result in lasting improvement. Empirical evidence shows that the most effective improvement seems to occur when external processes mesh with internal improvement activities (Harvey and Newton, 2004).

314. It is imperative to reinforce the role of external quality assurance by introducing elements which are mandatory in nature. At a minimum, the following two elements should be introduced: (i) the mandatory cyclical external validation of internal quality assurance mechanisms; and (ii) the possibility that the single external agency initiates selected external evaluations of institutions, academic areas within or across institutions, or of a particular theme (e.g. distance learning, transition of graduates to the labour market). It is important to bring legitimacy to internal quality assurance mechanisms by having them formally validated periodically by an external assessment, a responsibility for the single quality assurance agency. There should be the expectation that institutions establish routines that lead to the continuous improvement of their internal quality systems. Selected external evaluations covering institutions as a whole or specific academic areas/programmes within or across institutions provide, among other things, an useful mechanism to address the most critical cases of poor quality.

315. Given that many of the presently offered educational programmes in Mexican tertiary institutions have never undergone an external assessment, mostly as a result of a quality assurance system still in development, if resources allow, a single cycle of external assessments of those programmes never previously assessed by either the CIEES or the accrediting bodies recognised by the COPAES, should be considered. This would apply for programmes across the system in any type of institution. Such single round of assessments, similar in nature to those organised currently by the CIEES, would permit the system to review the quality of its programmes, provide advice for improvement, and identify those programmes which should either not be offered or not be given official recognition. However, given the likely high cost such approach entails, it is not recommended that a more mature system of quality assurance draws on the periodic external quality monitoring at programme level across the entire tertiary system.

316. The option for institutions to voluntarily submit their programmes to either external assessment (of the type currently performed by CIEES) or to external accreditation (of the sort currently offered by the bodies accredited by COPAES), should remain as a complementary element in the overall quality assurance system, especially if no mandatory scheme for programme evaluation is in place. This would provide institutions with the opportunity to both receive public recognition for the quality of their programmes and advice for improvement. The latter highlights the role of external quality assurance in enhancing improvement by being available to institutions of tertiary education for advice, consultation, research, and development on request. The development of dialogue and frequent communication between external experts and the institutions should be a vital characteristic of the quality assurance system. This, however, requires a high level of professional expertise within the agency in charge of external quality assurance. The agency could also undertake research on quality in tertiary education, disseminate best practices and provide benchmarking data across the sector.

317. Another area in need of improvement is that of the authorisation for launching new programmes and the official recognition of the associated qualifications. Currently, as explained earlier, autonomous institutions do not have to submit new programmes to external approval, the remaining public institutions follow rules specific to their subsystem, and private institutions are the subject of external monitoring only if they wish to obtain the RVOE. Institutions could be distinguished as of two types as regards the

launching of officially recognised programmes: those with no need for external approval to launch such programmes and those in need of external approval. For the latter institutions an external authorisation procedure should be established by the quality assurance agency to attest the appropriateness of the structure supporting the new programme. This would mirror the current process associated with the RVOE but with more robust criteria and extending it to public institutions. However all new programmes, in institutions with either status, should be the subject of an assessment of relevance (along the lines of that currently undertaken by some COEPES) in order to receive public funding. The basis to determine which institutions are officially authorised to launch new study programmes with no need for external approval could be the cyclical assessment of internal quality assurance mechanisms and/or the proportion of programmes in the institution recognised as of good quality (either through the current assessments by CIEES and the COPAES and/or the single cycle of external assessments proposed above). Such status should be reviewed periodically.

318. The proposed system also stresses the need to give stronger emphasis to internal quality assurance processes, through the external validation suggested above. In order to achieve quality improvement and transformation, trust in and commitment with institutions needs to be established. It is important to take full account of the expectations and values of administrators and academic staff. Sustained quality improvement in teaching and learning will not occur unless the approach to quality assurance triggers the intrinsic motivation of staff to achieve improvement.

319. Internal accountability should be guided by some key principles. Quality processes must be non-burdensome and delegation of responsibility for quality must be to those people able to effect change at the teaching-learning interface. Teaching units and other teams involved in providing student services must define improvement and put in place processes needed to foster and implement improvement (Horsburgh (1999). Informal internal quality monitoring, such as that brought about by professional dialogue and exchange of ideas, seems to be the most valuable in terms of improvement and enhancement of student learning. It is suggested that peer observation of teaching should be separated from other institutions' processes such as those for probationary staff, for under-performance or promotion. Feedback to individual staff must be confidential and the outcomes of the process should be the identification of the further developmental needs of the department as a whole (Gosling, 2000). These approaches could be assisted by the creation of centres of teaching excellence in institutions. Such centres could draw on the existing expertise of teaching evaluation and develop pedagogical strategies and training materials.

320. In order to create coherent systems, the aim of external quality assurance must be clear and expectations regarding its purposes and outcomes should gather consensus among the different stakeholders. In this respect, it is suggested that improvement and accountability be conceptually and practically distinct while allowing for close contact between them. Another key factor determining the impact of quality assurance is legitimacy. Quality judgements which lack legitimacy in the eyes of those on the receiving end are not likely to be acted upon if action can be avoided. In this respect, the nature of the involvement of the academic community as a whole is important, namely in the composition of external review teams. The same applies to the level of expertise involved in the co-ordination of the overall quality assurance exercise. It is important to ensure the good preparation of the staff concerned. Often, some of the major reasons for the weakness of a quality assurance system are the lack mechanisms of analysis of the information gathered during the external review, inadequacies of the selection process of and the training offered to evaluators and the lack of effectiveness of evaluation committees.

321. Another priority is to align quality assurance processes to the particular profile of institutions. The combination of the different bodies currently involved in quality assurance into a single agency does not mean that every institution should undergo the same procedures. Quality assessment procedures need to be adjusted to institutional missions. For instance the external validation of internal quality management systems should be seen in relation to the aims and objectives of the specific institution. Nonetheless it is

critical that all the institutions in the Mexican tertiary system, whether autonomous or not, are covered by the quality assurance system operated by the single agency.

322. It is also important that stakeholders such as students, graduates, employers, and government are visible in the evaluation procedures. As one example of participation of other stakeholders, the Danish system has the most explicit focus always using employer representatives in the expert panels and conducting extensive surveys of the attitudes of employers, recent graduates and students in the evaluation processes (Thune, 1998). It is increasingly the trend to include people from outside academia (e.g. non-academics who have an interest in tertiary education, representatives from employers) and from other countries in the quality review teams. Another major aspect of quality in tertiary education is the success of graduates in joining the labour market. In this respect, Mexico can draw on its excellent experience with graduates' surveys. The assessments carried out by CENEVAL also offer the potential for an increased focus on student outcomes.

323. Resources put into quality assurance activities will be wasted unless these activities have a beneficial effect. For this to be achieved, it is crucial to implement adequate follow-up procedures after the evaluation. Formal mechanisms for following up the results of the reviews need to be established and go beyond simply asking the institution what it has done. It is argued that, since the aim of the evaluation process is to originate a continuous process of quality assurance within the study programmes, it is essential that the institutions themselves are committed and take the lead to this follow-up (Thune, 1998). The external quality assurance agency should take measures essentially when an institution does nothing with the recommendations.

5.4 Equity

324. The response to reduce inequities in the access to and completion of tertiary education lies at four levels: (i) schooling policies; (ii) financial assistance to needy students; (iii) incentives for tertiary education institutions to widen participation and provide extra support for students from disadvantaged backgrounds; and (iv) alternative types of provision to account for the cultural diversity of the population.

325. Students whose parents have lower levels of education underestimate more often the net benefits of tertiary education. To offset this information gap, career guidance and counselling services in Mexican schools should strengthen their role in making poorly informed school children aware of the benefits of tertiary education and in raising their attendance aspirations. In this respect it is important to put in place a network of career guidance services that is adequately staffed and undertaken by individuals with the appropriate training. It is suggested that career guidance place more emphasis in the transition from upper secondary to tertiary education for students from disadvantaged backgrounds. The models suggested by a recent OECD review of career guidance can be useful in this respect (OECD, 2004d). This could be complemented with a means-tested financial aid scheme to encourage students to complete upper secondary education similar to what is provided through the *Oportunidades* programme. In addition, an expansion of tracks from vocational upper secondary education to tertiary education is also likely to enlarge the participation rates of the currently under represented groups.

326. Another crucial element for ensuring the equitable provision of tertiary education is the financial assistance provided to needy students. As described in detail in Section 5.2, the student support system should be expanded and diversified. It is suggested that it is based on a system of means-tested scholarships complemented with a universal income-contingent loan scheme. Suggestions to respond to the equity issues raised by the financing of the system were proposed earlier (Section 5.2).

327. Tertiary education institutions also need to be provided with incentives to widen participation by less represented groups and assist those groups with extra support. A possibility worth considering is the

creation of a special financial incentive for institutions to attract less represented groups. This could be achieved, for instance, by assigning a greater weight in the student-credits component of the funding formula to particular groups of students such as indigenous people. Institutions could engage in "affirmative action" by taking into account the socio-economic status of students in the selection process. This would compensate for the more limited educational opportunities some disadvantaged groups of students are offered prior to entering tertiary education. This would possibly lead to particular initiatives by institutions not only to widen access but also to support students from disadvantaged backgrounds in their studies progression. As noted earlier, Mexican institutions have already done considerable progress in offering tutoring services to their students. The overall strategy might also include adapting the learning environment to account for the diversity, for instance by adjusting the curriculum and the tuition for the entire student population. Initiatives include the development of multicultural competencies among the entire academic staff, seminars and courses on multicultural pedagogy and the training of tutors with multicultural knowledge and communication skills.

328. The further development of intercultural universities is to be encouraged. These institutions respond to a particular need in Mexican society and are a means to provide aspirations to indigenous communities in harmony with their culture. Current resource issues should be addressed to ensure the successful development of intercultural universities. There is a danger of developing these institutions from only one perspective and not valuing the other parts of Mexican culture. It is imperative that there is an understanding that bridging between the indigenous and non-indigenous communities involves exchange in the two directions. Hence, the policy of opening up these institutions to all Mexicans is to be preserved. Of course, policies to improve the participation of indigenous populations in tertiary education should encompass attendance in the entire system. More information about the success or failure of specific policies for the indigenous populations would be helpful to expand equity programmes.

329. Finally, tertiary education institutions need to be encouraged to engage further in lifelong learning and be more responsive to the needs of adult learners. This would widen their societal role with the new audiences they can reach. The development of policies to allow attendance on the basis of acquired competencies (rather than academic qualifications) should be envisaged to support the lifelong learning role of tertiary institutions. It is also important to provide support for young people who work and study simultaneously. In this regard, the supply of programmes could be more flexible to take account of this group.

5.5 Strengthening the regional role (see also Sections 5.6 and 5.7)

330. Mexico must pursue its commendable policy of decentralizing the supply of tertiary education programmes, which assists the effort of making the development of the most marginalized regions of the country a priority.

331. Tertiary education is one basis for achieving balanced development; however, it is also indispensable for regional economic revitalization. Although investments are being made to strengthen regional institutions, the local market cannot always absorb educated labour and graduates have often to migrate to other states. In Review meetings some students enrolled in regional institutions indicated they were looking for a job in other states as a result of the few opportunities in the region where their institution is located. Therefore, there is a case for considering a proactive culture of entrepreneurship to support economic development, and so avoid the loss of locally educated human resources.

