Reviews of National Policies for Education

Tertiary Education in Colombia

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Foreword

Colombia is one of the major economies of the Latin American and Caribbean region and the government has set itself ambitious goals for its social and economic development, for which human capital development is crucial. Despite progress in the education sector, much remains to be done to address a number of challenges including: expanding enrolment and improving equity, increasing quality and relevance, and making governance and finance more responsive. Among other actions, the government needs to continue increasing participation in post secondary education through improved loan and scholarship systems and increasing student places more evenly throughout the country.

The examiners' report covers the full range of tertiary education in Colombia using information provided in the *Background Report* prepared by the Colombian authorities for the Joint OECD/World Bank review and information supplied in meetings in the course of sites visits (Bogota, Barranquilla, Bucaramanga, Cali, Cartagena, Ibague, Manizales, Palmira and Pereira). The report gives an analysis of the achievements of the last decade and the challenges that Colombia faces in the quest of providing a world class system for its citizens in light of the economic, social and political context of the country. The review offers an in-depth study and recommendations on access and equity; the relevance of the system; its governance and management; research and development; and, financing. Other recommendations include a reform to the legal framework; greater focus on measurement of learning; and an integration of all actors, both university and non-university, into the system. They also emphasised increased funding for equity and an improved targeting system; strengthening quality assurance mechanisms; and further efforts to promote international integration, and research and innovation. The final chapter brings together, in the form of a synthesis, the specific recommendations of each chapter and sets out how policies can and should be addressed.

This review of tertiary education policy was undertaken within the framework of the programme of work of the OECD Directorate for Education in partnership with the World Bank. The financing for the review was provided by the government of Colombia and the World Bank.

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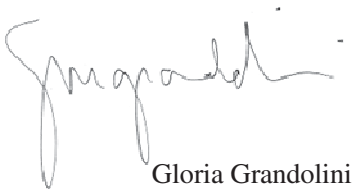

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Acronyms

AHELO	OECD's Assessment of Higher Education Learning Outcomes
ASCUN	Association of Colombian Universities
	Asociación de Universidades Colombianas
CEDLAS	Centre for Distributive, Labour and Social Studies, University Nacional de la Plata, Argentina
	Centro de Estudios Distributivos Laborales y Sociales, Universidad Nacional de la Plata, Argentina
CERES	Regional Centres of Higher Education
	Centros Regionales de Educación Superior
CESU	National Council of Higher Education
	Consejo Nacional de Educación Superior
CINDA	Inter-University Development Centre
	Centro Interuniversitario de Desarrollo
CNA	The National Accreditation Council
	Consejo Nacional de Acreditación
COLCIENCIAS	Administrative Department of Science, Technology and Innovation
	Departamento Administrativo de Ciencia, Tecnología e Innovación
CONACES	National Intersectorial Commission for Higher Education Quality Assurance
	Comisión Nacional Intersectorial de Aseguramiento de la Calidad de la Educación Superior
CONPES	National Council of Social and Economic Policy
	Consejo Nacional de Política Económica y Social
DANE	National Administrative Department of Statistics
	Departamento Administrativo Nacional de Estadística
DNP	National Planning Department
	Departamento Nacional de Planeación

DDS	Directorate for Social Development, National Planning Department
	Dirección de Desarrollo Social, Departamento Nacional de Planeación
ECV	Quality of Life Survey DANE-SDP
	Encuesta de Calidad de Vida DANE-SDP
ECAES	Higher Education Quality Tests
	Exámenes de Calidad de la Educación Superior
EPI	English Proficiency Index
FOMEC	Fund for University Quality Improvement, Argentina
	Fondo para el Mejoramiento de la Calidad Universitaria, Argentina
GCI	Global Competitiveness Index
GDP	Gross Domestic Product
GEIH	General Integrated Household Survey
	Gran Encuesta Integrada de Hogares
ICETEX	Colombian Institute of Educational Credit and Technical Studies Abroad
	Instituto Colombiano de Crédito Educativo y Estudios Técnicos en el Exterior
ICFES	Colombian Institute for Educational Evaluation
	Instituto Colombiano para la Evaluación de la Educación
INQAAHE	International Network for Quality Assurance Agencies in Higher Education
MECESUP	Programme for Improvement of Quality and Equity in Higher Education, Chile
	Programa de Mejoramiento de la Calidad y Equidad de la Educación Superior, Chile
MEN	Ministry of National Education
	Ministerio de Educación Nacional
NQF	National Qualifications Framework
OCyT	Colombian Observatory of Science and Technology
	Observatorio Colombiano de Ciencia y Tecnología
OLE	Labour Observatory for Education
	Observatorio Laboral para la Educación

OLO	Colombian Labour and Occupational Observatory
	Observatorio Laboral y Ocupacional Colombiano
PEI	Institutional Education Project
	Proyecto Educativo Institucional
PISA	OECD Programme for International Student Assessment
PTI	Professional Technical Institution
R&D	Research and Development
RCI	Colombian Network for the Internationalisation of Higher Education
	Red Colombiana para la Internacionalización de la Educación Superior
RIACES	Ibero-American Network for Higher Education Accreditation
	Red Ibero-Americana para la Acreditación de la Calidad de la Educación Superior
SABER 5	Final test of primary education
SABER 9	Final test of lower secondary education
SABER 11	Final test of compulsory education
SABER PRO	Examination of higher education quality
SACES	Higher Education Quality Assurance Information System
	Sistema de Aseguramiento de la Calidad de la Educación Superior
SEDLAC	Socio-Economic Database for Latin America and the Caribbean (World Bank and CEDLAS)
SE	Education Division, Directorate for Social Development, National Planning Department
	Subdirección de Educación, Dirección de Desarrollo Social, Departamento Nacional de Planeación
SENA	National Training Service
	Servicio Nacional de Aprendizaje
SISBEN	Selection System of Beneficiaries of Social Programmes
	Sistema de Identificación de Potenciales Beneficiarios de Programas Sociales
SPADIES	Higher Education Institutions Dropout Prevention and Analysis System
	Sistema de Prevención y Análisis de la Deserción en las Instituciones de Educación Superior

SNIES	National System of Higher Education Information
	Sistema Nacional de Información de la Educación Superior
SS	Health Division, Directorate for Social Development, National Planning Department
	Subdirección de Salud, Dirección de Desarrollo Social, Departamento Nacional de Planeación
STI	Science, Technology and Innovation
T&T	Technological and Technical
TE	Tertiary Education
TEI	Tertiary Education Institution
TI	Technological Institution
TIMSS	Trends in International Mathematics and Science Study, of the International Association for the Evaluation of Educational Achievement (IEA)
UCAS	Universities and Colleges Admissions Service
UNESCO	United Nations Educational, Scientific and Cultural Organization
VHQA	Voluntary High Quality Accreditation
WEF	World Economic Forum

Executive summary

In Colombia, the beginning of a new century has brought with it a palpable feeling of optimism. Colombians and visitors sense that the country's considerable potential can be realised, and prosperity can become the norm. Good government and effective institutions will lead the way forward, moving the country past the old and seemingly intractable obstacles and conflicts that muted progress for too long. The feeling is that a new sense of security, new potential to expand trade, better infrastructure and institutions, along with other investments, can bring new opportunities, and Colombians are ready to respond energetically.

Education is rightly seen as crucial to this process. As opportunity expands, Colombians will need new and better skills to apply to new challenges and prospects. The past underperformance of Colombia's education system is both a cause and an effect of a system unable to provide high quality education to all. An "education revolution" has begun and progress is being made. Basic and secondary enrolment, quality and learning outcomes are trending upward. Most positively, the system is being infused with a sense that success for all is possible. The government rightly wants success and opportunity at the tertiary level to be a part of this revolution.

The government's main policy goals at the tertiary level focus on the key challenges: expanding enrolment and improving equity, increasing quality and relevance, and making governance and finance more responsive. To achieve these goals, policy makers and stakeholders must find ways to reach consensus, work together and overcome inertia. Like any tertiary system, over time Colombia has drifted away from focusing exclusively on the needs of students, the graduates they become, and the society in which they live and work. Restoring the focus on how tertiary education can serve these needs is a good organising principle for reform.

The joint OECD-World Bank review team found many strengths in Colombian tertiary education. Much deserves to be recognised, preserved, and expanded: *(i)* a commendable expansion of enrolment in the past ten years; *(ii)* a diverse institutional landscape; *(iii)* sound and consistent

national planning and policy formulation; *(iv)* strong support for equity and a world class student loan institution; *(v)* comprehensive and advanced assessment systems and a dedication to data-informed decision making. These core strengths will become more effective and more valuable as the reform agenda progresses.

The main elements of reform are the right ones, but consensus on the precise content of changes has been elusive. Consensus exists on the need for expansion and the commitment to increasing public resources is welcome. The government developed a proposed reform of Law 30 – the main statute governing tertiary education – and vigorous national debate accompanied its dissemination. Opposition to for-profit education dominated the headlines, but, in the review team's view, other aspects of the proposed reform were and are more important. First among these is the need to review the complexity of the current scope and hierarchy of degree types (technical, technological, bachelor's, specialisation, master's and doctorate) and the legal restrictions on the type of institutions that can offer them. Simplification of the number of different degree types would create the conditions for better relevance and higher quality. Decisions on whether to grant or deny institutions permission to offer degrees of a particular type, now based on legal classification, would be better based on programme quality and overall institutional capacity.

The review team believes reform can succeed if a number of related elements are woven together. The simplification of the range and hierarchy of degrees connects to the greater facilitation of pathways between degree levels. Currently, graduates of technical and technological institutions seldom get any academic credit for prior coursework when they pursue more advanced degrees. The creation of propaedeutic cycles has helped some, but more effort is needed. Given the importance of non-university degrees, it is also crucial to make progress on integrating the National Training Service (*Servicio Nacional de Aprendizaje,* or SENA in its Spanish-language acronym) more fully into the tertiary system. As the system improves coherence, it must continue to improve quality and relevance. This requires continuous review of the demand for graduates and the extent to which institutions are providing graduates with relevant skills.

The dramatic increase in tertiary enrolment witnessed during the last decade has also resulted in a more equitable distribution of access to tertiary education. The goal of enrolling 50% of the age cohort is appropriate and achievable, but it implies new challenges for access and student finance policies. Colombia has a world-class student loan institution in the Colombian Institute of Educational Credit and Technical Studies Abroad (ICETEX, *Instituto Colombiano de Crédito Educativo y Estudios Técnicos*

en el Exterior). Every day, more and more aspiring students are able to realise their educational dreams because of the opportunities ICETEX provides. However, the resources available fall short of aggregate need, meaning that some qualified-but-needy students are left out. The expansion of public provision has helped create additional opportunities for financially needy students. The long-term aim of student financial aid policies should be to reach the greatest number of students while respecting and promoting the diversity of institutions and options available to students. A first step toward improving the student finance system will be increasing resources for student loans. At the same time, institutional finance policies seem to result in unevenness of opportunities for access; in some regions, tertiary education will be essentially free of charge in some public institutions whereas in other regions students must pay significant fees. Government policy ought to seek to lessen these disparities.

Quality and internal efficiency problems in secondary education reverberate in tertiary, and too often close pathways for learning and professional success for students from poorer families. Many students, especially those from the lower socio-economic strata, lack the preparation to succeed at the tertiary level. First, Colombians graduate from secondary at the young age of 16, with fewer years of education than most of their international counterparts. Secondly, the secondary system itself has serious deficiencies. High dropout rates from tertiary education attest to the gap between students' aspirations and the abilities they have been able to acquire in secondary education. Dropout is costly, for students and for society. The government has made it a priority to understand why it is so common and to mitigate it, but more needs to be done. Several steps can be taken to improve the readiness-to-succeed in tertiary education for secondary school leavers. These include raising learning outcomes at the secondary level, introducing a 12th grade of schooling or an optional bridge year between secondary and tertiary studies, and providing better information to aspiring students about which programmes are right for them.

As more students enter the system, efforts need to continue to assure the quality and relevance of their degree programmes. Colombia has a number of strengths to build on when it comes to quality, relevance and quality assurance, including the fact that the labour market is continuing to absorb and reward tertiary education graduates. The marked increase in the supply of new graduates, especially those with technical and technological degrees, has not significantly reduced the financial return to these degrees. While these trends need to be closely monitored, employment figures for graduates confirm that their skills are valued by employers. However, it is still too common to find programmes with questionable or weak quality and little relevance. The Regional Centres of Higher Education (CERES, *Centros*

Regionales de Educación Superior), for example, could provide an important dimension of access but need to redouble efforts to ensure the rigour and relevance of the education they offer.

No royal road to quality exists; quality emerges from continuous investment in faculty qualifications, in research, and from the day-to-day efforts of academic staff to strive for excellence. The government's mechanisms for promoting quality are contributing, yet need to be further developed to meet the challenges they face. The Register of Qualified Programmes now plays an important role in establishing initial standards for any authorised programme, yet "high quality" accreditation remains the preserve of more elite institutions. Efforts should be made to ensure that quality is reviewed not just at the time of authorisation but continuously. In addition, the accreditation system should evolve to ensure that "high quality" designates institutions that robustly fulfil their educational mandates, whether as internationally competitive research universities or as top-quality technical institutions serving local students' needs.

The governance of Colombia's tertiary education system reflects the autonomy and independence of its institutions. The strength and benefits of a decentralised tertiary education system are recognised in many countries, Colombia included. New and emerging demands on tertiary education systems call for highly effective and responsive governance structures focused on outcomes, transparency and accountability. Colombia should aim to refine governance arrangements continuously to achieve these goals. The Ministry of National Education (MEN, *Ministerio de Educación Nacional*) is encouraged to maintain and expand its focus on achieving national goals for tertiary education attainment and improvement, rather than on ensuring compliance. The national goals for tertiary education can and should be incorporated into institutional decision-making processes at all levels, by developing a common accountability framework. Institutional governing boards and campus leadership need to be focused on the public interest and not on institutional constituencies. The strong national data systems Colombia is developing can be instrumental in helping decision-making become more evidence-based.

The examination system run by the *Instituto Colombiano para la Evaluación de la Educación* (ICFES) – which measures students' abilities when they enter and leave tertiary education – puts Colombia in a position to be a global leader in both the measurement of value-added in tertiary education and, perhaps more importantly, the use of assessment findings for tertiary quality improvement. Therefore, investments in improving and expanding the technical quality of the ICFES system are eminently worthwhile. At the same time, the Ministry of National Education maintains impressive systems for collection of data on tertiary education students and

institutions, especially the Higher Education Institutions Dropout Prevention and Analysis System (SPADIES, *Sistema de Prevención y Análisis de la Deserción en las Instituciones de Educación Superior*). Continued efforts to refine and improve data quality will provide an expanding empirical basis for policy decisions.

As Colombia's economy matures and grows, it is increasingly seeking a wider range of international partners and linkages; it would be well advised to reflect this growing internationalisation more fully in the tertiary education system. The country has unique strengths that it can share with the Latin American region and the rest of the world; and, like all countries, it can benefit greatly by taking full advantage of the growing international flow of ideas and people. It will be timely to promote a comprehensive approach to internationalisation, including updating of curricula, greater second language acquisition, and mobility of staff and students.

Similarly, Colombia will require greater science, technology and innovation capacity to create the knowledge it needs and to select and adapt knowledge created elsewhere. Marked progress in expanding and strengthening doctoral programmes has been helpful, as has the commitment to invest revenues earned from natural resources to strengthen R&D capacity. Government policies rightly seek to decentralise research capacity and to emphasise the production and exploitation of useful knowledge, whether for local, national or global purposes. Experience suggests that building strong STI (Science, Technology and Innovation) capacity is a multi-decade process, requiring sustained investment and policy attention. Colombia should continue and expand its efforts in this area.

In Colombia the tertiary education system relies on a mix of public and private financing and struggles to reach adequate levels of resources. This is typical of countries with large cohorts of young people where tertiary education has recently changed from an elite to mass system. Colombia has been mobilising resources for tertiary education to finance not only expansion but improved quality and relevance. Public funding has increased, and the government has proposed new financing mechanisms to tie resources to GDP growth rates. All of this is encouraging, but more needs to be done. First, the uneven distribution of subsidies should be revisited. The amounts of public resource available to different institutions, and therefore the affordability to students of the tertiary education they offer, often vary markedly. Students in some localities or seeking some types of careers may find education to be much more expensive than others. Such significant disparities in subsidy are justifiable only if they drive students towards types of study the country regards as a priority. Secondly and importantly, Colombia should increase its efforts to join the global trend toward greater accountability and more links between funding and performance. Under

current laws and financing arrangements, resource allocations to institutions take no account of past performance, efficiency or value for money. No country with so many young people to educate can afford to fund long term a tertiary system without strong accountability and incentives for performance.

Colombians appreciate that, among all the riches of their country, potentially the greatest is their human capital. At the heart of education policy is the desire to see all students receive excellent basic and secondary education and then continue to pursue affordable, relevant and high quality tertiary education in their chosen field. The challenge is to overcome a past history of inadequate secondary preparation, insufficient financial assistance for needy students, unevenly funded institutions and underdeveloped quality mechanisms. Colombia has more than a decade of progress under its belt, and the energy to reach ambitious policy goals. Getting there in practice will involve dialogue and consensus-seeking among all stakeholders, as well as new resources and new rules. Each step forward, however, is a step towards a country that makes the most of its abundant talent.

Chapter 1. Overview, achievements and issues

This chapter opens with a brief description of the Colombian context, the country's education system, how Colombia fares in international comparisons and key aspects of its tertiary education system, including institutions, students enrolled, the returns from education, access and admission, quality and relevance, financing, academic staff, research and the government's future plans for the tertiary sector.

The chapter records Colombia's significant achievements, which include recent growth in participation, diverse institutions, sound national planning, public agreement on the importance of equitable access and excellent student support and educational evaluation agencies. Many challenges are also recorded: these include limited resources to fulfil plans, students under-prepared for tertiary education, as-yet-unequal access, high dropout, quality issues, limited research and internationalisation and a lack of institutional accountability.

Overview

About Colombia

Colombia is the fifth largest country in Latin America, covering an area of 440 831 square miles (1.14 million square kilometres). The country's geography and ecology are among the most varied in the world. Though most urban centres are located in the highlands of the Andes mountains, Colombian territory also encompasses Amazon rainforest, tropical grassland and both Caribbean and Pacific coastlines.

There is also great diversity among Colombia's population of 46.5 million people.[1] Latin America's third largest after Brazil and Mexico. Colombia's ethnic mix includes descendants of the original native inhabitants, Spanish colonists, Africans brought as slaves and twentieth-century immigrants from Europe and the Middle East. This diversity has produced a rich cultural heritage.

The country is rich in natural resources with substantial oil reserves and is a major producer of gold, silver, emeralds, platinum and coal. Historically, the rich families of Spanish descent benefited from this wealth to a greater extent than the majority, mixed-race population. Colombia's history in the 20th century was marked by very high levels of political violence, with armed conflicts between Conservatives and Liberals and a succession of agrarian uprisings, leading to the creation of several left-wing guerrilla groups that took control of large parts of the country's territory, especially in the jungle areas of the north and east. Subsequently, the lucrative returns from drugs and kidnapping came to dominate the rebels' agenda, and left-wing guerrillas were joined by right-wing paramilitaries. The conflict has lasted four decades. At one stage the government lost control of large swathes of Colombian territory, especially in the jungle areas of the north and east, to the rebels. Over the past ten years, the government has had some spectacular successes, regaining control of much of the rebel-held territory. Though the conflict is by no means resolved, hopes that the end may be in sight were further boosted by recent progress against armed insurgents.

Despite the armed conflict, Colombia's economy has experienced positive growth over the past decade. The economy continues to improve, mainly because of austere government budgets, focused efforts to reduce public debt levels, an export-oriented growth strategy, an improved security situation, high commodity prices and government policies that have engendered growing business confidence. Recent economic success culminated in 2011 in the passage of the Free Trade Agreement with the United States. Colombia is very proud of its "economic miracle", and the government now aspires to join the OECD.

Government and politics

Colombia is a republic with a democratic government, headed by the president, who is both head of state and head of government, the vice president and the council of ministers. The president is elected by popular vote to serve four-year terms (a maximum of two, though since 2006 they can be consecutive). Members of both houses of the Colombian congress are elected by popular vote, two months before the president is elected – the 102 senators on a national basis and the representatives by every region and minority group. They too serve four-year terms and can be re-elected indefinitely.

Colombia has seven major political parties – in rough order of congressional seats held in January 2011, these are: Social National Unity (U) Party, Conservative (PC) Party, Liberal (PL) Party, Radical Change

(CR) Party, National Integration (PIN) Party, Alternative Democratic Pole (PDA) Party and Green Party – and numerous smaller movements.

Colombia is divided into 32 departments plus the capital district of Bogota, which is treated as a department (Bogota also serves as the capital of the department of Cundinamarca). Departments are subdivided into municipalities, each of which is assigned a municipal seat, and municipalities are in turn subdivided into *corregimientos*. Each department has a local government with a governor and assembly directly elected to four-year terms. Each municipality is headed by a mayor and council, and each *corregimiento* by an elected *corregidor*, or local leader. At the provincial level the legislative branch is represented by department assemblies and municipal councils. All regional elections are held one year and five months after the presidential election.

Other cities which have been designated districts (in effect special municipalities) are Barranquilla, Santa Marta, Cartagena and Buenaventura. Some departments have local administrative subdivisions, where towns have a large concentration of population and municipalities are near each other (for example in Antioquia and Cundinamarca). Where departments have a low population and there are security problems (for example Amazonas, Vaupés and Vichada), special administrative divisions are employed, such as "department *corregimientos*", which are a hybrid of a municipality and a *corregimiento*.

Economy and society

The country's labour force is estimated at 21.78 million. Of those employed, 9% are believed to work in agriculture, 38% in industry and 53% in services. The country's most important industries are textiles, clothing, leather products, footwear, processed food and beverages, paper and paper products, chemicals and petrochemicals, cement, construction, iron and steel products, metalworking, coal and petroleum. Also its diverse climate and topography allows the country to benefit from a great variety of crops, including coffee, sugar cane, flowers, cacao beans, rice, cotton, and tobacco, among others (CIA World Factbook, 2010 estimates).

The national unemployment rate was 9.6% in the trimester August-October 2011. The unemployed are defined by the National Admnistrative Department of Statistics (DANE, *Departamento Administrativo Nacional de Estadística*), as people 12 years of age and older who did not work for at least one hour during the last week and who actively sought work during the last two weeks and are available to start working. In the same trimester 31.9% of the employed were regarded as "subjectively underemployed" (workers who want to earn more income, work more hours, or work in a job

more relevant to their skills) and 11.6% as "objectively underemployed" (workers with the same aspirations as the subjectively underemployed but who have taken steps to change their situation and are available for work of the desired type).

Colombia's economy has a large "informal sector", defined as including all those who work independently or in very small firms that do not have to comply with some or all the legal requirements applying to larger firms, in relation to company registration, paying taxes, registration in the national social security system and book-keeping. The 2010-2014 National Development Plan (DNP, 2011) notes that in Colombia in 2009, over 60% of workers did not contribute to social security and were thus considered part of the informal sector**.**

The country's currency is the Colombian peso (COP). In 2010 its GDP was USD 285.5 billion and its GDP per capita was USD 6 273 (World Economic Forum, 2011). The World Bank classifies Colombia as an upper middle income country, with the fourth largest economy in Latin America. The economy expanded faster than the rest of Latin America (5.0% vs. 4.1% per year) between 2002 and 2008. Following this period of broad-based economic growth, the economy was not affected too severely by the global economic crisis: it remained one of the few countries in the world with positive growth between 2008 and 2009. By 2010, the economy had largely recovered from the slowdown, although a collapse in exports to Venezuela has held back some economic expansion. GDP growth increased by 4.3% in 2010 compared with 1.5% in 2009. The main factors that cushioned Colombia and helped it to recover steadily from the effects of the global economic crisis were a responsible fiscal policy; a monetary policy based on an inflation targeting regime complemented by a floating exchange rate; and sound macro and micro prudential policies combined with a solid financial system (World Bank, 2011).

Economic growth in Colombia has been accompanied by poverty reduction. Between 2002 and 2010, poverty fell from 49.4% to 37.2%, while the proportion of the population that could not satisfy basic nutritional needs (the extreme poor) declined from 17.6% to 12.3%. The decline in poverty is commendable, but given Colombia's economic performance since 2002, the country's progress in reducing poverty falls below that of regional peers. Factors contributing to poverty in Colombia are high food prices and transport costs, in comparison with other countries in the region, and an over-protected agricultural sector (World Bank, 2011).

While poverty has been reduced, inequality remains stubbornly high. Colombia has the 7th highest Gini coefficient (0.578) worldwide, with inequality levels comparable to countries such as Haiti, Angola and South

Africa, all of which have much lower GDP per capita than Colombia. The main reason for Colombia's relative rise in the ranks of inequality is that other countries are becoming more equal. This is particularly true for other upper-middle income economies in Latin America, such as Brazil. Another important reason is limited fiscal redistribution, in terms of taxation and transfers, by Colombia's government. In 2008 almost 80% of all monetary transfers benefited the richest 20% of the population, while the poorest quintile received only 3% (Núñez Méndez, 2009; World Bank, 2011).

Another reason why inequality remains high is that Colombian labour markets have been unable to translate growth into widespread access to high quality jobs. Unemployment and informality in Colombia are among the highest in the region, driven by relatively high minimum wages (relative to Colombia's GDP per capita), high non-wage labour costs, and high payroll taxes as a fraction of wages. Gender inequality in the labour force contributes directly to inequality and to further labour market rigidities. High inequality levels are also reflected in relatively low levels of social mobility in Colombia, compared to Mexico, Peru and especially the United States (World Bank, 2011).

Disparities across and within the departments of Colombia are significant. This is one of the main issues mentioned in the National Development Plan 2010-2014. For instance, per capita income in Bogota is five to six times higher than that of the departments of Chocó and Vaupés; also, while the percentage of the population with unsatisfied basic needs is less than 20% in Bogota, in the Departments of La Guajira, Vichada, and Chocó this percentage is greater than 65%. Therefore, considerable differences are found in many areas, such as education. The rate of illiteracy exceeds 20% in the Departments of La Guajira, Chocó, Guaviare, Vaupés, and Vichada, while in Bogota, the Departments of Atlántico, Quindío, Risaralda, San Andrés or Valle del Cauca this rate is close to 6%. Furthermore, inequity within departments is alarming. For instance, within the Department of Bolívar, while the percentage of population with unsatisfied basic needs in Cartagena is 25%, this proportion is more than 76% in twelve municipalities of the same department such as San Jacinto, El Carmen de Bolívar and Santa Rosa.

In the World Economic Forum's (WEF) 2011-12 *Global Competitiveness Index*, Colombia ranked 68th of 142 countries, the same position as the previous year but with an improved score. Colombia's overall ranking was below those of Chile (31), Panama (49), Brazil (53), Mexico (58), Uruguay (63) and – by a whisker – Peru (67), but significantly above those of Argentina (85), Ecuador (101), Bolivia (103), Paraguay (122) and Venezuela (124). Overall, the country's competitiveness rankings are fairly typical of what the World Economic Forum calls "efficiency driven

economies". As the WEF report noted, the country's competitive strengths include a sound and stable macro-economic environment characterised by a low inflation rate and manageable levels of public debt and deficit; an improving education system; and a large domestic market. On the other hand, the report noted that despite the government's sustained efforts to improve social pacification and eradicate organised crime, security concerns remain very high on the list of factors dragging down the country's competitive potential; and that Colombia also needs to improve regulation and transport infrastructure. The four most problematic factors for doing business identified in the WEF's survey of Colombian executives were: corruption; inadequate infrastructure; inefficient government bureaucracy; and difficulties in accessing financing.

The country's official language is Spanish, and 90% of the population is Roman Catholic. Life expectancy is 74.55 years (71.3 for men, 78 for women) (CIA World Factbook, 2011 estimates). The population is concentrated in the Andean highlands and along the Caribbean coast. The nine eastern lowland departments, comprising about 54% of Colombia's area, have less than 3% of the population and a density of less than one person per square kilometre. Traditionally a rural society, movement to urban areas was very heavy in the mid-twentieth century, and now over 75% of the population live in urban areas (CIA World Factbook, 2010 figures). Over 7.5 million people live in the capital Bogota while Medellin and Cali have populations of over two million people each, and Barranquilla is home to over one million. Sixty-two other Colombian cities have populations of 100 000 or more.

Colombia's education system

The Constitution of 1991 defined education in Colombia as a civic right and a public service, with a social function. It made school compulsory from five until fifteen.

Colombian children go to pre-school up to the age of 5; primary education from 6-10 (grades 1-5); lower secondary education from 11-14 (grades 6-9); and upper secondary education from 15-16 (grades 10-11). Colombia has both public schools, which are attended by 85% of secondary pupils, and private schools, which are attended by 15% of secondary pupils.[2] From 2012, public schools are free until the end of upper secondary schooling, though previously they were free only until the end of primary schooling; private schools are fee-paying. Table 1.1 shows gross and net enrolment rates. The gross enrolment rates are much higher than the net enrolment rates, indicating a considerable degree of repetition (*i.e.* making under-performing students repeat school years) in the system. The review team understands that the Colombian government tried to reduce the amount of repetition by issuing a decree limiting it to 5% of pupils; but repealed the

decree when it became clear that pupils were reaching higher classes without the preparation to succeed there. Another issue in Colombia is that a large percentage of students do not enter the first grade on time.

Table 1.1 **Net and gross enrolment in the Colombian education system, 2010 (%)**

Education level	Net enrolment rate	Gross enrolment rate
Preschool (ages 3 to 5, grade 0)	61.8	89.4
Primary (ages 6 to 10, grades 1 to 5)	89.7	117.4
Lower secondary (ages 11 to 14, grades 6 to 9)	70.8	103.7
Upper secondary (ages 15 to 16, grades 10 to 11)	41.6	78.6
Tertiary (ages 17 to 21)	N/A	37.2

*Notes***:**

(1) Gross enrolment rate (UNESCO definition): total enrolment in a specific level of education, regardless of age, expressed as a percentage of the eligible official school-age population corresponding to the same level of education in a given school year. For the tertiary level, the population used is that of the five-year age group following on from secondary school leaving.

(2) Net enrolment rate (UNESCO definition): enrolment of the official age group for a given level of education expressed as a percentage of the corresponding population.

Source: MEN.

Since 2002, when the government of Colombia committed itself to a major education improvement programme called the Education Revolution (*Revolución Educativa*), coverage has been improving in all phases, but particularly in secondary education – between 2002 and 2009 net enrolment rates rose from 57.1% to 70.5% in lower secondary and from 29.5% to 39.8% in upper secondary. However, as the figures in Table 1.1 clearly show, substantial numbers are still not reaching the end of upper secondary schooling. Low coverage tends to be associated with rural rather than urban areas: upper secondary education is not offered in many rural areas, meaning that students must travel long distances if they are to continue to this level. Also, in the period to which the figures in Table 1.1 relate, the fees chargeable in the upper secondary phase, even by public schools, could well have been a disincentive to staying on.

Upper secondary education may be completed in either academic or vocational streams or schools. The Colombian school-leaving qualification is the *Bachillerato/Diploma de Bachiller,* broadly equivalent to a US high school graduation certificate. The graduation certificate is awarded by the student's school if teachers at the school consider the student's grades to be satisfactory. All students who wish to go on to a tertiary education

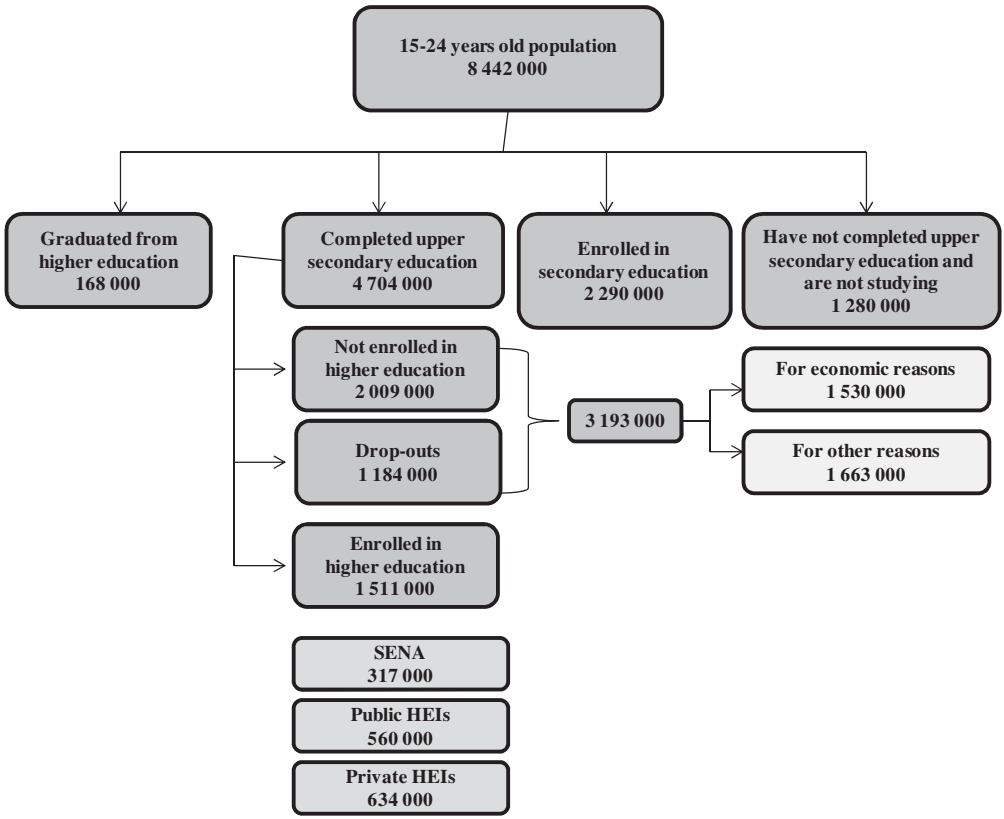
institution must also have taken a national exam set by the Colombian Institute for Educational Evaluation (ICFES, *Instituto Colombiano para la Evaluación de la Educación*) for 11th grade students (formerly known as the ICFES test and now officially known as SABER 11). However, schools may not take the test results into account when deciding whether or not to award a graduation certificate. As Table 1.1 shows, the gross enrolment rate in upper secondary education is just over 75%. The numbers who graduate from the 11th grade rose from 414 424 in 2002 to 691 852 in 2009, a 67% increase over 7 years (MEN, 2010). In 2010, 570 846 young people took the SABER 11 test.[3] Those who have both achieved a school graduation certificate and taken the SABER 11 test constitute the base population for entry to tertiary education.