332. The other challenge is the regional co-ordination of tertiary education activities (see 3.1, 4.1 and 5.1). Co-operation of all regional actors is required to improve greater efficiency for regional planning. COEPES, as a regional planning agency model should be evaluated, and positive experiences must be disseminated so as to strengthen and encourage good practices. The productive sector could helpfully

become more actively involved in COEPES; not only by participating in curricula planning, but with economic support for students, as for example, apprenticeship programmes in companies.

333. New and flexible learning schemes can help attract students. Consideration should be given to lifelong education options. These require flexible schedules, academic programmes with semi-distance learning components, and opportunities for greater mobility between the different subsystems and study modalities, as well as the labour environment.

5.6 Research and Innovation

334. The commitment of any country to become a "knowledge society" is partly reflected in the financial resources devoted to R&D. In this respect, it is imperative for Mexico to pursue its efforts to increase public expenditure in R&D so that the targeted level of 1 per cent of GDP is reached.

Private investment

335. Despite being important, increasing public expenditure is R&D is not sufficient. No country has ever secured advanced technological capabilities without a significant share of private R&D expenditure. Even to be "technology-followers" countries need to have business enterprises willing to invest in R&D. The reasons are that R&D units located in firms "allow better and faster diffusion within the economy of new technologies, lower the cost of technology transfer and capture more of the spillover benefits created by the operation of foreign firms" (Lall 2002:3). As a matter of fact, the countries which were able to make the transition to knowledge economies show a consistent and marked increase in private sector participation in R&D investment overtime (e.g. Korea, Ireland). This should be a matter for further debate in Mexico to raise the awareness of the need for further involvement of businesses in research, development and innovation.

336. Consequently, government policies must include schemes to stimulate private investment in R&D. One important incentive in this line is to create government-industry matching funds for collaborative research between tertiary institutions and industry. It is true that the seed for such a scheme already exists in the form of the AVANCE programme (Programme for the Creation of new Businesses based on Scientific and Technological Developments) launched by CONACyT. This, however, remains too timid and is far from being a core concern of national policy. Much more effort has to be made in this direction in collaboration with industry representatives. Along the same lines, current efforts to expand the participation of businesses in the Programme of Tax Incentives for Technological Research and Development (launched in 2001 by the CONACyT, SHCP and Ministry of Economy) are to be supported.

337. Another scheme that has produced good results in some countries (particularly in Southeast Asian countries such as Singapore) is government subsidies for firms to hire advanced qualified personnel. At the moment, demand from businesses for doctoral degree holders is scarce. The opinion of business representatives met during this Review was that, if things stay as they are, it is very unlikely such demand will increase in the short or medium terms. Hence there must be government intervention in the form of incentives for firms to be exposed to the advantages and benefits of hiring research qualified human resources. This requires negotiations between the relevant parties and should be given priority.

338. The policy measures suggested above have the potential double effect of increasing private investment in R&D and integrating tertiary education institutions into the innovation system. These suggestions apply both to the federal and state levels. However, there is convincing evidence in the literature that the role of regional governments should be considerably strengthened as regional innovation governance structures seem to work better than centralised ones, particularly in countries with huge regional disparities like Mexico.

Regional innovation

339. It could therefore prove useful to strengthen the role of local tertiary institutions in regional innovation systems. The "region" has grown in significance as a meaningful site for innovation policy as the localised nature of innovation processes became better understood. A number of studies have highlighted the importance of proximate skilled workforce in attracting inward investment, with consequent benefits in stimulating the development of local enterprises. A move in this direction requires associative regional governance. The latter implies a shift from federal state regulation to regional self-regulation exercised by an array of intermediate groups that typically include local authorities, regional development agencies, industry, labour market representatives and tertiary education institutions. They should collectively develop strategies that support cluster development and address gaps in the innovation support infrastructure, notably basic and applied research. One embryo of such regional intermediary organisation is the COEPES. The existing CONACyT programme of mixed federal and state funds has the potential to be instrumental in this context.

340. The role of institutions in regional innovation governance structures is to adapt their educational, research and community activities to support regional industry needs as well as the needs of other actors and individuals in their communities. This involves seeking out regional partners to develop and commercialise research; informing their teaching by regional needs; providing support and perhaps leadership in regional governance; and making a broad range of contributions to civil society, for example, in cultural and community development; opening up facilities such as libraries, museums and sports centres to the public. As some have said: "institutions should be an animator of regional innovation systems". Hence institutions should develop their strategic planning and future vision more in line with the regional role they are expected to play than with a single model of institutional "excellence".

Human resources for research

341. To be able to play such a role in regional innovation systems, institutions require research capabilities, well trained researchers and all the paraphernalia associated with research activities. But they also require specific and non conventional skills such as interactive, managerial, negotiation and communication competences to deal with other social actors beyond the research community. At the same time, a broad and productive science base is required. This is no easy task and there is no ready model to apply, but it is necessary to develop a strategy in this direction. To start with, the current efforts to raise the level of qualifications and quality of research staff in Mexican institutions should be sustained with the strengthening of the PROMEP and adequate support for graduate studies in the country and abroad.

342. Also important is the choice to be made by institutions concerning the areas of the graduate programmes they offer. As said before, it is unlikely that all state institutions can develop competence in all knowledge fields. Choices will have to be made and they should be based on negotiations and agreements with regional partners. Programmes such as the PROMEP, PIFI and PIFOP give institutions support to establish graduate programmes in their areas of comparative advantage.

343. The suggestions above also have implications to the way research grants are currently allocated by CONACyT, as well as to the evaluation criteria for awarding professional rewards (SNI) and assess graduate programmes (PNP). Despite the incentives currently given to joint applications, most research grants go to individual researchers (over two thirds of the research grants in the Programme to Support the Basic Sciences - *Programa de Apoyo a la Ciencia Básica*). This is in contradiction with the modern theories of knowledge production and use that advocate extensive interaction among actors. The effort of CONACyT to fund networks of researchers is still very limited and has not been evaluated.

344. It also needs to be ensured that the criteria for evaluating graduate programmes (PNP) as well as researchers' performance (SNI) contribute further to promote the participation of researchers in joint research with industry and their interaction with colleagues in other institutions and countries. Criteria used by CONACyT at the moment tend to discourage collaborative research – e.g. the counting of scientific publications gives lesser weight to papers in co-authorship.

5.7 Links with the labour market

345. In our view, initiatives to strengthen the connections between tertiary institutions and the labour market can be grouped into five categories. A first generic way of ensuring that the provision of educational programmes match employment requirements is to reinforce partnerships between institutions and the business sector. Examples of good practice already exist in Mexico. They involve internships for students and teachers in industry, offices in institutions to liaise with the business sector, participation of employers in the design of educational programmes and in institutional governance. These are all steps in the right direction but there is a need to make them more sustained and systematic across the entire tertiary education system. There is also a need to evaluate the variety of partnerships more carefully, to determine which of them are likely to be more effective.

346. The second is to formally involve employers and the business community in the development of tertiary education policy. At the state level the COEPES presents a good example of a forum where the views and needs of employers are expressed. For this dialogue to be effective, it needs to be ensured that each state COEPES operates as originally intended, that businesses and employers develop an interest in participating in this dialogue, and that the views of the latter are valued and taken into account in the formulation of policies. A similar forum is also needed at the federal level. The SEP should develop initiatives to more formally collect the views of employers to inform its policies at federal level. This could be organised in the context of the Council proposed in Section 5.1. It could also use its convening power to bring together stakeholders over areas of mutual interest. At another level, we have seen good examples of participation of employers as external members of institutional governing bodies. We do believe that the direct involvement of the business community in the daily running of institutions has the potential to improve the responsiveness of institutions to labour market needs and more institutions should consider such arrangement.

347. The third is to make information about available programmes, labour market outcomes and employment requirements available to students, institutions and employers. Mexico has made commendable progress in this respect. The tradition of conducting surveys of graduates and the rich information provided by the Labour Market Observatory (*Observatorio Laboral*) are exemplary practices to be supported. Students need to be informed about the labour market, the kinds of jobs available, and the types of educational preparation needed for those jobs. This helps students make well-informed decisions about their fields of tertiary study. In this respect it is important to ensure that career guidance in secondary schools is effective in using the wealth of information available, that it is adequately staffed and undertaken by individuals with the appropriate training (Section 5.4). It is also important to make transfers among fields of study, and among institutions, more flexible. This would allow students who realise they are in the wrong field of study to change, both reducing these kinds of mismatches and potentially allow greater responsiveness to changing labour market patterns.

348. It is also important to ensure that the available information about labour market outcomes is used effectively. It was not clear to the Review Team how the COEPES' assessment of programme relevance is undertaken and how labour market information is used. It could prove useful to launch a methodological study on how best to use the results from graduate surveys and other labour market information to inform assessments of relevance and decisions about which programmes to offer (in a way similar to the study conducted in 1998 by the SEP and ANUIES about how to conduct graduate surveys). There is also a need

to better publicise among employers the value of new degrees (e.g *Técnico Superior Universitario*) and new programmes. This would help alleviate the oversupply of graduates in areas such as accounting, administration and law.

349. A fourth element to better connect institutions to the labour market is through a formal qualifications framework, which offers the potential to co-ordinate the demands of employers, the expectations of students, and the offerings of institutions. Employers can specify competencies for employment; educational institutions can design programmes to develop these competencies in students; and students know what competencies they need in order to become employable. Tripartite arrangements would ensure the elimination of some of the mismatches now present in tertiary education. Local employers, professional associations or regional advisory bodies could help set programme standards and graduation requirements. An example of good practice is that provided by polytechnic universities whose educational programmes are based on a set of professional competencies required for employment.

350. Finally, as described in Section 5.4, tertiary education institutions need to be encouraged to engage further in lifelong learning and provide services to adult learners. This not only would assist the effort of upgrading the skills and competencies of those already in the labour force, but could also be a means for institutions to diversify their sources of revenue (e.g. through training provided to company employees).

5.8 Internationalization

351. If internationalization is to have greater weight and force in Mexican tertiary education, then the only realistic option is to strengthen specific institutional capacities especially those of universities, technological institutes and research centres. They are the institutional actors which are responsible for international student and academic exchanges. Moreover given Mexico's geographical position, internationalized institutions could become bridges between the Americas (Section 2).

352. Internationalization needs not only the active participation of tertiary education institutions but a range of system wide policies. These policies should include more flexible curricula and internationally recognized credits to facilitate two way student mobility; a greater commitment, as part of courses and programmes, to international materials; an increase in the number of courses offered in English, especially at postgraduate level; professional capacities to manage broader exchange programmes; funds allocated as part of the institution's budget; and better facilities for foreign students who study in Mexico.

353. Public policies have a role in supporting the internationalization of Mexican tertiary education and particularly R&D activities (Section 5.6). For emerging economies, like Mexico, collaboration with foreign research centres at the knowledge frontier can stimulate local research. These links help young researchers and expand academic mobility. The Review Team found, in conversations with CONACyT authorities and personnel in research centres, that these objectives are shared with the government but require greater public support to achieve satisfactory progress.

354. Mexico could exercise Latin American leadership in ALCUE providing that it can develop and express common interests. However Mexico's opportunity depends on it advancing more quickly in two related areas: compatible and comparative quality assurance especially with the European Union and, as mentioned above, an academic credit system which allows student mobility. If both are achieved then its impact on the rest of Latin America could be substantial.

6: CONCLUSION

355. There can be few tertiary education systems that have attempted as much as Mexico's with so many different institutions, in so many areas and serving so many ends. The Review Team could not fail to be impressed by its scope and potential and the committed officials, institutions' authorities, teachers, researchers and students it was fortunate to meet. Further in examining the mandated areas – governance, resourcing, quality, equity, regional role, research and innovation, labour market and internationalization – the Review Team understood it was scratching the surface, even with SEP's excellent Country Background Report (Secretaría de Educación Pública, 2006) and other information. The Review Team spent two weeks in the country, visiting 14 institutions, talking to over 30 groups and agencies and meeting about 450 people (see Appendix 3) so that it is very conscious that this report is a preliminary snapshot of a system made up of almost 2 thousand tertiary education institutions and around 2.5 million graduate and undergraduate students.

356. It became clear that each aspect was meeting some objectives and not others, while almost all the schemes were underfunded or at least needed a reallocation of funds within area sections. This conclusion might strike the reader or policy maker as being unsatisfactory because it is only part of the problem – the other part is to allocate funds *between* areas. And to do so requires setting priorities which under present circumstances is very difficult to achieve. However, the Review Team does not believe that the present set of arrangements (rather than system) can easily continue without bringing more fragmentation and possibly sacrificing current gains for a brokered mediocrity. In other words some kind of criteria to set priorities must be developed – to take a sharp choice - which places one item, such as R&D, for example, above equity or vice versa in given circumstances.

357. There is no easy way to find such criteria that does not involve some kind of consensus and takes into account the broad range of stakeholders that are interested in tertiary education. One reference point are the national development goals, often referred to in the report, but they do not easily distinguish between different operating choices that face education in general and tertiary education in particular. It is worth being reminded that the different levels of education are not separate systems, not least because a successful secondary system is the foundation of a successful tertiary education system – one flows into the other. Greater information and contacts between both can help fill serious information gaps – for example the socio-economic and cognitive background of students – which will not only assist decision making but help clarify the roles that different tertiary education subsystems play in educating students.

358. Better information is one precondition for building a consensus and it will be noted also that it is one of the persistent recommendations throughout this report. Tertiary education is a huge enterprise to the point that it has its own internal market. But if it is a huge enterprise then it requires far better information in terms of its operations and planning than is currently available for governments, institutions, staff and students. This is not a bureaucrat appeal for more forms, files and paper but the basis to build a common information platform as the foundation for overall policy making.

359. The argument for consensus can be approached in two ways; first as a process and second as a way of thinking about the counterfactual proposition, the lack of consensus. No one is going to deny the importance of education – rather a consensus will be needed at an operational level, but driven by four forces which will require policy choices about education rather than muddling through. These four forces are:

a. *Population*: the next ten years present a sharp challenge. Whereas the net population growth rate is declining, the total population will amount to around 119.2 million in 2015 compared to 103 million in 2005 and with the key cohorts, 15-19 year-olds and 20-24 year-olds declining as a proportion of the total population, but increasing in number. In 2015, the 15-19 cohort will be an estimated 10.6 million, the 20-24 cohort around 10.2 million with net ten-year increases substantially higher than for the period 1995-2005 (CELADE 2004, Table 24a). Thus the higher educational challenge will be offered no respite.

b. *Equity*: given high income and wealth inequality, it is vital that present educational equality improves. The most recent World Development Report (The World Bank, 2005c) calculates that Mexico has an educational Gini index of 0.34 so that it is essential that it moves in the direction of Chile (0.23) or Argentina (0.22) rather than towards Brazil (0.39). Without greatly expanded educational opportunities it will be difficult to provide hope to the millions of talented Mexicans who wish to study or improve their life chances without migrating. Further tertiary education is crucially associated with dynamic and sophisticated quality, which has to be patiently grown over time to have any effect.

c. *Financing* has been expanding rapidly but the resources provided for education will have to grow much more quickly than predicted to reach average OECD per student expenditure (see Appendix 4). Apart from increasing national tax revenue – a difficult but probably necessary task – there is a strong case for looking at the role of households and private resources as sources of educational income.

d. *Competitiveness and Employment* are not economic slogans but an appeal to national self interest. The option of providing cheap labour has to take into account the massive impact of China and India – Mexico's products will have to become, as they are doing, more sophisticated and associated with greater productivity. And this requires an educated workforce not simply with basic competencies but an ability to handle new machinery and communication systems which may require retraining. Many of these new skills will be learned on the job and again the foundation is a good basic education.

360. If there can be some agreement about what these four forces imply for Mexico, then it might be possible to build a consensus about recognizing the future role of education. It should be added there was no disagreement in the interviews held by the Review Team about tertiary education's strategic role.

361. It is not the role of this Review Team to explain to Mexican stakeholders how to build a consensus but rather to point out its value as a stepping-stone. We take the view that a comprehensive Council, as proposed in Section 5.1, has an intrinsic value, given the educational challenges facing all Mexicans. It should be a broad church, involving all stakeholders and, above all, a forum to build consensus on the strategic directions to follow with enough weight for the government to give them the subsequent follow-up at the policy level. It is not an exaggeration to think, in common with other developing countries, that education plays a key role for future Mexican prosperity.

362. The Review Team is conscious that there could be scepticism about creating another organization such as the Council. However given the dynamic growth of the sector and the high expectations for its future, we were struck that there was no forum where all this initiative and energy might be gather, at least two or three times a year. While the focus of these national discussions would be tertiary education, the Council must be aware of the educational (and therefore social) trade-offs between different levels.

363. In the background of all education discussions is the easy view that additional funds will cure all ills. This is an illusion in terms of quality and the future fiscal situation of a country with increasing

demands for better social services. Therefore, at best, it is likely that the educational budget will expand slightly above population growth. While all components discussed in this report have a sensible case for more funding, it is quite unlikely that this will occur. Thus two choices are possible: all components get poorer together or the range of potential resources is increased. And it is the latter which holds out the best promise provided Mexicans are prepared to pay more for their education with the agreement that they receive 'value for money'. This proposal requires discussion for if family households are to contribute more, then there must be safeguards for those who cannot afford the cost and willingness for institutions to be more forthcoming about the services that they provide.

364. Further, private universities should be included in the broad church as legitimate contributors to the tertiary education system. Given the resources at their disposal it does not seem sensible to exclude them, however difficult it may seem, from the grand consensus.

365. A consensus and the associated forum should examine some of the following issues, all to be found in this report but requiring some kind of general orientation:

a. Flexible funding based on a block grant and performance-based and competitive components, with a significant proportion allocated through targeted programmes or activities consistent with the government's strategic objectives;

b. The principle of continual reciprocity which is that recipients of public funds have to provide information, accept evaluations and recommendations for quality improvement;

c. The agreement that certain areas are fundamental to all tertiary education institutions such as affirmative action, student consumer rights and fairness. To support these activities one possibility is an education ombudsman reporting to the Forum;

d. An agreement that research funds are to be distributed among a limited number of tertiary education institutions, preferably on a competitive basis.

366. When a system is built from autonomous units, incentives have to be sufficiently attractive to combine forces. Yet while the states' commitment to tertiary education plays a greater role and has brought substantial actual and potential local benefits, there is a case for building regional institutions – that is combining certain state initiatives – to become regional centres of excellence. The advantage, for example in scientific and technological fields, is that scale can be achieved more quickly and it becomes cheaper for purchasing sophisticated capital equipment. In other words, to find ways by which state universities and technological institutes, which are required to undertake relevant research, achieve their goals through regional associations which might, in favourable circumstances, become clusters with state institutions and governments as shareholders.

367. If greater information and searching for a consensus seem imperative, it is because the Review Team was struck at the number of initiatives being undertaken in Mexico and their potential for fragmentation at a time when the four above mentioned forces continue to press. The Federal government and the state authorities must face this threat. It is now time to decide which initiatives demonstrate gains, which can be consolidated under present rules and which ones need change - and then to begin the arduous but necessary - given future stakes - process of adjustment.

REFERENCES

Acosta Silva, A. (2000), *Estado, Políticas y Universidades en un Período de Transición*, México D.F.: Fondo de Cultura Económica.

Altbach, P.G. (2003), "Evaluating and Rewarding Professors: Mexican Style", *International Higher Education*, Spring.

Antón, M.G. (undated), *El oficio académico en México (1960-2000)* (available from http://www.uv.mx/iie/Download/3.%20el_OFICIO_ACADeMICO_EN_MeXICO_Manuel_Gil.doc)

ANUIES (2005), *Acciones de transformación de las universidades públicas mexicanas 1994-2003*, Mexico D.F., (available from http://www.anuies.mx/e_proyectos/pdf/LibAccionesdetransformacion1_05.pdf)

ANUIES (2003), *Mercado Laboral de Profesionistas en México*, Mexico D.F.

ANUIES (2000), *La Educación Superior en el Siglo XXI*, Mexico D.F. (available from http://www.anuies.mx/servicios/d_estrategicos/documentos_estrategicos/21/index.html)

Backhoff Escudero, E. (2005), "Comparación de los resultados de las Pruebas Nacionales de educación básica: 2003 y 2004", *Perfiles Educativos*, Vol.27, no.108 (available from http://www.mexico.scielo.org/scielo.php?script=sci_arttext&pid=S0185-26982005000100006&lng=es&nrm=iso)

Bracho T. (2005), *Evaluación del Programa Nacional de Becas para la Educación Superior, 2002-2005*; Centro de Investigación y Docencia Económicas, A.C.

Brunner, J.J. (2006), "Mercados Universitarios: Ideas, Instrumentaciones y Seis Tesis en Conclusión", Escuela de Gobierno, Universidad Adolfo Ibáñez (available from http://mt.educarchile.cl/mt/jjbrunner/archives/2006/03/mercados_univer.html)

Bustos O. (2003), *Mujeres y Educación Superior en México*, Caracas: IESALC/UNESCO.

Castaños-Lomnitz, H. (2006), "Social sciences and science policies in Mexico", *Science and Public Policy* 33(2), pp. 115-123.

CELADE (2004) *Boletín Demográfico No. 73. América Latina y El Caribe: Estimaciones y proyecciones de población. 1950-2050*. Santiago de Chile: Comisión Económica para América Latina (available from http://www.cepal.cl/cgi-bin/getProd.asp?xml=/publicaciones/xml/7/14347/P14347.xml&xsl=/celade/tpl/p9f.xsl&base=/celade/tpl/top-bottom.xsl)

Clark, B. R. (1983), *The Higher Education System. Academic Organization in Cross-National Perspective*. Berkeley: University of California Press.

Cohen, W. and Levinthal, D. (1989), "Innovation and Learning: the two faces of R&D"; *Economic Journal* 99, pp. 569-596.

CONACyT (2005), *Indicadores de Actividades Científicas y Tecnológicas.* México, D.F.: Consejo Nacional de Ciencia y Tecnología (Edición de bolsillo).

CONACyT (2003), *Situación de la Ciencia y la Tecnología en las universidades públicas de los Estados*. México: Foro Consultivo Científico e Tecnológico.

CONACyT (2001), *Programa Especial de Ciencia y Tecnología 2001-2006*. México: Consejo Nacional de Ciencia y Tecnología.

Didriksson T., A., J. Fuentes Maya and A. Palma Cárdenas (2004), *El Financiamento para las Instituciones de Educación Superior en México 1990-2002*. Paper presented at the Seminario Regional sobre el financiamento de la educación superior en América Latina y el Caribe, Habana, Cuba (available from www.iesalc.unesco.org.ve).