Figure 1.1 shows what stage of education the 8 442 000 young people aged 15-24 in Colombia in 2010 had reached. Of the 15-24 year olds, 15.2% had not completed secondary education and were no longer studying; 27.1% were still in secondary education; 23.8% had left secondary education but never entered tertiary education; 17.9% had entered tertiary education and were still there; 14% had entered tertiary education but dropped out before graduating; and 2% had both entered tertiary education and graduated from it. Among the 37.8% who had either not entered tertiary education or had entered but then dropped out, 18.1% gave economic/financial reasons, 19.7% gave other reasons. Among the 17.9% who had entered tertiary education and were still there, 3.8% were in SENA centres, 7.5% were in private tertiary institutions and 6.6% were in (other) public tertiary institutions.

Standards in Colombian secondary education, according to international comparisons

The World Economic Forum's 2011-12 Global Competitiveness Report included rankings on a number of indicators relevant to education, training and research. Compared to its overall ranking of 68, Colombia ranked relatively well on university-industry collaboration on R & D (43), secondary enrolment (47), quality of management schools (53) and capacity for innovation (59); about the same for tertiary enrolment (64), internet access in schools (68), quality of scientific research institutions (69), brain drain (69), availability of research and training services (70) and quality of the education system (72); and less well on availability of scientists and engineers (77), quality of primary education (80), quality of math and science education (83), extent of staff training (84), net primary enrolment (100) and the ratio of women to men in the workforce (122, though the data underlying this indicator has now been questioned).

Figure 1.1 **Educational stages of young people aged 15-24**



Source: *Programa Colombiano de Crédito Educativo: Impactos y Factores de Éxito*, ICETEX, December 2010, p. 41.

The government of Colombia is keen to raise its national education performance to the levels typical of OECD member countries and committed to learning from international experience. International comparisons suggest that the performance of Colombia's secondary students has some way to go to reach average OECD standards. Students' chances of entering and completing the tertiary programmes of their choice depend very much on the educational standards they have achieved by the end of secondary education; therefore it is worth looking in some detail at Colombia's results in international comparative studies of secondary students' performance.

In 2009 Colombia participated for the second time in OECD's Programme for International Student Assessment (PISA). PISA is a triennial survey of the knowledge and skills of 15-year-olds. It has been designed to

allow valid comparisons across countries and cultures. PISA 2009 (OECD, 2010) focused particularly on reading but also covered maths and science. PISA performance scales are constructed so that for each of the three subjects, the mean score among OECD member countries is around 500, with about two-thirds of students scoring between 400 and 600 score points. A difference of 39 points equates to a year of schooling.

In the main domain tested, *reading*, Colombian students achieved a mean score of 413. This is 80 points below the OECD average of 493, indicating that at age 15 Colombia's students lag behind students in an averagely-performing OECD country such as the United Kingdom, by the equivalent of two years of schooling. When citing PISA rankings, OECD prefers to cite a range bounded by the highest and lowest possible rank where there is any statistical uncertainty. Colombia ranked 50th-55th among the sixty-five participating countries. Therefore Colombia's 15-year-olds performed less well than those in Chile (449, 44th), Uruguay (426, 46th-50th) and Mexico (425, 46th-49th); similarly to those in Brazil (412, 51st-54th); and significantly better than those in Argentina (398, 55th-59th), Panama (371, 61st-64th) and Peru (370, also 61st-64th).

In *mathematics*, the OECD average score was 496. Colombian students achieved a mean score of 381, or nearly three years' schooling behind an averagely-performing student in France, giving the country a rank of 56th-59th. Three Latin American participants scored significantly higher in maths: Uruguay (427, 45th-49th), Chile (421, 47th-51st) and Mexico (419, 49th-51st). Two, Argentina (388) and Brazil (386), scored higher but not significantly so. The remaining two, Peru (365) and Panama (360) scored significantly below Colombia. It is perhaps worth noting that all Spanish and Portuguese-speaking countries in PISA 2009 were further below the OECD average in maths than they were in reading.

In *science,* the OECD average score was 501. Colombian students achieved a mean score of 402, or two and a half years' schooling behind an averagely-performing student in the United States, giving the country a rank of 53rd-58th. Chile was Latin America's best-performing country in science (447, 43rd-45th), followed by Uruguay (427, 47th-49th) and Mexico (416, 50th-51st). The scores of Brazil with 405 (52nd-56th) and Argentina with 401 (53rd-59th) were not significantly different from Colombia's. Panama (376) and Peru (369) again lagged behind.

An in-depth analysis by the World Bank of the PISA 2009 results of the eight Latin American participants (Garcia-Moreno *et al*., 2011) notes that Colombia's results show big improvements since PISA 2006:

- In all subjects, Colombia's PISA 2009 scores showed statistically significant improvements over PISA 2006. Mean scores rose by

28 points in reading, 11 points in maths and 14 points in science. These gains are all the more impressive given the 6 percentage point increase in secondary education coverage between 2006 and 2009.

- Between 2006 and 2009, Colombia significantly reduced the numbers of low achievers, particularly in reading. Student scores are grouped into seven proficiency levels, with level 6 representing the highest scores and below level 1 the lowest scores. In each subject, level 2 is the baseline level. The proportion of Colombia's sample scoring below level 2 fell from 55.7% to 47.1% in reading, from 74% to 70.4% in maths and from 61% to 54.1% in science. However, Colombia's latest results still fall some way short of OECD averages: 18.8% below level 2 in reading, 22% below level 2 in maths and 18% below level 2 in science.

- Between 2006 and 2009 the difference between the best and worst five per cent of Colombia's PISA test-takers narrowed – by 48 points in reading, 37 points in maths and 11 points in science. This, combined with the fact that the average score of the lowest performing students rose in all three subject areas, indicates that both equity and quality of education improved over the period. Indeed, Colombia shows the smallest equity gap of all the Latin American participants in PISA 2009.

- Colombia's improvement in reading scores between PISA 2006 and PISA 2009 was the biggest in Latin America and put it among the top six countries in the world for improvement.

Despite the impressive recent progress, PISA 2009 outcomes show that there is still substantial room for quality improvements in the secondary education system which prepares Colombian students for tertiary education, employment and their future lives. Concerns include:

- The large numbers of 15-year-olds who scored below PISA level 2 – the baseline level – in one or more subject areas. Young Colombians with PISA scores below level 2 will have real difficulty achieving the standards required to function effectively in tertiary education and skilled jobs. This is particularly so because in the Colombian system young people leave secondary school after the 11th grade, at age 16 if in the age-appropriate year group, and thus many students have just one more full year of secondary education after the year in which PISA tests are typically taken – see description of Colombia's education system below.

- The very few 15-year-olds who scored at the highest levels, levels 5 and 6. Across the OECD, 7.6% did so in reading, 12.7% did so in maths and 8.5% did so in science. In Colombia, the equivalent figures were 0.5%, 0.1% and 0.1%, respectively.
- In maths, compared to other middle-income countries in PISA 2009 (Brazil, Argentina, Mexico, Uruguay, Montenegro, Romania and Bulgaria), Colombia had the lowest mean score of all – though, as mentioned above, the differences are not significant in the cases of Brazil and Argentina.
- Girls in secondary schooling in Colombia are further behind boys in mathematics and science, and less far ahead of boys in reading, than in any other PISA 2009 country:
  - In reading, girls outperformed boys in all participating countries and regions: the difference averaged 39 points across the OECD. However Colombia had the smallest difference of any of the 65 PISA 2009 participants – just 9 points, less than half of the difference in Chile and Peru, the two countries with the next smallest gender gaps. Though most Latin American countries have a smaller gap than average, as does Spain, Uruguay's bigger gap of 43 points proves that this need not be so.
  - In mathematics, by contrast, boys outperformed girls in most countries. The OECD average gender gap was 12 points in boys' favour. In Colombia the gap was 32 point in boys' favour, the biggest gap of any participating country. Of the other Latin American countries, Argentina's gap was less than the OECD average and in Panama, though boys outperformed girls, the difference between them was not statistically significant.
  - In science, there was no significant gender gap across the OECD, but there was in Colombia, where girls performed, on average, 21 points below boys. In no other participating country were girls at such a disadvantage. It is worth noting that girls outperformed boys in science in three Latin American countries, Uruguay, Panama and Argentina (although not by statistically significant margins).

The scale of Colombian girls' relative under-performance in secondary education will not only be dragging down the country's scores in international comparisons, but also leaving many girls less well-prepared than their male counterparts to compete for places in tertiary education and for future employment. This may contribute to low participation of women in the workforce in Colombia.[4]

Colombia has also participated in other international assessments of student performance, such as the Trends in International Mathematics and Science Study (TIMSS) of the International Association for the Evaluation of Educational Achievement (IEA). The most recent TIMSS results available are from 2007. They will not reflect all the quality improvement Colombia had achieved in secondary education by the time of PISA in 2009, but the results give the same key messages:

- Colombian students' average scores were some way below the scale average, which in TIMSS is 500. Fourth grade students (aged 10) scored 355 in maths, coming 30th out of 36 participating countries, and 400 in science, coming 29th. Eighth grade students (aged 14) scored 380 in maths, coming 40th out of 48 countries, and 417 in science, coming 39th.

- Colombia did however achieve dramatic improvement between the two TIMSS assessments in which the country had participated, 1995 and 2007. Only Colombia's eighth graders had participated in both years, but they demonstrated the biggest score increase of any participating country in maths (+47 points) and the second biggest score increase after Lithuania in science (+52 points).

- In all four TIMSS tests – 4th and 8th grade maths and 4th and 8th grade science – results showed more difference in favour of boys in Colombia than in any other participating country.

Tertiary education: institutions

This report will use the term "tertiary education" to encompass all the post-secondary formal education which Colombians call "e*ducación superior*", though the literal translation of this is 'higher education'. Traditionally, the term higher education referred only to academic education leading to degree qualifications, and was considered a subset of tertiary education, which also encompasses every other form of education leading to qualifications above the level of secondary schooling, such as vocational and technical education. Throughout the world, and certainly in Colombia, distinctions between tertiary and higher education are blurring. The government of Colombia has asked that this review cover education in both universities and the range of other institutions which provide technological and/or professional-technical training; and the review team believes that all forms and levels of tertiary education, university and non-university, have an important place in the system and in Colombia's future. Therefore this report will in general refer to tertiary rather than higher education.

There are four types of tertiary institution in Colombia:

1. Universities – these offer academic undergraduate programmes and graduate programmes leading to master's and doctoral degrees, and engage in scientific and technological research.
2. University institutions – these offer undergraduate programmes up to professional degree level and a type of graduate programme known as "specialisation" (a level of career-related qualification above bachelor's but below master's level).
3. Technological institutions – these offer programmes up to technologist level (distinguishable from professional technical level by their scientific basis), and may go beyond this to professional degree level provided the programmes in question are taught as "propaedeutic cycles". In the Colombian context this means that students proceed to their professional degree via first a technical, then a technological qualification conferring progressively wider and higher-level knowledge and skills in the same subject area.
4. Professional technical institutions – these offer professional/technical level training for a particular job or career.

A high school graduation certificate is the basic requirement for entry to tertiary institutions of the first three types. However, every institution decides its own admission standards and processes. Most (78%) use the results of the SABER 11 test, but most of these (72%) use the test in combination with other criteria.[5] As the SABER 11 test has no specific pass-mark, each institution sets its own minimum. Some institutions specify minimum grades in school graduation certificates, or require students to have taken particular subjects. Some set their own tests. Some interview candidates. Many use a mixture of methods. In Chile and a number of European countries, there is a national body co-ordinating the application processes of different institutions and/or acting as a clearing house for offers of places; no such body exists in Colombia, so students complete multiple applications to comply with the individual requirements of their chosen schools.

Table 1.2 shows the number of Colombian tertiary institutions, public and private, in each category in 2010. Figures in brackets show how the numbers in 2011 differ from those of 2007. It would appear that in both public and private sectors the numbers of higher-level tertiary institutions have risen while the numbers of technological and technical (T&T) institutions focusing on preparation for the labour market have fallen. It is not clear whether former T&T institutions have closed or been absorbed into larger institutions, or whether there has been "mission creep" and they have become higher-level institutions.

Table 1.2 **Tertiary institutions in 2011**

	Public 2011 (change from 2007)	Private 2011 (change from 2007)	Total 2011 (change from 2007)
Universities	32 (no change)	48 (+ 4)	80 (+ 4)
University institutions	27 (+ 4)	88 (+ 16)	115 (+ 20)
Technological institutions	12 (- 4)	42 (- 1)	54 (- 5)
Professional technical institutions	9 (-2)	30 (- 8)	39 (- 10)
Total	80 (-2)	208 (+ 11)	288 (+ 9)

Source: Background Report (MEN, 2011*a*).

Numbers in Table 1.2 exclude the training centres run by the following:

- SENA, the *Servicio Nacional de Aprendizaje* (National Training Service). SENA's main objective is to promote productive activities that contribute to the social, technological and economic development of the country. It is financed by a levy on employers of 2% of their payroll and has a number of functions, including running the public employment service. SENA provides a wide range of training programmes fee-free to learners, and enrols millions of people every year, though the vast majority are not in tertiary degree programmes. In 2010 SENA had 116 training centres. Table 1.3 breaks down SENA's total enrolment; only the T&T provision, which accounted for less than 4% of total enrolment in 2011, is tertiary. Labour technician training is at the level below professional technical; complementary training is mostly courses arranged for employers, but also training programmes for the unemployed and vulnerable groups. SENA has expanded its coverage remarkably over the last decade, including T&T enrolment. Although SENA enrolment in T&T accounts for 55% of total T&T students in the country, the institution itself remains primarily a provider of training services.
- The CERES, Regional Centres of Higher Education (*Centros Regionales de Educación Superior).* These centres were launched in 2003 with the aim of expanding educational opportunities for under-served regions. CERES programmes rely on regional resource-sharing partnerships between education institutions, government (national and local), the productive sector and, on occasion, SENA. Each CERES is run by one of the tertiary education institutions in the partnership. By 2010 164 CERES centres had been created in 31 departments; the 155 in operation had enrolled a total of 34 799 students, or just over 2% of the total enrolled undergraduate students.

Table 1.3 **SENA enrolment**

Programme type	2003	2004	2005	2006	2007
T&T and above	48 123	93 029	97 468	141 765	197 486
Labour technician	144 408	172 965	258 145	292 120	283 544
Complementary	2 070 851	2 698 805	3 497 739	3 714 924	4 672 158
Total	2 263 382	2 964 799	3 853 352	4 148 809	5 153 188

Programme type	2008	2009	2010	2011
T&T and above	249 654	255 422	296 686	353 104
Labour technician	322 999	509 463	667 544	666 389
Complementary	5 470 775	7 155 388	7 251 686	7 910 207
Total	6 043 428	7 920 273	8 215 916	8 929 700

Source: SENA, Sofía Plus. Disaggregation of tertiary figures (T&T and above) is from additional background data provided by MEN and SENA to the review team.

There are also some "virtual" tertiary programmes, offering 80% or more of content online, available at undergraduate (including T&T) and graduate level. The Colombian government is encouraging more institutions to offer online options as a means of increasing participation by students in remote areas. By 2009, 36 institutions offered such programmes, with over 4 000 students enrolled.

The structure of the tertiary education system, and the parts played in its governance by both the institutions and national agencies, are considered further in Chapter 2.

Tertiary education: students

Table 1.4 shows enrolment from 2002 to 2010. Undergraduate numbers have grown every year throughout the period, both on technical and technological programmes and on bachelors' degree programmes, as has the undergraduate coverage rate – from 24.4% to 37.1% over the period. This growth is impressive, but Colombia still has some way to go to reach the coverage rate of most OECD members: Table 1.5 shows comparable figures for a selection of OECD countries.

Table 1.4 **Tertiary students enrolled, 2002-2010**

	2002	2003	2004	2005	2006
Technical and technological (percentage of undergraduate total)	183 319	215 285	263 375	295 290	347 052
	(19.55)	(21.60)	(24.77)	(25.95)	(28.45)
Bachelor's	745 570	781 403	799 808	842 482	872 902
Total undergraduate (coverage as percentage of population 17- 21)	937 889	996 688	1 063 183	1 137 772	1 219 954
	(24.43)	(25.65)	(26.96)	(28.44)	(30.01)
Specialisation	55 133	43 783	39 893	45 970	47 506
Master's	6 776	8 978	9 975	11 980	13 099
Doctoral	350	583	675	968	1 122
Grand total	1 000 148	1 050 032	1 113 726	1 196 690	1 281 681

	2007	2008	2009	2010
Technical and technological (percentage of undergraduate total)	394 819	462 646	482 505	**542 358**
	(30.22)	(32.47)	(32.31)	**(34.16)**
Bachelor's	911 701	961 985	1 011 021	**1 045 570**
Total undergraduate (coverage as percentage of population 17- 21)	1 306 520	1 424 631	1 493 525	**1 587 928**
	(31.68)	(34.07)	(35.26)	**(37.05)**
Specialisation	40 866	44 706	54 904	**60 358**
Master's	14 369	16 317	20 386	**23 808**
Doctoral	1 430	1 532	1 631	**2 326**
Grand total	1 363 185	1 487 186	1 570 447	**1 674 420**

Source: Background Report (MEN, 2011*a*).

Table 1.5 **Coverage rates in selected OECD countries, 2008 (%)**

Country	Coverage rate	Country	Coverage rate
Korea	98.1	Hungary	65.0
Finland	94.4	Portugal	60.2
United States	82.9	Czech Republic	58.3
New Zealand	78.5	Japan	58.0
Denmark	78.1	United Kingdom	57.4
Australia	76.9	Austria	54.7
Norway	73.2	France	54.6
Sweden	71.1	Slovakia	53.6
Spain	70.6	Switzerland	49.4
Poland	69.4	Turkey	38.4
Italy	67.2		

Source: UNESCO, reproduced in MEN summary statistics.

The percentage of undergraduates enrolled in technical and technology programmes in Colombia has also grown every year except for a small reverse in 2009 – from 19.55% to 34.16% over the period. This is despite the fall Table 1.2 shows in numbers of professional and technical and technological institutions between 2007 and 2010. One explanation is that SENA provision in its own centres expanded, from 197 486 (49.4% of the T&T total) in 2007 to 296 686 (54.7% of the total) in 2010; but enrolment in other tertiary institutions expanded too, from 197 333 in 2007 to 245 672 in 2010.

Every type of graduate enrolment increased over this period too. Numbers on specialisation programmes fell, rose, fell and rose again but were 9.5% higher in 2010 than in 2002. Numbers on master's and doctoral programmes grew every year: by 2010 master's enrolment was over 250% higher and doctoral enrolment nearly 550% higher than in 2002.

Of the growth in total enrolment over this period, 75.7% was in public institutions, including SENA centres, and 24.3% in private institutions. Whereas 41.7% of students were enrolled in public institutions in 2002, by 2010 the figure was 55.4% (*Background Report* [MEN, 2011*a*]). Between them, the tertiary institutions of Colombia were offering nearly 11 000 programmes in August 2011.[6]

The distribution between disciplines of students who graduated from tertiary institutions excluding SENA in the period 2001-2010 was:

- Economics, management and accounting – 30.5%
- Engineering, architecture, urban planning and related degrees – 23.4%
- Social and human sciences – 19.3%
- Education – 11.4%
- Health – 9.0%
- Arts – 3.4%
- Mathematics and natural sciences – 1.6%
- Agronomy, veterinary and related degrees – 1.4%.[7]

Some students have a wider choice of tertiary institution than others. Places are not evenly distributed across Colombia's many and geographically varied departments and municipalities. Unsurprisingly, thinly-populated rural and jungle regions are least well-served. Table 1.6 shows gross enrolment rates by department 2002-2010. By the end of the period, all except two departments had places for at least 10% of the 17-21 age group. However, percentages ranged from 4.2% in Vaupés and 9.9% in Vichada (both in the Amazon jungle) to 50.4% in Quindío (between the cities of Bogota, Medellin and Cali) and 73.7% in Bogota.

Table 1.6 **Gross tertiary enrolment by department (%)**

Department	2002	2003	2004	2005	2006	2007	2008	2009	2010
Amazonas	1.5	4.0	5.1	4.4	6.4	6.5	6.5	12.4	13.3
Antioquia	26.6	28.0	29.6	31.3	33.3	33.1	35.1	39.6	40.9
Arauca	1.6	1.7	3.0	3.2	4.5	8.6	12.5	14.0	12.7
Atlántico	34.0	32.2	32.2	34.9	35.2	36.0	36.5	33.4	37.9
Bogota	55.4	55.5	59.9	61.3	66.8	63.0	68.3	71.7	73.7
Bolívar	13.2	17.9	18.3	18.5	18.3	22.2	24.9	21.8	28.0
Boyacá	21.0	22.5	23.1	26.3	25.7	33.7	36.5	37.4	39.7
Caldas	22.4	23.2	25.0	26.5	26.2	29.3	28.3	33.7	35.0
Caquetá	7.6	7.5	8.9	12.2	14.8	20.3	22.5	26.1	19.1
Casanare	2.6	4.5	5.0	8.2	9.9	18.4	26.0	26.1	23.8
Cauca	12.8	13.5	15.1	15.8	16.4	20.1	22.1	23.2	26.6
Cesar	10.9	11.7	12.0	14.0	15.5	19.2	21.0	25.0	21.6
Chocó	19.1	17.0	18.4	19.3	22.0	19.3	19.5	22.1	25.8
Córdoba	11.1	12.1	12.5	12.7	15.2	17.6	17.4	10.9	17.0
Cundinamarca	11.5	13.4	13.6	13.8	14.8	15.9	18.8	21.4	21.1
Guainía	N/A	0.0	3.3	4.2	9.7	17.0	19.4	14.0	11.5
Guaviare	N/A	0.0	1.7	3.1	7.3	11.6	13.0	14.2	12.8
Huila	11.5	13.7	14.4	16.2	17.0	21.1	23.3	26.0	25.7
La Guajira	13.0	13.2	12.8	14.3	15.3	14.6	17.7	20.8	17.5
Magdalena	6.7	7.9	9.4	11.5	13.0	21.5	23.1	24.6	20.5
Meta	13.2	14.2	14.1	17.9	20.0	24.9	26.5	25.3	24.4
Nariño	10.6	11.0	10.6	11.9	12.2	16.6	17.5	18.9	18.3
Norte de Santander	21.9	26.9	25.9	29.0	26.2	36.6	39.8	42.2	42.8
Putumayo	2.8	3.3	4.2	4.1	5.1	6.1	9.1	6.8	11.5
Quindío	22.7	25.0	25.3	24.6	29.6	40.6	47.8	49.4	50.4
Risaralda	17.6	21.0	24.2	26.6	28.7	35.3	39.4	37.1	42.2
San Andrés	18.1	7.1	9.4	7.2	12.2	18.7	19.2	17.3	25.7
Santander	31.2	32.2	34.4	36.1	36.1	39.7	44.8	38.2	48.0
Sucre	9.2	10.6	9.1	10.7	11.4	14.8	17.3	17.2	17.0
Tolima	18.1	25.8	27.6	27.9	27.9	24.2	26.5	26.5	25.6
Valle del Cauca	23.8	22.9	23.2	24.3	24.7	26.5	27.8	29.7	31.7
Vaupés	N/A	0.0	0.7	2.7	4.1	12.0	7.8	9.6	4.2
Vichada	N/A	0.0	0.5	2.0	2.7	7.6	8.3	10.9	9.9
National Total	24.5	25.6	27.0	28.4	30.0	31.7	34.1	35.3	37.1

Source: MEN, SNIES.

Dropout rates from Colombian tertiary education are regarded by the Ministry of National Education as unacceptably high, though they have come down from 48.4% of students failing to complete their programmes in 2004 to 45.4% in 2010, and the Latin American and Caribbean average is 50% (*Background Report* [MEN, 2011*a*]). The government of Colombia set up a special monitoring tool, known as SPADIES (see below), to track the incidence of dropout and the factors associated with it. SPADIES information helps institutions to identify which of their students are most potentially vulnerable and to take preventive measures.

However those who complete their courses find that tertiary education makes a considerable difference to future earnings, and that the higher their education level, the more they earn, as Table 1.7 shows. Average starting earnings for an individual with a bachelor's degree are almost four times as high as those of high school graduates. Although the figures below do not control for unobservable factors such as ability or self-selection, World Bank estimates show that returns to tertiary education in Latin America are high by international standards, and Colombia is no exception (Gasparini *et al.*, 2011). As economic theory predicts, returns decline as the supply of new graduates increases, but the rate of the decline is slower than the rate of growth of new graduates.

Table 1.7 **Average monthly earnings by education level**

Highest education level achieved	Average monthly earnings of 2009 graduates at 2010 prices (USD[1])
High school certificate	220
Technician title	507
Technologist title	590
Bachelor's degree	804
Specialisation	1 508
Master's degree	1 896
Doctorate	2 930

Notes:

(1) USD exchange rate of 2 April 2012: COP 1 792/USD.

Data from Labour Observatory for Education (OLE, *Observatorio Laboral para la Educación*) do *not* include SENA graduates.

Source: MEN estimates based on Labour Observatory for Education (OLE); data for high school earnings are DNP-DDS-SESS (*Departamento Nacional de Planeación*, *Dirección de Desarrollo Social*, *Subdirección de Educación*, *Subdirección de Salud*) estimates based on DANE-GEIH (*Departamento Administrativo Nacional de Estadística-Gran Encuesta Integrada de Hogares*) of July-September 2010 and represent all workers with a high school certificate as the highest level achieved.

Chapter 3 considers access to and retention in Colombian tertiary education, whether tertiary opportunities are equitably distributed and the impact of the student support system.

Tertiary education: national agencies

The Ministry of National Education (MEN, *Ministerio de Educación Nacional*), first appeared in the government structure in 1886. Today it sees its role as managing and overseeing every stage in the formation of human capital in Colombia.

Within the MEN is the Vice-Ministry of Higher Education (*Viceministerio de Educación Superior*), established in 2003. The Vice-Ministry is in charge of applying national policies on higher education and planning for and overseeing the sector. Internally it divides into two main offices, the Directorate of Higher Education Promotion (*Dirección de Fomento de la Educación Superior)* and the Directorate of Higher Education Quality (*Dirección de Calidad de la Educación Superior).* The Directorate of Higher Education Promotion's responsibilities include: strategies for developing human capital; expanding the supply and improving the regional distribution of tertiary places; improving retention; promoting technical and technological education; and tertiary funding, efficiency and information systems. The Directorate of Higher Education Quality is concerned with quality improvement; developing the current quality assurance system; strengthening the development of undergraduate programmes, including the extent to which they are based on generic and specific competences; and "preventive and corrective" monitoring and control.

The National Council of Higher Education (CESU, *Consejo Nacional de Educación Superior)*, established in 1992, is an advisory body of the Ministry of National Education. Its members are from the tertiary education (TE) community, not ministry officials. It arranges bi-monthly meetings where they discuss relevant matters such as the creation of new tertiary institutions, what to do about problem institutions or the approval of postgraduate programmes.

The National Intersectorial Commission for Higher Education Quality Assurance (CONACES, *Comisión Nacional Intersectorial de Aseguramiento de la Calidad de la Educación Superior)*, is a consultative institution of the Ministry. It advises on quality assurance issues and specifically on whether institutions and individual degree programmes should be included in the Qualified Registry (*Registro Calificado)*: members are divided by subject area, and peer reviewers assist in the evaluation process. CONACES also advises on quality improvement policies, on the recognition of foreign qualifications and on the legislative framework for tertiary education.

The National Accreditation Council (CNA**,** *Consejo Nacional de Acreditación*), is another consultative institution of the Ministry, advising mainly on applications institutions submit for "high quality accreditation", for the institution or for individual programmes. The council consists solely of academic members nominated by the CESU and bases its operations on CESU guidelines.

The Administrative Department of Science, Technology and Innovation (acronym DACTI, *Departamento Administrativo de Ciencia, Tecnología e Innovación*, though the name COLCIENCIAS is still much more widely used in Colombia and is used in this report), works closely with higher education institutions. COLCIENCIAS aims to promote policies that increase scientific research and the production of knowledge, and provides funding for many scientific research projects conducted in universities and university institutions.

The Colombian Institute for Educational Evaluation (ICFES, *Instituto Colombiano para la Evaluación de la Educación*)**,** is responsible for evaluation at all levels of education. It designs and manages four different tests. SABER 5 is taken at the end of primary school, SABER 9 at the end of lower secondary school. Then, as already mentioned, at the end of the 11th rade every student who may wish to enter tertiary education takes the SABER 11 test. SABER 11 includes evaluation in core subjects – Spanish, mathematics, biology, chemistry, physics, philosophy, social sciences and foreign languages – and a flexible component where deeper knowledge is required, either of a specific core subject or of cross-cutting problems related to Colombian society and the environment. As undergraduates taking bachelors' degrees reach the end of their programmes, they take another test, formerly known as ECAES but now officially known as SABER PRO. This test, incorporating several different tests for different fields of knowledge, is intended to evaluate the quality of higher education and is mandatory as of 2009. Its results show not only the attainment levels of students in different institutions, but also – when compared to their SABER 11 scores at the end of upper secondary school – the distance they have travelled since joining those institutions, in other words the value those institutions have added.

The Colombian Institute of Educational Credit and Technical Studies Abroad (ICETEX, *Instituto Colombiano de Crédito Educativo y Estudios Técnicos en el Exterior*), aims to promote enrolment in tertiary education and increase coverage by providing financial support to less affluent students. ICETEX was set up initially to provide students with loans to access higher education abroad; it still manages most support to graduates studying abroad, all bilateral programmes through which foreign governments give scholarships to Colombians and all arrangements for

short-term study visitors from abroad. However, its mission has now expanded to offer a wider range of support mechanisms addressed mainly to domestic students.

The National Training Service (SENA, *Servicio Nacional de Aprendizaje*) has already been mentioned. Though attached to the Ministry of Labour rather than the the Ministry of National Education, SENA has had great influence on the professional technical and technological education of Colombians during the last decade. By 2010, over 55% of professional technical and technological enrolment was in SENA centres.[8]

Tertiary education: national information systems

The National System of Higher Education Information (*Sistema Nacional de Información de la Educación Superior*), SNIES, gathers and is the official source of data from tertiary education institutions on enrolment, number of applicants, number of graduates, finance structure, internationalisation, student welfare etc. The system includes data on all research and investigation done by higher education institutions: COLCIENCIAS keeps similar information, but only for the projects it funds.

The Higher Education Quality Assurance Information System (SACES**,** *Sistema para el Aseguramiento de la Calidad de la Educación Superior*), keeps track of the programmes on the Qualified Registry and the programmes and institutions granted high quality accreditation.

The Higher Education Institutions Dropout Prevention and Analysis System (SPADIES, *Sistema de Prevención y Análisis de la Deserción en las Instituciones de Educación Superior*) tracks higher education students, their socio-economical and academic characteristics. Through SPADIES it is possible to identify the variables that have a significant influence on the drop-out rate of every institution and thus formulate policies to improve the efficiency of the higher education sector.

The Labour Observatory for Education (OLE, *Observatorio Laboral para la Educación*), tracks graduates from the tertiary system once they enter the labour market, to establish their later employment history and earnings and so shed light on the relevance of their study programmes. Results by degree programme and by institution are published.

The quality and relevance of tertiary education

Dramatic expansion of higher education during the 1990s made quality a major issue in Colombia. The current quality assurance mechanisms were mainly set up from 1998 onwards. The main mechanisms are:

- The Register of Qualified Programmes (Registro Calificado). Tertiary institutions are not permitted to offer programmes unless they are listed on the Register, the institution having demonstrated that they meet specified minimum quality requirements.
- The system of high quality institutional and programme accreditation, which is voluntary and based on applications from the institutions.
- The SABER PRO tests of student outcomes.

OLE information on graduates' subsequent employment history and SPADIES information on dropout levels are also relevant to assessments of institutional quality.

The Colombian government is very conscious of the key contribution tertiary education can make to the country's development and prosperity, and committed to ensuring its relevance (*pertinencia).* Policies to ensure relevance include raising quality, developing student competences, designing programmes and assessing their quality on the basis of outcomes, seeking to raise the proportion of professional/technical and technological programmes, introducing more ICT and other new technology in the education system, promoting innovation and research, encouraging more students to learn a second language (particularly English) and, in general, achieving a better match between business demand and education system supply.

SENA offered the review team a comparison between Colombia's need for trained manpower at various levels, and what the education and training system is currently providing. SENA's premise is that the system should be shaped like an equilateral triangle, providing the highest numbers of trained people at the lowest level (operative/assistant with at most labour technical training) and progressively fewer trained people at the higher levels. On SENA's analysis, current provision falls short of the country's needs for operatives (by about a quarter), for technicians and technologists (by about half) and for holders of master's and doctoral degrees (by about three-quarters), but supplies considerably more bachelors' degree-holders than industry and the economy require. While such analyses are always difficult to confirm unless they are based on up-to-date and comprehensive data on the earnings of workers with different levels of qualifications, and the review team did not have access to the data SENA used, their analysis does appear consistent with calculations of recent relative changes to wage premia. When normalised for the respective rates of growth of graduates, the wage premium for T&T graduates has declined less than the wage premium for graduates with bachelor's degrees; and both wage premia are substantial

in Colombia. These phenomena could have various causes, but they do suggest that T&T graduates are in demand by employers, and that demand is reasonably robust.

A full discussion of the quality and relevance of tertiary education in Colombia is in Chapter 4. Chapter 5 considers the quality assurance system.

Financing

Figure 1.2 shows how, over the period 2007 to 2011 (projections), Colombia's GDP has increased by nearly 35% and its total education spending by over 43%. The percentage of GDP spent on education has risen from 7.19% to 7.65%, and there has been a corresponding rise in the percentage devoted to higher education, from 1.84% to 1.96%. Within these spending totals, public spending has risen significantly – from 4.28% to 4.75% of GDP on education at all levels and from 0.86% to 0.98% of GDP on tertiary education (Table 1.8). This tertiary education figure is higher than average for Latin America and approaching the OECD average – see Chapter 9 Table 9.2. Private spending, though, has declined very slightly. As a result, by 2011 public and private expenditure on higher education are exactly equal at 0.98% of GDP each.

Colombian public universities are funded in a specific way, defined in Articles 86 and 87 of Law 30 of 1992. Article 86 spells out that their government funding will be based on their 1993 revenues and costs, inflation-adjusted. But because this does not allow for other changes, such as increases in student numbers, Article 87 provided for general increases in government contributions corresponding to at least 30% of the percentage increase in annual GDP growth. The Ministry of National Education has developed a model for calculating the contribution to each university: the model takes account of staff numbers, student enrolment and research output, among other things. All types of tertiary institutions other than universities are funded through direct central or local government contributions from their sponsoring ministry.