Edquist, C. and B. Johnson (1997), "Institutions and Organisations in Systems of Innovation". In C. Edquist (ed.) *Systems of Innovation: Technologies, Institutions and Organisations.* U.K.: Pinter Publishers/Cassell Academic.

Faulkner, W., J. Senker and L. Velho (1995), *Knowledge Frontiers: Public Sector Research and Industrial Innovation in Biotechnology, Engineering Ceramics and Parallel Computing*. Oxford: Clarendon Press.

Freeman, C. (1987), *Technology Policy and Economic Performance: Lessons from Japan*. London: Francis Pinter.

Fuentes Molinar, O. (1983), "Las épocas de la universidad mexicana"; *Cuadernos Políticos*, N° 36, Abril-Junio.

Garcel-Ávila, J. (2005), "Internationalization of Higher Education in Mexico". In H. de Wit, I. C. Jaramillo, J. Garcel-Ávila, J. Knight (eds.) Higher Education in Latin America; Eashington, D.C.: The World Bank, 2005.

García Guadilla, C. (2006), "Financing higher education in Latin America". In *Higher education in the world 2006: The financing of universities*; Global University Network for Innovation and Palgrave-Macmillan.

Gosling, D.W. (2000), *Guidelines for the Peer Observation of Teaching and Learning*, Education Studies Centre (ESCALATE).

Guichard, S. (2005) "The education challenge in Mexico: delivering good quality education to all". OECD, Economics Department Working Paper, No. 47.

Harvey, L. and J. Newton (2004), "Transforming Quality Evaluation", *Quality in Higher Education*, vol. 10, no. 2.

Horsburgh, M. (1999), Quality Monitoring in Higher Education: the impact on student learning, *Quality in Higher Education*, Vol. 5, No. 1.

Huisman, J. and J. Bartelse (eds.) (2001), *Academic Careers: A Comparative Perspective*. Twente: Center for Higher Education Policy Studies, University of Twente.

Ibarrola, M. (1992), "Mexico". In Clark, B.R. and G. Neave (eds.) *The Encyclopedia of Higher Education*. Oxford: Pergamon Press, 1992, Vol. 1.

Jongbloed, B. (2004), "Funding higher education: options, trade-offs and dilemmas". Paper for Fulbright Brainstorms 2004 (available from http://www.utwente.nl/cheps/documenten/engpap04fundinghe.pdf)

Jongbloed, B. and H. Vossensteyn (2001), "Keeping up Performances: an International Survey of Performance-Based Funding in Higher Education", *Journal of Higher Education Policy and Management*, vol. 23 No.2.

Kent, R. (2005), "The Transformations in Mexican Higher Education in the 1990s"; *International Higher Education*, Winter.

Lall, S. (2002), "Science and technology in Southeast Asia". Paper presented at the EC Strata Meeting in Brussels, 22-23 April 2002.

Lundvall, B. A. (1992), *National Innovation Systems: Towards a Theory of Innovation and Interactive Learning*. London: Frances Pinter.

Malo, S. (2006), "Educación superior: paradigma en entredicho"; *Este País-Tendencias y Opiniones*, Número 178, enero.

Malo, S. (1992), "El Sistema Nacional de Investigadores de México"; *Interciencia* 17(6): 344-347.

Nelson, R. (ed.) (1993), *National Innovation Systems A Comparative Analysis*. New York & Oxford: Oxford University Press.

Observatorio Ciudadano de la Educación (2005), *Plataforma Educativa 2006, VII.Educación Superior*, Cuaderno de trabajo, Elaborated by M. Silva Laya.

OECD (2006), *OECD Factbook 2006: Economic, Environmental and Social Statistics*. Paris: OECD.

OECD (2005a), *Education at a Glance: OECD Indicators 2005*. Paris: OECD (see www.oecd.org/edu/eag2004).

OECD (2005b), *Economic Surveys – Mexico*; Volume 18/2005. Paris: OECD.

OECD (2005c), Main Science and Technology Indicators, volume 2005/2. Paris: OECD.

OECD (2004a), *OECD Thematic Review of Tertiary Education: Guidelines for Country Participation in the Review*, OECD, Paris (available from www.oecd.org/edu/tertiary/review).

OECD (2004b), *OECD Handbook for Internationally Comparative Education Statistics: Concepts, Standards, Definitions and Classifications*, OECD, Paris.

OECD (2004c), *Learning for Tomorrow's World: First Results from PISA 2003*. Paris OECD.

OECD (2004d), *Career Guidance and Public Policy: Bridging the Gap*, OECD, Paris.

OECD (1997), *Reviews of National Policies for Education, Mexico: Higher Education*. Paris OECD.

Ornela, C. and D. C. Levy (1991), "Mexico". In Philip G. Altbach (ed.) *International Higher Education. An Encyclopedia*. New Cork & London: Garland Publishing, Inc., 1991, Vol. 2.

Pavitt, K. (1998), "The social shaping of the national base"; *Research Policy* 27: 793-805.

Paz, O. (1978), "Posiciones y contraposiciones: México y Estados Unidos". En Paz, O., *Obras Completas*, Vol. 8, pp. 437-53. México, D. F.: Fondo de Cultura Económica, 2004.

Richardson, R. C. and R. Kent (2002), "Government Policies and Higher Education Performance in the U.S. and Mexico: Report of a Comparative Study"; AIHEPS, Draft 4, August 22.

Rodríguez Gómez, R. (2006), "Cobertura. Segunda Parte", *Campus* 179, junio. http://www.ses.unam.mx/publicaciones/milenio.php?campus=c179rrg&archivo=jun06&fecha=jun06

Rodríguez Gómez, R. (2002), "Continuidad y cambio de las políticas de educación superior"; *Revista Mexicana de Investigación Educativa*, enero-abril, vol. 7, núm. 14.

Rodríguez Gómez, R. and H. Casanova Cardiel (2005), "Higher Education Policies in Mexico in the 1990s: A Critical Balance"; *Higher Education Policy*, March 2005, Volume 18, Number 1 (available from http://www.palgrave-journals.com/hep/journal/v18/n1/full/8300072a.html).

Rodriguez Gomez, R. and M. Sosteric (1999), "Higher Education in Transition: An Agenda for Discussion"; Electronic Journal of Sociology" (available from http://www.sociology.org/content/vol004.002/rodriguez.html).

Salter. A.J. and B.R. Martin (2001), "The economic benefits of publicly funded basic research a critical review"; *Research Policy* 30: 409-532.

Sánchez Soler, M. and A. Mungaray Largarda (2001), *Problemática del Servicio Social y Propuestas para su Mejoramiento*; Colección Documentos, ANUIES, México.

Schmelkes, S. (2005), *Educación Superior Intercultural. El caso Mexicano*. Caracas: IESALC/UNESCO.

Schwartzman, S. (2001), "The future of education in Latin America and the Caribbean". Paper presented at the Seventh Meeting of the Intergovernmental Regional Committee of the Major Project in the Field of Education in Latin America and the Caribbean – ED01/PROMEDLAC VII/REF2 – Working Document.

Scott, F. and J. Anstine (2002), "Critical mass in the production of PhDs: a multidisciplinary study", *Economics of Education Review* 21: 29-42.

Secretaría de Educación Pública (2006), OECD Thematic Review of Tertiary Education, Background Report for Mexico, Mexico City (available from www.oecd.org/edu/tertiary/review).

Secretaría de Educación Pública (2005) *Equidad, calidad e innovación en el desarrollo educativo nacional*. México: Secretaria de Educación Pública, cap. 6.

Secretaría de Educación Pública, Subsecretaría de Educación Superior e Investigación Científica (SESIC) e Instituto Internacional para la Educación Superior en América Latina y el Caribe (IESALC) (2003), "Informe Nacional sobre la Educación Superior en México" (available from http://www.anuies.mx/e_proyectos/pdf/01_Informe_Nacional_sobre_la_Educacion_Superior_en_Mexico.pdf).

The World Bank (2005a), *Generación de Ingresos y Protección Social para los Pobres*, Banco Mundial, México; II Vol.

The World Bank (2005b), *World Development Indicators 2005*. Washington, D.C.: The World Bank.

The World Bank (2005c), *World Development Report 2006. Equity and Development*. New York: Oxford University Press.

The World Bank (2004), *La pobreza en México: Una evaluación de las condiciones, las tendencias y la estrategia del Gobierno*, México.

Thune, C. (1998), "The European Systems of Quality Assurance: Dimensions of Harmonisation and Differentiation", *Higher Education Management and Policy*, vol. 10, no. 3, pp. 9-25.

Universidad Tecnológica de la Sierra Hidalguense and Secretaría de Educación Pública (2004), *La evaluación externa en las Universidades Tecnológicas: Un medio eficaz para la rendición de cuentas, Informes y recomendaciones 1996, 1999 y 2002*, Ed. Limusa, México, D.F.

Villa Lever, L. and P. Flores-Crespo (2002), "Las universidades tecnológicas mexicanas en el espejo de los institutos universitarios de tecnología franceses"; *Revista Mexicana de Investigación educativa*, Enero-Abril, vol. 7, N° 114.

LIST OF ACRONYMS

ACRONYM	Spanish Version	English Version
AMPEI	Asociación Mexicana para la Educación Internacional	Mexican Association for International Education
ALCUE	Espacio Común de Educación Superior de la Unión Europea, America Latina y el Caribe	Higher Education Common Area of the European Union, Latin America and the Caribbean
ANEUT	Asociación Nacional de Egresados de las Universidades Tecnológicas	National Association of Graduates of Technological Universities
ANUIES	Asociación Nacional de Universidades e Instituciones de Enseñanza Superior	National Association of Universities and Higher Education Institutions
ANUT	Asociación Nacional de Universidades Tecnológicas	National Association of Technological Universities
AVANCE	Programa de Apoyo para la Creacion de Nuevos Negocios a Partir de Desarrollos Científicos y Tecnológicos	Programme for the Creation of new Businesses based on Scientific and Technological Developments
CBR		Country Background Report
CENEVAL	Centro Nacional de Evaluación para la Educación Superior	National Center for Higher Education Assessment
CIEES	Comités Interinstitucionales para la Evaluación de la Educación Superior	Inter-institutional Committees for Higher Education Assessment
CINE/ISCED	Clasificación Internacional Normalizada de la Educación	International Standard Classification of Education
CINVESTAV	Centro de Investigación y de Estudios Avanzados	Center for Research and Advanced Studies
COEPES	Comisiones Estatales para la Planeación de la Educación Superior	State Commissions for Higher Education Planning
CONACyT	Consejo Nacional de Ciencia y Tecnología	National Council for Science and Technology
CONAEDU	Consejo Nacional de Autoridades Educativas	National Council of Educational Authorities
CONCYTEG	Consejo de Ciencia y Tecnología del Estado de Guanajuato	Council for Science and Technology of the State of Guanajuato
CONPES	Coordinación Nacional para la Planeación de la Educación Superior	National Council for Planning of Higher Education
COPAES	Consejo para la Acreditación de la Educación Superior	Council for the Accreditation of Higher Education
CORPES	Consejos Regionales para el Planeamiento de la Educación Superior	Regional Councils for Higher Education Planning
CUMEX	Consorcio de Universidades Mexicanas	Consortium of Mexican Universities
EAIE		European Association for International Education
EGEL	Examen General de Egreso de la Licenciatura	General Examination for Graduates of *Licenciatura* Degrees
EGETSU	Examen General de Egreso del Técnico Superior	General Examination for Graduates of *Técnico Superior* Degrees
EXANI II	Examen General de Ingreso a la Educación Superior	General Examination for entering undergraduate education
EXANI III	Examen General de Ingreso al Posgrado	General Examination for entering postgraduate education
FAM	Fondo de Aportaciones Múltiples	Fund of Multiple Contributions
FIMPES	Federación de Instituciones Mexicanas Particulares de Educación Superior	Federation of Mexican Private Higher Education Institutions
FIUPEA	Fondo de Inversión de las Universidades Públicas Estatales con Evaluación de la ANUIES	Investment Fund of State Public Universities with Evaluation by ANUIES
FOMES	Fondo para la Modernización de la Educación Superior	Fund for the Modernization of Higher Education
FONABEC	Fondo Nacional de Becas	National Scholarship Fund
GDP/PIB	Producto Interno Bruto	Gross Domestic Product
IESALC	Instituto Internacional para la Educación Superior en América Latina y el Caribe	International Institute for Higher Education in Latin America and the Caribbean
INEE	Instituto Nacional para la Evaluación de la Educación	National Institute for the Evaluation of Education
INEGI	Instituto Nacional de Estadística, Geografía e Informática	National Institute of Statistics, Geography, and Informatics
IPN	Instituto Politécnico Nacional	National Polytechnic Institute
ISCED/CINE	Clasificación Internacional Normalizada de la Educación	International Standard Classification of Education
ISO		International Organisation for Standardisation
ITESM	Instituto Tecnológico y de Estudios Superiores de Monterrey	Technological Institute of Monterrey