Universities enjoy full autonomy in how they may use their income from public and private sources. Other institutions classed as Public Establishments are also granted financial and administrative independence; operational autonomy may be granted provided they remain within the national policy framework for higher education.

All tertiary institutions other than SENA centres charge fees to students. For a single semester of a law degree programme, these range from USD 106 at the public Universidad del Atlántico, to USD 621 at the private Corporación Universitaria Rafael Núñez, to USD 5 500 at the private University of Los Andes[9] (which, in the Times Higher Education World

Rankings 2011, achieved Colombia's highest ranking and the fourth highest ranking in Latin America). Private tertiary institutions, naturally, rely on student fees for a substantial part of their income; but all are required by law to have not-for-profit status.

A full discussion of the financing of tertiary education will be found in Chapter 9.

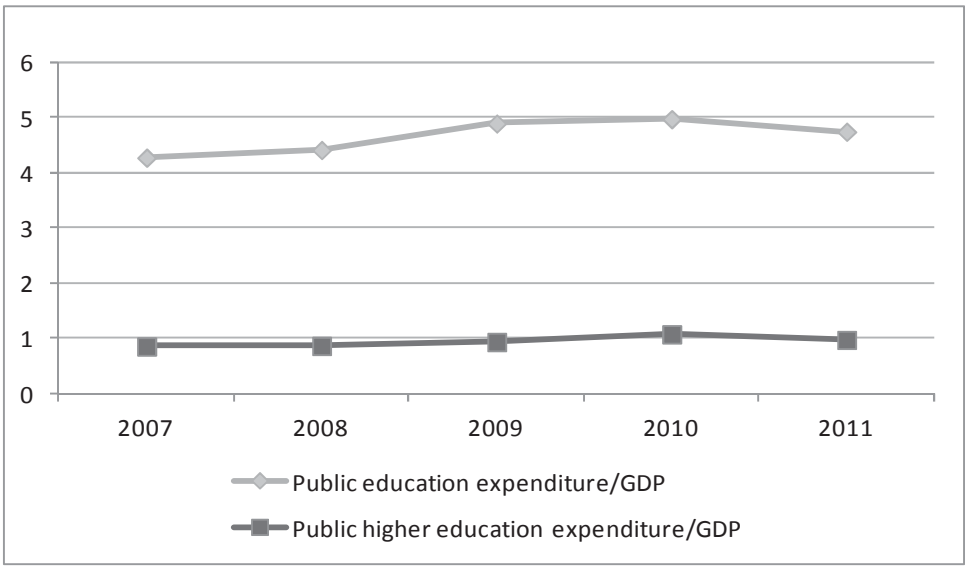
Table 1.8 **GDP and education spending, 2007-2011**

	2007	2008	2009	2010	2011
Nominal GDP (USD millions)[1]	240 982	267 060	280 852	302 144	324 956
Total education spending (USD millions)[1]	17 332	19 700	22 254	23 868	24 844
Public education expenditure/GDP (%)	4.28	4.42	4.90	4.98	4.75
Private education expenditure/GDP (%)	2.91	2.96	3.02	2.92	2.89
Total education expenditure/GDP (%)	7.19	7.38	7.92	7.90	7.65
Public higher education expenditure/GDP (%)	0.86	0.87	0.94	1.08	0.98
Private higher education expenditure/GDP (%)	0.99	1.00	1.02	0.99	0.98
Total higher education expenditure/GDP (%)	1.84	1.87	1.96	2.06	1.96

Note (1): USD exchange rate of 2 April 2012: COP 1 792/USD.

Source: Presentation made by the Minister of National Education to the review team (MEN (2011*b*).

Figure 1.2 **Public expenditure on education (% of GDP)**



Source: Presentation made by the Minister of National Education to the review team (MEN (2011*b*).

Academic staff of tertiary institutions

As Table 1.9 shows, from 2002 to 2009 the number of tertiary education teaching staff rose by 32.6%, though numbers of students increased by 57%. Over the same period there was a limited but significant upward shift in teachers' qualifications. Whereas in 2002 the figures had been 47% with bachelor's degrees, 33% with specialisations, 17% with master's degrees and 3% with Doctorates, by 2009 42% had bachelor's degrees, 34% had specialisations, 19% had master's degrees and 4% had Doctorates. The quality of teaching and teaching staff in tertiary education will be considered in Chapter 4.

Table 1.9 **Teaching staff in tertiary institutions and their qualifications, 2002-2009**

Highest qualifications	2002	2002 (%)	2003	2004	2005
Bachelor's degree	39 063	47%	38 985	38 597	39 265
Specialisation	27 420	33%	33 244	33 760	36 221
Master's degree	14 414	17%	15 457	17 309	19 657
Doctorate	2 445	3%	2 617	2 871	3 193
Total	**83 342**	100%	**90 303**	**92 537**	**98 336**

Highest qualifications	2006	2007	2008	2009	2009 (%)
Bachelor's degree	39 616	42 929	46 555	46 741	42%
Specialisation	37 979	36 406	37 958	38 076	34%
Master's degree	19 471	19 288	21 026	21 093	19%
Doctorate	3 540	3 522	4 105	4 578	4%
Total	**100 606**	**102 145**	**109 644**	**110 488**	**100%**

Source: MEN, SNIES.

Research, innovation, internationalisation and information

Only in the last two decades has Colombia made a concerted effort to develop science, technology and research, recognising that the country's economic growth is substantially influenced by advances in scientific and technological research and innovation and development processes. Colombia starts from a low base. The level of business innovation is relatively low. Less than 1% of GDP is dedicated to R&D. In 2007, only 4 002 people in Colombia had doctoral degrees, 9.3 for every 100 000 inhabitants, 50% of the number proposed by the Mission for Science, Education and Development in 1994.

There have been recent advances, however. A new law on science, technology and innovation was passed in 2009. Its declared aims are to develop a new research-supported production model in Colombia that allows value to be added to all products and services; and to implement the results of research to solve the country's problems. Additionally, funding for science, technology and innovation was substantially increased recently, with the allocation of 10% of the country's coal and oil production royalties to the Science, Technology and Innovation Fund (*Fondo de Ciencia, Tecnología e Innovación*). Colombia's ranking for the innovation pillar of the World Economic Forum's *Global Competitiveness Index 2011-12* was 57, significantly higher than its 2010-11 ranking of 65, thanks to improved scores in all the relevant rankings, particularly the quality of scientific institutions (up 12 places from 81 to 69); the country's capacity for innovation (up 11 places from 70 to 59); the availability of scientists and engineers (up 9 places from 86 to 77) and the protection of intellectual property (up 7 places from 93 to 86).

COLCIENCIAS, now officially re-named the Administrative Department of Science, Technology and Innovation (DACTI), is the institution in charge of developing and overseeing the research sector. COLCIENCIAS seeks to interest young people in science, through projects starting in primary education such as ONDAS and Little Scientists: more than a million schoolchildren took part between 2002 and 2009. For higher education, programmes such as Seedbeds for Young Researchers were designed; these programmes aim to get young people involved in science, technology and innovation, help the Colombian research community to grow and develop, strengthen high level research groups and centres, connect Colombian researchers with international centres and encourage co-operation between university science and the productive sector. COLCIENCIAS also manages the Science, Technology and Innovation Fund.

With government encouragement, universities have given more attention to research, promoted graduate programmes, increased their links with business (Colombia's highest ranking in the World Economic Forum's *Global Competitiveness Index 2011-12* was for university-industry co-operation on R&D) and increased the number of faculty members with doctoral degrees (see above).

The number of researchers has also grown rapidly. In 2003, there were 12 276 active researchers and 809 research groups recognised by COLCIENCIAS. Today, 14 983 researchers and 3 489 research groups are active, with support from COLCIENCIAS, universities, the Bank of the Republic (Colombia's Central Bank), the Foundation for Promoting

Research, state entities with important research programmes (for example, the Ministry of Agriculture and the Ministry of Mines) and private research organisations: 94% of these groups are from higher education institutions (*Background Report* [MEN, 2011*a*]).

Annual output of PhDs, though still low, is on a rising trend. From 139 in 2002 and just 85 in 2003, the numbers produced rose to 483 in 2009 and 500 (provisional) in 2010. A target of 1 000 has been set for 2014.[10] The numbers of scientific articles published by Colombians in international journals, and the recognition of Colombian publications in international reference indexes, have also continued to increase. Colombian citations in the Science Citation Index increased from 774 in 2001 to 2 676 in 2009.[11]

The state is also promoting the development of academic programmes in areas that foster economic growth. Strategic development areas where the country can develop its competitive advantages are thought to include outsourcing services, software and information technology services, cosmetics and tourism. And as well as increasing doctoral programmes in engineering and science within the country, interchange programmes with ally countries are encouraged.

COLCIENCIAS has not so far had the resources to finance more than a small proportion of the research projects for which its support is sought, but hopes that this will change, following a recent government decision to devote 10% of the royalties from coal and oil production to funding science, technology and innovation. Nonetheless, as Chapter 7 on Research and Development explains further, there remains a serious need for more and better-targeted funding for research in universities and other research centres; for more rapid growth in doctoral programmes for Colombians at home and abroad; and for better co-ordination among the various participants in these activities in both the public and private sector.

Graduate studies abroad are also supported by ICETEX – which in 2011 funded 2 293 young people to enrol on postgraduate studies abroad with an investment of COP 31 340 million (66% for master's and PhDs), and also managed 904 grants for a total of COP 22 414 million on behalf of governments and international organisations – and by another national organisation, COLFUTURO. This is a public-private not-for-profit partnership benefiting from both private and state funding. COLFUTURO funds students for an amount not exceeding USD 25 000 per year, for a maximum of two years. In general half the money provided is a government scholarship, the other half a repayable loan (for certain subjects, less of the money is non-repayable). Students compete for funding; to apply they need the backing of the university where they attended their previous course

(which will have pre-selected its best candidates) and to have already been accepted onto the programme abroad. If students have limited means and the percentage COLFUTURO pays is not enough for essential costs (such as fees in the United States, for example), they may get extra support from ICETEX or from the university which nominated them. Though COLFUTURO does not exclude any discipline, each discipline has a limited number of places; students applying for popular subjects have a lower success rate. COLFUTURO sends over 1 000 Colombian graduate students abroad every year, of whom around 150 are initially supported for PhD programmes; some 20% of those on master's programmes go on to PhDs with COLFUTURO support. Students are expected to return to Colombia; the incentive is that if they do not, they must repay their entire funding.

Another example of Colombia's internationalisation effort is the national Bilingualism Programme. The objective is to deliver teaching in a second language at all levels of education. The Common European language framework was adopted and the goal set was that students should achieve B1 level by the time they graduated from high school. First, teachers were tested. To address the low standards thus revealed, courses were set up for them to take, in person or on line, at universities and English language centres. Measurable improvements were achieved. The government recommended tertiary institutions to include English teaching in all programmes. SENA was a key player in delivering the English teaching, to students in other institutions as well as its own. Also, ICETEX offers a reciprocity programme in which foreign teachers, researchers and language assistants support the teaching of their mother tongue (including English, French, German, Mandarin, Portuguese, etc.), and final semester students complement their studies, at universities in Colombia. In 2011 the ICETEX invested COP 42 729 million in this programme.

Colombia is very keen to internationalise further and attract more international students and teachers to its tertiary institutions, particularly universities. The institutions themselves have set up a number of internationalisation initiatives. However, as Chapter 6 on Internationalisation explains, Colombia cannot yet be said to have in place either an effective country-wide internationalisation strategy, or the key planks on which such a strategy should rest.

Chapter 8 on Information and Transparency reviews the various information sources available to students, institutions, employers and the general public – most have already been mentioned in this chapter – and considers whether they are fit for purpose, sufficient and transparent.

Government policies and plans for tertiary education in the future

During the fieldwork visit the Minister of National Education presented to the review team the National Policy on Education for 2011-14 (MEN, 2011*c*). The government is proud of the recent increase in coverage, the growing proportion of students entering the technical and technological courses important to the nation's future prosperity, the steps already taken to achieve better coverage in under-served regions and the number of tertiary institutions and programmes with high quality accreditation. However, important policy objectives remain to be realised.

The Plan envisages reform of the current basic law on tertiary education, Act 30 of 1992. The aims of the reform are:

- To create better conditions in order to increase the number of Colombians who obtain a higher education degree. This will involve having a larger and more flexible range of higher education quality programmes; promoting access, improving retention and offering more funding sources for students; and increasing regional participation.
- To create the conditions for improving the tertiary education offer to students. This will involve a continuous improvement in quality standards, and increasing the size and range of resources put into the sector.
- To adapt the tertiary system better to the country's needs and align it with regional and international trends and standards.
- To strengthen good governance and transparency in the sector.

Specific targets to be achieved by 2014 include:

- Increasing the undergraduate coverage rate from 37% to 50%.
- Increasing the proportion of undergraduate students on T&T programmes from 34% to 45%.
- Generating 645 000 new tertiary places.
- Increasing the percentage of students with some public financial support from 66% to 75%.
- Increasing the percentage of students with long-term educational loans from 18.6% to 23%.
- Increasing the percentage of municipalities with tertiary provision from 62% to 75%.

- Decreasing the annual in-year dropout rate from 12% to 9%.
- Increasing the percentage of T&T programmes which are competence-based from 25% to 80%, and the percentage of university programmes which can be accessed by graduation from T&T programmes from 4% to 10%.
- Increasing the percentage of high-quality-accredited institutions from 7% to 10%, the percentage of high-quality-accredited programmes from 13% to 25% and the percentage of SENA T&T programmes on the Qualified Registry from 4% to 100%.
- Increasing the percentage of tertiary teachers with PhDs from 14% to 18%, and the percentage of teachers who have had in-service training in pedagogy to 25%.

Other objectives stated in the Plan are to:

- Strengthen the development of generic and specific competences at all levels of tertiary education.
- Strengthen the quality evaluation and quality assurance systems.
- Incorporate innovation, relevance and internationalisation into all tertiary programmes.
- Improve articulation between high school and tertiary education.
- Strengthen the management of the tertiary sector – by government through the Education Secretariats and by institutions themselves – to make it a model of efficiency and transparency.

A new draft law designed to achieve the ambitions in the National Education Plan was unveiled early in 2011. It aroused great interest and strong passions among various stakeholder groups, including students and public universities: both these groups came to feel that their interests were or might be threatened. A full description and discussion of the draft law is in Chapter 2. The government gave extra time and opportunities for consultation, and undertook to remove the most contentious section of the draft law, a proposal to allow for-profit universities a place in the system. The concessions did not persuade the students, who were at this point making common cause in public protests and demonstrations with students on strike in Chile, although – in the opinion of the review team – the Chilean context is very different. President Santos therefore announced that the draft law would be withdrawn from congressional consideration, if the students agreed to end their protests, on the understanding that the government would review the law, and consult again with all stakeholders. The law was withdrawn in November 2011.

The review team agrees with the Colombian government that the law of 1992 is no longer fit for purpose, and that a new basic law is imperative if all the worthwhile objectives in the National Education Plan are to be realised. One happy result of the position now reached is that this report and its recommendations will be available to the government and people of Colombia in time to be considered before the new law is finalised.

Achievements

As Colombia moves towards a modern, diverse, relevant and high-quality tertiary education system it can build on a commendable number of strengths and existing achievements. In the team's view, these include:

- The recent growth of participation in the system, to a gross enrolment rate of over 37% in 2010.
- The diverse range of tertiary institutions in the system serving different academic and professional needs at and below university level.
- The high level of agreement within Colombia on the importance of improving access to high-quality tertiary education for less socio-economically advantaged students.
- The government of Colombia's clear, coherent, specific and (in the team's view) well-judged plans for future tertiary growth and development with excellence and equity.
- The international standards being achieved in the country's top universities.
- The scale of the technician and technology programmes available, including those publicly provided without student fees by SENA.
- The country's system of student loans, which was the first in the world and, in the shape of the ACCES system run by ICETEX, is still one of the best.
- The efforts being made to reduce student dropout, and the SPADIES system set up to track the incidence and causes of dropout.
- The ICFES system of educational evaluation, including the SABER 11 tests young people take in order to enter tertiary institutions and the SABER PRO tests taken in order to graduate from them. Developed further and used in combination, these tests could make Colombia a world leader in the assessment of value added by tertiary education.

- Some very good national data systems, which make information on tertiary education and its labour market impact available to policy-makers, institutions, students and the public.
- The Colombian system of propaedeutic cycles, which in theory at least allow students to progress up through the tertiary education levels.
- The high-quality accreditation process, though this is not part of the mandatory quality assurance system.
- The degree of autonomy enjoyed by Colombian tertiary institutions.

Issues

In the following areas, the review team sees actual or potential problems and (sometimes considerable) scope for improvement.

- Though national plans for tertiary education are commendable as plans, it is not always clear how they are to be achieved, particularly where they depend on new resources or higher human capital development.
- The government was unable to gain acceptance for the 2011 legal reform proposals seen as necessary to fulfil its plans, despite wide consensus on many elements in the reform package.
- Tertiary institutions are very conscious of their autonomy, less conscious of their responsibility to help in realising national goals. Autonomy without accountability can make an education system unsteerable.
- Diversity in the range of tertiary institutions faces a degree of threat from upward mission drift.
- The academic standards Colombian students have achieved by the time they enter tertiary education are generally low in comparison with other countries. This lack of "college-readiness" leads to academic struggle and high dropout, with the least advantaged students the worst affected.
- Access to tertiary education is as yet far from equal for students from poorer households.
- One contributory factor is that the fees payable on entering different types and levels of tertiary institution are not related to the quality or value of the education provided, but to public/private status, different sources of funding and historic allocations of public funds. This distorts student choices.

- A second contributory factor is that although ICETEX has increased its resources, these are still insufficient to fund loans for all eligible students who cannot enter tertiary education without them. Furthermore, ICETEX could improve the targeting system in order to better achieve their aim of benefiting qualified-but-financially-needy students. Currently, the institution targets mostly students in *estratos* 1, 2 and 3 (to whom 98% of the loans are allocated) and uses SISBEN as proxies for the socio-economic level of students (as is also done by most of Colombian public institutions). However, as discussed in detail in the Annex to Chapter 3, the *estratos* system – like many income verification tools in Colombian and in other countries – has some inherent deficiencies that limit its ability to accurately determine student financial need. ICETEX, in conjunction with other national institutions such as the National Planning Department (DNP, Departamento Nacional de Planeación) should develop an instrument that more adequately assesses student financial need.
- SENA, which does not charge fees to students on its T&T programmes, is so over-subscribed that only one of every seven applicants is awarded a place and actually enrols.
- ICETEX makes public the eligibility requirements and general loan selection criteria on its website and through other means, such as telephone assistance lines for applicants. Acceptance or rejection letters both contain the applicant's score and the minimum score for successful applicants. However, perhaps because the full formula for calculating applicants' scores is not explained in detail, some students report not fully understanding why they were not approved for loans. ICETEX could remedy this problem by providing specific criteria and their weights in calculating scores along with the abundant general information it makes available to applicants.
- The propaedeutic cycles work less well in practice than in theory because of the gaps between technologist graduation level and professional degree entry standards.
- In general, progress up through the tertiary levels is limited by lack of a National Qualifications Framework, credit transfer, and collaborative arrangements between different tertiary institutions.
- The quality and standards of some programmes – especially T&T programmes and those offered in many CERES – is low. The only mandatory part of the Colombian quality assurance system, the safeguarding of programme standards through the Register of Qualified Programmes, requires improvement.

- Many institutions have only weak links and collaboration with employers over curriculum development and desired competencies and outcomes. This limits the relevance of their programmes to the needs of the Colombian economy and may make their graduates less employable.
- The ICFES SABER 11 tests in their current form are not as reliable at distinguishing between the performance of individual students as is generally assumed. The great potential value of the SABER PRO tests has yet to be appreciated by tertiary institutions.
- Despite national and institutional efforts, by international standards dropout is extremely and inefficiently high.
- Also by international standards, first degree courses – particularly in public universities – are unnecessarily long.
- Internationalisation in the tertiary system is at a very early stage of development.
- Levels of investment in research and innovation are very low by international standards.
- National information and data systems, though often very good individually, are not linked together so as to make it easy for users to bring together information from different databases. The full potential of some systems is not being exploited.
- The review team does not believe that the public sector budget alone can be expected to fund Colombia's important plans for expansion and for improvements in equity and quality.
- Tertiary institutions are not held accountable for the results of their spending or the public value obtained from it, although almost all will have received some public funds or subsidies, directly or indirectly.
- Because of the low level of audit scrutiny applying to private tertiary institutions, it is uncertain whether all are operating, as they should, on a non-profit basis.
- Performance-based funding mechanisms are lacking. Administrative arrangements and financial management rules in public universities are too complex, stifling initiative and innovation. The accounting and financial practices of private tertiary education institutions are not transparent.

Notes

1. 2012 figure from DANE, based on 2005 Census projections.
2. Figures from MEN/SNIES.
3. ICFES website.
4. *World Economic Forum Global Competitiveness Report 2011-12*, p. 478, which states that Colombia has 55 women for every 100 men. According to the WEF, the Latin American countries showing the smallest gender gaps in PISA 2009 have significantly more women in their workforces: for example Uruguay has 77 women for every 100 men and Argentina has 71.
5. Percentage figures from ICFES presentation to the review team.
6. MEN and SACES figures for programmes on the Qualified Registry.
7. 2010 figures from MEN Labour Observatory for Education (OLE, *Observatorio Laboral para la Educación*).
8. SENA presentation to the review team.
9. SNIES, consulted on 10 December 2011.
10. COLCIENCIAS presentation to the review team.
11. Ibid.

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Chapter 2. Vision, structure, governance and management of the Colombian tertiary education system

This chapter examines Colombia's vision for tertiary education, and how well the Colombian tertiary system is organised in terms of its overall structure, governance and management systems.

The chapter begins with a discussion of the reforms the government proposed to Law 30 in 2011, the debate that followed, and what that debate revealed about public attitudes towards tertiary education. It closes with a summary of recommendations, including the need to (i) review and simplify the current hierarchy of tertiary degrees and qualifications, and create clear and transparent pathways to higher-level programmes and qualifications; (ii) review the supply of and demand for tertiary education graduates at all levels; (iii) integrate SENA more fully into the tertiary education system; (iv) agree an accountability framework; and (v) build national goals into institutional decision-making processes.

Introduction

Colombia has an extensive system of tertiary education, encompassing a vast array of institutions and programmes that must respond to the ever-changing needs of a growing, diverse, and dynamic country. Like other countries, Colombia has come to realise that its tertiary education system plays not just a key role, but quite possibly the single most important role in the future prosperity and stability of the country. Evidence that this realisation is broadly shared can be found in the national debate over the future of tertiary education in which Colombia is currently engaged – a debate which involves the highest levels of the Colombian government, the multiple layers of the education system, students, faculty, employers, and the public. While this debate has been divisive, this is at least in part because the stakes are so high and the importance of tertiary education to the future of the country is so widely recognised. In this sense, the debate on the future of Colombian tertiary education is a debate over alternative views of the future of Colombia itself.

Much of the national debate over the vision for future of tertiary education in Colombia is centred on proposed reforms of the national organic statute for higher education – Law 30 of 1992 (Colombian Congress, 1992). This chapter includes an analysis of the issues the legislation was intended to address, including the need to expand the capacity of the higher education system, the missions and roles of the various higher education sectors and how they relate to one another, and the growing role of the quality assurance system in strengthening higher education in Colombia. The findings and recommendations of the review team on proposed reforms to Law 30 are included in this chapter.

The chapter then discusses how well the Colombian higher education system is organised to carry out this vision, particularly in terms of its overall organisational structure, governance, and management systems. For each topic, the chapter describes the current system and arrangements, or refers to full descriptions in other chapters. On each topic, the findings and observations of the review team are presented and the recommendations of the review team are set out.

The chapter begins with a discussion of Colombia's vision for higher education, including the proposed reforms to Law 30 and the issues they raise about the future of higher education in Colombia.

Vision

It may seem odd to begin a discussion of whether there is a shared vision for the future of higher education in Colombia by discussing a disputed and now withdrawn legislative proposal. However, while there were deep disagreements about certain elements of that proposal, the review team believes that debates about the law have also revealed considerable underlying consensus.

The proposal to reform Law 30 was developed by the administration of President Santos, and pursued as a government priority under the leadership of Minister of National Education María Fernanda Campo Saavedra.[1] One aspect of the legislation above all others – the provisions that would have allowed for-profit universities to operate in Colombia under certain conditions – prompted strong opposition from certain sectors, which led ultimately to a student strike and the closure of universities throughout the country. The government withdrew the legislation in November 2011, which ended the strike but did not stop the debate over the future direction of tertiary education in Colombia. Indeed, when the legislation was withdrawn the government made clear that it intended to review the legislation and hold further discussions with stakeholders, including students.

The reform proposals put to the Colombian Parliament in 2011 went very much wider than the for-profit universities provisions. Many of the ideas and concepts in those proposals have not been disputed. The proposals were founded on a National Policy for Education (MEN, 2011*a*), which in turn was derived from a National Development Plan for 2010-2014 (DNP, 2011). The name of the Plan – *Prosperity for All* – suggests the organising principles behind the National Policy and the proposed reforms to Law 30.

Increasing demand and enrolment

Probably the most significant and widely-agreed element of the vision for Colombian tertiary education in the proposed reforms is the focus on accommodating the demand for higher education, which continues to increase rapidly, while meeting the changing workforce demands of the Colombian economy. As the Colombian economy modernises, the demand for tertiary-level skills and knowledge grows apace.

The recent history of student demand and tertiary enrolment in Colombia mirrors the experience of many countries. As has already been shown in Chapter 1, Table 1.4, there was an increase of 67% between 2002 and 2010; the gross enrolment rate, as a percentage of the population aged 17 to 21, increased from 24.4% to 37.1% over the same period. This increase in participation is not accounted for by population growth – between 2002 and 2010, the 17 to 21 age population grew by only approximately 1.4% per year – but increasing high school graduation rates were a contributory factor. Three-quarters of this increase in enrolment was accommodated in public institutions. The annual increase in enrolment in the public sector averaged 10.5% between 2002 and 2010. Of course, this rapid rate of growth has posed considerable challenges, which will be discussed later in this chapter.

The growth in enrolment was not evenly distributed over all types of institutions in the Colombian system. The greatest increase occurred in the technical and technological institutions, whose enrolment saw an annual average increase of 14.5% between 2002 and 2010. By contrast, the rate of increase at the bachelor's degree level was a more modest, but still substantial, 4.2% per year. As a consequence of this shift in enrolment patterns, the total share of students enrolled in technical and technological programmes increased from 19.5% in 2002 to 34.2% in 2010.

Graduate education saw even more dramatic rates of growth over the same time period. master's-level education grew at an annual rate of 17% between 2002 and 2010, while doctoral-level enrolment grew even more rapidly at an average annual rate of 26.7%. The number of master's-level students more than tripled, increasing from 6 776 in 2002 to 23 808 in 2010.

The number of doctoral-level students grew more than six-fold, from just 350 in 2002 to 2 326 in 2010. While these numbers are still below the Latin American regional average, they represent substantial growth by any measure.

There is no reason to believe that this demand for higher education will not continue to increase. The overwhelming evidence on labour market returns (see Table 1.7 in Chapter 1) is that Colombian labour markets are demanding increasing levels of skills and knowledge. The differences in employment rates based on levels of education suggest that labour markets are demonstrating a reasonable ability to absorb an increasing number of graduates.

Government policy, expressed in the National Policy for Education (MEN, 2011*a*), is to further expand higher education opportunity and increase higher education attainment rates to higher levels. Specifically, the Plan calls for increasing the tertiary education coverage rate to 50% by 2014, from its current rate of 37%.

All of these trends – and the goals stated in the National Plan – are consistent with a national vision of increasing the overall higher education attainment level of the Colombian population. The areas of greatest growth are those that – the experience of other countries has shown – are most needed in a changing global economy, namely technical/technological and graduate-level education. These changing enrolment patterns reflect student demand, but also result from conscious policy decisions within Colombia to build up these sectors as part of the modernisation of the higher education system.

Geographic access

Another key element of the modernisation of Colombian tertiary education is the improved distribution of tertiary education opportunities throughout the country. Like many countries, Colombia faces a situation in which tertiary education institutions and programmes are disproportionately concentrated in particular regions and cities – especially in the nation's capital. The review team heard many stories of students who were forced to move to Bogota or another city to get into their programmes of choice. These students face numerous challenges, ranging from finding a place to live to dealing with the cultural shock of moving from small towns or rural areas to very large urban centres. Also, lack of geographic access places tertiary education outside the financial reach of many students and families. Students who must move to attend it are also at much greater risk of dropping out prior to completing their degree or other study programme.

There is clear evidence that national policies have already increased higher education opportunities outside the largest urban centres. In 2002, 71.2% of all students attended institutions in the departments of Bogota, Antioquia, Valle, Santander and Atlántico, all of which have large urban centres. By 2010, this proportion had fallen to 64.3%. Along with this shift, the number of municipalities with students enrolled in higher education increased from 286 in 2003 to 785 in 2010 (as of 2011, there were a total of 1 103 municipalities in Colombia). The National Plan calls for an increase in the number of municipalities offering higher education opportunities from 62% to 75%.

Aside from expanding access to tertiary education institutions, another way to address the problem of assuring geographic access is to expand distance education. Most students in Colombia study on-site, although the number participating in distance education programmes is showing a modest increase in terms of their share of total enrolment. In 2010, about 11% of students were enrolled in distance education. Between 2002 and 2010, gross enrolment in distance learning programmes grew at an annual rate of 9.5%, while on-site programmes grew by 6.3%. While the growth rate is greater for distance education than traditional on-site delivery, the evidence of other countries suggest that rates could grow much faster, and that distance education could play a much greater role in addressing tertiary education needs throughout the country.

Finally, like other countries, Colombia faces the challenge of increasing access to higher education for students from the lowest economic strata of the country. Here, too, there is evidence of progress although much remains to be done. In 2001, according to CEDLAS and World Bank figures (see Chapter 3, Table 3.12), the share of net tertiary enrolment for students from households from the three lowest income quintiles was 28.5% and the share for students from the top quintile was 52.8%; by 2010 the figures were 32.5% and 44.7% respectively. However, the picture is less positive for students from Q1 households, the poorest 20%; these households saw their share of enrolment fall between 2001 and 2010, from 10.3% to 8.2%. Increasing gross enrolment rates to the levels called for in the National Plan will require even greater progress in expanding access to low-income students. This objective has wide national support. The National Plan's goals of raising the percentages of students receiving some public financial support to 75% and the percentage receiving long-term loans from ICETEX to 23%, both by 2014, will of course require additional funding – which also has wide national support, and which the proposed new law addressed.

Increasing public funding

Specifically, the proposal to reform Law 30 called for tertiary education funding to be increased by COP 428 billion in the period 2012 to 2014 and COP 6 trillion by 2022, to pay for the reforms and proposals outlined in the legislation. This is in addition to COP 29 trillion called for in the legislation to provide an annual increase of 3% per year for the formulae for core operating support (MEN, 2011*b*).

Expanding capacity through governance changes

Even the levels of extra funding outlined above are not enough to enable the tertiary system to meet all projected needs and demands. The Colombian government recognised this, and sought ways of addressing the gap by bringing more money into the system. This was why the proposed legislative reform envisaged allowing for-profit tertiary providers to enter the system, which is currently prohibited under Colombian law. To help pay for more places for more students, the new law proposed allowing more private funds to be invested in tertiary education via public-private partnerships between existing non-profit institutions and for-profit entities.

This proposed change – ultimately the source of most of the opposition to the government's proposal – should be seen as part of a larger set of policy changes regarding institutional governance. Underlying the proposed change is the government's belief that current legal differences between tertiary institution, and corresponding restrictions on the type and level of programmes that each type of institution can offer, are outmoded and inhibit the ability of the higher education system to meet national needs. The government proposal is to move away from a system in which programme and degree offerings are determined by institutional type and name, towards one in which the important thing is whether institutions have proved that they meet rigorous quality standards. Of course, this requires strong quality assurance mechanisms.

Quality assurance

Colombia has made significant progress towards development of a strong quality assurance system based on accreditation of high quality programmes and institutions, quality standards maintained by a national registry, and stronger provisions for transparency and accountability. These topics are discussed in detail in later chapters of the report. For the purposes of discussing the government's proposals to reform Law 30, it is sufficient to say that the legislation would consolidate and enact into law many aspects of the quality assurance system that have evolved since 1992 (MEN, 2011*c*). Quality assurance was also a major focus of the development of the reform

proposals by the Ministry of National Education (IESALC-UNESCO, 2010). The review team believes that Colombia benefits greatly from an impressive level of commitment to improving education quality, shared by the Ministry of National Education, national associations concerned with tertiary education and institutional leaders.

Quality issues are discussed in more detail in Chapter 4, the quality assurance system in Chapter 5. In terms of system design, the key elements of the system are the Register of Qualified Programmes (*Registro Calificado*), which sets minimum standards for institutions authorised to operate and grant degrees and other credentials, and the accreditation system, which is a voluntary system of quality assurance with high standards for programmes and institutions. The review team heard on many occasions that the Colombian quality assurance system worked better at the two extremes – setting basic quality standards and identifying truly high-quality programmes and institutions – than in distinguishing between the vast array of programmes and institutions in between. The development of stronger quality assurance pathways for all institutions to use to improve quality and performance should be a priority.

Review team findings – vision

If Colombia's vision for the future of its tertiary education system is to be realised, there must be reforms to the existing law, Law 30. The question is not whether, but how, to reform it. The review team was present in Colombia while proposed reforms were under consideration by the Colombian Congress, and witnessed the student strikes which closed the Universidad Nacional and other institutions. The team met individuals with a wide range of views on the proposed legislation, including students, faculty, and tertiary education administrators, as well as MEN officials. The review team was not asked to express views on the strengths and weaknesses of the proposed reforms in this report, because the draft law was already under discussion by the Colombian Congress. Now, of course, the situation has changed. The issues that the proposals were designed to address are still live; the options in the proposed legislation can still be considered in the discussion scenarios that the government has planned; and there is after all time for the team's views to be taken into account.

In the view of the review team, the proposed reforms to Law 30 were, taken as a whole, a constructive approach to improving the Colombian tertiary education system. Of course, individual elements of the proposals can and should be reviewed to meet the expressed concerns of stakeholder groups and the political realities. But what most impressed the review team about the proposal was that it represented a realistic vision for a stronger system. It was based on the accomplishment of specific goals, which in turn

were based on the needs of students and the nation rather than of the institutions. The proposal specifically aimed to improve the quality of tertiary education by building a strong quality assurance system on the foundations already in place; to expand the capacity of the system to effectively so that more students could be served; and to bring more money into the system, both by committing significant new public resources and by governance changes designed to stimulate new private sector investment.