LIST OF ACRONYMS (continued)		
ACRONYM	**Spanish Version**	**English Version**
OECD/OCDE	Organización para la Cooperación y el Desarrollo Económico	Organisation for Economic Co-operation and Development
NAFSA		National Association of International Educators
NAFTA/TLCAN	Tratado de Libre Comercio de América del Norte	North American Free Trade Agreement
PAEES	Programa de Asistencia a Estudiantes de Educación Superior	Higher Education Student Aid Programme
PAN	Partido Acción Nacional	National Action Party
PFPN	Programa de Fortalecimiento del Posgrado Nacional	National Programme for Strengthening Postgraduate Education
PIB/GDP	Producto Interno Bruto	Gross Domestic Product
PIFI	Programa Integral de Fortalecimiento Institucional	Comprehensive Programme for Institutional Strengthening
PIFOP	Programa Integral de Fortalecimiento Institucional del Posgrado	Integrated Programme for Institutional Strengthening of Graduate Degrees
PIID	Programa Institucional de Innovación y Desarrollo	Institutional Programme for Innovation and Development
PISA		Programme for International Student Assessment
PNP	Padrón Nacional de Posgrados SEP-CONACyT	SEP-CONACyT National Registry of Graduate Programmes
PPP	Paridad de Poder de Compra (PPC)	Purchasing Power Parity
PRD	Partido de la Revolución Democrática	Democratic Revolution Party
PRI	Partido Revolucionario Institucional	Institutional Revolutionary Party
PROADU	Programa de Apoyo al Desarrollo Universitario	University Development Support Program
PROMEP	Programa de Mejoramiento del Profesorado	Faculty Enhancement Programme
PROMIN	Programa de Mejoramiento Institucional de las Escuelas Normales Públicas	Programme for the Institutional Improvement of Public Teacher Education Institutions
PRONABES	Programa Nacional de Becas para la Educación Superior	National Programme of Scholarships for Higher Education
PRONAD	Programa para la Normalización Administrativa	Programme for Administrative Normalization
PRONAE	Programa Nacional de Educación 2001 – 2006	National Education Program 2001 - 2006
R&D	Investigación y Desarrollo	Research and Development
RICyT	La Red de Indicadores de Ciencia y Tecnologia - Iberoamericana e Interamericana	Iberoamerican and Interamerican Network of Indicators on Science and Technology
RVOE	Reconocimiento de Validez Oficial de Estudios	Recognition of Official Validation of Studies
SCI		Science Citation Index
SEP	Secretaria de Educación Pública	Ministry of Public Education
SES	Subsecretaría de Educación Superior	Higher Education Undersecretariat
SESIC	Subsecretaría de Educación Superior e Investigación Científica	Higher Education and Scientific Research Undersecretariat
SHCP	Secretaría de Hacienda y Crédito Público	Ministry of Finance and Public Credit
SNI	Sistema Nacional de Investigadores	National System of Researchers
SINAPPES	Sistema Nacional para la Planeación Permanente de la Educación Superior	National System for Permanent Planning of Higher Education
SOFES	Sociedades de Fomento para la Educación Superior	Society for the Promotion of Higher Education
SSCI		Social Science Citation Index
SUPERA	Programa de Superación del Personal Académico	Programme of Enhancement of Academic Staff
TLCAN/NAFTA	Tratado de Libre Comercio de América del Norte	North American Free Trade Agreement
UAM	Universidad Autónoma Metropolitana	Metropolitan Autonomous University
UNAM	Universidad Nacional Autónoma de México	National Autonomous University of Mexico
UPN	Universidad Pedagógica Nacional	National Pedagogic University

APPENDIX 1: THE OECD REVIEW TEAM

José Joaquín Brunner (Rapporteur)
Professor, Government School
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Carmen García Guadilla
Professor, Centro de Estudios del Desarrollo,
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Administrator, Education and Training Policy Division
Directorate for Education, OECD

Léa Velho
Professor, Department of Science and Technology Policy
Universidade Estadual de Campinas, Brazil

APPENDIX 2: NATIONAL CO-ORDINATOR AND AUTHORS OF THE COUNTRY BACKGROUND REPORT

National Co-ordinator for Mexico
Dr Felicia Knaul, General Co-ordinator for the Administrative Modernisation of Education, Ministry of Public Education (*Secretaría de Educación Pública*). Assisted by a team from the Higher Education Department (*Subsecretaría de Educación Superior*) led by the Deputy Minister for Higher Education, Dr Julio Rubio Oca.

Authors of the Country Background Report
The report was prepared by the Ministry of Education (*Secretaría de Educación Pública*).

APPENDIX 3: PROGRAMME OF THE REVIEW VISIT

Monday 13 March, Mexico City

08:00 – 10:30 Officials from the Ministry of Education (*Secretaría de Educación Pública*)

Minister of Education, Dr Reyes Tamez Guerra
Deputy-Minister for Higher Education, Dr Julio Rubio Oca
National Co-ordinator, Dr Felicia Knaul

Representatives from several Departments within the Ministry of Education:

- General Directorate for University Education (*Dirección General de Educación Superior Universitaria*);
- General Co-ordination of Technological Universities (*Coordinación General de Universidades Tecnológicas*);
- General Directorate for Technological Higher Education (*Dirección General de Educación Superior Tecnológica*);
- General Directorate for the Higher Education of Professionals of Education (*Dirección General de Educación Superior para Profesionales de la Educación*);
- National Co-ordination of Polytechnical Universities (*Coordinación General de Universidades Politécnicas*)
- General Directorate of Professions (*Dirección General de Profesiones*);
- General Directorate for Accreditation, Incorporation and Renewal (*Dirección General de Acreditación, Incorporación y Revalidación*);
- General Co-ordination of Bilingual Intercultural Education (*Coordinación General de Educación Intercultural Bilingüe*);
- National Program of Scholarships for Higher Education (PRONABES, *Programa Nacional de Becas para la Educación Superior*).

10:30 – 11:30 CIIES
Interinstitutional Committees for Higher Education Assessment
(*Comités Interinstitutionales para la Evaluación de la Educación Superior*)

11:30 – 12:30 COPAES
Council for the Accreditation of Higher Education
(*Consejo para la Acreditación de la Educación Superior*)

12:30 – 14:00 Working Lunch with officials from Ministry of Education (*Secretaria de Educación Pública*), chaired by the Deputy-Minister for Higher Education, Dr Julio Rubio Oca.

14:00 – 15:30 ANUIES
National Association of Universities and Higher Learning Institutions
(*Asociación Nacional de Universidades e Instituciones de Enseñanza Superior*)

15:30 – 17:00	FIMPES Federation of Mexican Private Higher Education Institutions (*Federación de Instituciones Mexicanas Particulares de Educación Superior*)
17:00 – 18:00	ANUT National Association of Technological Universities (*Asociación Nacional de Universidades Tecnológicas*)
18:00 – 19:00	Labour Market Observatory (*Observatorio Laboral*)
19:00 – 20:00	PRONABES National Program of Scholarships for Higher Education (*Programa Nacional de Becas para la Educación Superior*)

Tuesday 14 March, Pachuca, State of Hidalgo

09:30 – 12:30	Visit 1: Autonomous University of the State of Hidalgo (*Universidad Autónoma del Estado de Hidalgo*) Rector Dr. Luís Gil Borja and Management Group Academic Staff Representatives Student Representatives
12:30 – 14:00	Working Lunch with the State Commission for Higher Education Planning of the state of Hidalgo (*Comisión Estatal para la Planeación de la Educación Superior*, COEPES-Hidalgo), with the presence of the Minister of Education of the State of Hidalgo, Mr. Jorge Romero Romero.
14:30 – 17:30	Visit 2: Technological Institute of Pachuca (*Instituto Tecnológico de Pachuca*) Director M.C. José Antonio Durán Mejía and Management Group Academic Staff Representatives Student Representatives
18:00 – 20:00	Visit 3: La Salle University in Pachuca Rector Pedro Liedo Galindo and Management Group Academic Staff Representatives Student Representatives

Wednesday 15 March, Ixmiquilpan and Pachuca, State of Hidalgo

09:30 – 12:30	Visit 4: Technological University of Mezquital Valley (*Universidad Tecnológica del Valle del Mezquital*) Rector Dr. José Antonio Zamora Guido and Management Group Academic Staff Representatives Student Representatives
12:30 – 14:00	Working Lunch with the State Council for Science and Technology (*Consejo Estatal de Ciencia y Tecnologia*)

16:00 – 18:30 Visit 5: Polytechnic University of Pachuca
(*Universidad Politécnica de Pachuca*)
Rector Dr. Gustavo Núñez Esquer and Management Group
Academic Staff Representatives
Student Representatives

Thursday 16 March, Mexico City

08:00 - 11:00 Visit 6: National Polytechnic Institute
(*Instituto Politécnico Nacional*)
Director-General Dr. José Enrique Villa Rivera and Management Group
Academic Staff Representatives
Student Representatives

11:15 - 13:15 Visit 7: Centre for Research and Advanced Studies - CINVESTAV
(Centro de Investigación y de Estudios Avanzados)
Director-General Dra Rosalinda Contreras Theurel and Management Group
Academic Staff Representatives
Student Representatives

14:15 – 15:15 Working Lunch with the Citizens' Observatory of Education (*Observatorio Ciudadano de la Educación*)

15:30 - 17:30 CONACyT
National Council for Science and Technology
(*Consejo Nacional de Ciencia y Tecnología*)
Director General of CONACyT, Dr Gustavo Chapela Castañares and Management Group

17:30 – 18:30 SNI
National System of Researchers
(*Sistema Nacional de Investigadores*)

18:30 – 20:00 Science and Technology Forum
(Foro Científico y Tecnológico)

Friday 17 March, Mexico City

08:00 - 10:30 Visit 8: Autonomous Metropolitan University, Iztapalapa Unit
(*Universidad Autónoma Metropolitana, Unidad Iztapalapa*)
General Rector Dr. José Lema Labadie, Rector of the Azcapotzalco Unit, Dr. Adrían de Garay Sánchez, Rector of the Iztapalapa Unit, Dr. Oscar Monroy Hermosillo, Rector of the Xochimilco Unit, Dr. Norberto Manjarrez Álvarez, and Management Group
Academic Staff Representatives
Student Representatives

11:00 - 13:30 Visit 9: Technological University of Mexico
(*Universidad Tecnológica de México, UNITEC, Campus Coyoacan*)
Rector Ing. Raúl Méndez Segura and Management Group
Academic Staff Representatives

Student Representatives

14:00 – 16:00 Working Lunch with Mexican Researchers in Higher Education:
Norma Rendero López, Professor, *Universidad Autónoma Metropolitana*
Felipe Martínez Rizo, Director, *Instituto Nacional para la Evaluación de la Educación*
Guillermo Aguilar Sahún, Profesor, *Universidad Nacional Autónoma de México*, advisor to the Deputy-Minister for Higher Education.
Adrián de Garay Sánchez, Professor, *Universidad Autónoma Metropolitana*.