The review team noted that one theme ran through the publicly-reported comments of those leading opposition to last year's proposed reforms, and the private comments of many of the stakeholders the team encountered. This theme was concern that reforms such as encouraging more professional-technical and technological education and accommodating private providers might weaken Colombia's public universities or threaten their autonomy to provide traditional academic and liberal arts education. There is room for further debate over specific approaches to strengthening Colombian tertiary education, but the review team wishes to point out that the skills and knowledge represented by technical and professional education have become the basic point of entry for most citizens of countries with advanced economies throughout the world. It is essential, both for individual Colombians and for Colombia's future prosperity, that the country develops an efficient, effective and high-quality tertiary education system that will meet the needs of the majority of citizens, not just a select few.

The review team recommends that the issues raised by the discussion of proposals to reform Law 30 continue to be addressed by the Colombian government, in consultation with stakeholder groups. The essential focus of the reforms should be on increasing the capacity of the Colombian tertiary education system to serve additional students and to improve the quality of student outcomes in terms of learning, completion, and employment.

The review team also supports substantially increasing public support for tertiary education, as in the 2011 reform proposals and the government's budget proposals. The proposal to tie future funding increases to rates of GDP growth is specifically endorsed. However, Colombia can expect to see an on-going increase in demand for tertiary education, which may outstrip the availability of funds from public sources even when economic times are good, as they are today in Colombia.

If, now or in future, public resources cannot meet the needs which Colombian citizens agree should be met, the only way to meet those needs is through increased use of private provision and cost sharing. That has been the route taken to tertiary expansion in countries in Latin America, Eastern Europe, and Southeast Asia, among other regions. In particular, public-private partnerships are a model that holds considerable promise for

Colombia. Of course, issues of financial accountability are paramount and the public interest must be safeguarded, which is why strong systems of financial control (discussed later in this chapter and in Chapter 9) are essential. The most important consideration, however, is quality. All new providers – whether public, private, or a hybrid – should be subject to the same rigorous requirements and standards, established and maintained by a strong quality assurance system.

System structure

To understand the overall structure of the Colombian higher education system, it is necessary to consider the different types of institutions, the role of regional centres for higher education – CERES – and the unique role played by the National Training Service known as SENA. The basic components of the system have already been described in Chapter 1. This section of the report will focus on the review team's findings regarding the structure of the Colombian tertiary education system, and its recommendations for future action in this area.

Types of institutions

As already described, the basic structure of the Colombian higher education system consists of four tiers representing institutions with supposedly distinct missions and programmes: Professional Technical Institutions which offer short-term postsecondary technical education in a wide range of vocational fields; Technological Institutions which offer higher level technological and professional education leading directly to careers or on to higher-level tertiary education; University Institutions which offer programmes leading to undergraduate degrees, and sub-doctoral graduate degrees in select areas; and Universities, which offer the full range of academic programmes including doctorates. Table 1.2 in Chapter 1 shows the number of institutions of each type, and how numbers have changed in recent years: institutions of the first two types are collectively referred to as T&T institutions. In all cases, institutions can be public or private; but if private, must be not-for-profit institutions under the provisions of the current national law for higher education (Law 30 of 1992, Article 98 [Colombian Congress, 1992]).

While this four-tiered structure is somewhat unusual, at least from an international standpoint, the structure of institutional types in most countries reflects history, funding approaches, and political considerations. That does not in itself prevent them from being effective. However, a number of issues related to Colombia's four-tier structure concern the review team.

(1) Differentiation of degrees and credentials. Colombia's institutional types are designed to mirror three levels of degrees and credentials: technical, technological, and professional. Professional degrees may be at bachelor's, master's or doctoral level, and can be offered either in disciplines related to the technical and technological fields or in other academic disciplines. There is an additional post-graduate degree in technological fields, known as a specialisation. The ability to confer certain degrees and credentials is restricted to institutions of certain types. There are two problems with this approach. One is that the differentiation between levels – particularly between professional technical and technological – is becoming less and less clear as technical skills advance and become increasingly important in the workforce. Simplification of the range of degree types would be desirable, particularly if it allows more constructive approaches to defining institutional roles and missions to emerge, as discussed later in this chapter. Another is that it complicates the task of providing individuals with clear pathways to higher levels of skills and knowledge, recognised by progressively higher-level degrees and qualifications. One way of progressing through the levels is through what are called propaedeutic cycles in which students are expected to be able to proceed to the higher-level programmes on the basis of previously-attained mastery of lower-level skills. As discussed in Chapters 3 and 4, Colombia has this system but it is not yet clear that it is working well for enough of the students who embark on it. Another way – which is potentially useful to all students, at whatever level or institution they start their tertiary education – is to have a strong National Qualifications Framework (NQF). A NQF makes the meaning of qualifications much more transparent to students and employers and enables students to move freely between institutions and levels, knowing that they will receive credit for previous study (provided that an effective credit transfer system has been developed and implemented alongside the NQF). Though Colombia is committed to developing a NQF it is far from being in place, and pathways for students between institutions appear to be unclear, as also discussed in Chapter 4. The review team believes that it is very important for Colombia to develop this ladder-like approach to tertiary titles and degrees, in order to offer Colombians meaningful pathways to advancement, and help assure that the ever-changing needs of the economy are adequately met.

Colombia is recommended to review its hierarchy of degrees and qualifications, and to simplify and clarify the differences between them. This review should be tied to the on-going development of a National Qualifications Framework and a national system of certification of labour market competencies. It is also recommended that clear and transparent pathways to higher levels of education should be established throughout the Colombian tertiary education system. This is particularly urgent in high-

demand fields in which the Colombian labour market has too few graduates with the skills and knowledge needed. The review team heard of at least two examples of such sectors – health care and information technology – but there are doubtless others which should be identified and targeted.

(2) Mission drift is another issue closely related to the differentiation of institutional types. Mission drift usually occurs when institutions at higher levels of a system are seen as having higher prestige or attracting additional resources. It tends to arise particularly where the natural progression of qualifications crosses institutional boundaries or does not fit neatly into existing institutional categories – as when attempts are made to create ladders of qualifications up to and including professional degrees in technology-related fields. The institutions with the authority to offer higher-level degrees in Colombia may not have the expertise, interest, or capacity to provide programmes for the lower rungs of the ladder; and the institutions with the expertise, interest and capacity may well lack the authority to offer professional degrees. In these cases, it makes sense to allow flexibility and alternative approaches. These include permitting individual institutions to offer qualifications above their normal levels in limited fields where their ability to do so is demonstrated, and developing collaborative arrangements between institutions of different types which, between them, can take students all the way up the ladder.

The review team recommends that, to avoid unnecessary mission drift, T&T institutions should be permitted to offer professional degrees, but only where a clear need and institutional capacity have been demonstrated. Also, financial and other incentives should be devised to encourage collaboration between institutions of different types whose purpose is to offer, between them, a ladder of qualifications or propaedeutic cycle, particularly in emerging technology-related fields.

(3) Supply and demand of bachelor's degrees. The view that Colombia is currently oversupplied with bachelor's degree holders was expressed to the review team on several occasions. However there is evidence that bachelor's degrees are particularly attractive to students: current student demand for education at this level exceeds available capacity. This issue surfaced in the student protests against proposed reforms to Law 30, which were characterised in some quarters as an attempt to weaken universities for the benefit of other types of institutions. In the team's view, Colombia has a clear need to strengthen and expand tertiary provision at the professional technical and technological levels; and available evidence on absorption rates suggests that bachelor's degree supply and demand are more nearly in balance than T&T supply and demand. However, it does not necessarily follow that Colombia is currently over-producing bachelor's degree holders – that could only be established from looking at employment and earnings rates.

The review team recommends that the Ministry of National Education or another credible group commissions an authoritative external review of the supply and demand for higher education graduates at all levels. This analysis should take into account employment rates and salary levels related to field of study as well as level of degree. The important role of bachelor's degrees in preparing individuals for further professional post-graduate education should also be taken into account. Colombia appears to have access to the data necessary to conduct this type of analysis, and the results could be of great value in determining the accuracy of the perceptions upon which the positions of various stakeholders rest. The methodology for such an analysis has been developed at Georgetown University (Georgetown University, 2011 and 2010) in the United States and by other centres and agencies in several countries.

SENA

No discussion of the Colombian tertiary education system is complete without including the role of SENA (National Training Service, *Servicio Nacional de Aprendizaje*). SENA offers a wide range of educational programmes throughout Colombia (see Table 1.3 for a breakdown). Even counting just those SENA programmes which are classified as professional technical or technological and are therefore at tertiary level, in 2010 SENA enrolment represented 19% of total undergraduate enrolment and 55% of total enrolment in professional technical and technological programmes in Colombia. However, in spite of SENA's major contribution and role as a provider of T&T programmes, the review team encountered some ambivalence about SENA's role in the tertiary system. SENA programmes and enrolment are not always included in national data on higher education. And as SENA is administratively attached to the Ministry of Labour and not the Ministry of National Education, its connection to key initiatives affecting the overall education system is sometimes unclear. This ambivalence does not seem to be the result of any attempt by SENA to distance itself from the rest of the tertiary system, or of the system consciously attempting to exclude SENA. Both parties seem to recognise that SENA plays a key and growing role, and has enormous potential to improve educational outcomes. SENA's leadership is keen to play an even more important role in Colombia's future economic and social development, and told the review team that they greatly valued the explicit recognition of SENA centres as tertiary education institutions in the legislative proposal to reform Law 30.

The review team recommends increased efforts to integrate SENA into the Colombian tertiary education system. This includes developing strategies to integrate SENA into data collection, reporting and analysis systems; academic programme planning; strategic planning; and quality assurance mechanisms.

Governance

On a governance continuum on which total institutional autonomy lies at one end and central national control at the other, Colombia falls in the middle but leaning towards the autonomy end. The challenge, of course, is finding ways of responding effectively and quickly to national priorities and needs while maintaining the flexibility and local engagement of autonomous institutions. This section of the chapter will consider the role of the Ministry of National Education (MEN), and then discuss institutional governance, concluding with a discussion of some issues raised by Colombia's approach to governance.

The governance role of the Ministry of National Education (MEN)

The history and functions of the Ministry of National Education and Vice Ministry of Higher Education were described in Chapter 1. The governance role of both the MEN and the Vice Ministry is to establish national goals, to develop strong strategic planning and policy-making based on reliable data, and to establish strong quality assurance systems. This governance role seems to the review team to be entirely appropriate in a system such as Colombia's, which is based on strong institutional autonomy.

The review team recommends that the MEN continue to focus primarily on national goals for higher education attainment and improving higher education quality assurance (both in terms of learning and relevance). The Ministry and Vice-Ministry are working hard to convince Colombians – including those within the tertiary education system – that higher education attainment must be raised and the relevance and quality of higher education programmes must be improved. These are vital tasks.

Institutional autonomy

After many shifts in policy,[2] the principle of institutional autonomy was enacted in the Constitution of 1991. In 1992, Law 30 defined the operational framework of the higher education system, including the role and functions of the MEN. Since then, there have been several attempts to refine the operational framework to promote greater effectiveness and efficiency, most recently in the reform proposals of 2011. In Colombia, as in other countries, the challenge is to find the right balance between autonomy and control.

Autonomous tertiary institutions bring significant benefits to a country. Institutional autonomy helps to protect academic freedom and a sense of local ownership. Autonomy can help institutions to be more responsive to local conditions and needs, for example by allowing new programmes to be developed and implemented much more rapidly. Giving autonomy to

institutions generally reduces central administration costs and removes the need for the onerous supervision and reporting requirements associated with control. Autonomous institutions tend to have a greater sense of responsibility for outcomes and to make greater efforts to resolve their problems by themselves.

However, high levels of institutional autonomy can also create problems. There can be mission drift in autonomous systems, if institutions are free to pursue their own ambitions without adequate consideration of public need or cost. High levels of institutional autonomy can make it difficult or impossible to respond to national needs and priorities. For a highly autonomous system to avoid these and other downsides, two "system strengtheners" must be in place. The first is adequate and effective information reporting systems. The second is proper accountability of the institutions to stakeholders and paymasters, including students, employers, the wider public and central government.

The review team considers that Colombian tertiary institutions have a satisfactory level of institutional autonomy, but there are some significant accountability gaps. The MEN and Vice Ministry's focus on national goals, however, is making national priorities and needs much more transparent to stakeholders.

The review team recommends that the MEN and Vice Ministry on the one hand, and the tertiary institutions on the other, work together to develop an agreed accountability framework, making clear how each institution will play its part in the achievement of the national goals, and what mechanisms the institutions will use to report their progress. Though each institution should contribute in accordance with its particular mission, all should be expected to report using a common set of performance indicators, which will be published. This common accountability framework and reporting system should also allow more effective targeting of resources to meet national and regional needs, through performance funding or other means, as discussed in Chapter 9.

Institutional governance

Most Colombian higher education institutions, particularly universities, have a traditional governance structure consisting of a governing board broadly representative of institutional constituencies (*Consejo Superior*), a rector and his or her staff (*Rectoría*), and an academic council or faculty

senate (*Consejo Académico*). Decision-making follows patterns similar to those of higher education institutions in many parts of the world. For example, academic programme decisions in universities are made in academic committees at the programme level and work their way up through higher level committees to the rector and governing board (Universidad de los Andes, Universidad del Norte, Universidad del Valle y Pontificia Universidad Javeriana, May 2011).

In contrast to some countries with rector-based systems, the review team did not find in Colombia strong evidence of political intrusion into public institutions. Of course, public institutions in all countries operate in a political context and can be subject to political influence and pressure, and Colombia is no exception. Institutional governance was rarely raised as a priority issue in the team's fieldwork discussions, and the team did not feel that it was well understood, either on or off campus.

Governing board members can and should be a constructive force, not just for the strengthening of institutions, but also for the improvement of tertiary education throughout the nation. Therefore the review team took particular note of the characteristics of governing board memberships. Although this information was not readily available, the team was able to obtain it for many of the institutions visited. In most cases, governing boards seem to consist of a range of stakeholders, and no one group appears to exert undue influence. The selection of rectors – probably the single most important responsibility of governing boards – appears to be based primarily on merit and professional expertise. However, one apparent shortcoming in governing board membership should be remedied.

It is recommended that the composition of institutional governing boards be reviewed to ensure adequate representation of the public interest, and not just of institutional constituencies. In particular, the private sector and employers should be represented whenever possible. Board members should be reminded – directly, and by the highest levels of leadership in Colombia – that their primary responsibility is to serve the public. If systems to inform board members of national needs and priorities are inadequate, they should be developed.

Management

The review team was not able to do a comprehensive study of the quality of management of tertiary education institutions in Colombia, but did investigate the mechanisms and decision support systems available to support good management.

Internal and external controls

The Office of the Comptroller General audits use of public resources in public institutions, and the General Accounting Office reviews their financial statements. In private institutions, the Office of Inspection and Surveillance of the MEN performs financial audits. The team received the impression that public funds are generally well accounted for. The review team also asked institutions visited about their own internal and external control systems, particularly for finances. Not only are financial controls such as budgeting processes and audits in place and being used, at some larger institutions offices of internal controls and audits provide additional safeguards over the appropriate use of funds. The team is therefore reasonably confident that basic financial controls are in place throughout the system and that many institutions have established even stronger systems. Many stakeholders commented on the need for Colombian higher education to demonstrate convincingly that it is free from corruption and that decisions regarding the use of public funds are made in a clear and transparent fashion. In the view of the review team, this area provides an opportunity to demonstrate progress of real value to stakeholders and the public.

The review team recommends that the MEN selects an outside entity to review Colombia's higher education financial control systems, at both the national and institutional level. The objective for the review should be to compare current systems to international norms and standards, and to determine their ability to support national objectives for higher education outcomes.

Increasing focus on outcomes

The review team warmly endorses the focus on outcomes apparent in both the National Plan for Education and the 2011 proposals for reform of Law 30. A focus on outcomes can make a bigger contribution to improving institutional management than almost anything else. This is because orientation to a set of shared goals helps to align decision-making at all level within an institution, and also across institutions. Shared goals – coupled with strong reporting on outcomes – can even lead to the replacement or elimination of other forms of external controls, including regulation and centralised decision-making.

The review team recommends that consideration of the national goals for tertiary education be incorporated into institutional as well as national and regional decision-making processes, so that personnel at all levels have the opportunity to understand the goals and reflect on their implications for their areas of responsibility. This approach will enable all institutional staff

– those who make things happen at operational levels as well as those who make institutional policy at higher levels – to be engaged with the national goals and play a part in realising them.

Data-driven decision-making

Arguably the most powerful tool for strengthening management decision-making is basing decisions on data. Evidence-based policy-making can be particularly useful in the education field, where decisions are too often based on tradition, precedent or habit ("that's how we do things here").

Colombia has invested impressively in developing data systems, which in some cases rival the best in the world. However, this data is not being routinely used by tertiary institutions to improve the education they provide. One example is the development by the Colombian Institute for Education Evaluation, ICFES, of the SABER PRO examination of learning outcomes in higher education. As this exam is calibrated with the SABER 11 exam taken at the end of secondary education, it offers an almost unprecedented opportunity to determine the effect of programmes and learning systems on the educational outcomes of students. Many countries are struggling to develop this type of exam and make the information it could produce available to faculty and others, to enable them to improve teaching and learning. On several occasions, the review team asked campus stakeholders if they used SABER PRO to learn about the effectiveness of their teaching and learning systems, only to hear that, while SABER 11 results were very useful in admissions, ways of using SABER PRO had not been considered.

Another example is the data produced by the Colombian Labour Observatory for Education (OLE, *Observatorio Laboral para la Educación*). OLE tracks the placement of graduates into employment, providing higher education institutions with extremely valuable data. Institutions currently use this data as an external accountability measure or to demonstrate labour market returns for graduates from particular programmes; but they rarely use it as a diagnostic tool for programme improvement, or to find out how and whether former students in work are applying what they have learnt, or to research the labour market potential of possible new programmes, or to enable them to improve careers advice to students.

The MEN is recommended to encourage and support institutions in making innovative and creative uses of Colombia's generally excellent data systems to improve decision-making – for example, through a small competitive grant programme to support projects that demonstrate potential uses of the data. Coupled with a strong dissemination approach and the focus on national goals, data-driven decision-making could significantly strengthen Colombia's tertiary education system.

Summary of recommendations

Legislation to reform Law 30 should be reintroduced after a period of review and additional consultation with stakeholder groups. Reform should focus on increasing the capacity of the Colombian tertiary education system to serve additional students, and improving the quality of student outcomes in terms of learning, completion, and employment.

The current hierarchy of tertiary degrees and qualifications should be reviewed, simplified and clarified. Clear and transparent pathways to higher-level programmes and qualifications should be established throughout the Colombian tertiary education system.

Stronger policies should be developed and enacted to prevent unnecessary mission drift, while fostering the development of ladders of qualifications, particularly in emerging technology-related fields.

An external review of the supply of and demand for tertiary education graduates at all levels should be commissioned by the Ministry of National Education or another credible group. The review should take into account employment rates and salary levels related to field of study as well as qualification level.

Increased efforts should be made to integrate SENA into the tertiary education system. Important areas for integration include data collection, reporting and analysis systems, academic programme planning, strategic planning and quality assurance mechanisms.

The Ministry of National Education should continue to focus primarily on national goals for tertiary education attainment and improving tertiary education quality assurance (both in terms of learning and relevance).

The Ministry of National Education and the tertiary education institutions should work together to develop an agreed accountability framework, which makes clear how each institution will play its part in the achievement of the national goals, and what mechanisms and performance indicators the institutions will use to report their progress.

The composition of institutional governing boards should be reviewed to ensure adequate representation of the public interest, and not just institutional constituencies. The private sector and employers should be represented whenever possible.

The Ministry of National Education should select an outside entity to review Colombia's tertiary education financial control systems, at both the national and institutional level.

The national goals for tertiary education should be incorporated into institutional decision-making processes at all levels. Personnel at all levels should be encouraged to reflect on the implications of the goals for their areas of responsibility and to play their part in achieving them.

The Ministry of National Education should encourage institutions to make more creative use of national data systems, so that decision-making at all levels of the tertiary system becomes more evidence-based.

Notes

1. The government proposal was presented for discussion on 10 March 2011. On 3 October 2011, the draft law was formally filed in Congress.
2. Set out fully in the *Background Report* (MEN, 2011*a*).

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Chapter 3. Access and equity to tertiary education in Colombia

This chapter examines student access to and retention in tertiary education, the extent to which different groups of students have benefited from recent enrolment growth, and how opportunities might be made more equal in the future.

The chapter closes with a summary of findings, and recommendations intended to (i) improve the college-readiness of Colombian school-leavers; (ii) ensure that admissions processes operate fairly; (iii) rationalise tertiary institutions' different funding sources; (iv) enable ICETEX to support more students and improve targeting of students from the poorest backgrounds; and (v) continue offering options to ease loan repayment burdens on young graduates.

This chapter considers whether young people in Colombia have adequate, fair and equal opportunities to enter and graduate from tertiary education. Access questions arise where there are not enough suitable opportunities or young people cannot, in practice, take them up. Equity issues arise wherever young people who may be assumed to have equal talent or ability to benefit from tertiary education, but who have different characteristics or come from different backgrounds, experience significantly different outcomes. This chapter discusses how easy or difficult is it for young Colombians to find the tertiary opportunities they need or want; to gain entry to their preferred institution; to afford the costs; and to complete their programmes successfully. It also discusses whether their chances of doing all these things vary according to the type of school they attended, their socio-economic background, where they live or whether they are male or female.

Tertiary places: supply and demand

Numbers in the system have grown in recent years and are planned to grow further. As shown in Chapter 1, Table 1.4, the number of students enrolled in tertiary education increased from 1 000 148 in 2002 to 1 674 420 in 2010. Undergraduate enrolment in 2010 was 1 587 928, a coverage rate of 37.1% of the 17-21 age group, up from 24.4% in 2002.

The government's target is that undergraduate enrolment should reach a coverage rate of 50% of the age group by 2014. Population projections by the Colombian National Administrative Department of Statistics (DANE) suggest that by 2014 there will be some 70 700 more young Colombians aged 17-21,[1] requiring enrolment to rise to around 2 178 700 for 50% coverage. This would seem to require around 590 800 more places than there were in 2010. The government's objective, according to the National Education Plan, is to go even further and increase undergraduate places by a total of 645 000 – presumably to accommodate more students at peak times, give students more choice and improve place distribution between regions.

The government also intends that, by 2014, 45% of undergraduate enrolment should be in professional technical and technology (T&T) programmes, compared with 34% in 2010. If that intention is to be realised, there will need to be over 980 200 T&T places in 2014, 438 000 more than in 2010 – an increase of over 80%. Given that SENA has a target of 569 000 T&T places by 2014, non-SENA T&T places must increase by over 165 500 places.

The government's T&T expansion target limits the need for universities to increase undergraduate places – only around 152 500 bachelor's degree places need to be added to the 2010 total by 2014 (for an increase of 14.6%) – though other government objectives and targets also suggest a need for universities to provide more places on master's and in particular PhD programmes.

Table 3.1 shows current levels of enrolment and 2014 targets at the different tertiary education levels.

Table 3.1 **Undergraduate enrolment 2010 baseline and 2014 targets**

Level	2010 baseline	2014 target	Required 2010-2014 absolute growth	Required 2010-2014 % growth rate	Required average annual growth rate
T&T	542 358 (34.2%)	980 202 (45.0%)	437 844	80.7%	15.9%
Non-SENA T&T	245 672 (15.5%)	411 202 (18.9%)	165 530	67.4%	13.7%
SENA T&T	296 686 (18.7%)	569 000 (26.1%)	272 314	91.8%	17.7%
University	1 045 570 (65.8%)	1 198 025 (55.0%)	152 455	14.6%	3.5%
Total undergraduate	1 587 928(100%)	2 178 227(100%)	590 299	37.2%	8.2%

Note: Enrolment absolute goals, with the exception of SENA enrolment, are based on a gross coverage rate goal of 50%, 45% participation for T&T and 2005 Census projections for population aged 17-21. The source for the SENA enrolment goal is the presentation to the review team.

Sources: MEN, SENA.

If these plans are achieved, will Colombia have the right level and distribution of places to meet economic needs and student demands for access? One way of answering this question is by reference to international comparisons. Table 1.5 showed that Colombia's current level of tertiary enrolment compares unfavourably with many OECD countries. If coverage is raised to 50%, that will still be the case, but Colombia will have achieved higher coverage levels than Switzerland and Turkey had in 2008 and be within five percentage points of the 2008 coverage rates of France, Austria and Slovakia.

Table 3.2 shows the gross coverage rates of Colombia and Latin American comparator countries in the latest years available in the World Bank's Data Indicators. Venezuela, Argentina and Chile have already reached coverage rates of more than the level Colombia plans for 2014. Colombia's neighbours Panama and Ecuador could be overtaken if they are not making equal efforts to boost participation in the near future.

Table 3.2 **Gross tertiary education coverage rates in Latin America**

Country	2006	2007	2008	2009
Venezuela			79	78
Argentina	68	68	69	
Chile	47	52	55	
Panama	45	45	45	
Ecuador		35	42	
Bolivia		38		
COLOMBIA	32	33	35	37
Paraguay		29		37
Peru	34			
Brazil		34		
Mexico	25	26	27	28

Source: World Bank.

It should be said here that it would be unsafe to judge countries' relative competitiveness on coverage rate alone. It is also important that the tertiary education in which students enrol is the right tertiary education to meet the country's needs, and that the tertiary system is efficient in ensuring that a high percentage of the students who matriculate go on to graduate successfully. Switzerland is an interesting example. Its coverage rate is relatively low by OECD standards, but the World Economic Forum's Global Competitiveness Report has rated Switzerland as the world's most competitive country in both 2011-12 and 2010-11.

In the view of the review team, the Colombian government's 2014 targets of 50% coverage rate combined with a rise in the proportion of T&T enrolment to 45% are sound and appropriate in relation to the country's current economic needs, provided the efficiency of the tertiary system can be improved to reduce dropout (see discussion of retention below).

A separate question is whether current and planned provision meets student demand. It is relatively easy to calculate that, if 37.1% of a 17-21 age group consisting of 4 286 000 people were enrolled in undergraduate programmes in 2010, then 2 696 000 17-21 year olds were not: but as 37.1% is a gross not a net coverage rate (*i.e.* includes in the numerator many students older than 21 and some younger than 17), the true figure for 17-21 year olds not in tertiary education is higher. Data from DANE's 2008 Quality of Life Survey (ECV, *Encuesta de Calidad de Vida*), can shed some light on this. It shows that only 24% of 17-21 year olds were attending tertiary education, whereas another 24%, or around 1 million young people,

were not attending, but had completed secondary school or had attended a tertiary institution and left it without graduating, making them potential new tertiary education students. Another 12% had already obtained a tertiary degree or title and the remaining 40% were not eligible, because they left school without graduating or have yet to graduate. Clearly, not all students attending higher education need be in the 17-21 age group, but the majority are, and especially so when they first enter this level of education. Table 3.3 sets out these figures.

Table 3.3 **Population aged 17 to 21, 2008 (%)**

Attending tertiary education, undergraduate	24.1
Attending tertiary education, graduate	0.05
Not attending any school, with complete secondary or incomplete tertiary education	24.4
Not attending any school, with complete tertiary education	12.0
Attending secondary or primary school	22.1
Not attending any school, with incomplete secondary education	17.3
Total	**100**

Source: Authors' calculations based on DANE-ECV 2008.

An alternative way of comparing demand and supply is to compare the numbers of students applying to tertiary institutions with the numbers admitted. The MEN publishes figures for total applications and total admitted students on SNIES, the National System of Higher Education Information. The absorption rate (*tasa de absorción*) can be calculated as the ratio between these two figures. Absorption rates for the years 2002-2011 are shown in Table 3.4.

Table 3.4 **Absorption rates, 2002-2011 (%)**

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011[1]
Prof. Technical	61	71	76	114	113	73	55	74	87	84
Technological	57	55	58	80	78	54	63	75	70	72
University	32	33	36	43	42	43	41	51	51	49
Total	**37**	**38**	**41**	**52**	**50**	**46**	**45**	**56**	**56**	**55**

Note (1): Preliminary figure.

Sources: 2002-2008 data: calculations based on MEN/SNIES, quoted in *Informe de Colombia,* by Universidad de los Andes, Universidad del Norte, Universidad del Valle and Pontificia Universidad Javeriana (May 2011); 2009-2011 data: own calculations based on MEN, SNIES.

There must however be doubts over whether the figures in Table 3.4 provide a reliable measure of supply versus demand. There is in Colombia no single agency which knows about all tertiary applications, as there is in countries where all applicants have to go through a common application process or a national clearing system which filters out multiple applications. Tertiary institutions supplying their own application and admittance figures to MEN/SNIES have no way of knowing whether their rejected applicants applied elsewhere, and if so whether they were accepted. MEN/SNIES have no way of identifying and subtracting duplicate applicants, or those who were patently ineligible for entry. It is not clear whether SENA figures are included. (In 2011, only 13% of applicants enrolled in SENA's T&T programmes, but again, this number includes duplicates, as individuals may apply to more than one programme.) For all these reasons absorption rates calculated based on SNIES data most probably overstate unmet demand from applicants ready to benefit from tertiary education – except for professional technicians in 2005 and 2006 where they seem likely to overstate, with rates above 100%. Conversely, there may be other young people who could benefit but did not apply – perhaps for lack of the financial means or lack of local places. These aspects will be discussed below.

The figures in Table 3.4 also suggest that demand is stronger for university places than for T&T places, particularly professional technical places. The high demand for university places may be driven by the prestige of university degrees as well as their high returns in the labour market. Despite this, the review team believes that the government of Colombia is right to wish to raise the percentage of T&T programmes. T&T programmes are likely to be a more realistic option than university for many of the new entrants who will join the system as coverage is expanded from 37% to 50%, and the Colombian economy has a clear need for more well-trained technicians and technologists.

Characteristics of tertiary students

The SPADIES information system, set up to monitor student dropout and identify factors associated with dropout, provides a wealth of information on the characteristics of tertiary students in the system. On the SPADIES website can be found analyses of students by gender, SABER 11 test scores, total household income, mother's education level, whether the student was working when they took the SABER 11 test and whether the family owns its own home.

Tables 3.5, 3.6 and 3.7 draw on the information available on the SPADIES website in November 2011. The only reason to doubt the reliability of the percentages shown is that SPADIES also publishes the numbers of students included in each analysis. Tables 3.5, 3.6 and 3.7 each show different total student numbers for the same period, and some analyses seem to be based on relatively few of the students who would have been enrolled at the time. The total numbers of students in the analyses go down in the most recent periods, when other MEN statistics show total student numbers rising. In 2010 semester 1, for example, Table 3.5 is based on results for 1 070 000 students whereas Table 3.7 is based on just 180 000, which raises real doubts over whether it is equally representative of all students. While the sample size itself is certainly sufficient for producing statistically significant results, sheer size does not guarantee that a sample is representative unless it has been generated in a strictly random fashion.

The team understands that SPADIES information is derived from two main sources: tertiary institutions, which provide identifying information on those they have enrolled and those who have dropped out, and the questionnaires students are invited by ICFES to fill out when they sit their SABER 11 tests, which cover gender, household income, parental education, home ownership etc. It seems however that students are not obliged to answer all the questions on the questionnaire; and it is possible that students from certain socio-economic backgrounds are less or more likely than average to answer certain questions. To the team's knowledge, no studies have been conducted on whether or not socio-economic data from SPADIES are representative of the full student group: though this is not a matter of concern as far as SABER 11 scores are concerned.

Table 3.5 **Students by gender, by year and semester, 2007-2010**

	2007 S1	2007 S2	2008 S1	2008 S2	2009 S1	2009 S2	2010 S1	2010 S2
Students: total number in this analysis	906 350	927 771	994 193	1 000 026	1 052 521	1 047 078	1 069 486	985 776
Male (%)	47.5	47.4	47.5	47.4	47.6	47.7	48.0	47.9
Female (%)	52.5	52.6	52.5	52.6	52.4	52.3	52.0	52.1

Source: SPADIES.

Table 3.5 shows that the percentage of female students in the tertiary system remained stable from 2007-2010, never below 52% or above 53%, always significantly more than the percentage of males.

Table 3.6 **Students by SABER 11 test scores, by year and semester, 2007-2010**

	2007 S1	2007 S2	2008 S1	2008 S2	2009 S1	2009 S2	2010 S1	2010 S2
Students: total number in this analysis	808 119	825 523	882 291	889 659	876 442	845 804	797 618	700 175
Low scores (%)	32.4	32.9	33.6	34.1	34.8	35.2	35.7	36.0
Average scores (%)	41.4	41.6	41.5	41.7	41.6	41.2	41.9	41.8
High scores (%)	26.2	25.5	24.9	24.2	23.5	23.1	22.4	22.2

Note: S1 = First semester; S2 = Second semester.

Source: SPADIES.

Table 3.6 demonstrates that in every semester from 2007 to 2010 the Colombian tertiary system has taken in more people with low SABER 11 test scores and fewer with high SABER 11 test scores. Full SPADIES information shows that the same is true of every semester back to the year 2000. This indicates that over the last 10 years the tertiary institutions collectively have been progressively widening their intake, becoming more inclusive and more willing to give more students the opportunity to continue in education. It also indicates that the institutions have faced the challenge of training up to graduation standard larger and larger numbers of young people with relatively low prior attainment. The number of students in this analysis peaks in 2008, which is not true of tertiary student numbers generally. This indicates that later data are less complete, rather than that an increasing number of people enrolling in tertiary education have not taken the SABER 11 test – the ICFES website shows growing numbers taking the 11th grade test every year from 2005 to 2009.

Table 3.7 **Students by total household income (multiples of minimum salary), by year and semester, 2007-10**

	2007 S1	2007 S2	2008 S1	2008 S2	2009 S1	2009 S2	2010 S1	2010 S2
Students: total number in this analysis	301 164	300 375	270 125	241 831	219 528	198 824	179 888	152 667
Income 0-2 minimum salaries (%)	36.8	38.1	39.7	41.2	42.8	43.9	45.2	45.7
Income 2-3 minimum salaries (%)	26.3	26.4	26.6	26.6	26.8	27.0	27.0	27.2
Income 3-5 minimum salaries (%)	19.4	19.0	18.4	17.9	17.2	16.8	16.4	16.1
Income 5-7 minimum salaries (%)	8.6	8.2	7.8	7.4	6.9	6.6	6.4	6.2
Income 7+ minimum salaries (%)	8.9	8.3	7.6	6.9	6.2	5.6	5.0	4.7

Note: S1 = First semester; S2 = Second semester.

Source: SPADIES.

Table 3.7 again presents a very consistent picture. In every semester from 2007 to 2010, students from families with income of up to two minimum salaries – the poorer half the population – have taken a larger share of the places. By 2010, over 45% of students came from such families. Similarly, in every semester from 2007 to 2010, students from families with income of 7 or more minimum salaries have taken a smaller share of the places. Here again, the picture is confirmed by the longer run of more detailed results on the SPADIES website. Before 2004 the share of those whose families earned less than one minimum salary was never more than 0.1%; by 2010 S2 it was up to 0.5%. At the other end of the scale, the share of those whose families had income of 15 or more times the minimum salary decreased from 2.3% in 2001 S2 to 0.8% in 2010 S2. These are positive signs of progressively greater inclusiveness and better access to tertiary education for the children of the poorest families, clearly indicating that tertiary education is no longer the preserve of the elite. However, this particular analysis is based on the results of a small proportion of students, suggesting that not all answered the family income question when responding to the ICFES questionnaire they received when sitting the SABER 11 test. If non-response correlates positively or negatively with socio-economic status, the resulting sample is non-random and may produce biased estimates. It should also be borne in mind that 16 year-olds may not have accurate knowledge of their family's income; that even where this is known there is an incentive to under-report it, given that low income helps the chances of securing a student loan; and that measuring income by multiples of the minimum salary is just one of several possible ways of measuring family wealth or poverty in Colombia, a theme returned to below.

The SPADIES analyses of educational level of students' mothers show that since 2004 the percentage of students with university-educated mothers has fallen from 22% to 13%; the percentage with mothers who have had only primary education has risen from 28% to 40%; the percentage of students who were working when they took their SABER 11 test has risen from 7% to 10%; and the percentage whose parents are home-owners has fallen from 78% to 66%. All these figures are consistent with greater inclusion and widening participation in tertiary education. But all the analyses are based on results for a small minority of students (in 2010 S1, 198 000 for property ownership, 212 000 for work status and 285 000 for mother's education).

Box 3.1 **Recent changes to SPADIES data**

Since the paragraphs above were written, the MEN has added data on some characteristics of a large number of additional students to the SPADIES website for several past years. No official explanations have appeared on the website, either for the previous exclusion of these students' data or for its addition now, but the review team understands that ICFES has only recently passed to MEN the socio-economic data for students who sat the SABER 11 test between 2006 and 2011.

Table 3.7 (revised) below shows the data that now appears on the SPADIES website on students by household income 2007-10. The student numbers for 2007 Semester 1 are 2.5 times as high as before; the student numbers for 2010 Semester 2 are nearly 6 times as high as before. The percentages of students with relatively low family income (0-2 minimum salaries) have increased by 6-8 percentage points in all semesters while the percentages of students from better-off families have generally decreased, as can be seen from comparing the latest percentages with the previous figures shown in brackets. This confirms the review team's doubts about the representativeness of the data previously published.

Table 3.7 rev. **Students by total household income (multiples of minimum salary), by year and semester, 2007–2010**

	2007 S1	2007 S2	2008 S1	2008 S2	2009 S1	2009 S2	2010 S1	2010 S2
Students: total number in this analysis	756 141	774 339	828 329	828 326	883 297	896 405	931 788	911 697
Income 0-2 minimum	44.6	46.1	47.7	49.0	50.0	50.6	51.0	51.4
salaries (%)	(36.8)	(38.1)	(39.7)	(41.2)	(42.8)	(43.9)	(45.2)	(45.7)
Income 2-3 minimum	23.5	22.9	22.9	22.6	22.5	22.5	22.4	22.2
salaries (%)	(26.3)	(26.4)	(26.6)	(26.6)	(26.8)	(27.0)	(27.0)	(27.2)
Income 3-5 minimum	18.0	16.9	16.9	16.4	16.0	15.7	15.4	15.1
salaries (%)	(19.4)	(19.0)	(18.4)	(17.9)	(17.2)	(16.8)	(16.4)	(16.1)
Income 5-7 minimum	7.9	7.4	7.1	6.8	6.5	6.3	6.1	6.0
salaries (%)	(8.6)	(8.2)	(7.8)	(7.4)	(6.9)	(6.6)	(6.4)	(6.2)
Income 7+ minimum	6.1	5.9	5.3	5.2	5.0	5.0	5.0	5.2
salaries (%)	(8.9)	(8.3)	(7.6)	(6.9)	(6.2)	(5.6)	(5.0)	(4.7)

Note: S1 = First semester; S2 = Second semester.

Source: SPADIES.

Large numbers of extra students have also been added into certain other analyses. In 2010 S1, for example, the educational level of mothers has become available for nearly 944 000 students (previously 258 000); the data now indicates that 27% of students' mothers have at most primary education, whereas 21% have tertiary education (the previous figures were 40% and 13% respectively). With nearly 933 000 students now covered by the data for students working when SABER 11 test taken (previously 212 000), the percentage of working students is 6.4% in 2010 S1 (the previous figure was 10%). And with nearly 959 000 students now covered by the 2010 S1 data for parental home-ownership (previously 198 000), it seems that 74.6% of tertiary students' parents owned their own homes (previously shown as 66%). The review team notes as curious that including a much higher percentage of students in these three analyses gives a picture of a student body which is on average slightly more advantaged, whereas including a much higher percentage of students in the family income analysis (Table 3.7) gave a picture of lower average family incomes.

By contrast, recent changes to SPADIES data make little difference to the picture reported in Tables 3.5 (students by gender) and 3.6 (students by SABER 11 test scores). Although in both cases some extra students' details have been added – bringing the number analysed by gender up to 1 081 644 and the number analysed by test score up to 1 006 863 in 2010 S1 – this has not changed the percentage distributions significantly. The only point worth mentioning is that in every semester in the period 2007-2010, the percentage of female students is now marginally higher, by 0.1-0.3 percentage points, than shown in Table 3.5 – while remaining between 52% and 53%.

The transition from secondary to tertiary education and equity issues arising

Colombian students are still relatively young when they complete upper secondary education. The "official" age at which Colombian students should graduate from school is 16. When they enter tertiary education, many are indeed 16, a few even younger. However, those who did not enter primary school on time, repeaters and those who went into the labour market first will be at least 17.

The UNESCO Global Education Digest 2011 shows Colombians as leaving school at 17. This is young even by the standards of Latin America. Peruvians and Venezuelans also leave school at 17 but in Argentina, Bolivia, Brazil, Chile, Mexico, Panama, Paraguay and Uruguay students leave school at 18. Colombian school-leavers are even younger by North American and Western European standards. In this group the Global Digest 2011 shows an upper secondary leaving age of over 17-18, 19 or even 20 – for every country except Ireland.

Young Colombians going into tertiary education have also had fewer years of schooling than counterparts in many countries. They will have left upper secondary school after the 11th grade, whereas most developed countries have a 12th grade and some have a 13th. This difference shows up in international comparisons of school life expectancy (primary to tertiary education). UN Social Indicators[2] show school life expectancy in Colombia as 14 years, 13 for men and 14 for women. Within Latin America, this is higher than Panama, Peru and Paraguay but lower than Argentina, Uruguay and Chile. Except for Turkey, all OECD members outside Latin America show longer school life expectancy than Colombia.

Being younger than most international counterparts and having had one less year of primary and secondary education than most, Colombian school-leavers may be expected to find the transition from school to university or other tertiary institution quite demanding, unless their schools have prepared them exceptionally well. How well do Colombian schools prepare young people for the transition? As Chapter 1 records, Colombian secondary schools do not emerge particularly well from international student performance comparisons such as PISA and TIMSS. Though Colombia's results were notably better in PISA 2009 than in PISA 2006 – for which the country deserves credit – they were still not good in 2009, by international standards. Of particular concern for the transition to tertiary education is the large percentage of Colombia's 15-year-olds who scored below PISA level 2 – the baseline level – in one or more subject areas.

The 47% of Colombian 15-year-olds scoring below reading proficiency level 2 are a particularly vulnerable group. As the PISA 2009 report states: "Their limited abilities put their future educational and work-related careers at risk. Longitudinal studies confirm this. In Canada, for example, of the 9% of students who scored below level 2 in reading in PISA 2000, two-thirds of them had not progressed to post-secondary education and only 10% of them had reached university. In contrast, the majority of students proficient at level 2, but no higher, had moved to post-secondary education … Evidence from Australia, Switzerland and Uruguay shows similar results and emphasises the … positive relationship between performance in PISA and … attending and successfully completing more intellectually challenging vocational schools or acquiring tertiary education." And it is worth stressing again that in all the countries mentioned in this PISA report quotation, students will spend more time in upper secondary school after taking the PISA test and before seeking entry to tertiary education than will students in Colombia. Of the students in Colombia's PISA 2009 sample, 42% were in the 10th grade, with just one more full year of secondary education to go; 21% were already in the 11th grade, their final year; and the remaining 37% are still struggling in grades 7-9.

During fieldwork the review team discussed with a range of Colombian stakeholders this issue of whether young Colombians are adequately prepared by schools to make the transition to tertiary education. In the consistent view of institutional stakeholders, many students who arrive at tertiary institutions, particularly universities, lack "college-readiness". There is therefore a big gap between the knowledge and skills they have acquired in school and the knowledge and skills they need to have if they are to learn effectively at tertiary level. The bigger the gap is for an individual student, the bigger the risk that he/or she, if successful in accessing tertiary education, will fail to keep up with the demands of their programme and will drop out. In line with this, data from SPADIES show that the main reasons for dropout from higher education tend to be academic, rather than economic, personal or institutional (MEN, 2009).

Which students, from which backgrounds, are least likely to be college-ready? Self-evidently perhaps, those who have low SABER 11 test scores. Some stakeholders suggested to the team that, in general, public school graduates are less well prepared than private school graduates.

Table 3.8 shows average SABER 11 scores in the "Calendar A" 11th grade test in 2009, in the *núcleo común* of eight core subjects which every student must take: language, maths, biology, chemistry, physics, social sciences, philosophy and English (ICFES, 2011).[3] These scores confirm that students from public schools perform less well on average, but suggest other relevant factors, such as whether the school is urban or rural and the socio-economic category of the school. On average, students from private urban schools scored highest, followed by private rural schools, then public urban schools, then public rural schools. The average score in public rural schools is 6.2 points below the average score in private urban schools. However, when schools are compared only with others in the same socio-economic category, the picture is quite different, as can be seen by looking vertically down the "average score" column. In the lowest category 1, public urban schools do best, followed by public rural, private rural and lastly private urban; the difference between highest and lowest is down to 1.8 points. In category 2, public urban and private rural schools do best and equally well; then come public rural and finally private urban; and the difference between highest and lowest is just 1.5 points. There are no public rural schools in category 3; in this category the difference between the highest, private rural, and the lowest, public urban, is 1.7 points. There are no public schools of any kind in category 4, the highest socio-economic category; here private urban schools outdo private rural schools by 2.2 points. It is not clear how many of these differences are statistically significant.

Table 3.8 indicates, therefore, that public school students' test results are no worse on average than those of private school students, once account is taken of each school's socio-economic context. Public schools actually perform better if the comparison is confined to schools in socio-economic category 1. If comparison is confined to socio-economic category 2, public and private school averages are about the same. Most schools in categories 1 and 2 will be public schools, serving (by definition) relatively disadvantaged students. By contrast, schools in the top socio-economic category are found only in the private sector, serving relatively privileged pupils whose background gives them many other advantages.

Table 3.8 **Performance in SABER 11 grade test by school type, 2009 (Calendar A)**

School type	Socio-economic category	Average score, *núcleo común*					Standard deviation
Public, urban	1	44.9					6.0
	2		47.1				6.3
	3			50.2			6.7
	All public urban					**46.9**	6.5
Public, rural	1	44.0					5.6
	2		45.8				6.3
	All public rural					**44.4**	5.9
Private, urban	1	43.1					5.4
	2		45.6				6.5
	3			50.9			7.2
	4				56.6		7.6
	All private urban					**50.6**	7.9
Private, rural	1	43.4					5.6
	2		47.1				5.8
	3			51.2			7.0
	4				54.6		7.5
	All private rural					**49.9**	8.3

Source: ICFES (2011), "Examen de Estado de la Educación Media: Resultados del Período 2005-2010".

The evidence in Table 3.8 is broadly consistent with evidence from PISA 2009. PISA reports have consistently noted that the socio-economic background of students and schools has a powerful influence on educational performance – though some countries succeed in reducing its impact on

learning outcomes, and in all countries some individuals demonstrate that socio-economic barriers can be overcome. Colombia has a socio-economic profile well below the average OECD country, which explains part (though by no means all) of the difference between Colombian and OECD average performance in PISA 2009. Brazil and Mexico have similar socio-economic profiles to Colombia; students from Peru tend to be somewhat less advantaged, and students from Panama, Uruguay, Chile and Argentina somewhat more advantaged.

Across OECD countries, a student from a more socio-economically advantaged background (among the top one seventh) outperforms a student from an average background by 38 score points, or about one year's worth of education, in reading. But regardless of their own socio-economic background, students attending schools with a socio-economically advantaged intake tend to perform better than those attending schools with more disadvantaged peers. And in PISA 2009, almost all of the variation in reading performance explained by socio-economic difference in Colombia was *between* schools rather than *within* schools. Thus in Colombia it is particularly likely that an individual student's performance will be influenced by the average level of the socio-economic group that predominates in their school and determines their school's socio-economic category – though Colombian schools tend to be relatively homogenous in their socio-economic make-up in any case.

The conclusion is that, though the school attended can make a significant difference to SABER 11 test score and hence college-readiness, the factor with the biggest influence is the school's socio-economic category, not whether a school is private/public or urban/rural – though in the lowest two socio-economic categories, public schools in urban areas seem to have a slight advantage.

One other factor worth examining is whether gender affects SABER 11 test results. Colombia's results in both PISA 2009 and TIMSS 2007 showed girls performing less well relative to boys than in any other participating country. What does the SABER 11 test show? Table 3.9 gives average results for girls and boys in each of the two tests a year run by ICFES from mid-2005 until mid-2010. In every one of the 10 tests shown, boys did better than girls. The differences are not great, but they are astonishingly consistent, corroborating the messages from international comparisons that girls are disadvantaged in the Colombian secondary system, a fact that is all the more evident when maths scores are analysed. This makes girls' higher secondary graduation rate all the more impressive.

Table 3.9 **Performance in SABER 11 test by gender, 2005-2010**

Test date	Average score in *núcleo común,* boys	Average score in *núcleo común,* girls	Difference (boys minus girls)
2005-2	47.9	46.8	**1.1**
2006-1	48.1	46.7	**1.4**
2006-2	48.3	46.9	**1.4**
2007-1	47.5	47.1	**0.4**
2007-2	47.9	46.8	**1.1**
2008-1	48.1	47.1	**1.0**
2008-2	48.1	47.1	**1.0**
2009-1	48.0	47.0	**1.0**
2009-2	48.0	47.1	**0.9**
2010-1	49.9	49.0	**0.8**

Source: ICFES (2011), "Examen de Estado de la Educación Media: Resultados del Período 2005-2010".

Admission to tertiary institutions and equity issues arising

As already mentioned, the numbers entering tertiary education have been increasing steadily and are planned to increase further, towards a target of 50% participation by 2014. The government of Colombia is confident of being able to achieve this 50% participation rate, given the numbers of young people qualified to enter tertiary education who are not yet accessing it, and the aim of increasing the T&T proportion of places to 45%, which could be achieved mainly by increasing numbers attending T&T programmes at SENA. The review team is satisfied that 50%, with a T&T proportion of 45%, is a reasonable level of tertiary participation for the country to aim for, and gives due weight to the country's economy needs.

It is less clear that the pattern of tertiary places planned for 2014 is in line with the existing pattern of student aspiration and demand. Where do students wish to go, and are they succeeding in accessing their institutions of choice? The team is not aware of any recent survey evidence on this, so the question is what can be deduced from application and acceptance patterns. Table 3.4 certainly suggests that university studies have the highest ratio of applicants to enrolments, and this is consistent with evidence from the team's discussions with students; but some doubts were expressed above about how much reliance can be placed on the figures, especially if students who apply to universities are more likely to apply to more than one institution. SENA, on the other hand, does have very high demand, in part because its programmes are free.

It is very difficult to ascertain application and success rates accurately in Colombia, because every institution decides and applies its own admission criteria and processes. No details are held centrally of the entry arrangements and criteria of each institution. Applications are sent by individual students to one or more tertiary institutions they wish to apply for. There is no common date by which all applications must be submitted, or by which all students will know whether they have been accepted. Students may make multiple applications; probably many do, particularly in urban areas where they have more options. It may well happen that one student is accepted by two or more institutions while another student who applied to the same institutions is rejected because there are no more places to offer.

There is in Colombia no central agency which processes all the applications, and so is in a position to collate and analyse them and eliminate duplicate acceptances for other students' benefit. Such agencies have been set up in a number of other countries for university applications. They make the process of applying to universities and securing a place in one much easier and less stressful for students and they save administration for the higher education institutions. In the United Kingdom, for example, the vast majority of tertiary applications from young people are made though the Universities and Colleges Admissions Service (UCAS), an organisation wholly owned by the higher education sector. UCAS invites all young people to fill in a form naming six higher education institutions they wish to apply to. UCAS then passes applications to the institutions named, receives their offers or refusals of a place, and forwards these to the students. It also ensures that each student chooses one offer[4] and that any places they do not want are made available to other students. The whole process operates on line and is very efficient. A similar clearing-house system operates in Chile, for students who take the entry test for a group of public and private universities, most of which are members of the Council of Rectors of Chilean Universities.

The review team's conversations with stakeholders, especially the groups of students with whom meetings were arranged at every institution visited during fieldwork, suggest that university is still the preferred option for most young people, if their families can afford the fees and other costs or if they expect to get the necessary financial support from ICETEX or the institution itself (see "student support" section below). University has the most prestige and graduates with bachelor's degrees or higher earn significantly more money, on average, than technicians and technologists.

And in Colombia as in many other countries, vocationally-oriented courses have yet to achieve parity of esteem with academic courses, in the minds of many parents and students. This is unfortunate, given the strength of employer demand for professional technicians and technologists and the fact that in some of the most popular subject areas, output of university graduates exceeds the number of good jobs for them (according to employers who spoke to the review team). It is also, arguably, short-sighted given Colombia's commitment to expanding and developing education in "propaedeutic cycles", which allow young people to move up a ladder of increasingly high-level programmes, through professional technician and technologist to professional degrees. As yet, the review team was told, very few students have moved the whole way up this ladder successfully. The transition from technologist to professional degree can still be difficult, not least because it often means moving to a different tertiary institution whose entry standards may not dovetail with the previous institution's exit standards. It will be important to generate more examples of successful ascent of the propaedeutic cycles ladder, to encourage students to choose T&T courses in the confidence that they are not "dead ends".

Young people set on going to university often choose public universities over private universities because the fees tend to be more affordable; a number of students told the team that they would have preferred private universities had it not been for their extra cost. However, the fees charged by public universities vary considerably, depending on the generosity or otherwise of their government funding. Those without the means or, more rarely, the aspiration for university generally wish to go to SENA. This is partly because SENA programmes have a good reputation among young people. SENA's biggest selling point, though, is that its programmes are free. Consequently, SENA places tend to be over-subscribed, entry requirements can be quite demanding and it seems that entry standards are rising. Students whose applications had been unsuccessful told the team that they thought this was because their SABER 11 test scores were not high enough. SENA, however, claims that SABER 11 test scores are not taken into account: when courses are oversubscribed, admission is based on interviews and in some cases SENA also administers its own tests. What is clear is that in 2011, only around 13% of SENA applicants subsequently enrolled in SENA programmes. The team also noted that some SENA establishments visited during fieldwork ran very few programmes at night or in the evenings, only during the day. In the areas served by these SENA centres, SENA programmes will be inaccessible to many less-well-off students who need to work to cover their living costs while studying.

T&T institutions other than SENA are the least popular option among students. The private institutions are unsubsidised, meaning that they need to charge quite high fees. Even the public ones may be subsidised at a low rate, if at all: the team visited one institution whose regional education authority had offered it the choice between becoming fully self-financing or closing down. The reputation of these institutions for quality varies quite widely: at some, the team formed the impression that the students are getting poor value for the fees paid.

Equity issues arise if some groups are less successful than others in competing for places at the institutions of their choice. It is very difficult to say whether and how far these issues arise in Colombia, for the reasons already explained. The policy of leaving admission criteria and processes entirely up to institutions themselves, with no central oversight or collection of detailed data, may be consistent with Colombians' understanding of institutional autonomy, but has some unfortunate results. Many of the students the review team met on visits had applied for university places and been rejected. They seemed to be unclear why they had been rejected, unclear about what the admission criteria were supposed to be and often doubtful about whether the formal admission rules had been followed in any case. Current and recent students seemed to share a conviction that 'you have to be from a rich family to get into university', and also a conviction that the better-off applicants, or those whose families had enough money to pay tuition fees and/or enjoyed local influence, would be allowed in regardless of the criteria.

While there is no clear evidence that these students' views were accurate, they received some support from one public university the team visited. The new rector explained that in the past, local politicians had intervened extensively in decisions on which applicants were admitted, in order to do favours to friends and supporters. The only way to avoid this, the university had decided, was to hand over their whole admission process – from deciding criteria to processing applications to drawing up the list of applicants who should be offered places – to another public university, the Universidad Nacional in Bogota.

It seems to the team that, whatever the underlying truth of these matters, the level of student distrust and suspicion is a problem for Colombia. If students do not have clear, full and accurate information about the admissions criteria of every tertiary institution, they will make poor choices and suffer unnecessary rejections and disappointments. If institutions with ministry approvals and public funding are not making their criteria clear and

public, there is a problem of transparency. If published criteria are not being followed rigorously, or if students who do not meet them are being admitted at the expense of students who do, then serious issues of fairness, equity and accountability arise.

The team also believes that the government of Colombia needs to collect more information on admission arrangements and criteria, on how they are operated, and on the personal characteristics of accepted and rejected applicants, in order to assure itself and Colombia's young people that this aspect of the system is working fairly. Autonomy should always be accompanied by an obligation to explain and justify to stakeholders the autonomous decisions reached.

The review team has considered whether equity would be even better served if all tertiary institutions agreed, or were required, to adopt a common set of admission requirements for each programme level (professional technical, technologist, undergraduate degree etc.). This is done in a number of countries, often relying on a national school-leaving exam (the *Abitur* in Germany, the *Baccalauréat* in France, the Leaving Certificate in Ireland) or a national university entry test (Chile, China) or both (Spain). Colombia already has SABER 11, which is in effect a school-leaving exam and is compulsory for those wishing to enter tertiary education. ICFES told the team that 78% of Colombian tertiary institutions use the SABER 11 test results as an admission criterion, though most of them (72%) combine this information with other elements such as individual interviews, the results of other tests and school marks.

There would be a strong case for recommending universal use of SABER 11 test results as the sole or principal criterion for tertiary admissions, but for one thing. In Chapter 5, Table 5.11, this report presents figures on the reliability of the present SABER 11 subject tests. Average reliabilities are quite low for a summative examination, and in the opinion of the team's assessment expert, too low to rely on in a high stakes situation, such as a decision whether to accept or reject a student whose score is within a few points either side of the minimum score demanded by the institution concerned. Tertiary institutions which supplement SABER 11 subject tests with other criteria may therefore be right to do so, provided that their other criteria add to the overall reliability of the selection process. The review team is not of course saying that reliability levels are so low that SABER 11 should not be used in admissions at all – it could well be that the entry tests used in other countries, and the other tests some Colombian institutions use in parallel, are even less reliable. Indeed, it would be sensible, in the team's view, for all tertiary institutions to make some use of SABER 11 results in admissions, given that they are the only objective test taken by all students.

Moreover, the SABER 11 tests are currently being redesigned by ICFES, in ways that should improve average reliability levels. The question whether to make these tests the basis of a common admissions system should be revisited, when the new tests are in place and their reliability levels known to be high enough for this purpose.

Access and equity in relation to family income

The government of Colombia is particularly concerned that young people from different socio-economic backgrounds should have equal chances of accessing tertiary education. The young people the team met in Colombia also felt strongly that different income groups should have equal opportunities. Analysis of tertiary participation by socio-economic status is far from straightforward, however. Three different ways of analysing the socio-economic status of students' families are in regular use in educational contexts in Colombia – *estratos*, SISBEN (*Sistema de Identificación de Potenciales Beneficiarios de Programas Sociales*, Selection System of Beneficiaries of Social Programmes) and multiples of minimum wages – and all of them have disadvantages. The Annex at the end of this chapter explains all the technical issues involved in measuring socio-economic status in Colombia, and what these disadvantages are: a brief summary is given below.

Estratos (strata) are the categories used in the Colombian socio-economic stratification system which classifies housing according to its physical characteristics and environment, in order to price public services at differentiated rates and to allocate subsidies to the poorest areas. Dwellings are classified into one of six strata, with strata 1 being the poorest. However, studies by both the World Bank and the government of Colombia suggest that this classification system no longer aligns particularly well with income distribution. Some 90% of Colombians are in strata 1-3 and some quite well-off families are classified as in these strata.

Table 3.10 shows how the strata relate to income deciles. The percentages in each column show the percentage of the population in that stratum that falls within each income decile. For example, of those living in stratum 2 accommodation, 13.5% are in income decile 7, 14.1% in decile 8, 13.4% in decile 9 and 8.4% in decile 10 – therefore in total nearly 50% of people in the second-poorest housing category are in the four richest income deciles. This shows that using stratum as a key selection criterion is not always a sound way of targeting potential beneficiaries and improving equity.

Table 3.10 **Relationship between strata and income deciles, 2010 (%)**

Deciles	Strata					
	1	2	3	4	5	6
1	10.7	4.6	1.8	1.0	1.0	1.2
2	12.8	5.4	1.7	0.4	0.2	0.1
3	13.7	7.6	2.9	0.9	0.6	0.3
4	13.8	9.3	4.5	1.4	0.7	0.5
5	12.7	10.9	6.6	2.1	0.8	0.5
6	11.4	12.8	9.2	3.6	1.9	0.9
7	9.5	13.5	12.1	5.7	2.3	1.4
8	7.4	14.1	16.4	10.5	6.2	3.4
9	5.4	13.4	21.7	20.5	14.5	9.2
10	2.6	8.4	23.1	53.9	71.9	82.5
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: National Administrative Department of Statistics (DANE), 2010 Household Survey.

When determining applicants' socio-economic status for the purpose of deciding their eligibility for ACCES loan support, ICETEX relies on the e*stratos* system. In absolute numbers ICETEX provides the most loans to students *from estrato* 2 followed by *estrato* 1. Loans to students from *estratos* 4, 5 and 6 constitute less than 7% of all loans.[5] But when deciding whether also to subsidise their living expenses and/or write off 25% of the loan principal upon graduation, ICETEX uses the second socio-economic classification system, SISBEN.

SISBEN (*Sistema de Identificación de Potenciales Beneficiarios de Programas Sociales*, Selection System of Beneficiaries of Social Programmes) is a government instrument used to determine eligibility for social programmes based on indicators of socio-economic welfare. Students from families with SISBEN 1 or 2 are considered the least advantaged, while in some cases, level 3 is also eligible for social programmes. The versions of SISBEN used until the end of 2011 have had similar disadvantages to the *estratos*. The latest version, SISBEN III, will come into use in 2012. It should be a considerable improvement over previous versions, but only time and use in practice will tell.

The third classification system is based on total household income in multiples of the Colombian minimum wage – used, as already mentioned, in SPADIES analyses to determine dropout causes. Though this system can distinguish with reasonable efficiency between the bottom 50% of the population (0-2 minimum wages), the next 40% (3-5 minimum wages) and the top 10%, the information requires substantial conversion to make it comparable with the income quintiles or deciles generally used in other

countries. Not only does the minimum wage rise more than inflation from year to year, but also the data do not take into account differences in household size, which can have profound effects on income per capita, a better measure for determining socio-economic status.

The World Bank uses a database called SEDLAC (Socio-Economic Database for Latin America and the Caribbean), which makes income data from all the household surveys in Latin America cleaner and more comparable. Colombia's SEDLAC data come from household surveys that DANE conducts regularly. The SEDLAC data "equivalises" income for household size, taking into account the facts that larger households can benefit from economies of scale and that children under fourteen require less income for a given standard of living.

Tables 3.11, 3.12 and 3.13 present SEDLAC information on net tertiary enrolment by equivalised income quintile, for Colombia and a group of Latin America comparators. Total net tertiary enrolment figures (percentages) are lower in any given year than the total gross tertiary enrolment figures quoted elsewhere in this report, because they are compiled on a different basis. Gross Colombian enrolment (37.1% in 2010) is calculated by dividing the total numbers enrolled in tertiary education, whatever their age, by the tertiary-age population, that is the population in the five-year age group following on from the secondary school leaving age. Net Colombian enrolment for SEDLAC purposes (23.1% in 2010) is calculated by asking all 18-24 year olds in household surveys whether they are currently attending a TEI, and dividing the number saying they are by the total number of 18-24 year-olds surveyed, applying appropriate weights to expand survey data to the entire population.

Table 3.11 **Net tertiary enrolment by equivalised income quintiles, 2001-2010**

	Equivalised income quintiles (% net enrolment)					
Colombia	Q1	Q2	Q3	Q4	Q5	**Total**
2001	7.9	6.2	7.8	14.4	40.6	**16.6**
2002	8.5	5.5	8.7	13.3	41.9	**16.4**
2003	8.6	6.5	9.2	16.2	40.5	**17.9**
2004	7.1	6.7	9.3	17.3	43.9	**18.5**
2005	6.6	7.0	10.3	19.1	46.4	**18.9**
2006	9.6	8.8	12.5	21.6	44.7	**19.5**
2007	9.5	10.9	14.8	25.1	50.0	**22.1**
2008	9.0	12.0	16.4	25.8	50.6	**23.2**
2009	9.7	10.8	17.5	25.5	50.0	**22.8**
2010	9.5	11.5	16.7	26.5	52.0	**23.1**

Source: SEDLAC (CEDLAS and the World Bank).

Table 3.11 shows that in Colombia in 2010, 9.5% of 18-24s from the poorest fifth of the population were in tertiary education. This is significantly higher than the 7.9% recorded in 2001, but most of the growth in this quintile's tertiary participation seems to have occurred between 2001 and 2006, since when the percentage has stayed much the same – though there are fluctuations from year to year. However 40.6% of 18-24 year-olds from the richest fifth of the population were in tertiary education in 2001, and by 2010 their participation had increased to 52%. Therefore, participation by the richest fifth has grown by 28% over the period, while participation by the poorest fifth has grown less, by 20%. If account is taken only of the positions of the richest and the poorest, it seems that while the benefits of creating more places in the system have trickled down to the poorest, income-related participation gaps have if anything widened – though this conclusion may not be a safe one to draw, because if (as seems probable) students from rich families are more likely than students from poor families to take degree courses, the affluent students have greater chances of being picked up as tertiary participants by household surveys, just because degree programmes last longer than other tertiary programmes.

There are more positive signs of progress in the column for Q2, the second-poorest quintile. There, participation has nearly doubled, growing from 6.2% to 11.5% over the period. And in Q3 participation has more than doubled, growing from 7.8% to 16.7%. Q4 participation has nearly doubled, growing from 14.4% to 26.5%. So while in 2001 Q5 had nearly three times the tertiary share of Q4, by 2010 Q5's share was just less than twice Q4's. Q5 no longer dominates tertiary participation as it used to do, and middle income Colombians have done the best of all from tertiary expansion.

This analysis is reinforced by Table 3.12, showing each quintile's share of the total tertiary education cake. Table 3.12 makes clear that between 2001 and 2010, Q1's share of enrolment went down from 10.3% to 8.2%, the shares of Q2, Q3 and Q4 grew, while Q5's share fell from 52.8% to 44.7%. And while at the start of the period Q5's share was almost three times higher than Q4's, by 2010 Q5's share was under twice that of Q4.

Table 3.13 shows that in 2009 Colombia's equity performance was around the middle of the Latin American table. Colombia's participation rate for students in Q1, the poorest quintile, was higher than the rates in Brazil, Costa Rica, Peru and Uruguay; but lower than rates in Argentina, Chile, Ecuador and Mexico. Colombia's difference between Q5 and Q1 participation rates was less than in Brazil, Costa Rica, Panama and Uruguay, and the other five countries all had lower rates of Q5 participation than Colombia.

Table 3.12 **Share of net tertiary enrolment in each equivalised income quintile (%)**

Year	Q1	Q2	Q3	Q4	Q5	Total
2001	10.3	8.1	10.1	18.7	52.8	100
2002	10.8	7.1	11.1	17.1	53.8	100
2003	10.6	8.1	11.3	20.1	50.0	100
2004	8.4	8.0	11.1	20.5	52.0	100
2005	7.4	7.8	11.5	21.4	51.9	100
2006	9.9	9.0	12.8	22.2	46.0	100
2007	8.6	9.9	13.4	22.8	45.3	100
2008	7.9	10.5	14.4	22.7	44.5	100
2009	8.6	9.5	15.4	22.5	44.0	100
2010	8.2	9.9	14.4	22.8	44.7	100

Note: Calculations are based on quintiles equivalent to 20% of the population, which is not necessarily the case for the population 18-24, but this should not significantly alter the results.

Source: Authors' calculations based on SEDLAC (CEDLAS and the World Bank).

Table 3.13 **Net tertiary enrolment by equivalised income quintiles 2009, international comparisons**

	Equivalised income quintiles (% net enrolment)					
Country	Q1	Q2	Q3	Q4	Q5	Total
Argentina	15.9	21.5	28.1	41.7	52.8	30.0
Brazil	3.3	5.1	9.7	20.4	48.8	16.3
Chile	17.1	21.9	25.7	35.0	59.2	30.6
Colombia	9.7	10.8	17.5	25.5	50.0	22.8
Costa Rica	5.2	7.5	11.7	21.2	47.0	17.8
Ecuador	12.1	15.9	18.3	25.8	47.3	24.6
Mexico	15.6	14.3	16.3	22.5	44.0	22.5
Panama	4.4	8.1	11.4	22.2	41.1	16.8
Peru	8.5	16.1	24.9	36.1	56.0	28.5
Uruguay	3.2	8.0	15.5	28.1	50.9	18.8

Note: Data for Mexico are for 2008.

Source: SEDLAC (CEDLAS and the World Bank).

Table 3.14, comparing the shares of tertiary enrolment by quintile, again shows Colombia around mid-table. Colombia's richest fifth of the population take up a smaller share of tertiary enrolment than in Brazil, Costa Rica, Panama and Uruguay, and the share of the poorest fifth is higher than in Brazil, Costa Rica, Panama, Peru and Uruguay.