18:00 - 19:00 Visit 10: National Autonomous University of Mexico
(*Universidad Nacional Autonóma de México, UNAM*)
Administration (Led by Director-General for Inter-institutional Collaboration, Lic. Juan Carlos Nolte Santillán)

Saturday 18 March, San Felipe del Progreso, State of Mexico

09:30 - 12:30 Visit 11: Intercultural University of the State of Mexico
(*Universidad Intercultural del Estado de México*)
Rector Dr. Felipe González Ortiz and Management Group
Academic Staff Representatives
Student Representatives

Sunday 19 March, Mérida, State of Yucatán

Day off

Monday 20 March, Mérida, State of Yucatán

Review Team work

Tuesday 21 March, Mérida, State of Yucatán

Review Team work

Wednesday 22 March, Mérida, State of Yucatán

08:00 - 10:30 Visit 12: Autonomous University of Yucatán
(*Universidad Autónoma de Yucatán*)
Rector Dr. Raúl Godoy Montañez and Management Group
Academic Staff Representatives
Student Representatives

11:00 - 13:00 Visit 13: Metropolitan Technological University
(*Universidad Tecnológica Metropolitana*)
Rector Ing. Ricardo Bello Bolio and Management Group
Academic Staff Representatives
Student Representatives

13:15 – 15:00 Working Lunch with the State Commission for Higher Education Planning of the state of Yucatán (*Comisión Estatal para la Planeación de la Educación Superior*,

	COEPES-Yucatán), with the presence of the Minister of Education of the State of Yucatán, Ms Carmen Solís Robleda.
15:30 - 18:00	Visit 14: Technological Institute of Mérida (*Instituto Tecnológico de Mérida*) Director Ing. José Leobardo Cortes y Noh and Management Group Academic Staff Representatives Student Representatives

Thursday 23 March, Mexico City

08:00 – 08:45	Ministry of Health (*Secretaría de Salud*) Deputy-Minister for Quality and Innovation in Health, Dr Enrique Ruelas Barajas
09:00 – 10:00	Officials from Ministry of Education (*Secretaría de Educación Pública*) in charge of Upper Secondary Education (*Educación Media Superior*)
10:00 – 11:00	CONTU National Confederation of University Workers (*Confederación Nacional de Trabajadores Universitarios*)
11:00 – 11:45	ANEUT National Association of Graduates of Technological Universities (*Asociación Nacional de Egresados de las Universidades Tecnológicas*)
11:45 – 12:45	CENEVAL National Center for Higher Education Assessment (*Centro Nacional de Evaluación para la Educación Superior*)
13:00 – 14:00	Employers and Business Community Representatives from CONCAMIN (Confederation of Industrial Chambers of the United States of Mexico, *Confederación de Cámaras Industriales de los Estados Unidos Mexicanos*); UNIVERSIA and FONABEC (National Scholarship Fund, *Fondo Nacional de Becas*)
14:00 – 16:00	Oral Report by Review Team, chaired by Dr Julio Rubio Oca, Deputy-Minister for Higher Education

APPENDIX 4: COMPARATIVE INDICATORS ON TERTIARY EDUCATION

	Mexico	OECD mean	Mexico's rank[1]	% to OECD mean[2]
OUTCOMES				
% of the population aged 25-64 with tertiary qualifications (2003)				
Tertiary-type B – Total	2	8	24/24	25
Males	2	7	23/24	29
Females	2	8	24/25	25
Tertiary-type A– Total	14	15	19/30	93
Males	17	16	13/30	106
Females	11	15	20/30	73
Advanced research programmes – Total[i]	-	1	-	-
Males	-	1	-	-
Females	-	1	-	-
% of the population aged 25-34 with tertiary qualifications (2003)				
Tertiary-type B	3	9	22/25	33
Tertiary-type A and advanced research programmes	16	20	22/30	80
% of the population aged 55-64 with tertiary qualifications (2003)				
Tertiary-type B	0	5	24/25	-
Tertiary-type A and advanced research programmes	7	12	26/30	58
% of the population aged 25-64 with tertiary qualifications – time trends				
1991	-	18	/21	-
2003	15	24	22/30	63
% of the population aged 25-34 with tertiary qualifications – time trends				
1991	-	20	-	-
2003	19	29	22/30	66
Average years in formal education (2003)[3]	8.7	12.0	29/30	
Survival rates in tertiary education (2003)				
Number of graduates divided by the number of new entrants in the typical year of entrance				
Tertiary-type A education	69	70	10/19	99
Tertiary-type B education	81	73	6/16	111
Advanced research programmes	54	58	4/6	93
Average duration of tertiary studies (in years) (year varies)[4]				
All tertiary education	3.42	4.21	16/19	81
Tertiary-type B education	-	2.18	-	-
Tertiary-type A and advanced research programmes	-	4.72	-	-

	Mexico	OECD mean	Mexico's rank[1]	% to OECD mean
Tertiary graduates by field of study[5] (2002)				
Tertiary-type A				
Education	16.7	-	10/27	
Humanities and arts	1.4	-	27/27	
Social sciences, business and law	41.6	-	3/27	
Science	11.0	-	9/27	
Engineering, manufacturing and construction	16.0	-	9/27	
Agriculture	2.1	-	11/27	
Health and welfare	10.6	-	16/27	
Services	0.5	-	27/27	
Not known or unspecified	-	-	-	
All fields	100.0			
Tertiary-type B				
Education	0.4	-	19/20	
Humanities and arts	0.4	-	23/25	
Social sciences, business and law	35.2	-	9/24	
Science	14.1	-	5/23	
Engineering, manufacturing and construction	42.1	-	1/23	
Agriculture	0.9	-	15/22	
Health and welfare	7.0	-	18/22	
Services	0.0	-	23/23	
Not known or unspecified	-	-	-	
All fields	100.0			
Advanced research programmes				
Education	8.2	-	5/23	
Humanities and arts	1.7	-	27/27	
Social sciences, business and law	33.3	-	2/26	
Science	24.9	-	12/27	
Engineering, manufacturing and construction	15.0	-	11/26	
Agriculture	14.1	-	1/26	
Health and welfare	2.8	-	26/27	
Services	-	-	-	
Not known or unspecified	-	-	-	
All fields	100.0			

	Mexico	OECD mean	Mexico's rank[1]	% to OECD mean
Tertiary graduates by field of study[5] per 10,000 population (2002)				
Tertiary-type A				
Education	5.19	-	19/27	
Humanities and arts	0.44	-	27/27	
Social sciences, business and law	12.89	-	19/27	
Science	3.42	-	18/27	
Engineering, manufacturing and construction	4.97	-	18/27	
Agriculture	0.65	-	20/27	
Health and welfare	3.29	-	20/27	
Services	0.14	-	27/27	
Not known or unspecified	-	-	-	
All fields	31.01	-	24/27	
Tertiary-type B				
Education	0.01	-	20/20	
Humanities and arts	0.01	-	24/25	
Social sciences, business and law	0.64	-	20/24	
Science	0.26	-	17/23	
Engineering, manufacturing and construction	0.76	-	17/23	
Agriculture	0.02	-	22/22	
Health and welfare	0.13	-	20/22	
Services	0.00	-	23/23	
Not known or unspecified	-	-	-	
All fields	1.82	-	23/26	
Advanced research programmes				
Education	0.01	-	22/23	
Humanities and arts	0.00	-	27/27	
Social sciences, business and law	0.04	-	26/26	
Science	0.03	-	27/27	
Engineering, manufacturing and construction	0.02	-	/2626	
Agriculture	0.02	-	25/26	
Health and welfare	0.00	-	27/27	
Services	-	-	-	
Not known or unspecified	-	-	-	
All fields	0.12	-	27/27	
Employment ratio and educational attainment[6] (2003)				
Number of 25 to 64-year-olds in employment as a percentage of the population aged 25 to 64				
Lower secondary education				
Males	94	73	1/30	129
Females	44	49	22/30	90
Upper secondary education (ISCED 3A)				
Males	-	81	-	-
Females	-	62	-	-
Post-secondary non-tertiary education				-
Males	-	84	-	-
Females	-	72	-	-
Tertiary education, type B				
Males	95	88	2/26	108
Females	61	77	25/26	79
Tertiary education, type A and advanced research programmes				
Males	91	89	9/30	102
Females	71	79	27/30	90

	Mexico	OECD mean	Mexico's rank[1]	% to OECD mean
Employment ratio and educational attainment (2003)				
Number of 30 to 34-year-olds in employment as a percentage of the population aged 30 to 34				
Lower secondary education				
Males	96	76	1/26	126
Females	39	48	21/26	81
Upper secondary education (ISCED 3A)				
Males	96	84	1/26	114
Females	39	58	25/26	67
Post-secondary non-tertiary education				
Males	96	85	1/26	113
Females	39	60	25/26	65
Tertiary education, type B				
Males	96	87	1/26	110
Females	40	63	25/26	63
Tertiary education, type A and advanced research programmes				
Males	95	88	1/26	108
Females	45	67	25/26	67
Unemployment ratio and educational attainment[7] (2003)				
Number of 25 to 64-year-olds who are unemployed as a percentage of the population aged 25 to 64				
Lower secondary education				
Males	1.9	9.8	28/28	19
Females	2.0	11.0	26/27	18
Upper secondary education (ISCED 3A)				
Males	-	7.1	-	
Females	-	10.6	-	
Post-secondary non-tertiary education				
Males	-	5.9	-	
Females	-	6.9	-	
Tertiary education, type B				
Males	2.0	3.9	17/18	51
Females	2.1	4.4	15/17	48
Tertiary education, type A and advanced research programmes				
Males	2.8	3.6	19/27	78
Females	2.5	4.1	19/27	61
Unemployment ratio and educational attainment (2003)				
Number of 30 to 34-year-olds who are unemployed as a percentage of the population aged 30 to 34				
Lower secondary education				
Males	1.7	11.0	26/26	15
Females	0.7	9.6	26/26	7
Upper secondary education (ISCED 3A)				
Males	1.7	7.3	26/26	23
Females	0.7	6.8	26/26	10
Post-secondary non-tertiary education				
Males	1.7	6.8	26/26	25
Females	0.7	6.6	26/26	11
Tertiary education, type B				
Males	1.7	6.3	26/26	27
Females	0.8	6.3	26/26	13
Tertiary education, type A and advanced research programmes				
Males	2.0	5.6	26/26	36
Females	0.9	5.7	26/26	16

	Mexico	OECD mean	Mexico's rank[1]	% to OECD mean
Ratio of the population not in the labour force and educational attainment (2002)				
Number of 25 to 64-year-olds not in the labour force as a percentage of the population aged 25 to 64				
Lower secondary education				
Males	4	20	30/30	20
Females	52	46	7/30	110
Upper secondary education (ISCED 3A)				
Males	-	13	-	-
Females	-	30	-	-
Post-secondary non-tertiary education				
Males	-	11	-	-
Females	-	22	-	-
Tertiary education, type B				
Males	16	9	1/25	178
Females	64	21	1/25	305
Tertiary education, type A and advanced research programmes				
Males	32	8	1/30	400
Females	77	19	1/30	405
Ratio of the population not in the labour force and educational attainment (2002)				
Number of 30 to 34-year-olds not in the labour force as a percentage of the population aged 30 to 34				
Lower secondary education				
Males	2	10	27/29	20
Females	55	39	3/29	141
Upper secondary education (ISCED 3A)				
Males	-	7	-	-
Females	-	26	-	-
Post-secondary non-tertiary education				
Males	-	3	-	-
Females	-	18	-	-
Tertiary education, type B				
Males	2	3	17/25	67
Females	36	16	2/25	225
Tertiary education, type A and advanced research programmes				
Males	2	3	18/29	67
Females	27	15	2/29	180
Earnings of tertiary graduates aged 25-64 relative to upper secondary graduates aged 25-64 (2002) (upper secondary = 100)				
Tertiary-type B	m	-	-	-
Tertiary-type A	m	-	-	-
Earnings of tertiary graduates aged 30-44 relative to upper secondary graduates aged 30-44 (2002) (upper secondary = 100)				
Tertiary-type B	m	-	-	-
Tertiary-type A	m	-	-	-
Trends in relative earnings of tertiary graduates aged 25-64 (upper secondary and post-secondary non-tertiary education = 100)				
1997	m	-	-	-
2002	m	-	-	-

	Mexico	OECD mean	Mexico's rank[1]	% to OECD mean
PATTERNS OF PARTICIPATION				
Participation rates of all persons aged 15 and over by programme (2002)				
Per cent of all persons aged 15 and over in tertiary type-5A programmes	3.1	4.0	19/26	78
Per cent of all persons aged 15 and over in tertiary type-5B programmes	0.1	0.7	21/26	14
Per cent of all persons aged 15 and over in tertiary type-6 programmes	0.0	0.2	23/23	-
Per cent of all persons aged 15 and over in all tertiary programmes	3.2	4.9	23/26	65
Index of change in total tertiary enrolment (2003) (1995 = 100)				
Total				
Attributable to change in population[8]	109	96	3/19	114
Attributable to change in enrolment rates[9]	134	143	10/19	94
Enrolment rates (2003)				
Full-time and part-time students in public and private institutions, by age				
Students aged 15-19 as a percentage of the population aged 15-19	43.9	79.1	27/28	55
Students aged 20-29 as a percentage of the population aged 20-29	9.7	23.6	26/28	41
Students aged 30-39 as a percentage of the population aged 30-39	3.4	5.4	15/28	63
Students aged 40 and over as a percentage of the population aged 40 and over	0.5	1.6	13/21	31
Age distribution of enrolments (2003)				
Persons aged 35 and over as a per cent of all enrolments in tertiary type-5A programmes	2.8	10.3	21/24	27
Persons aged 35 and over as a per cent of all enrolments in tertiary type-5B programmes	1.2	16.2	20/21	7
Persons aged 35 and over as a per cent of all enrolments in tertiary type-6 programmes	41.0	30.2	7/22	136
Persons aged 35 and over as a per cent of all enrolments in total tertiary programmes	3.0	11.7	22/24	26
Persons aged less than 25 as a per cent of all enrolments in tertiary type-5A programmes	82.6	63.9	2/26	129
Persons aged less than 25 as a per cent of all enrolments in tertiary type-5B programmes	91.4	58.9	1/26	155
Persons aged less than 25 as a per cent of all enrolments in tertiary type-6 programmes	1.5	10.2	17/21	15
Persons aged less than 25 as a per cent of all enrolments in total tertiary programmes	82.4	61.5	1/27	134
Persons aged less than 20 as a per cent of all enrolments in tertiary type-5A programmes	29.4	13.9	1/27	212
Persons aged less than 20 as a per cent of all enrolments in tertiary type-5B programmes	50.3	17.2	1/27	292
Persons aged less than 20 as a per cent of all enrolments in tertiary type-6 programmes	-	0.4	-	
Persons aged less than 20 as a per cent of all enrolments in total tertiary programmes	29.9	15.0	1/27	199

	Mexico	OECD mean	Mexico's rank[1]	% to OECD mean
Gender distribution of enrolments (2003)				
Females as a per cent of enrolments in tertiary type-5A programmes	50.0	53.2	23/29	94
Females as a per cent of enrolments in tertiary type-5B programmes	40.7	54.8	26/29	74
Females as a per cent of enrolments in tertiary type-6 programmes	39.2	44.0	22/28	89
Females as a per cent of total tertiary enrolments	49.6	53.2	24/29	93
Net entry rates into tertiary education[10] (2003)				
Tertiary-type B				
Total	1.7	15.6	19/23	11
Males	2.0	14.2	18/22	14
Females	1.3	17.0	20/23	8
Tertiary-type A				
Total	27.8	52.5	25/26	53
Males	27.6	46.6	24/25	59
Females	28.0	57.1	24/25	49
Distribution of students in tertiary education by type of institution[11] (2003)				
Tertiary-type B education, public	95.7	67.5	6/27	142
Tertiary-type B education, government-dependent private	-	19.5	-	-
Tertiary-type B education, independent private	4.3	13.1	-	33
Tertiary-type A and advanced research programmes, public	65.9	77.6	24/27	85
Tertiary-type A and advanced research programmes, government-dependent private	-	11.5	-	-
Tertiary-type A and advanced research programmes, independent private	34.1	10.9	3/17	313
Distribution of students in tertiary education by mode of study (2003)				
Tertiary-type B education				
Full-time	100	78.3	1/29	128
Part-time	-	22.5	-	-
Tertiary-type A and advanced research programmes				
Full-time	100	83.4	1/29	120
Part-time	-	16.6	-	
Age distribution of net entrants into tertiary education, tertiary-type A (2003)				
Age at 20th percentile (20% of new entrants are below this age)	18.3	19.2	2/23	95
Age at 50th percentile (50% of new entrants are below this age)	19.5	20.8	18/23	94
Age at 80th percentile (80% of new entrants are below this age)	23.6	24.9	11/19	95
Foreign students as a percentage of all students (2003) (foreign and domestic students) [12]	-	6.4	-	-
Index of change in foreign students as a percentage of all students (2003) (foreign and domestic students) (1998 = 100)	-	-	-	-
National students enrolled abroad in other reporting countries relative to total tertiary enrolment[13] (2003)	0.9	4.0	27/29	23
Expected changes of the 20-29 age group by 2012 relative to 2002 (2002 = 100)[14]	104	96	9/30	108
Upper secondary attainment rates (2003)				
% of persons aged 25-34 with at least upper secondary education	25	75	30/30	33
Expected years of tertiary education under current conditions (2002) Full-time and part-time[15]	1.1	2.8	27/28	39

	Mexico	OECD mean	Mexico's rank[1]	% to OECD mean
Admission to tertiary education[16] Source: Eurydice (2005)				
Limitation of the number of places available in most branches of public and grant-aided private tertiary education (2002/03)				
Limitation at national level with direct control of selection	-	1/35	-	-
Selection by institutions (In accordance with their capacity or national criteria)	-	23/35	-	-
Free access to most branches	-	11/35	-	-
EXPENDITURE				
Annual expenditure on tertiary education institutions per student, public and private institutions (2002)				
In equivalent US dollars converted using PPPs, based on full-time equivalents				
All tertiary education (including R&D activities)	6074	10655	22/26	57
Tertiary-type B education (including R&D activities)	-	-	-	-
Tertiary-type A and advanced research programmes (including R&D activities)	-	-	-	-
All tertiary education excluding R&D activities	5298	7299	15/21	73
Annual expenditure on tertiary education institutions per student relative to GDP per capita, public and private institutions (2002)				
Based on full-time equivalents				
All tertiary education (including R&D activities)	65	43	2/26	151
Tertiary-type B education (including R&D activities)	-	29	-	-
Tertiary-type A and advanced research programmes (including R&D activities)	-	42	-	-
All tertiary education excluding R&D activities	57	34	2/21	168
Cumulative expenditure on educational institutions per student over the average duration of tertiary studies[17] **(2002)**				
In equivalent US dollars converted using PPPs				
All tertiary education	20787	45812	18/19	45
Tertiary-type B education	-	-	-	-
Tertiary-type A and advanced research programmes	-	-	-	-
Change in tertiary education expenditure per student relative to different factors				
Index of change between 1995 and 2002 (1995 = 100, 2002 constant prices)				
Change in expenditure	172	-	3/24	-
Change in the number of students	142	-	7/25	-
Change in expenditure per student	121	-	7/23	-
Change in tertiary education expenditure per student				
In equivalent US dollars converted using PPPs (2001 constant prices and 2001 constant PPPs)				
1995				
2001				
Expenditure on tertiary education institutions as a percentage of GDP, from public and private sources				
All tertiary education, 2002	1.4	1.4	10/28	100
Tertiary-type B education, 2002	-	0.2	-	-
Tertiary-type A education, 2002	-	1.1	-	-
All tertiary education, 1995	1.1	1.3	15/25	85

	Mexico	OECD mean	Mexico's rank[1]	% to OECD mean
Relative proportions of public and private expenditure on educational institutions, for tertiary education				
Distribution of public and private sources of funds for educational institutions after transfers from public sources				
Public sources, 2002	71.0	78.1	21/27	91
Private sources, household expenditure, 2002	28.5	18.5	7/24	154
Private sources, expenditure of other private entities, 2002	0.5	7.6	16/16	7
Private sources, all private sources, 2002	29.0	21.9	7/27	132
Private sources, private, of which subsidised, 2002	0.6	1.3	8/10	46
Public sources, 1995	77.4	-	13/19	-
Private sources, household expenditure, 1995	22.6	-	3/15	-
Private sources, expenditure of other private entities, 1995	-	-	-	-
Private sources, all private sources, 1995	22.6	-	7/19	-
Private sources, private, of which subsidised, 1995	-	-	-	-
Distribution of total public expenditure on tertiary education (2002)				
Public expenditure on tertiary education transferred to educational institutions and public transfers to the private sector, as a percentage of total public expenditure on tertiary education				
Direct public expenditure on public institutions	94.9	71.1	1/25	133
Direct public expenditure on private institutions	-	11.5	-	-
Indirect public transfers and payments to the private sector	5.1	17.4	25/27	29
Expenditure on tertiary education institutions as a proportion of total expenditure on all educational institutions (2002) Public and private institutions	22	24	14/23	-
Total public expenditure on tertiary education (2002)				
Direct public expenditure on tertiary institutions plus public subsidies to households (which include subsidies for living costs, and other private entities)				
As a percentage of total public expenditure[18]	4.7	3.0	3/26	157
As a percentage of GDP	1.0	1.3	20/28	77
Subsidies for financial aid to students as a percentage of total public expenditure on tertiary education (2002)				
Scholarships / other grants to households	2.8	9.2	21/26	30
Student loans	2.3	7.6	13/15	30
Scholarships / other grants to households attributable for educational institutions	0.8	1.1	1/9	73
Annual expenditure per student on instruction, ancillary services and R&D (2002) [ii]				
Expenditure on tertiary education institutions in US dollars converted using PPPs from public and private sources, by type of service				
Educational core services	5298	7173	16/22	74
Ancillary services (transport, meals, housing provided by institutions)	-	342	-	-
Research and development	776	2795	17/20	28