Table 3.14 **Share of net tertiary enrolment in each equivalised income quintile (%) 2009, international comparisons**

Country	Q1	Q2	Q3	Q4	Q5	Total
Argentina	10.0	13.4	17.5	26.1	33.0	100
Brazil	3.8	5.8	11.1	23.4	55.9	100
Chile	10.8	13.8	16.2	22.0	37.2	100
Colombia	8.6	9.5	15.4	22.5	44.0	100
Costa Rica	5.7	8.1	12.6	22.8	50.8	100
Ecuador	10.1	13.3	15.3	21.6	39.6	100
Mexico	13.8	12.7	14.5	20.0	39.1	100
Panama	5.1	9.3	13.1	25.4	47.1	100
Peru	6.0	11.3	17.6	25.5	39.6	100
Uruguay	3.0	7.6	14.7	26.6	48.2	100

Note: Data for Mexico are for 2008.

Source: SEDLAC (CEDLAS and the World Bank).

Nonetheless, overall the conclusion must be that access to tertiary education remains far from equitable between income quintiles, and Colombia has much work still to do if students from lower-income groups are to have the same tertiary opportunities as students from Q5, or even Q4, enjoy. This is partly a matter of ensuring greater college-readiness among students from poorer families as discussed above, and partly a matter of giving those students access to financial support to see them through their courses.

Equity in the student support system

If tertiary education is to be accessible to lower-income students whose families cannot themselves afford to finance fees and living costs, other sources of student support must be made available. The Colombian government recognised this when it established the Colombia Student Loan

Institute, ICETEX. ICETEX offers student loans for students enrolled in technical, technological, university or postgraduate programmes in national and/or international tertiary education institutions. The Institute also manages national and international scholarships and grants on behalf of various public and private organisations. Colombia was a pioneer in this area – not only in Latin America but internationally – as ICETEX was established in 1950, the first institution of its kind in the world.

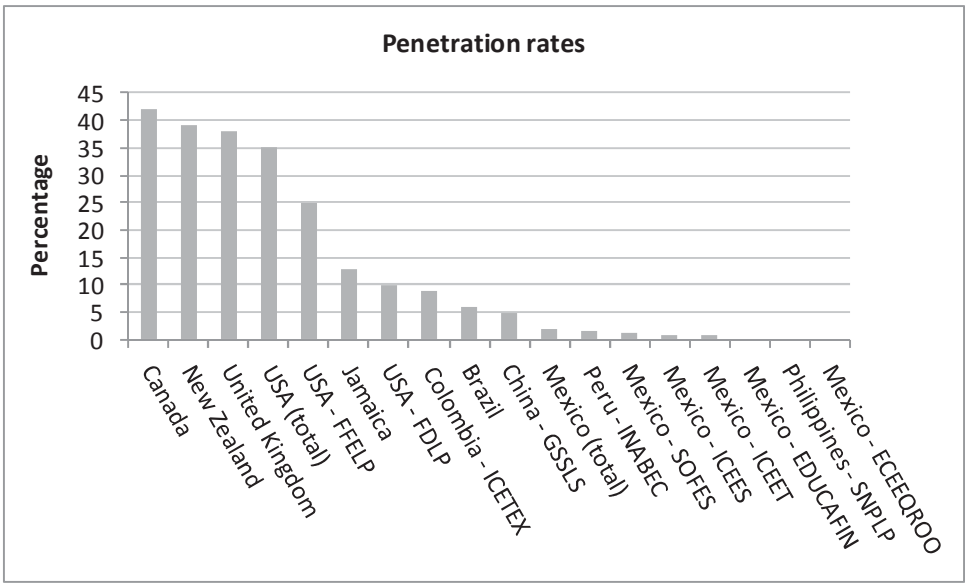
In 2002, when the rate of gross enrolment in tertiary education was 24%, only 9% of the target student population had access to student loans (the target population excludes SENA students, public university students who pay less than one minimum wage and private university students in strata 5 and 6). In that same year the government launched its plan for expanding and improving education, the *Revolución Educativa*, ICETEX was tasked with implementing a revised student support programme called Access to Higher Education with Quality (*Acceso con Calidad a la Educación Superior*), known as ACCES. The ACCES programme's ambitious goals are to increase equitable access to tertiary education in Colombia, to make the system more efficient, and to help improve its quality and relevance. Between 2002 and 2011, the total number of annual ICETEX student loans (new and renewed) increased from 53 969 to 155 199. As a result, by 2010 the proportion of loan beneficiaries in the target student population had risen to 20%.[6]

Thanks to ICETEX, Colombia has achieved probably the highest share of students benefiting from a loan as a percentage of the total enrolled population in Latin America: Figure 3.1 indicates that the maximum achieved in other countries in the region is around 10%. ACCES provides subsidised loans to students from disadvantaged backgrounds (low income groups, marginal urban and rural population, displaced groups, indigenous, Afro-Colombians, students with disability, etc). The loans are in fact a hybrid of pure loan and grant, the grant proportion depending on beneficiaries' income level. In addition, ICETEX forgives 100% of the loan for students from what it considers to be the poorest groups who achieve outstanding results in the SABER PRO exam.

A student's eligibility for ACCES is determined by criteria that take into account the student's financial circumstances, their chosen tertiary institution (accredited institutions have a higher priority) and, in the case of first-year students, their academic performance as measured by the SABER 11 tests; students in their second or later years must have a minimum grade point average of 3.4/5.0 for the last semester prior to the loan application. As already mentioned, determination of financial circumstances is based on the *estratos* (strata) system. Additionally, up to 2011, loan recipients from households in SISBEN levels 1 and 2 qualified

for a living expenses subsidy and a write-off of 25% of the loan principal on graduation. Starting in 2012, when SISBEN III comes into use, eligibility for this other support will be decided using varying cut-off points determined by geographic location.

Figure 3.1 **Proportion of students benefiting from a loan in selected countries**



Note: The penetration rate is the number of students benefiting from student loans in the latest year available as a percentage of the overall student population enrolled in higher education. Data for Colombia is 2006.

Sources: Domenec Ruiz Devesa and Andreas Blom (2007). Based on: SOFES (2006); ICEES (2006); ICETEX (2006); INABEC (2006); Suzuki, Blom, and Yammal (2006) for ICEET, ICEEQROO, and Educafin in Mexico; United Kingdom Student Loans Company Limited (2005); Canada Student Loans Program (2004); New Zealand Student Loan Scheme (2006); US Office of Post-Secondary Education Website (2006) for the United States; Kitaev *et al.* (2003) for the Philippines; Shen and Li (2006) for China; World Bank (2002) for Jamaica; and World Bank EdStats Website (2006) for national enrolment in higher education).

Of the 124 531 ACCES loan recipients between 2008 and 2011, 97.1% were from families in strata 1, 2 and 3, with 33% coming from strata 1 and 51.7% from strata 2 (ICETEX/World Bank, 2011). The equivalent figures for the population 17-21 years of age are 93% for strata 1, 2 and 3, 32.1% for strata 1 and 42.3% for strata 2. The type of tertiary institution also affects loan size because ICETEX pays up to 100% of tuition costs at technical and

technological institutes but only up to 75% of tuition costs at universities (subject to a cap which means the loan is less than 75% for the most expensive private university in Colombia, the University of Los Andes, and one or two others). Table 3.15 summarises the various permutations of assistance available.

Table 3.15 **Interest rates for ACCES loans and other loan conditions, May 2011**

Student characteristics		Interest rates		Other ACCES loan conditions		
Stratum	*SISBEN 1 or 2*	*Study and grace period*	*Repayment period*	*% of tuition covered*	*Living expenses subsidy*	*Write-off of 25% of loan principal on graduation*
T&T students						
1,2,3	Yes	4%	8%	100%	Yes	Yes
1,2,3	No	4%	8%	100%	No	No
4,5,6	No	8%	8%	100%	No	No
University students						
1,2,3	Yes	4%	12%	75%	Yes	Yes
1,2,3	No	4%	12%	75%	No	No
4,5,6	No	8%	12%	75%	No	No

Note: Introduction of SISBEN III in 2012 will mean changes in the eligibility conditions in the last two columns.

Source: ICETEX/World Bank (2011), *ACCES Loans: the Path to Equitable Access to Tertiary Education in Colombia*, ICETEX/World Bank.

Most loans go to undergraduate students in Colombia, but ICETEX also funds graduate students (4 436 loans in 2010) and study abroad (1 758 loans in 2010), amounting to about 14% of the new loans granted in 2010. Table 3.16 shows the distribution of beneficiaries by type of institution and programme. In 2010 nearly 80% of the resources went to funding university undergraduate education and considerably less – 13.4% – to funding T&T education. This is partially due to the comparatively lower cost of this type of study: while less than one-sixth of total resources (13.4%) are lent to T and T students, these students receive close to one-third (about 30%) of all loans.

As well as helping young people who could not otherwise afford tertiary education to access it, ICETEX loans also help to reduce the dropout rates of beneficiaries, as will be shown in the next section.

Table 3.16 **Distribution of beneficiaries by type of institution and programme level (2010)**

Type of institution	Number of beneficiaries	Distribution of beneficiaries (%)	Total loan amounts (USD thousands)[1]	Distribution of resources (%)
University	207 074	72.4%	**868.2**	79.9%
Technological	44 854	15.7%	**127.3**	11.7%
Professional technical	14 075	4.9%	**18.5**	1.7%
Specialisation	11 615	4.1%	**38.8**	3.6%
Master's Degree	8 224	2.9%	**31.9**	2.9%
PhD	246	0.1%	**1.5**	0.1%
Teacher Training	56	0.0%	**0.3**	0.0%

Note (1): USD exchange rate of 2 April 2012: COP 1 792/USD.
Source: ICETEX, 2011.

The review team thinks highly of the ICETEX system, which has a strong reputation for international leadership in the area of student loans. Its objectives are eminently sound, it has contributed very considerably to access and equity and the scheme is run very efficiently, largely on line – operating costs fell from 12% in 2002 to 5.2% in 2010 (Econometría, 2010).

The review team has just four concerns. The first concern relates to the ICETEX policy of basing means-testing for determining loan eligibility only on *estratos*, a targeting instrument that results in inclusion error. As explained in the Annex to Chapter 3, the *estratos* system has flaws when used as a proxy for income. ICETEX prioritises as financially needy all families in strata 1, 2 and 3, yet, as already mentioned, these three strata cover 90% of the Colombia population. ICETEX provides most of its financial aid to students in stratum 2 (the second-lowest of 6), but, as Table 3.10 showed, nearly half of those classified as stratum 2 are in families with income levels that put them in the four highest income deciles. This means that *(i)* ICETEX's primary loan targeting mechanism could be improved; *(ii)* some of the public resources provided to ICETEX for the equity purpose of helping poorer students who could not otherwise access tertiary education may well be being allocated to students whose families may be able to afford to pay;[7] and *(iii)* as a result (given that only a fraction of those seeking loans received them), these resources would then not be available to some poorer students who need them, so those students would miss out on tertiary education. Another aspect of concern is the fact that students from *estratos* 1, 2 and 3 all receive the same loan conditions, despite the fact that in 2010, 44.8% of *estrato* 3 households belonged to

income deciles 9 and 10, compared to only 8% of *estrato* 1 households. It is recommended that a better targeting system be devised by relevant national institutions such as DNP and ICETEX. As the Annex to Chapter 3 shows, different instruments have different benefits and/or deficiencies as needs assessment tools for tertiary education. It is complicated to determine whether the best system will come from a combination of some existing instruments or the creation of a new, dedicated system for tertiary education needs assessment. What is clear is that a more accurate needs assessment instrument is needed.

A second, related concern is that, although ICETEX has increased its resources, these are still not enough to help all the students who seek its support and are in principle eligible. Figures on the SPADIES website appear to show that the percentage of enrolled students ICETEX supports peaked in the first semester of 2008 and has been declining since (though some enrolments may be missing from the figures recorded from the second semester of 2009 onwards). This suggests that although the resources given to ICETEX have increased, the demand for these resources is increasing at an even faster pace. Moreover, while additional budget increases are expected, in support of the government's plan to move towards 50% participation in tertiary education by 2014, the extra money is very unlikely to enable ICETEX to help all the students who could benefit from tertiary education but cannot afford to enter it without a loan. Given that it cannot meet all students' needs, ICETEX currently rations its support by concentrating it on needy students with the best academic records (as demonstrated by their SABER 11 scores and grades). Since students with better results tend to be those with greater socio-economic advantages, this does not maximise equity. It is therefore desirable to create options for the most financially needy students (among those who meet the basic eligibility criteria but without regard to their relative academic records) in order to improve equity.

The third concern has to do with ICETEX loan repayments and potential default. In recent years, ICETEX has made significant progress in reducing default rates. The proportion of overdue loans was reduced from 21.6% in 2007 to 12.8% in 2009. This reduction is noteworthy given ICETEX's mandate to lend to an inherently risky set of borrowers: needy students without access to loans from other sources (such as private banks) and with few or no assets to guarantee their debt. Nonetheless, for graduates with the lowest income opportunities and/or who are affected adversely by cyclical downturns in the Colombian economy, the loan repayment burden can at times be too high. Recent debates in the Colombian press have highlighted this concern. ICETEX has responded very recently by creating new repayment options for borrowers, as discussed below.

The fourth and last concern is linked to the fact that quality accreditation mechanisms are voluntary and perhaps not as widespread and far-reaching in Colombia as might be expected after almost twenty years of accreditation efforts (see Chapters 4 and 5). Currently, only 62% of ICETEX loan beneficiaries attend institutions with very high quality accreditation. That leaves a significant proportion of beneficiaries studying at institutions whose educational standards may leave something to be desired; in these cases, access and equity aims may not be fully realised and the risk of ICETEX beneficiaries dropping out is increased. ICETEX is aware of this challenge and has made a conscious effort to take the quality of eligible institutions into consideration in the scoring methodology. This makes it all the more urgent for the Ministry to address this issue of the quality of non-accredited tertiary education institutions.

Dropout

There is understandable concern in Colombia about the high dropout rates from tertiary education in recent years, shown in Table 3.17. Dropout is both an efficiency issue and an equity issue. It is clearly inefficient if significant numbers of young people who start tertiary programmes fail to complete them: money invested in providing and supporting students on programmes not completed is largely wasted and Colombia's economic needs for trained manpower will remain unmet. However the Colombian government seems to be at least equally concerned about the implications of high dropout rates for access and equity, and the fact that so many students' aspirations for a better life on graduation will not be realised. And equity issues clearly arise if some groups in Colombian society regularly suffer more dropout or take longer to complete their programmes than others. It is particularly worrying if the equity gains from expanding tertiary coverage and enrolling more students from less privileged backgrounds are cancelled out by greater dropout among the very groups of students expansion was intended to bring into the system for the first time.

The cohort rates shown in Table 3.17 measure the proportion of students who enter the first year of education but then leave (by the tenth semester for bachelor's degree studies and by the sixth semester for technologist and professional technician studies). The team understands that the annual drop-out rate analyses the proportion of students who are two semesters behind: they are classified as dropouts one year later. The annual rates were above 15% in 2004; dropped to 10.7% in 2007; but have risen since. Cohort dropout rates appear to move in the same direction as annual rates but with a lag of a year or so; they moved down until 2008 and have now crept up again. The government hopes to bring the annual rate down to 9% by 2014.

This will be challenging to achieve, but is very important if the tertiary system is to become more equitable. As is clear from the wealth of information on the website of SPADIES (the national information system specifically designed to track dropout and help identify its causes), rates of dropout vary considerably by student characteristics, study level and institution type, and the highest dropout rates are associated with the types of students and programmes which will feature more prominently in the system as the national coverage rate rises towards 50%.

Table 3.17 **Dropout rates by year and cohort, 2002-2011**

Year	Dropout rate by cohort	Dropout rate by year
2002	52.6	N/A
2003	51.6	N/A
2004	48.4	15.8
2005	48.3	13.1
2006	47.8	11.5
2007	46.4	10.7
2008	44.9	12.1
2009	45.3	12.4
2010	45.4	12.9
2011	45.3	11.8
2014 target		**9.0**

Source: MEN, SPADIES, http://spadies.mineducacion.gov.co/spadies.

Specifically, information on the SPADIES website in November 2011 showed that:

- The biggest dropout occurs in the lowest level tertiary programmes. By the end of the 6th semester, when dropout from T&T courses was measured, 59.6% of professional technician students and 54.7% of technologist students had left. By this stage 40% of university students had also left, though their dropout rate had risen to 45.3% by the 10th semester, the point at which university dropout is officially measured.
- The largest dropout occurs in the first semester, with rates tailing off gradually after that. By the end of the first semester, 16.9% of university students, 25.9% of technologist students and 28.8% of professional technician students had already withdrawn.

- Public institutions suffer less dropout than private institutions overall, but the differences are very small.
- Dropout rates tend to rise as students' household incomes fall. For students from the lowest income group, with family earnings of less than one minimum salary, the dropout rates by the end of the first, 6th and 10th semesters were 22%, 45% and 55%. For students from the highest income group with family earnings of more than 15 minimum salaries, the dropout rates at the same points were 15%, 36% and 40%.
- One powerful predictor of likely dropout rates is whether students had high, medium or low SABER 11 test scores. For students with high scores, the dropout rates by the end of the first, 6th and 10th semesters were 14%, 32% and 38%. For students with medium scores, the dropout rates at the same points were 19%, 42% and 49%. For students with low scores, the dropout rates at the same points were 26%, 53% and 60%.
- Female students are significantly less likely to drop out than male students. For women the dropout rates by the end of the first, 6th and 10th semesters were 19%, 40% and 46%. For men the dropout rates at the same points were 23%, 48% and 55%. This is particularly interesting bearing in mind that according to international studies like PISA and TIMSS, girls perform less well aged 15; that their SABER 11 scores seem always to be slightly lower on average; and that a higher percentage of women are enrolled in tertiary education (though this could be partly due to superior staying power).
- There are some variations by subject studied. The highest dropout rates are seen in engineering, architecture and urbanism (dropout rates by the end of the first, 6th and 10th semesters of 23%, 50% and 56%) and the lowest in health sciences (dropout rates at the same points were 15%, 33% and 38%).
- Dropout rates also vary by Colombian department. Of those regions with cohort rates extending over 10 semesters, in 2011 the highest rates were in Norte de Santander and in Valle del Cauca, where dropout was 51.6% and 51.1% respectively by the 10th semester. The lowest were in Huila, where dropout reaches just 36% by the 10th semester. Chocó and San Andrés y Providencia have a shorter history of tertiary provision than this. On the basis of information over 7 semesters, rates in San Andrés y Providencia (a group of

islands in the Caribbean that are part of Colombia) as well as rates in Putumayo looked exceptionally high, though the Ministy of National Education suggests that this may be due to poor data quality.

Reasons for dropout in Colombia are generally distinguished as economic/financial, academic, institutional, or personal. An important aim of ICETEX ACCES loans is to reduce dropout by removing or minimising the economic reasons for it. The loan programme has indeed proved quite effective in reducing dropout levels and improving the chances of completion of at-risk students. The SPADIES data showed that, overall, students with ACCES loans had a drop-out rate per cohort of 35.6%, while those without loans had a drop-out rate of 52.1%.

Table 3.18 shows the dropout rates associated with ACCES loans for different periods. If the student has had the loan for just one semester, dropout rates are somewhat higher than for students with no loan, though it should be borne in mind that the "no loan" students may well be more socio-economically advantaged. Students with loans for two semesters or more, however, have lower dropout rates than "no loan" students throughout their programmes, and the longer they have their loans for, the more pronounced the impact appears to be. Furthermore, students with ACCES loans have better academic results, pass more classes and on average graduate one semester earlier (*Background Report* [MEN, 2011]). These differences may not be wholly due to having a loan, because the ICETEX policy of deciding which students should receive loans partly on academic grounds means that loan recipients are on average less likely to drop out and more likely to achieve good academic results than tertiary students in general: not only are loan recipients initially selected partly on the basis of their SABER 11 scores, they must also maintain a grade point average of 3.4/5.0 in order to continue qualifying for a loan. Despite this, the review team accepts that ICETEX is making an important equity and efficiency contribution, given that significant numbers of those supported are genuinely poor and that dropout rates tend to rise as students' household incomes fall. Nonetheless, the fact that first semester dropout is so high even for many students with loans suggests to the review team that most first-semester dropout is for academic reasons, or at least not for economic reasons.

Institutions visited by the team also operated other strategies for reducing dropout for economic reasons. Some had their own self-funded scholarship or loan schemes to help less advantaged students who could not get ICETEX loans or for whom the loans were insufficient. One public university charged lower fees to students from lower socio-economic strata, and ran part-time and Saturday-only programmes to help working students.

Table 3.18 **Cohort dropout rates associated with ICETEX loans for different numbers of semesters**

	Cohort dropout rate by end of this semester (%)									
Semester	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
No loan	22	30	36	40	43	45	47	49	50	52
Loan for:										
1 semester	24	35	42	46	49	51	53	55	56	57
2 semesters	13	26	33	38	41	43	45	47	48	50
3 semesters	12	18	25	30	34	37	39	40	42	44
4 or more semesters	9	14	17	20	23	25	28	29	31	34

Source: MEN, SPADIES, http://spadies.mineducacion.gov.co/spadies, November 2011 (updated March 2012).

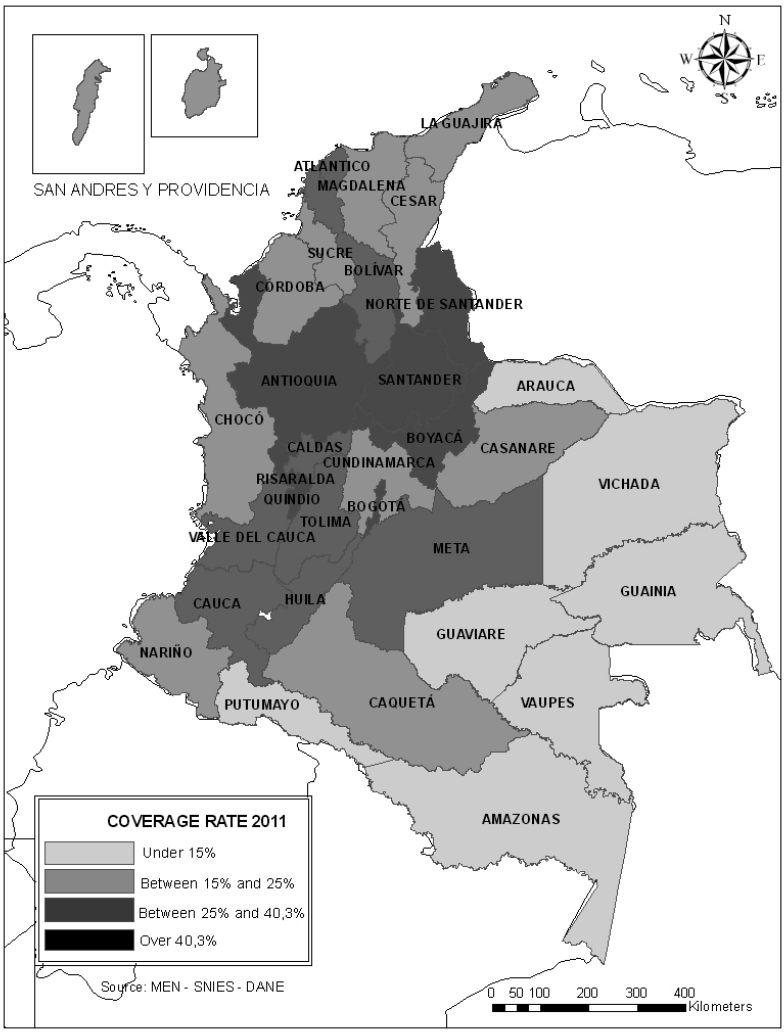
An important aim of the SPADIES system is to enable institutions to identify and monitor their students who are most vulnerable to dropout for academic reasons, so that they can watch for signs of students struggling and intervene in good time. Between 2007 and 2010 the Ministry of National Education contributed COP 6.3 billion to supporting suitable interventions; institutions contributed a further COP 6.8 billion. By the end of 2010 this money had funded training to improve the basic skills and core competences of nearly 6 500 students, which tertiary institutions provided in collaboration with secondary schools. Evaluation showed that the average annual drop-out rate decreased in the first 11 institutions to operate these programmes, while increasing elsewhere. By the first semester of 2010 (the most recent period for which SPADIES records appear to be complete), 5.8% of enrolled students were receiving academic support aimed at preventing dropout. This is more than ever in the past, but far fewer than the number evidently needing help.

A number of the tertiary institutions visited by the review team had made impressive efforts to minimise dropout for academic reasons – though they were not all able to show evaluation evidence of positive results. Examples of programmes the institutions thought were working well included: remedial maths and language classes; making such classes available on line for students to work on as convenient; adding extra weeks at the beginning of semesters for special tuition to help strugglers catch up with their classmates and improve their research and study skills and problem-solving; training teachers to diagnose students' areas of weakness and provide tailored help; making teaching methods more student-centred, less directive and more participative; and setting up a dedicated counseling, mentoring and advice centre for students experiencing problems.

Regional differences

Table 1.5 in Chapter 1 showed tertiary enrolment in every Colombian department in 2010 as a percentage of the population aged 17-21 in that region, to indicate how the number of places available to aspiring tertiary students varied between departments. Figure 3.2 illustrates the differences in 2011.

Figure 3.2 **Gross tertiary enrolment rate by department, 2011**



Source: MEN, SNIES.

Seven regions have coverage of less than 15%: these are mainly savannah and jungle departments in the west and south of the country. Another ten departments have coverage between 15% and 25%; six of them are coastal and three (Cundinamarca, Casanare and Cesar) are neighbours to high coverage regions. San Andres y Providencia also has coverage between 15% and 25%. At the other end of the scale, the seven departments of Antioquia, Bogota, Boyacá, Norte de Santander, Quindío, Risaralda and Santander have above-average coverage of over 40.3% – Bogota and Quindío already over 50%. Within departments there are still some municipalities without tertiary education provision, but the National Education Plan declares an aim of increasing the percentage of municipalities offering at least some tertiary opportunities from 62% in 2010 to 75% in 2014.

However, it must be borne in mind that young people from one region or municipality may access tertiary opportunities in another. No statistics are available from MEN-SNIES showing tertiary participation rates by department of residence or origin. Students from regions with relatively few tertiary places may go in large numbers to institutions in the big cities, especially if they live near them (young people from southern Cundinamarca studying in Bogota, for example). Young people from affluent backgrounds will generally find it easier to move than others – a potential source of inequity – but ICETEX loans for living costs open up this possibility for less advantaged students too.

In the absence of general statistics on student mobility for tertiary education, Table 3.19 affords some clues. It shows the percentage of students who remain to work in the region where they did their tertiary studies. Regions are numbered (1) to (4), in accordance with their level of enrolment as marked in Figure 3.2, (1) being the highest.

The regions with the highest place coverage – those marked (1), with over 40.3% in 2011– tend also to have high numbers of locally-trained graduates working in them, from 49% in Boyacá to 86% in Antioquia. The regions with the next highest coverage – those marked (2) – show wider variation, from 39% in Tolima to 78% in Valle del Cauca. It would seem that some of these regions retain a higher share of local graduates because they are more isolated, whereas the magnetic pull of nearby big cities causes others, such as Tolima, to lose them. All the regions marked (3), with coverage of 15-25%, retain over 50% of local graduates as workers, except Cundinamarca with 18% which definitely suffers from the Bogota effect. The four regions marked (4) shown in Table 3.11 have the lowest coverage – below 15% – but are retaining as workers within the region between 46% (in Amazonas) and 85% (in Putumayo) of those they train. The review team assumes that either graduates there lack the means and/or the transport to

move out, or these students have been trained in fields that are in demand locally and are finding local jobs without having to move out. Departments which keep a major share of their home-grown graduates as workers benefit not only from the education opportunities afforded to their young people, but also from the economic benefits highly-trained workers can bring.

Table 3.19 **Percentage of 2001-2010 graduates who work in the region (department) where they did their tertiary studies, by region**

Antioquia (1)	85.7	**Boyacá (1)**	49.1
Atlántico (2)	59.2	**Cundinamarca (3)**	17.7
Bolívar (2)	66.0	**Meta (2)**	67.4
Cesar (3)	64.8	**Norte de Santander (1)**	52.7
Córdoba (3)	65.4	**Santander (1)**	67.2
Guajira (3)	69.0	**Amazonas (4)**	45.5
Magdalena (3)	55.4	**Arauca (4)**	56.1
Sucre (3)	56.9	**Casanare (3)**	51.3
Bogota DC (1)	74.8	**Guaviare (4)**	65.7
Caldas (2)	42.3	**Putumayo (4)**	84.7
Caquetá (3)	57.7	**Cauca (2)**	65.2
Huila (2)	75.4	**Chocó (2)**	45.0
Quindío (1)	53.9	**Nariño (3)**	76.4
Risaralda (1)	66.1	**San Andrés y Providencia (3)**	84.5
Tolima (2)	39.1	**Valle del Cauca (2)**	78.4

Notes: The percentage calculations exclude those graduates for whom there is no information. Vaupés, Vichada and Guainia are not shown in Table 3.19, due to very small numbers.

Source: MEN, Labour Observatory for Education (OLE).

Findings and conclusions

Colombia has made substantial efforts in recent years to increase the numbers enrolled in tertiary education to the 2010 level of 37.1% of the 17-21 age group. The government's target of achieving 50% coverage by 2014 – mainly through expansion of provision for professional technicians and technologists – seems sound, in terms both of achieving greater equity and meeting the needs of the country's economy. However, if the planned increases in coverage are to achieve their intended benefits for Colombia's young people and for Colombian businesses, it is not enough for students to enrol in larger numbers. The programmes available to them need to be high-quality, relevant to labour market needs, and well-matched to their talents,

prior attainment levels and career prospects. And they need to complete and graduate from their programmes in a far higher proportion of cases than they do today.

Preparation for tertiary education

The most fundamental problem Colombia faces in arriving at this desirable destination is the lack of college-readiness of so many Colombian school-leavers. They have simply not been schooled enough, or well enough, by the time they enter tertiary education. In international student comparisons involving Colombian students aged 14 and 15, their performance – though clearly improving over time – is still significantly below world averages. They then leave school, having been through fewer grades of schooling than students in most countries with similar or higher income levels, at an age which is young even by Latin American standards. Compared to counterparts in competitor countries, Colombian school-leavers know less. By the time they finish school, they will have had less time to acquire the basic functional skills that nearly half of them still lacked at age 15, according to PISA 2009. They will also be less mature, and as a result, less likely to make optimal decisions on future studies and careers. This all adds up to poor academic preparation that limits students' potential to learn and keep up in tertiary education; requires tertiary institutions to invest considerable time and effort in remedying academic deficiencies that schools (given more time) could address more efficiently and at less cost to fee-paying students; and makes a high level of dropout almost inevitable. Poor student choices of careers and programmes – which could well be related to lack of suitable information and advice – may also be a driving factor behind high dropout rates during the first semester. Less importantly but still worth noting, a typical graduate from a Colombian public school is unlikely to be accepted for direct entry (*i.e.* without further preparation) onto university bachelors' degree courses in many countries – particularly European countries – where schooling lasts longer and university admission depends on presenting equivalent school-leaving qualifications. This limits the scope for outgoing international mobility at undergraduate level. Some elite private schools in Colombia are aware of this and offer their students a 12^{th} year, so that they may reach internationally equivalent high-school-leaving standards.

A number of equity issues stem from the fact that this lack of college-readiness is most apparent in the case of school-leavers from poorer families or schools in poor areas. Because the students are poorer, they will almost certainly have attended public schools, but it seems to be the socio-economic status of the student and their classmates that makes the difference, rather than whether the school is public or private. On average,

students from poorer families have lower SABER 11 scores, which – ironically – makes them less likely to be accepted at the institutions charging relatively low fees (such as generously-funded public universities).

As coverage is expanded towards 50%, these problems can only become more acute if this college-readiness issue is not addressed. Past expansion has always been accompanied by increases in the percentages of enrolled students with below-average test scores. This is not, of course, because average SABER 11 test scores are going down, but because increasing numbers of the lower scorers are now able to reach tertiary education. If no action is taken, it seems likely that the additional students (those who at 37% coverage would have remained outside the tertiary system) will face even greater competition for free or low-cost places, particularly at universities for which relatively low growth is planned. They will also be less likely to get into the institutions of their choice and will have a higher dropout rate.

The review team considered various possible ways of radically improving college-readiness in Colombia. The first option is to *improve very considerably the quality and equity of secondary schooling.* The review team's remit did not include secondary education, which could well merit a separate study by international experts. However, Colombian students' results in PISA and TIMSS international comparative studies of student performance suggest a need to address several issues, including: large numbers of students whose attainment levels are below what the PISA study describes as the 'baseline level' which will enable them to function effectively in tertiary education; very low numbers attaining the highest performance levels; particular weakness in mathematics; and under-performance of female students. As was acknowledged in Chapter 1, Colombia's secondary school attainment levels have been improving recently, and a number of other countries (including Chile) offer encouraging examples of boosting standards significantly from a low base. However, all international experience shows that major improvements in school quality and equity do not come quickly or easily: they require determined, co-operative, and sustained effort over a long period.

The second option is to *add a 12th grade to universal schooling*. The review team understands that this option has been under consideration in Colombia for some time, but the government is not yet committed to its introduction. It is appreciated that this would be expensive, but the investment could well pay off, and not only in improving tertiary education quality, efficiency, equity and graduation rates. Longer and better schooling would also help the other 50% of young people who do not go into tertiary education, raising their value to employers and therefore their potential wages (the team understands from stakeholders that it is often difficult for a young Colombian with no qualifications beyond their school-leaving

certificate to find a job at or above the minimum wage) and improving the educational level of those who become mothers at an early age. Leaving school later would also resolve an issue that many Colombian high school graduates currently face: that they are too young to work legally. The legal minimum age for working is 18, thus many high-school graduates who are not college-bound must either join the informal labour market or wait until they turn 18 to join the formal one.

Apart from the cost, the other potential downside of adding a 12th grade is that it could increase dropout among those who have become disengaged from school by this stage; but dropout could be minimised and re-engagement achieved if the opportunity is taken to develop coherent and relevant technical education at the upper secondary education level and offer it to those young people not intending to go into tertiary education. A successful precedent for this already exists in one region of Colombia, within the framework of the Antioquia Upper Secondary Education project supported by the World Bank. The overall level of cognitive skills of the school-age population can have a dramatic long-term impact on the economic development of countries. International studies have shown that every extra year of educational attainment in the population raises aggregate productivity by at least 5%, with stronger long-term effects through innovation (De la Fuente and Ciccone, 2003), and raises the stock of foreign direct investment by 1.9% on average (Nicoletti *et al*, 2003).