	Mexico	OECD mean	Mexico's rank[1]	% to OECD mean
Expenditure on tertiary education institutions by resource category (2002) [iii]				
Distribution of total and current expenditure on tertiary education institutions from public and private sources				
Percentage of total expenditure				
Current	97.3	88.4	1/26	110
Capital	2.7	11.6	26/26	23
Percentage of current expenditure				
Compensation of teachers	59.0	42.3	1/15	139
Compensation of other staff	18.3	22.2	13/15	82
Compensation of all staff	77.3	66.1	4/27	117
Other current	22.7	33.9	24/27	67
Registration and tuition fees (2002/03)[19] Source: Eurydice (2005)				
Registration and tuition fees and other payments made by students of full-time undergraduate courses, public sector				
Neither fees nor compulsory contributions	-	9/35	-	
Solely contributions to student organisations	-	3/35	-	
Registration and/or tuition fees (and possible contributions to student organisations)	-	23/35	-	
LITERACY LEVELS				
IALS achievement levels of graduates aged 25-34 (1994-1995) Source: IALS				
Graduates aged 25-34 at IALS levels 1 and 2 as a per cent of total graduates aged 25-34	-	19	-	
Graduates aged 25-34 at IALS levels 4 and 5 as a per cent of total graduates aged 25-34	-	40	-	
PATTERNS of PROVISION				
Ratio of students to teaching staff in tertiary education[20] **(2003)**				
Based on full-time equivalents, Public and private institutions.				
Type B	13.7	14.4	7/15	95
Type A and advanced research programmes	15.2	15.7	9/18	97
Tertiary education all	15.1	14.9	10/23	101
EXPECTATIONS OF 15-YEAR-OLD STUDENTS				
Students' expected educational levels (2003) Source: PISA 2003 (OECD, 2004)				
Per cent of 15-year-old students who expect to complete secondary education, general programmes (ISCED 3A)	42.2	48.9	20/28	86
Per cent of 15-year-old students who expect to complete secondary education, vocational programmes (ISCED 3B or C)	19.9	29.9	14/26	67
Per cent of 15-year-old students who expect to complete post-secondary non-tertiary education (ISCED 4)	-	16.4	-	129
Per cent of 15-year-old students who expect to complete tertiary-type B education (ISCED 5B)	26.5	20.5	8/26	110
Per cent of 15-year-old students who expect to complete tertiary-type A education or an advanced research qualification (ISCED 5A or 6)	48.6	44.0	13/29	-

	Mexico	OECD mean	Mexico's rank[1]	% to OECD mean
RESEARCH AND DEVELOPMENT[iv]				
Gross domestic expenditure on Research and Development (R&D) as a percentage of GDP Source: OECD (2005)				
2001	0.39	2.27	27/27	7
1993	0.22	2.12	27/27	10
Higher education[21] expenditure on R&D as a percentage of GDP Source: OECD (2005)				
2001	0.12	0.40	25/27	30
1993	0.12	0.37	24/26	32
Percentage of gross domestic expenditure on R&D by sector of performance (2001) Source: OECD (2005)				
higher education	30.4	17.5	8/26	174
(higher education in 1993)	53.7	17.5	2/26	307
business enterprise	30.3	69.3	26/26	44
government	39.1	10.4	1/26	376
private non-profit sector	0.2	2.8	16/19	7
Percentage of higher education expenditure on R&D financed by industry Source: OECD (2005)				
2001	1.1	6.1	22/25	18
1993	3.4	5.6	17/24	61
Total researchers per thousand total employment Source: OECD (2005)				
1999	0.6	6.5	24/24	9
1993	0.4	5.9	22/24	7
Researchers as a percentage of national total (full time equivalent) (1999) Source: OECD (2005)				
higher education	48.7	26.4	7/25	184
(higher education in 1993)	54.8	25.9	5/23	212
business enterprise	16.2	64.0	22/25	253
government	34.5	8.3	2/25	416
Share in OECD total "triadic" patent families[22] (%) Source: OECD (2005)				
2001	0.03	-	23/30	
1991	0.02	-	25/30	
Foreign PhD students as a per cent of total PhD enrolments (2003)	-	13.7	-	

NOTES

Sources:

All data are from OECD (2005a), *Education at a Glance: OECD Indicators 2005*, Paris, unless indicated otherwise in the table.

Other sources:

Eurydice (2003), *Key data on education in Europe - 2002 edition*, Brussels, http://www.eurydice.org/Doc_intermediaires/indicators/en/frameset_key_data.html

IALS, *International adult literacy survey database.*

OECD (2004c), *Learning for Tomorrow's World, First Results from PISA 2003*, OECD, Paris.

OECD (2005c), *Main Science and Technology Indicators, volume 2004/2*, OECD, Paris.

Missing data:

a: Data not applicable because the category does not apply.
c: There are too few observations to provide reliable estimates.
m: Data not available.
n: Magnitude is either negligible or zero.

General notes:

1. "Mexico's rank" indicates the position of Mexico when countries are ranked in descending order from the highest to lowest value on the indicator concerned. For example, on the first indicator *"% of the population aged 25-64 with tertiary qualifications, Tertiary-type B - Total"*, the rank *"x/x"* indicates that Mexico recorded the xxst highest value of the xx OECD countries that reported relevant data. The symbol "=" means that at least one other country has the same rank.
2. "% to OECD mean" indicates Mexico's value as a per cent of the OECD value. For example, on the first indicator*"% of the population aged 25-64 with tertiary qualifications, Tertiary-type B - Total"*, the percentage *"xx"* indicates that Mexico's value is equivalent to xx% of the OECD mean.
3. The calculation of the average years in formal education is based upon the weighted theoretical duration of schooling to achieve a given level of education, according to the current duration of educational programmes as reported in the UOE data collection.
4. Two alternative methods were employed to calculate the average duration of tertiary studies: the approximation formula and the chain method. For both methods, it should be noted that the result does not give the average duration needed for a student to graduate since all students participating in tertiary education are taken into account, including drop-outs. Hence, the figure can be interpreted as the average length of time for which students stay in tertiary education until they either graduate or drop out.
5. These indicators show the ratio of graduates as a proportion to all fields of studies. The fields of education used follow the ISCED classification by field of education.
6. The employed are defined as those who during the survey reference week: *i)* work for pay (employees) or profit (self-employed and unpaid family workers) for at least one hour, or *ii)* have a job but are temporarily not at work (through injury, illness, holiday, strike or lockout, educational or training leave, maternity or parental leave, etc.) and have a formal attachment to their job.
7. The unemployed are defined as individuals who are without work, actively seeking employment and currently available to start work.
8. The impact of demographic change on total enrolment is calculated by applying the enrolment rates measured in 1995 to the population data for 2003: population change was taken into account while enrolment rates by single year of age were kept constant at the 1995 level.
9. The impact of changing enrolment rates is calculated by applying the enrolment rates measured in 2003 to the population data for 1995: the enrolment rates by single year of age for 2003 are multiplied by the population by single year of age for 1995 to obtain the total number of students that could be expected if the population had been constant since 1995.
10. The net entry rates represent the proportion of persons of a synthetic age cohort who enter a certain level of tertiary education at one point during their lives.
11. Educational institutions are classified as either *public* or *private* according to whether a public agency or a private entity has the ultimate power to make decisions concerning the institution's affairs. An institution is classified as *private* if it is controlled and managed by a non-governmental organisation (*e.g.*, a Church, a Trade Union or a business enterprise), or if its Governing Board consists mostly of members not selected by a public agency. The terms "*government-dependent*" and "*independent*" refer only to the degree of a private institution's dependence on funding from government sources. A *government-dependent private institution* is one that receives more than 50 per cent of its core funding from government agencies. An *independent private institution* is one that receives less than 50 per cent of its core funding from government agencies.
12. Students are classified as foreign students if they are not citizens of the country for which the data are collected. Countries unable to provide data or estimates for non-nationals on the basis of their passports were requested to substitute data according to a related alternative criterion, e.g., the country of residence, the non-national mother tongue or non-national parentage.

13. The number of students studying abroad is obtained from the report of the countries of destination. Students studying in countries which did not report to the OECD are not included in this indicator.
14. This indicator covers residents in the country, regardless of citizenship and of educational or labour market status.
15. School expectancy (in years) under current conditions excludes all education for children younger than five years. It includes adult persons of all ages who are enrolled in formal education. School expectancy is calculated by adding the net enrolment rates for each single year of age.
16. For this indicator, the column "OECD mean" indicates the number of Eurydice member countries/areas, in which limitations on admission to tertiary education are adopted, out of 35 countries/areas for which data are available. For example, in the row "Limitation at national level with direct control of selection", 1/35 indicates that limitation at national level with direct control of selection is adopted in 1 country.
17. The estimates of cumulative expenditure on education over the average duration of tertiary studies were obtained by multiplying annual expenditure per student by an estimate of the average duration of tertiary studies.
18. Total public expenditure on all services, excluding education, includes expenditure on debt servicing (*e.g.* interest payments) that are not included in public expenditure on education.
19. "Registration fees" refers to payments related to registration itself or the certified assessment of each student. By "tuition fees" is meant contributions to the cost of education supported by individual tertiary education institutions. These fees also include any certification fees. Payments for entrance examinations are excluded. For this indicator, the column "OECD mean" indicates the number of Eurydice member countries/areas, in which registration and tuition fees are adopted, out of 35 countries/areas for which data are available. For example, in the row "Membership fees to student organisations", 5/35 indicates that membership fees are adopted in 5 countries/areas.
20. "Teaching staff" refers to professional personnel directly involved in teaching students.
21. "Higher Education" includes all universities, colleges of technology and other institutions of post-secondary education, whatever their source of finance or legal status. It also includes all research institutes, experimental stations and clinics operating under the direct control of or administered by or associated with higher education institutions. For detail, see OECD (2002), *Frascati Manual 2002: Proposed Standard Practice for Surveys on Research and Experimental Development.*
22. "Triadic patent" means patents filed all together to the European Patent Office (EPO), the US Patent and Trademark Office (USPTO) and the Japanese Patent Office (JPO). This indicator shows each country's share in total triadic patents filed by OECD countries. Reference year is when the priority patent is filed. Data is estimated by the OECD Secretariat and provisional. Because a few countries share large proportion of triadic patents, other countries have small share.

Country specific notes:

[i] "Advanced research programmes" is included in "Tertiary-type A".

[ii] "Research and Development" and therefore "total expenditure" are underestimated.

[iii] Public institutions only.

[iv] Data on R&D expenditure before 1993 and after 2002 are not available.