The third option is to *introduce as a formal part of the system an optional bridge year between school and tertiary education*, for those with tertiary aspirations or whose knowledge and skills need improving if they are to compete effectively for tertiary places. This would have fewer economic benefits and help a smaller proportion of young people, but if well-designed could make a very big impact on college-readiness and dropout rates, as well as freeing tertiary institutions from much of the burden of compensating for deficiencies in preparation, and giving disadvantaged young people better chances in the competition for tertiary places. Bridge year programmes could be run either by tertiary institutions (there are models in the foundation and access courses many UK universities run to enable young people with potential to acquire the entry qualifications they lack); or by secondary schools as an extension year; or by specialist 12th grade colleges set up for the purpose; or by consortia including both secondary schools and tertiary institutions. In Chile many tertiary education institutions offer a preparatory year for students who do not know what they want to study or for students who need extra preparation. They refer to this year as "*bachillerato*". In Quebec, Canada, all students must study at General Education Colleges known as CEGEPs before transferring to a university.

A fourth option is to *introduce degrees that the wider ability range now in the tertiary system can more easily attain* – by reducing the length of bachelor's degrees, lowering their exit standards, or introducing Foundation degrees as a stepping-stone to bachelor's degrees. In Colombia, most public universities offer five year bachelor's degrees and fear that shorter degrees would result in a loss of quality – though a good number of private universities and a few public ones have already reduced their bachelor's degrees to four years – and it is common for individuals to take longer than the official duration of the programme to achieve their degrees. However, three or four year bachelor degrees are now the norm among European countries which have signed the Bologna agreement; the United States and many other non-European countries have four year degrees. Shorter degrees have many advantages, including lower cost, which makes them more affordable to a wider range of students and reduces the likelihood that they will drop out, as well as enabling institutions to achieve higher throughput and making public funding go further. However, in the Colombian context this option is not straightforward. If the government considers it important to maintain the international reputation of Colombian degrees by keeping bachelor's degree exit standards at their current level, there is a limit to how far degrees can feasibly be shortened: expecting students from a wider ability range to complete the same programmes as their predecessors in a shorter time means placing on them additional demands which will increase failure and dropout for academic reasons. And it is hard to think of any major country offering internationally-respected three-year – or even four-year – bachelor's degrees with a school-leaving age as low as 16. The United Kingdom combines three-year degrees with a leaving age of 18. The United States combines four-year degrees with a leaving age of 17.

A more promising route for Colombia to explore might be introduction of Foundation degrees. In the United Kingdom, for example, students can take two-year Foundation degrees, and on completing them can either go on to obtain a bachelor's degree with one more year's study in the same or a different tertiary institution, or enter the labour market with a qualification respected by employers. But as this description implies, two conditions must be satisfied if Foundation degrees are to bring the intended benefits. First, the Foundation degree qualification must have genuine labour market currency in its own right; the only way to ensure this is to give employers a lead role in its design. Secondly, this qualification must be genuinely transferable, *i.e.* all institutions offering bachelor's degrees must accept Foundation degrees – whether from their own institution or another – as entitling the holder to enter their bachelor's programmes without repeating years (*e.g.* entitling three-year Foundation degrees holders to enter a four-year programme in the same discipline, at the start of the programme's

fourth year). The review team considers that this universal transferability is extremely unlikely to be achieved without a National Qualifications Framework in place.

A fifth option is to *offer better information and advice to secondary students choosing tertiary options.* Students in Colombia are quite well-served with internet-based factual information on tertiary institutions and their programmes, though there is scope for improving the transparency, user-friendliness and ease of access to information about costs, dropout rates, duration and other relevant factors, as discussed in Chapter 8 on Information and Transparency. On the other hand, relatively few of the students review team members met when visiting institutions seemed to have benefited from objective advice and guidance on which programme, at which institution, would best meet their needs and aspirations and are best suited to their academic strengths. Without independent personal advice and guidance, students are likely to make sub-optimal choices and end up on the wrong courses, disappointed or dropping out. The team recognises, however, that even the best advice may not prevail while big variations remain in the affordability of different tertiary institutions in Colombia, as discussed elsewhere in this chapter. Another barrier to acceptance of advice may well be the belief that university is the only worthwhile, attractive option, among many students who are unprepared or unsuitable for long and academically-demanding university programmes. Better quality assurance of T&T programmes, including assuring their business relevance, as discussed in Chapters 4 and 5, could make these shorter degrees more attractive to individuals.

Chapter 5 will also describe ICFES's current plans to redesign the SABER 11 test so that it assesses competencies necessary for tertiary education more effectively. A redesigned test could make an important contribution to helping students to make suitable choices in the light of their own abilities and potential. In particular, such a redesign would allow students at the lower end of the ability spectrum to have a better idea of their possibilities for success in further study, while secondary schools would be better able to evaluate their success or otherwise in preparing students for various types of tertiary education. But if these desirable aims are to be achieved, it is important that in future *all students in the 11th grade take the SABER 11 test.*

To summarise, the review team considers that the first option – *improve the quality and equity of secondary schooling* – is necessary but, being a long-term solution, cannot be the only solution. The fifth option – *offer better choice advice to secondary students* – is worthwhile but by no means sufficient on its own. The fourth option – *introduce degrees that the wider ability range can more easily attain* – is worth exploring in the form of

Foundation degrees, but not straightforward in the Colombian context because other reforms are needed first. The leading options for improving college-readiness in Colombia are therefore the second – *add a 12th grade to universal schooling* – or the third – *a bridge year between school and tertiary education*. Introducing either of these options would also improve the prospects of shortening bachelor's degrees in Colombia.

Tertiary admission arrangements

In Colombia every institution decides and applies its own admission criteria and processes. This makes for a less than transparent admission system. Significant numbers of the current and recent students the team met seemed to believe that entry to universities depended on money and family influence, not the formal admission rules. Their perceptions may be wrong, but the existence of these perceptions is a problem in itself. It seems to the team that the government of Colombia needs to collect more information on admission arrangements and criteria, on how they are operated, and on the personal characteristics of accepted and rejected applicants, in order to assure itself and Colombia's young people that admissions operate fairly. It would also be helpful to set up a central clearing-house, which processes all the applications, collates and analyses them and can eliminate duplicate acceptances for other students' benefit.

The review team considered whether equity would be even better served if all tertiary institutions adopted common admission requirements for each programme level. The obvious choice for a common admission criterion is SABER 11 test results, but the reliability of the tests in their current form is not quite high enough for them to be used on their own for such a high stakes purpose. However ICFES is redesigning the tests, so this question might be worth revisiting in future.

Access via propaedeutic cycles

The review team considers that propaedeutic cycles can be very helpful to access and equity if they work as intended and enable students starting at professional technician level to climb all the way up the ladder to gain professional degrees. There seem to be concerns, however, that at the point where a technologist graduate seeks entry to a professional degree programme the ladder may sometimes have a rung missing, or the gap between two rungs may be too great. It is important to ensure that all institutions, including universities, recognise technology graduates as having the entry qualifications for professional degrees; and that the institutions which train technologists align their graduation standards with other institutions' professional degree entry standards.

Affordability of tertiary education to students

The fees charged by programmes at different institutions vary considerably. Relative costs and affordability, though not the only factor, have a big effect on student choices. In a rational education market, higher fee costs would be associated with better quality, value and/or outcomes. In Colombia, the amounts charged in fees differ mainly because the sources of institutional funding differ (for example, SENA programmes are funded from a levy on employers' payrolls, programmes at public universities are funded by government according to a legal formula determined in 1983). As will be discussed further in Chapter 9 on Financing, the resulting differences in fees charged to students are not easy to explain or justify on any rational basis, and they distort choices, particularly those of students with limited means. Young people with university potential who are not accepted by the best-funded and therefore most affordable public universities may give up thoughts of university education and turn to SENA, just because it is fee-free. Other young people may be unwilling to consider the professional technician or technologist programmes that would be their best option, because lower fees make the local public university much more affordable than the local (non-SENA) T&T institutions. Because public funding for student aid is limited and therefore students cannot be sure of obtaining ICETEX loan support, even if they are from the poorest households and appear to meet all the published eligibility conditions, affordability considerations may drive students towards the cheapest options, regardless of which is best for them educationally.

Access and equity in relation to household income

The review team analysed tertiary participation rates by equivalised income quintiles, using the SEDLAC (Socio-Economic Database for Latin America and the Caribbean) database devised by the World Bank and CEDLAS (*University Nacional de la Plata*, Argentina). This methodology gives a different, but truer picture than the proxy measures in common use in Colombia such as *estratos,* the second version of SISBEN which is highly correlated with *estratos,* or total household income expressed in multiples of the national minimum wage. The team's analysis shows that between 2001 and 2010 participation by students from every quintile increased by at least 20%, but the share of the richest fifth, Q5, grew while the share of the poorest fifth fell, Q1. However the biggest gainers were students from Q2, Q4 and in particular Q3, the middle income families. Though the richest fifth of students still have the highest participation rates by some margin, their share of total tertiary places is steadily reducing over time. Therefore, real progress has been made, and although the Colombian government still

has a considerable way to go if it wishes to achieve equal access opportunities for all citizens regardless of household income, the country is not doing badly by the standards of Latin American countries.

The student support system

The student support system has a crucial part to play in improving the tertiary participation of students from lower income families. The review team was very impressed by the ICETEX loan system, which is giving many students from poorer backgrounds tertiary opportunities they would never otherwise have had. The main concerns are that ICETEX has too few resources to help all those who want financial help and appear eligible for it on present criteria; that better instruments are needed to assess student financial need and thereby improve targeting (and/or improve the certainty about the accuracy of targeting); and that the loan repayment burden may weigh too heavily on students of limited means. Regarding the last issue, it should be noted that ICETEX has recently made new payment options available to borrowers. These are designed to ease repayment burdens by having payments grow as borrower income grows. ICETEX calls this option the *cuota escalonada* or "graduated payment" system. Students can now elect to start repayment with smaller monthly amounts. Their payments increase on a schedule that should basically conform – on average – to their increased earnings through time. Students still fully amortise their loans, but with a schedule under which payments remain a more constant proportion of their (growing) incomes. Furthermore, from July 2012 there is a new student loan policy in ICETEX for the poorest students (levels 1, 2 and 3 of SISBEN). ICETEX offers a zero real interest rate during the loan period. Also, there are grants of COP 653 499 per academic semester, as well as remission of 25% of the value of the tuition fee when the student graduates, and total debt forgiveness if the student receives outstanding results in the SABER PRO exam.

The team believes that several steps need to be taken to improve ICETEX's equity contribution. First, ICETEX deserves sustained and increased financial support to enable it to continue and expand its important equity promotion role and help more of the poorest students. The starting point should be a careful re-assessment of ICETEX's financial requirements if it is to support the government's expansion plans, on various scenarios ranging from continuing to support the current percentage of enrolled students, to an ideal situation in which all students who want financial help and need it to access tertiary education would be eligible. At the same time, ICETEX should continue to diversify its funding sources – as it has done very effectively in recent years – and improving its financial sustainability through higher repayment rates.

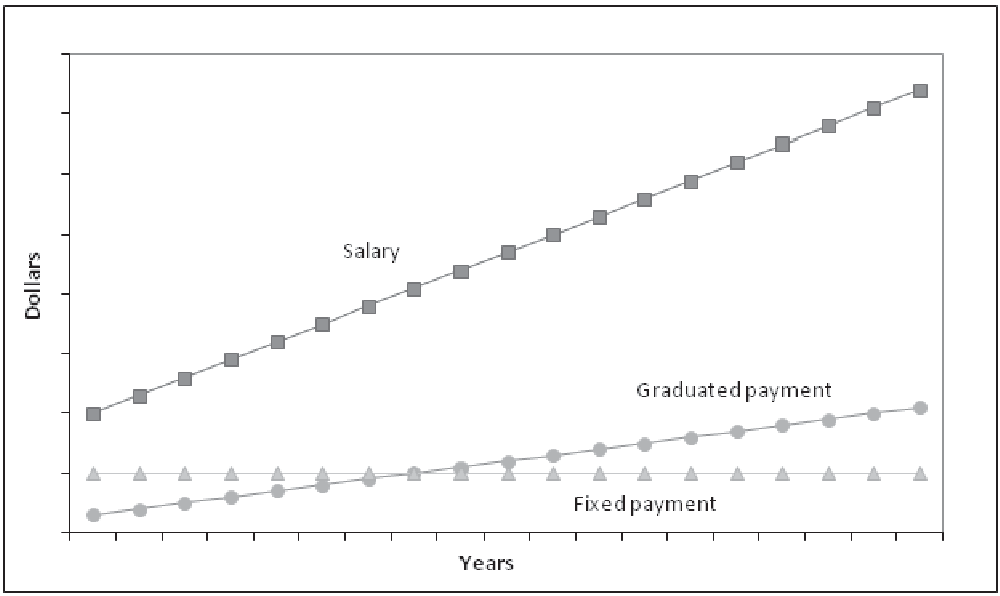
Secondly, to improve targeting on students from the most needy families, ICETEX should move to a better system for assessing socio-economic status or household income in a reliable way. All agencies involved directly and indirectly in targeting subsidies in the education sector – DNP, DANE, MEN and ICETEX – could work together to develop a better methodology.

Thirdly, adjustments in loan design and monitoring are desirable in order to better link repayment conditions to actual income of graduates and assess the socio-economic characteristics of loan beneficiaries in ways that facilitate international comparisons. The government of Colombia may want to explore the feasibility of moving to an income-contingent student loan system that could, in principle, be both more efficient and more equitable. Since the mid-90s, several industrial countries including Australia, New Zealand, Sweden and the United Kingdom have adopted income-contingent loan systems, sometimes referred to as graduate tax, in which loan repayments are a fixed proportion of a graduate's annual income (Salmi and Hauptman, 2006). Although experience to date is limited, such systems can achieve a better balance between effective cost recovery and risk to the borrower (Barr, 2004). Administration is generally simpler and cheaper because loan recovery is handled through existing collection mechanisms, such as the income tax administration or the social security system. Income-contingent loans are also more equitable and satisfy more fully the ability-to-pay principle, since graduates' payments are in direct proportion to their income. For example, the student support system in Sweden minimises the risk of student default by limiting repayments to four per cent of income after graduation. In Australia, income-linked loan payments are made through the tax system, at a rate of two, three or four per cent of taxable income, depending on how much a graduate earns.

ICETEX has recently instituted a graduated repayment system that has a repayment schedule more in line with the natural evolution of the salaries of young graduates. Relying on graduated payments instead of fixed payments helps minimise the burden on graduates and improve loan recovery, as illustrated by Figure 3.3. Moving from the original fixed payment system to a graduated payment scheme may significantly improve the viability of ICETEX by reducing the probability of default or delayed payments among the most vulnerable graduates. From the second semester of 2012, ICETEX is moving in this direction by offering beneficiaries the possibility of lower initial repayments, but these must be offset by higher payments later, according to a set timetable which takes some account of average graduate salary progression.

Fourthly, to reduce further the likelihood of vulnerable students dropping out, greater attention should be given to the quality of the institutions and programmes loan beneficiaries enrol in. Ideally the vast majority of ICETEX beneficiaries should be enrolled in accredited programmes and/or institutions; the present figure is 62%.

Figure 3.3 **Effect of repayment type**



Source: Elaborated by the review team.

ICETEX has however distinguished itself among student loan institutions across the world for the careful balance it has always struck between providing benefits and ensuring future viability by maintaining acceptable repayment rates. In implementing the above recommendations, ICETEX should not abandon the need to maintain this balance.

Dropout

The team rates highly the SPADIES system set up to monitor dropout and its causes, and has noted much good work being done in tertiary institutions to minimise dropout. This work includes a number of programmes to try to remedy poor academic preparation, and some institutional schemes to support students financially.

ICETEX loans are associated with lower dropout rates, and the longer the loan has continued, the less likely the student is to drop out. Although it would be necessary to control for other factors, such as academic performance, to be sure that this lower dropout is a direct effect of the ICETEX loans, the evidence suggests that most dropout for financial reasons could be avoided if there were a major expansion in ICETEX resources and loan coverage, as suggested above. However, the limited impact of an ICETEX loan on dropout in the first semester, and the team's discussions with tertiary institutions, suggest that most of that very substantial early dropout is for academic reasons. The remedy lies in addressing lack of college-readiness, in the ways already proposed.

Access by gender

Boys are less likely to enter tertiary education and more likely to drop out, despite receiving consistently higher results than girls in the common core of SABER 11 tests. Part of the answer to this apparent conundrum seems to be that girls are disadvantaged in the Colombian secondary school system – Colombia's results in both PISA 2009 and TIMSS 2007 showed girls performing less well relative to boys than in any other participating country – so in tests taken at Colombian schools boys appear to be stronger performers, relative to girls, than they would in other countries.

Colombia's young school-leaving age is, in the team's opinion, particularly unhelpful to boys, who tend on average to be less mature than girls at 16. Countries in which school pupils take national exams at 16 commonly find that girls achieve significantly better results overall. Therefore the 12th grade or bridge year proposed above should particularly improve boys' chances of accessing and completing tertiary education.

Access by region

There are significant disparities between regions in tertiary enrolment, but a full assessment of their equity impact needs more evidence than the team has – for example on the numbers qualified for tertiary entry in each region, and the extent to which residents of one region enrol in another. The difficulties of achieving equitable coverage in areas of sparsely-populated jungle or poor transport links are also appreciated. The government's aim of extending provision to three-quarters of municipalities by 2014 appears to strike a reasonable balance between equity and feasibility. Distance learning also plays a significant role in achieving greater geographical equity.

Recommendations

To address the lack of college-readiness of many Colombian school-leavers, particularly boys, the government should consider introducing a 12th grade of schooling. If that is ruled out on cost grounds, the government should introduce an optional bridge year between school and tertiary education, for those with tertiary aspirations or whose knowledge and skills need improving if they are to compete effectively for tertiary places. Bridge year programmes could be run by tertiary institutions, by secondary schools, by both in collaboration or by special new 12th grade colleges. The introduction of Foundation degrees is an option worth exploring.

Colombia should also intensify efforts to improve the quality and equity of secondary education and seek ways of providing secondary students with independent, personalised advice and guidance on their tertiary choices. To improve the information available on every individual's academic strengths and suitability for different types of tertiary education and training, all year 11 students should be required to take the SABER 11 test.

To improve transparency and student trust in the admission system and to assure itself and Colombia's young people that admissions operate fairly, the government should collect more information on admission arrangements and criteria, on how they are operated, and on the personal characteristics of accepted and rejected applicants. The information should be published and made available to young people and their families. The government should also set up a central clearing-house to process all the applications and eliminate duplicate acceptances, and should take up with the institutions concerned any cases where admissions criteria seem to lack fairness or objectivity. In the longer term, the introduction of national standard admission requirements for each level of tertiary programme could be considered.

The different funding sources for tertiary institutions of different types should be reviewed and rationalised, to avoid student choices being distorted by unwarranted differences in affordability (see Chapter 9).

ICETEX resources should be increased, ideally to the extent necessary to support the government's plans for tertiary expansion with equity, enable all lower-income students who want and need financial help to access tertiary education to be supported, and make significant inroads into dropout for financial reasons.

To improve targeting on students from the most needy families, ICETEX should move to a better system for assessing family income, developed in collaboration with the National Planning Department (DNP).

The best way forward would be a system that combines SISBEN, *estrato* and other socio-economic data, including verifiable income where possible and particularly in the case of individuals not covered by SISBEN.

To ease the loan repayment burden on young graduates and reduce default rates, the government of Colombia should continue offering more options for repayment (as they are currently doing with *cuota escalonada*).

Disparities between regions in tertiary enrolment should be addressed, as the government proposes, by increasing the number of municipalities with their own provision and expanding distance learning.

Annex to Chapter 3.
Measures of socio-economic status in Colombia

In Colombia, at least five different scales are available for assessing the relationship between socio-economic status and access to tertiary education, or for targeting social programmes such as loans and maintenance grants provided by ICETEX. The five are:

- Socio-economic strata or estratos;
- SISBEN;
- minimum wage multiples;
- income quintiles;
- mother's educational attainment.

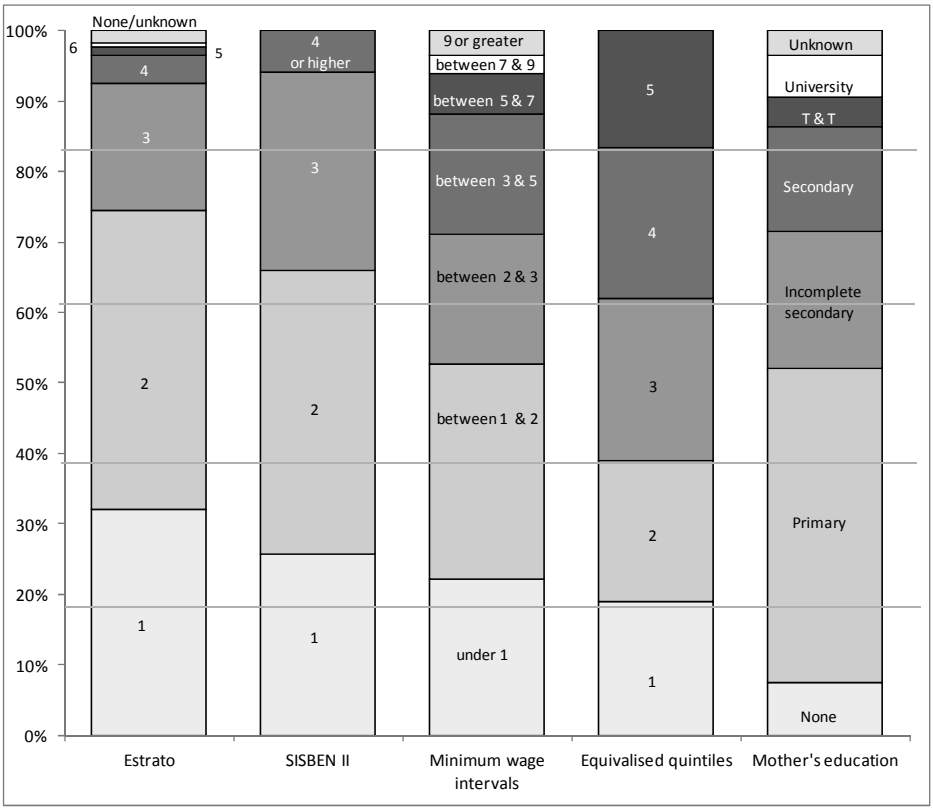
Each has its own advantages and disadvantages. Figure 3.1.1 shows the distribution of the population aged 17 to 21 according to each of the aforementioned categories (note that the SISBEN distribution is based on a simulation; the instrument only covers about 60% of the population), followed by a brief description of each.

Socio-economic strata or *estratos*

The socio-economic stratification system, or *estratos*, was designed to distinguish who should get access to subsidised public services (utilities, water, etc.). The system classifies dwellings into 6 strata according to their physical characteristics and surroundings (*e.g.* road conditions, presence of pavements and street lighting, etc.). Households in *estratos* 1-3 receive subsidies on their utility bills, those in *estrato* 4 pay the going rate, and those in *estratos* 5 and 6 pay a premium. The system, however, suffers from high inclusion error (Parra, 2008 and World Bank, 2004), with close to 75% of the population living in *estratos* 1 and 2, and over 90% in *estratos* 1, 2 and 3. Because any house in a given area can be classified according to the mean for that neighbourhood, inaccuracies are inherent. Many households in

strata 1-3 – especially those in stratum 3 – thus belong to the upper income deciles. Anecdotal evidence suggests that the measurements have been altered to widen access to subsidies for political purposes. While correlation with income or well-being is clearly imperfect, one advantage of using the *estratos* system to analyse equity is straightforwardness: most Colombians are well aware of their *estrato,* making this information easy to collect. A clear disadvantage is its poor discriminatory power.

Figure 3.1.1 **Comparison of main socio-economic scales using divisions of the population aged 17-21**



Note: Shares are calculated for population aged 17 to 21; this explains why equivalised income quintiles are not each equal to 20% of the total population. Note that each measure is independent; therefore, for instance, households in *estrato* 1 are not all in equivalised income quintiles 1 and 2. Although minimum wage intervals and equivalised income quintiles both use income as the underlying variable, note that the former uses total household income and the latter uses income per capita, adjusted for household size and composition.

Source: Authors' calculations based on GEIH 2009 (General Integrated Household Survey) and ECV 2008 (DANE Quality of Life Survey).

SISBEN

SISBEN, or *Sistema de Identificación de Potenciales Beneficiarios de Programas Sociales* (Selection System of Beneficiaries of Social Programmes), is a proxy means-based test tool used to target social programmes in Colombia. SISBEN assigns a score to households based on a series of socio-economic characteristics. SISBEN III, which will come into use in 2012, represents an improvement over previous versions in that it uses a multidimensional approach to poverty, corrects for a previous high correlation with *estratos*, and now makes it possible for social programmes to determine cut-off points different from levels 1, 2 or 3 to determine programme eligibility.

Figure 3.1.1 shows that the distribution of simulated SISBEN II levels was very similar to that of the *estratos*: close to 70% of the population fell in levels 1 and 2, which are considered poor and generally eligible to participate in social programmes. This correlation is expected to change with SISBEN III. Figure 3.1.1 is based on a simulation using the 2008 Quality of Life Survey (ECV, *Encuesta de Calidad de Vida*): a significant proportion of the population has never had a level assigned, as they do not live in areas previously identified as poor, and only about 50% are actually registered as in SISBEN levels 1 and 2. However, any individual can ask to be included.

Minimum wage multiples

Another measure sometimes used is household income as multiples of the prevailing minimum wage. While this measure does not normalise for differences in household size, it can be useful to understand how much income is available to purchase services such as tertiary education. Figure 3.1.1 shows the distribution of 2009 household income by minimum wage multiples, when the minimum wage amounted to COP 496 900. About 50% of the population aged 17 to 21 lived in households with less than 2 minimum wages (almost COP 993 800) and 90% in households with less than 7 minimum wages (COP 3 478 300).

Income quintiles

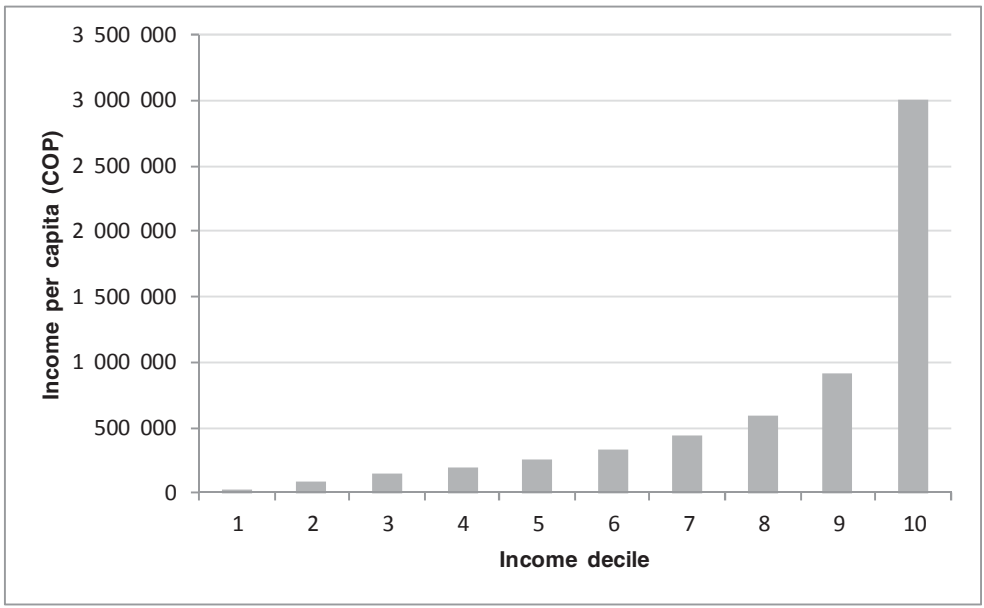
Probably the most internationally-comparable measure of household income is that which divides it into quintiles. Colombia's data comes from surveys conducted by DANE. The equivalised quintiles calculated by the World Bank's SEDLAC system correct for variations in the average number of children per household by quintile and make some additional technical adjustments. The SEDLAC data is comparable for all Latin American countries.

Mother's education

Mother's education tends to be one of the most stable socio-economic variables. Unlike income, it does not fluctuate due to economic cycles and is less prone to measurement error. Given high historical inequalities in access to education in Colombia, it can be a good predictor of socio-economic level. Moreover, this variable is less prone to measurement error, especially in the case of self-administered surveys. For these reasons, parental education also tends to be used frequently in international educational mobility studies. Figure 3.1.1 shows that the mothers of over 50% of the population 17 to 21 had only had primary education or less, whereas only 4% had attended university and only 6% had had some form of T&T education.

Finally, Figure 3.1.2 shows the average income of the Colombian population by income per capita decile, in order to put income data into perspective. It is worth noting that the total sum of the incomes per capita of deciles 1-9 is roughly equal to the income per capita of decile 10.

Figure 3.1.2 **Average monthly income by income per capita deciles, 2010**



Source: Fedesarrollo, 2011, based on DANE-ECV 2010 (Quality of Life Survey).

Notes

1. Calculations based on 2010 and 2014 projections for 15-19 and 20-24 age groups on www.dane.gov.co/daneweb_V09/index.php?option=com_content&view=article&id=75&Itemid=72, searched December 2011.
2. UN Statistics Division Demographic and Social Statistics, last updated June 2011.
3. ICFES runs two 11th grade tests a year, the test in the 2nd semester being referred to as Calendar A (taken by the majority of schools which start their school year in February and end in December), the test taken in the 1st semester being referred to as Calendar B (taken by some private schools which start the school year in September and end in June/July). In 2009 78% of tests were taken in Calendar A. The results from the two Calendars should not be aggregated because in each, marks are norm-referenced against the performance of others taking the same test.
4. In the UK system, students who do not know the results of their school-leaving exams when they submit applications can also choose a second "insurance" offer, in case they get lower exam grades than expected.
5. Data from 2010.
6. MEN supplied the data in this paragraph.
7. Affordability is influenced by many factors (institution type, number of family members, etc.). The point is that the weaknesses of the income-measurement tools obscure the accuracy and efficiency of targeting resources to needs. This is a challenge in all countries, including Colombia.

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Chapter 4. Quality and relevance of tertiary education in Colombia

This chapter examines the quality and relevance of tertiary education provision and offers an analysis of labour market demand for graduates in Colombia.

The chapter closes with a summary of main findings and recommendations, including the need to (i) improve the quality of many programmes at technical and technological institutions and CERES; (ii) continue to upgrade the qualifications of academic staff and to promote a strong academic culture in all institutions; (iii focus on programmes that develop the competencies required by employers; and (iv) prioritise the implementation of a nationally-recognised framework of qualifications.

Introduction

Tertiary education of good quality plays a major part in the creation of human capital and in equipping graduates with the knowledge, skills and attitudes to participate in the economy and in society. Because it contributes to the social and economic development of a country and is a major item of public spending, the challenge of measuring and assessing the quality of tertiary education is one that preoccupies policy makers in all OECD countries. And, as tertiary education moves from an elite to a mass system and the pressure to provide additional places intensifies, assuring the quality of private provision becomes essential.

The discussion of the quality of Colombia's tertiary education is divided between two chapters of this report. This chapter focuses on *(i)* the extent to which the system provides and allows for an appropriate diversity of educational institutions to cover both individual needs and those of the labour market; and *(ii)* how well, institutions manage teaching and learning opportunities to help students progress and succeed, including enrolment trends in labour-market-relevant disciplines and the qualifications of

academic staff. Existing policies to assist student mobility and to develop regional initiatives are also examined. The chapter then discusses the labour market and the demand for graduates in Colombia together with current graduate employment trends. It examines to what degree the system provides timely and accurate information about institutions and courses to facilitate choices that are appropriate for individual student preferences and abilities and are likely to be demanded by the market. The measurement of educational outcomes and of quality assurance will be dealt with in the next chapter.

Quality and relevance

If Colombia is to improve its competitiveness and achieve OECD membership, the education services and research capacity provided by its institutions should meet international standards for quality of outcomes. In the *World Economic Forum Global Competitiveness Report 2011-12*, Colombia is ranked at 80 in the Health and Primary Education pillar for the quality of its primary education, and 72 in the Higher Education and Training pillar for the quality of its education system as a whole. Colombia's overall quality ranking of 72 is considerably above Brazil's 115 and Chile's 87, indeed above the rankings of all Latin American countries except Costa Rica's 23. However, on the indicator for local availability of high-quality, specialised research and training services, Colombia ranks 70 while Chile ranks 33 and Brazil ranks 36. And on the extent of company investment in staff training – also important because vocational and continuous on-the-job training is needed to ensure regular upgrading of workers' skills – Colombia ranks 84 as against 33 for Brazil and 37 for Chile.[1]

A key objective of the government of Colombia's reform programme for higher education as set out in the National Development Plan[2] is to improve the quality of teaching and learning and to treble the availability of competency-based programmes oriented to the labour market. A further objective is to strengthen system monitoring and evaluation with the goal of creating a national job skills evaluation system. A greater focus on regionalisation is also proposed, as are measures to improve the alignment of supply and demand for educational services. The need to achieve system improvement by focusing on the quality of academic staff is a key element of the programme. Other key elements are the promotion of research and innovation in tertiary institutions and a proposal to improve second language acquisition, discussed in other chapters of this report.

Institutional mission and focus

International literature has identified diversity as a major factor in the provision of successful higher or tertiary education (Van Vught *et al.*, 2008). A system with a range of different kinds of institutions may be expected to provide choice for students; to be responsive to changing labour markets; to offer opportunities for innovation; and to expand opportunities for flexible, work-oriented study. Moreover, there is general agreement that diversity of mission will also assist in increasing participation and in moving from elite to mass higher education (OECD, 2008, Vol. 1, Chapter 5, pp. 259-309).

In 2011, Colombia had a total of 288 tertiary education institutions (TEIs), offering diversity of provision and of programme choice in both public and private institutions. Table 1.2 in Chapter 1 shows how many institutions belong to each of the four types, and how numbers of each changed from 2007 to 2011. Universities teach both undergraduate and graduate programmes across the full range of academic disciplines, including those of a social and humanistic nature, and conduct appropriate research at post-graduate and post-doctoral levels. University Institutions or Schools of Technology are authorised to conduct teaching for professional disciplines or occupations at both degree and diploma levels, specialised graduate programmes, and research characterised by its applied and technological nature. Technological and Professional Technical institutions provide training in technical and occupational courses and applied specialist courses and which may only offer courses in their areas of specialisation. The difference between Technological Institutions (TIs) and Professional Technical Institutions (PTIs) lies in the length and complexity of their programmes: TI programmes typically require seven semesters and PTIs five semesters. Graduates of a TI are expected to work at a higher technological level and may have done applied research in more specialised areas towards the end of their courses, while PTIs prepare technicians.

Technical and technological degrees and diplomas are not necessarily offered in separate institutions. A policy objective of the Colombian system is to have all courses provided in TIs and PTIs linked to "propaedeutic cycles", a term which describes a linked system of courses providing preparatory or introductory teaching whereby students obtain a recognition that allows them to proceed to the next level of education. By 2010, TIs and PTIs accounted for 35% of all tertiary level education and training in Colombia.

The rapid growth in enrolments since 2007 has not been matched by a parallel growth in institutions (see Table 1.2). The numbers of private universities and university institutes has increased only modestly; numbers of public universities and university institutes have remained constant; while the numbers of TIs and PTIs have slightly decreased. Increasing participation has been accommodated largely by SENA, the country's largest training institution, which in 2010, as Table 4.1 shows, delivered 55% of TI and PTI programmes.[3]

Table 4.1 **SENA share of professional technician and technologist (T&T) programmes, 2010**

Programme level	MEN data 2010	SENA share	SENA share %
Professional technician	93 014	26 211	28%
Technologist	449 344	270 475	60%
Total	**542 358**	**296 686**	**55%**

Source: SENA presentation and MEN statistics.

The process of quality assurance and of institutional and programme accreditation is fully discussed in Chapter 5. Therefore it is sufficient to note here that, by mid 2011, full institutional accreditation had been awarded by the National Accreditation Council (CNA, *Consejo Nacional de Acreditación*) to 22 TEIs (9 public and 13 private), comprising 7% of the total: in October 2011, that number had risen to 23 fully accredited institutions and the government target is to increase that number to at least 10% of the total (29, on current institutional numbers) by 2014 (MEN, 2011*b*). By mid-2011 there were 646 accredited programmes, or 13% of the total; the government plans to increase this percentage to 25% by 2014. Moreover, all TEIs, including TIs and PTIs, must follow the regulations which stipulate that all programmes must reach the minimum quality requirements and be listed on the Register of Qualified Programmes (*Registro Calificado).*[4] Currently, only two TIs or PTIs have institutional accreditation.[5]

In addition to the Universities, University Institutes, TIs and PTIs, Colombia also has a large supply (2 584) of private non-tertiary institutions providing nearly 8 300 different types of work-related programmes. The review team visited one branch of a national organisation, the National Association of Family Compensation Funds *(Asociación Nacional de Cajas de Compensación Familiar)*, which, although in receipt of 4% of the 9% enterprise tax, is essentially a private provider of educational programmes

focused on primary and secondary schools as well as on vocational training and job-insertion courses, which are available to any individual over the age of 16 with a 9th grade certificate. Because SENA is free and consequently is over-subscribed, the *Cajas* – which operate in a number of locations countrywide and offer open access courses at very modest fees – pick up many of those who would otherwise not receive training at all. By law, the *Cajas* are allowed to offer tertiary education if they set up separate tertiary institutions for the purpose; because of rising demand, several of them have done so.

Training provision

The WEF Global Competitiveness Report 2011-12 emphasises the importance of training for the relevance of a tertiary education system: "In particular, today's globalising economy requires countries to nurture pools of well-educated workers who are able to adapt rapidly to their changing environment and the evolving needs of the production system" (page 5). This raises the issue of quality assurance for training providers, a topic that is not strictly within the scope of this report. However, it is worth noting here that the Ministry of National Education has plans to improve the quality of all work-related training by collaborating with the Ministry of Labour. Detailed targets are to introduce a quality register for training courses and, by 2014, to have 50% of courses on the register; to introduce quality certification and increase the number of those programmes receiving a quality certificate from 1% to 15%; and to strengthen the institutional quality certification and improve it from 1.4% to 20% by 2014.[6]

Regional Centres of Higher Education (CERES)

Since 2003, the Regional Centres of Higher Education (CERES, *Centros Regionales de Educación Superior*) have formed a major part of the strategy of the Ministry of National Education to decentralise the supply of higher education and to expand its coverage at regional level, especially in the most remote and vulnerable communities. The overall goal of CERES is to "create opportunities for social and economic development for communities through the creation of opportunities for access to higher education".[7] Specifically, CERES aim to increase the provision of tertiary education services that are responsive to the needs of the local economy; about a quarter of their programmes are linked to agriculture and veterinary sciences or related topics.[8] CERES operate through local partnerships which are composed of the Departmental Education Secretariats, local governments, universities, local employers and in some cases SENA. The national government invested COP 27 billion in the Centres' development between

2003 and 2010, while regional and local authorities have contributed a variety of resources, including in-kind resources. Companies provide work placements as well as facilities, as appropriate. Each Centre is managed by a local tertiary education institution.

Table 4.2 **Regional Centres of Higher Education (CERES)**

Centres established	Operational	First semester 2011 enrolments	New places	Programmes	Regional & local governments
164	155	31 222	6 476	1 078	31 Departments 590 municipalities

Source: MEN, SNIES.

Table 4.2 shows the expansion of CERES Centres to date. By 2011, significant progress had been made to establish centres in areas of social and economic need, although the coverage is relatively small in terms of the overall needs of Colombia for tertiary education opportunities, with enrolments of approximately 31 000 in 2011. Many of the 1 078 programmes developed are at Professional Technician or Technologist level, though CERES also supports professional degree level training. The review team was provided with a detailed list of 66 T&T programmes in 23 geographically dispersed TEIs. These programmes form part of the propaedeutic cycles and can enable a student to progress or transfer to a university to continue their studies.

The *Background Report* (MEN, 2011*a*) identifies some issues that need to be addressed in CERES, including the need to *(i)* extend academic opportunities throughout the country with the involvement of ICETEX; *(ii)* achieve greater co-operation among regional partners; and *(iii)* improve pathways from secondary to tertiary level.

The review team was impressed with the enthusiasm and dedication of staff in the Centres visited and considers that, given the involvement of all stakeholders including employers, CERES represent a potentially powerful instrument to decentralise and regionalise the delivery of tertiary education in Colombia. International evidence shows that where regional labour market and demographic analyses and employers' surveys are carried out to establish the likely demand and relevance of courses for a particular region, there is a greater likelihood of success both for the individual students and also for the local economy. The Community College model in the United States is a good example of that approach, combining as it does focus on student access and success in learning, with workforce development initiatives.

However, the team has the following issues and concerns.

- The scale of individual centres visited is quite small, not highly resourced and potentially inefficient. Moreover, there was some concern that the centres were teaching outdated technology. Given that students are paying significant fees (either with an ICETEX loan or with local government funding) the centres may not be offering good value for money. Increasing the size and resources of some existing centres, and proposed new ones, could achieve better economies of scale through increased demand and could also build critical mass, which could improve the quality and relevance of the programmes offered. However, this is not the only problem.
- Because the CERES are attached to public TEIs where staff have fewer incentives than in private TEIs to change or to accommodate new approaches to competency-based education, there is no evident incentive to make the centres work more effectively. There is anecdotal evidence that private TEIs do better in this respect.
- Credits obtained from CERES programmes suffer from the absence of a national programme for credit recognition. The team believes that incentives are needed to make a credit transfer system work at all levels in the face of real barriers to student mobility, including a lack of financial resources and wide geographical dispersal. CERES graduates could greatly benefit from a system where credits are not recognised on an individual basis only, but are part of a National Qualifications Framework. This issue is further discussed below.

Growing student numbers

Increased participation in higher education and training leading to the availability of well-educated and trained human capital is an important indicator of the competitiveness of an economy. On this measure Colombia has been doing well in recent years, as is shown by the steady growth in enrolments at all levels, including in graduate education (see Table 1.4).

In its 2003 report on Colombian tertiary education, the World Bank recommended that the government should move to expand enrolment in the TIs and PTIs (World Bank, 2003). The *Background Report* (MEN, 2011*a*) showed that, despite the decrease in the numbers of these institutions between 2007 and 2010, there was an increase in the number of T&T programme cycles and the percentage of undergraduates enrolled on technical and technology programmes in Colombia grew by an annual rate of 14.5%, from a total share of enrolment in tertiary education in 2002 of 19.5% to 34.2% in 2010 (*Background Report*, p. 29). As already noted, this

growth is largely explained by the increase in SENA provision in its own centres, from 197 486 (49.4% of the T&T total) in 2007 to 296 686 (54.7% of the total) in 2010.

Table 4.3 shows how the tertiary institutions, including SENA, have responded to the demand for T&T programmes in Colombia between 2003 and 2010; as Table 1.4 showed, these programmes accounted for progressively more of total undergraduate enrolment throughout that period. The MEN target is to increase the T&T share of participation further in future, from 34.2% in 2010 to 45% by 2014 (MEN, 2011*b*). As already indicated in Chapter 3, if that target is to be met, some 438 000 more T&T places will need to be created by 2014 to add to the 542 000 there were in 2010 – an increase of over 80%. Ensuring that this growth is achieved to the required level of quality will stretch the capacity of the current quality assurance system to its utmost.

Table 4.3 **Enrolment growth in professional technician and technologist programmes, 2004-2010 (%)**

Year	2004	2005	2006	2007	2008	2009	2010	Annual growth 2003-10
All non-SENA	1.9	16.1	3.8	-3.9	7.9	6.6	8.2	5.7
Private	1.3	13.6	3.9	-0.1	0.9	9.1	4.0	4.6
Public	2.6	19.0	3.6	-8.0	16.1	4.1	12.6	6.8
SENA	93.3	4.8	45.4	39.3	26.4	2.3	16.2	29.7
Prof technician	89.4	6.8	38.5	37.5	8.7	-26.9	-77.9	-5.4
Technologist	109.7	-2.7	73.9	45.1	81.3	56.6	97.6	61.7
Total	**22.3**	**12.1**	**17.5**	**13.8**	**17.2**	**4.3**	**12.4**	**14.1**

Source: MEN, SENA.

Enrolments by discipline

In 2003, the World Bank study commented on the imbalance in enrolment by discipline in Colombia, with relatively low numbers of both undergraduates and graduate students enrolled in technical subjects. Table 4.4 shows that by 2010, this was still an issue, with 75% of all graduates concentrated in economics, management and related disciplines. In fact, there had been a marked increase in graduates in social sciences and humanities (17% compared with 13.5% in 2001). The National Development Plan expresses concern about the low numbers enrolling in agriculture and veterinary (which are disciplines needed in the labour market) and in

mathematics and natural sciences; in 2010, these two disciplines account for less than 4% of the total number of awarded degrees. This issue, presented to the review team at national level, was borne out in meetings with employers, some of whom commented that some regional business needs were not being met and that the system was producing too many of some types of professionals (*e.g.* law, medicine) and not enough of others (*e.g.* data programmers).

Table 4.4 **Degrees awarded by discipline, 2001 and 2010**

Discipline	2001	%	2010	%
Agriculture, veterinary & related disciplines	1 772	1.3%	2 885	1.4%
Fine arts	3 867	2.8%	7 227	3.6%
Education sciences	25 268	18.2%	29 311	14.5%
Health sciences	13 114	9.5%	16 626	8.2%
Social sciences and humanities	18 666	13.5%	34 706	17.1%
Economics, management, accounting & related disciplines	44 008	31.7%	64 740	32.0%
Engineering, architecture, urban studies & related disciplines	30 761	22.2%	43 314	21.4%
Mathematics and natural sciences	1 254	0.9%	3 565	1.8%
Total	**138 710**	**100%**	**202 374**	**100%**

Source: MEN, Labour Observatory for Education (OLE). Not including SENA.

Mismatches between employers' needs and educational provision arise partly because of public failure to appreciate the value of some kinds of technical and vocational education and are not unique to Colombia. Internationally, families and individuals perceive that individual circumstances can be improved, both socially and economically, by degrees in law or business. Meanwhile, the popularity of vocationally-oriented courses continues to decline when compared with more academic university courses. In Colombia, as the analysis in Chapter 3 shows, the increase in enrolments in technology and technician courses can be explained by the pressure on university places and the fact that SENA courses are fee-free, while the relative unpopularity and high dropout rates of TI and PTI institutions other than SENA can be attributed partly to their cost.

The review team's conversations with stakeholders, reported in Chapter 3, confirmed that university is still the preferred option for most students and their families (Table 3.4). Students tend to assume that a university degree will be their best route to high-earning jobs, often without researching the employment rates of previous graduates of the programmes they have in mind (though this research can be done quite easily through *Observatorio Laboral*). It is not clear whether students are unaware of

employers' demands for more well-trained technicians and technologists, or are ignoring them because academic and professional disciplines are considered more appealing or more prestigious. It is also possible that potential students take account of the higher average earnings of university graduates in work, but not of the likelihood or otherwise of getting work, or of the longer time they will have to study before they can earn. Students may also be insufficiently aware that if they follow the propaedeutic cycle route to degree-level studies, they could (if the cycles work as intended) have the best of both worlds as the proud possessors of technician, technologist and degree qualifications.

As part of its strategy to make T&T study more attractive to potential students and to encourage the take-up of needed technologically-oriented disciplines, in 2006 the government borrowed USD 3.5 million from the Andean Development Cooperation and, with USD 1.5 million in matching funds, launched the "Strengthening Professional Technical and Technology Education" project. This project, implemented by the Ministry of National Education, created 40 strategic alliances between 63 higher education institutions, 97 unions, 129 companies, 77 local governments and 532 secondary education institutions. A total of 299 competency-based academic programmes were designed and were attended by 7 941 third level students in higher education and by 26 510 students through linkages with secondary education. Project outcomes included the increased provision of needed technical disciplines in remote regions and higher enrolments in T&T programmes. Information provided to the review team following the site visits indicates that by 2011, enrolments in these T&T programmes reached 43% of total enrolment in higher education.

Role of SENA in tertiary education and training

In the last quarter of 2010, SENA trained 4.4 million individuals in a diverse range of programmes and activities over a wide geographic area, delivered through 20 Regional Offices and 116 Professional Training Centres.[9]

As already noted, SENA is a substantial contributor to tertiary level education in Colombia, primarily but not exclusively through the professional technician and technologist programmes it provided to 296 686 students, 55% of the country's enrolled T&T students, in 2010. SENA tertiary level programmes are practice-oriented and less theoretical than longer university courses, and they usually have an element of work placement leading to a professional certificate or title.

Table 4.5 **Durations and numbers of SENA tertiary programmes**

Programmes	Duration	Number of programmes
Labour technician	4 trimesters	265
Professional technician	4 trimesters	161
Technologist	8 trimesters	
Specialisation	2 trimesters	123
Complementary training provided to employees	40-440 hours	400 (150 of them distance learning)

Source: SENA presentation.

In order to strengthen the management of competency-based education, SENA is also developing a system of Knowledge Management and Networks of Sectoral Knowledge with associated teaching materials development. This is being undertaken as part of Colombia's Management of Human Capital programme, led by the Ministries of Labour and National Education. The aim of this programme is to develop and implement a National Qualifications Framework embracing a framework of competences appropriate for qualifications at all levels.

There was broad consensus both at national level and among beneficiaries interviewed by the team that SENA continues to play a substantial and useful role as a provider of T&T education. In interviews with SENA students, strong individual satisfaction was expressed, both with the programmes and with the student welfare experience, together with a great deal of gratitude for the opportunities that SENA provides. Inevitably, much of that satisfaction may be attributed to the fact that SENA courses are free while all other educational options, including CERES, are fee-paying. As discussed in Chapter 3, though enrolled students generally perceive SENA programmes to be of high quality and to improve employment prospects, empirical data are not available to confirm this, and only about 13% of applicants are accepted.

University staff to whom the team spoke were happy with the technical competence of graduates from SENA T&T programmes enrolled in their courses, but were less persuaded of their readiness to study academic subjects, whereas they had confidence in the academic readiness of students arriving from (other) TIs and PTIs. This might perhaps be due to the more advantaged socio-economic status of students who attend fee-charging non-SENA T&T programmes, but the review team could not access information on the respective student populations to check how much they differed. The alternative explanation is lower SENA graduation standards. Some academics also complained of the difficulty of establishing a good working

relationship with their local SENA. It may be that some of their negativity arose from the fact that SENA is perceived to have ample public funds with minimum accountability, while many universities consider themselves starved of financial resources. Several academics worried about mission drift and felt that SENA should not be allowed to award degrees.

The employers the review team spoke to appeared to be satisfied that SENA does a good job of training T&T graduates, although they too had a few doubts. Employers are legally obliged to offer SENA students paid internships during their courses whereas there is no such obligation for other providers' students who might (some employers felt) give better value for money as interns. In terms of quality, employers spoken to considered that SENA needs to focus even more on the relevance of their programmes to local labour market needs, and to ensure that all their programmes met international standards – SENA's leadership concedes that they have more to do in this respect. The employers the team spoke to were happy to select employees from among SENA T&T students, but acknowledged that they did not pay them particularly well or consider them capable of being trained up to a high level – attributing this to SENA's relatively low entry standards and the many students SENA takes from public schools. The team found that owners of both large and small firms believed that SENA primarily serves large firms.

Qualifications of academic staff

Altbach and Salmi (2011, p. 326) identify the ability to attract, recruit and retain leading academics as a "key success factor" in the development of excellent universities. Table 1.9 in Chapter 1 showed the improvement in the qualifications level of academic staff in Colombia over the period 2002-2009. In 2002, 47% of academics had undergraduate degrees only; 33% had specialisations; 17% had master's degrees; and just 3% had doctorates. By 2009, 42% had undergraduate degrees only; 34% had specialisations; 19% had master's degrees; and 4% had doctorates. By 2011, the percentage of full-time faculty members with doctoral degrees had gone up very significantly, to 14%[10] – though this is still very low by international standards[11] – and the number of faculty with a graduate degree of some kind had reached 57% (*Background Report* [MEN, 2011*a*]). Given the importance of the presence of well qualified staff to support the teaching, learning and research processes,[12] the team was heartened by the progress to date in recruiting staff with higher levels of education and in improving the qualifications of existing academic staff. The trend is clearly in the right direction, but with a long way still to go. There is general acceptance that low qualifications among academics indicate a distinct weakness in the Colombian system and risk compromising efforts toward the improvement of quality overall.

The National Development Plan recognises that the academic qualifications issue has to be a priority area for reform and, in Minister Campo's presentation of October 2011 (MEN, 2011*b*), there is a target to increase the number of academic staff with PhDs from 14% to 18% of the total teaching force by 2014. Another measure to strengthen quality is the target of increasing the number of academics who had participated in pedagogical and/or in research technique development programmes from 13 500 to 23 000 (25% of the total teaching force) by 2014.

There are a number of other national policies to improve the quality of subject-related teaching in Colombia's tertiary institutions. In 2011, approximately 1 600 academics were undertaking 80 doctoral programmes developed by the MEN, in disciplines ranging from education, health sciences, agronomy, social sciences, engineering, economics and administration to mathematics and natural sciences. Meanwhile, specific regional initiatives were targeted at upgrading specialisations and master's degrees to master's and doctorates respectively, in needed disciplines such as basic sciences, agriculture and veterinary studies. The MEN also supports initiatives to exploit the benefits of technology by developing staff in the use of this technology, in initiatives such as the Advanced Technology National Academia Web (RENATA) programme which connects TEIs and research centres in order to encourage collaboration and innovation. By 2009, a national strategy to improve the proficiency of graduates in a second language – including measures whereby TEIs included English in the curriculum of all academic programmes as a prerequisite for their entry on the Register of Qualified Programmes – was beginning to improve quality and relevance. This initiative is further discussed in Chapter 6 on Internationalisation.

At institutional level, the team was aware of a strong emphasis on the importance of these Staff Development programmes, which often involve international graduate education or training, for instance in the acquisition of a second language or in developmental uses of ICT.

Individual universities all have their own Institutional Education Projects (PEIs, *Proyectos Educativos Institucionales*), which are supposed to develop institutional strategic plans building on an analysis of the strengths and weaknesses of each institution. However, in a number of meetings, some scepticism was expressed about the willingness of staff in public universities to implement these projects whole-heartedly, given the absence of incentives in the public sector and the general view that university management is much more efficient in the private sector. The team did not have the opportunity to assess either pedagogical methodologies or the implementation of the PEIs.

Quality and relevance of programmes

The development of programmes to inculcate both discipline-specific and generic competencies is another important dimension of academic quality and relevance at institutional level. The OECD AHELO project, in which Colombia is a participant, argues that "the simple acquisition of knowledge is not enough to count as an education", positing instead four key sets of competencies that lie at the heart of an excellent learning system: *(i)* discipline-specific skills; *(ii)* generic skills, *(iii)* learning in context; and *(iv)* a value-added strand.[13] Discipline-specific skills relate self-evidently to the field of knowledge that a student chooses. Learning in context includes cultural, physical and behavioural contexts, while the value-added strand focuses on "What a student brings to a degree programme and what he or she leaves with… as a powerful indicator of teaching quality, availability of resources and the capacity of students to learn."

Internationally, there has been a growing demand both from policy makers and from employers for information about the generic competences of graduates as they enter a competitive and increasingly globalised labour market. OECD summarises these competencies under the broad headings of critical thinking, analytical reasoning (the ability to generate fresh ideas, and the practical application of theory), problem-solving, ease in written communication, leadership ability and the ability to work in groups. To this list may be added competence in a second language for the majority of graduates. However, while there is a general agreement about the importance of these skill sets, it is notoriously difficult to measure generic skills as so few instruments exist to measure them with.

There is also a growing demand to measure educational attainment not simply by reference to the number of years of education or of the degrees gained, but as an indication of what an individual knows or can do; and to benchmark individual competences against the knowledge and skill set needed by the economy and society as a whole. In Colombia, the team was provided with evidence of a large number of programmes and initiatives at both national and institutional level aiming to incorporate a competence-based approach into its teaching and learning activities throughout the system. Specifically, the National Development programme aims to increase the percentage of T&T programmes which are competence-based from 25% to 80%.

At T&T level, employers can be involved in the development of curricula for the propaedeutic cycles programmes, in order to increase their relevance to local and regional labour markets. Competences are described in conjunction with employers and job descriptions are defined with

appropriate skill sets, thus enabling students to make a choice as to whether to leave the education system or to add further levels of competence by studying at a higher level. At the university level, private universities are much more heavily influenced than public ones by the local labour market and by the presence of local business people, either as founders or board members. Employers do not appear to have any involvement in the development of programmes in public universities.

In spite of these efforts, the team was struck by the continuing tendency to measure skills acquisition by time-bound semesters rather than competencies; by the rather low level of second language proficiency among the academic staff; and by the fact that language courses, which are such a necessary part of a modern student's competence, cost extra in almost every public university. Conversely, the private universities visited by the team, many of which were accredited, demonstrated a clear orientation to the needs of students and strong linkages with employers and an international focus in curriculum design. Their students whom the team met appeared to be very motivated and to want more active and engaged learning experiences – and some student meetings were conducted in English.

Overall, there were many positive opinions about the quality of university graduates, both from the staff of Research Centres who provide them with further research opportunities and from employers.

Articulation of the system: pathways and mobility

In 2003, the World Bank study reported on the absence of pathways to facilitate student mobility through the tertiary education system (World Bank, 2003, p. 95). During 2011 fieldwork, the review team concluded that education policy makers in Colombia were aware of the importance of providing opportunities for mobility throughout the system, both as a means of contributing to equity as well as of raising the educational standards of the population and thus increasing the stock of human capital.

The MEN has developed a number of policies to promote a flexible learning system whereby students are enabled to carry credit between and among institutions at all levels.

- In co-operation with the TIs and PTIs as well as with SENA, business and other stakeholders, strategies have been developed to improve the linkage between the secondary school system at grades 10 and 11 and tertiary education. Links between secondary and tertiary education are intended to promote access, to strengthen the basic core competences of students, to increase participation and

to improve the relevance of academic programmes, while facilitating transfer between the world of work and the education and training systems.[14]

- The propaedeutic cycles mentioned earlier in this chapter constitute another instrument to promote equity and to encourage mobility. One key objective of this policy, which was promulgated in Law 749/2002, is to ensure that the tertiary education system is flexible enough to respond to national, regional and local labour market demands for trained human resources. A second major objective is that the education system will equip students with the qualifications needed for entry to the labour market and will enable them to progress up and across the system through a series of linkages so that diplomas or degrees, earned at one level, will be recognised at the next level up or in another institution in another region. Moreover, the cycles allow students to try out more than one course and also permit a combination of work and education. And, as noted above, employers are invited to advise on the curriculum in these programmes in order to enhance their relevance to the local labour market. The process of obtaining approval and quality registration for a programme of propaedeutic cycles requires detailed submissions, which must include: *(i)* detailed labour market analysis to include local and regional economic development plans; *(ii)* institutional analysis with relevant strategic plans; *(iii)* student and employer surveys; and *(iv)* technical and programme analysis (Unidades Tecnológicas de Santander, 2010). TIs and PTIs are only allowed to grant professional degrees if their courses form part of the propaedeutic cycles system.

In one Technological Institution, the team was informed that a recognised system of credit transfers enables students to continue up the ladder without having to start all over again. However, it was also noted that this progression often applies only for graduates of a specific institution, within the same region. It is not usual for credits to be recognised in different regions and different institutions. When this Technological Institution was asked if it was able to compare its outcomes with other institutions' outcomes using the SABER PRO assessment, the answer was that SABER PRO is not suitable for Technological Institutions – it was said for example that SABER PRO could not assess an Agricultural programme because it tests generic and not technical programme outcomes. In the meantime, in practice and as noted above, in many institutions competencies do not yet appear to be measured and credits do not seem to exist for switching from T&T institutions to public universities or university institutions.

National Qualifications Framework (NQF)

Among policy makers in Colombia there is general recognition of the potential benefits of a well-organised and widely accepted National Qualifications Framework (NQF) which includes: *(i)* clear descriptors of standards and competencies and skills for each level of the education and training system; *(ii)* the comparability of qualifications, whether certificate, diploma or degree level; *(iii)* the recognition of prior learning; *(iv)* the abolition of "dead-end" courses to be replaced by a system of credits which enable individuals to continue to study at higher levels in the system; and, last but not least, *(v)* the contribution of a well-functioning and well-understood QF in enabling access and re-entry for mature students, thus strengthening the lifelong learning system. Policy-makers too understand the value of the NQF, together with a credit system which would act as a passport to potential jobs not only in Colombia but also throughout the Latin American region and beyond.

While the National Development Plan and all material supplied by the MEN highlighted the importance of developing a qualifications framework to contribute to student mobility at home and abroad, the team was told that, in practice, a qualifications framework meeting all the requirements above has yet to be developed. It remains very difficult to enter public universities with a diploma or a degree from a TI or a PTI, and, as the discussion of the CERES demonstrated, any such transfers seem to happen on a one by one or exceptional basis rather than automatically. If this is the case within the formal tertiary education system, it is likely that opportunities to carry credits from SENA to universities or university institutions are rare. Concerns were expressed about employers' insufficient awareness of the labour market value of the propaedeutic cycles and about the different levels of competence covered in these cycles.

In meetings with the team, employers did note that as yet, relatively few people in Colombia manage to move up from a technology degree to a professional degree, and that people they recruit with technology degrees are unlikely to progress far within companies. However, the team was not able to evaluate whether employers were aware of the potential value of a functioning NQF in providing clarity about the competencies and skills levels achieved by their future employees and the potential usefulness of such a framework in helping them select and retain appropriate human capital for their enterprises. This is an important issue, as experience in Portugal with the introduction of the NQF shows that it is vital to involve employers at local level as early as possible in the design and implementation of a credit system based on the recognition of competences and of prior learning.

The Colombian labour market

Although education can be considered an end in itself, an important role of tertiary education is to develop a labour force commensurate with the needs of a modern economy. This section analyses recent labour demand and supply trends for tertiary educated workers in Colombia.

A recent World Bank study (Gasparini *et al.*, 2011) for 16 Latin American countries shows that the 2000s saw a reversal in the increase in the returns to tertiary education experienced during the 1990s. On average, the wage gap between skilled (defined in this chapter as tertiary-educated) and unskilled (non-tertiary-educated) workers widened in the 1990s and shrunk in the 2000s. In Colombia's case, Gasparini *et al.* noted a substantial rise in the wage premium for skilled labour during the 1990s despite an increase in the relative supply of skilled workers, suggesting a strong increase in demand for those with tertiary education; and that although during the 2000s the skilled labour wage premium fell somewhat, this was not because of a change in relative demand, but just because the supply of skilled people continued to grow.

This report's analysis agrees with Gasparini's. The review team finds that in Colombia, demand for tertiary graduates – and indeed for workers who have had any tertiary education at all – has remained strong in the face of a rapid expansion of supply. In Colombia, as in Latin America generally, the wage premium for tertiary education is especially high. This means that tertiary education is still one of the best investments a young person can make, even if the wage premium continues to moderate and trend slightly downwards as in recent years.

The labour market value of tertiary education

The National Administrative Department of Statistics (DANE, *Departamento Administrativo Nacional de Estadísticas*) characterises the working age population as that aged 12 and over. In 2010, the working age population totalled 34 581 393 people, of which 21 555 813, or 62.3%, were economically active. Economic activity rates are highest for people with at least some tertiary education, hovering around 78% in recent years, whereas the rate for people without any tertiary education was 60% in 2010.

Research indicates that returns to tertiary education are extraordinarily high in Latin America, and the data presented below – although they do not control for unobservables such as ability or self-selection – show that Colombia is no exception. As can be seen in Table 4.6, in 2010, on average, recent graduates with a professional technician title earned 2.3 times as

much as workers with a high school certificate; those with a technologist title earned 2.68 times as much; those with a bachelor's degree earned 3.65 times as much; and those with doctorates earned over 13 times as much. Although earnings for recent tertiary education graduates have shown a slight downward trend in recent years, the returns to tertiary education remain high by international standards. On average, tertiary educated individuals aged 25 to 64 in OECD countries can expect to earn only about 50% more than workers with a high school degree. Colombia also exhibits high returns by Latin American standards: in Brazil, on average, university degree workers can expect to earn about 150% more than their high school graduate counterparts (OECD, 2011).

Table 4.6 **Average earnings by education level, USD**[1]

Highest education level achieved	Average 2010 earnings of 2009 graduates	As percentage of "high school certificate" earnings
High school certificate[1]	220	100%
Professional technician title	507	230%
Technologist title	590	268%
Bachelor's degree	804	365%
Specialisation	1 508	685%
Master's degree	1 896	861%
Doctorate	2 930	1 331%

Note (1): USD exchange rate of 2 April 2012: COP 1 792/USD.

Data from OLE do *not* include SENA graduates. Earnings figures from OLE represent the *Ingreso Base de Cotización*, *i.e.* the income reported for social security contributions; earnings of workers who do not contribute to social security are not included.

Source: MEN estimates based on Labour Observatory for Education (OLE); data for high school earnings are DNP-DDS-SESS estimates based DANE-GEIH Jul-Sep 2010 and represent all workers with a high school certificate as the highest level achieved.

Potential workers have become increasingly more educated over the period 2003-2010, as Table 4.7 shows. All the growth was in categories with education at upper secondary level or above: numbers of potential workers fell marginally in categories with an education level of lower secondary or below. The numbers of the economically active who had had at least some tertiary education grew by 51.2%, or 1.68 million people, between 2003 and 2010. During this period 1.05 million more people whose highest education level was upper secondary also joined the economically active population, but this represented only a 23% rise. The data for 2003-10 thus show a

growing relative and absolute supply of workers with at least some tertiary education – which is not surprising given the rise in gross enrolment rates and numbers of tertiary graduates. These upward trends can be expected to continue in the near future as enrolment rates in tertiary education continue to rise.

Table 4.7 **Educational distribution of those in or seeking work, 2003-2010**

Highest education level	2003	2007	2008	2009	2010	2003-2010 absolute change	2003-2010 % change
None	1 230 216	1 007 755	925 802	1 031 241	1 027 136	-203 080	-16.5%
	6.4%	5.3%	4.7%	5.1%	4.7%		
Preschool/ primary	6 371 241	5 835 252	5 878 989	6 253 265	6 463 090	91 849	1.4%
	33.3%	30.4%	29.9%	30.7%	29.8%		
Lower secondary	3 557 823	3 277 972	3 258 589	3 510 051	3 619 172	61 349	1.7%
	18.6%	17.1%	16.6%	16.6%	16.7%		
Upper secondary	4 582 621	5 046 886	5 029 324	5 489 544	5 633 731	1 051 110	22.9%
	23.9%	26.3%	25.6%	26.3%	26.0%		
At least some tertiary	3 278 160	4 003 750	4 571 595	4 574 106	4 956 298	1 678 138	51.2%
	17.1%	20.9%	23.2%	21.2%	22.8%		
Total	19 158 709	19 177 644	19 669 120	20 862 890	21 704 633	2 545 924	13.3%
	100.00%	100.00%	100.00%	100.00%	100.00%		

Note: Data are for the second trimester.

Source: DANE - GEIH. GFPT-DGPT-MPS calculations based on 2005 Census population projections.

A look at data for first-time job seekers is also useful, because this group is likely to capture the bulk of recent graduates and may shed more light on what is likely to happen in the near future. Table 4.8 shows their educational distribution. Comparing this to the educational distribution for all potential workers in Table 4.7 shows that, while in 2010 22.8% of all the economically active had tertiary education, the figure for first-time job seekers was 29.5%. And while in 2010 26% of all the economically active had upper secondary education, the figure for first-time job seekers was 43%. The tertiary-educated showed the biggest growth of all educational levels between 2003 and 2010, both among Colombia's economically active population overall and among first-time job-seekers. These data suggest that the supply of tertiary-educated potential workers seems set to continue rising for some years to come.

Table 4.8 **Educational distribution of first-time job seekers, 2003-2010 (%)**

Highest education level	2003	2007	2008	2009	2010
None	1.7	1.5	0.8	1.6	0.9
Preschool/primary	10.6	14.2	11.5	12.0	8.3
Lower secondary	17.9	17.4	16.6	16.4	18.2
Upper secondary	51.1	45.4	46.9	40.7	43.0
At least some tertiary	18.6	21.4	24.2	29.3	29.5
Total	100.0	100.0	100.0	100.0	100.0

Note: Data are for the second trimester.

Source: DANE - GEIH. GFPT-DGPT-MPS calculations based on 2005 Census population projections.

Will there continue to be enough labour demand to absorb this increasing supply of highly-skilled workers? Table 4.9 shows the educational distribution of Colombia's employed population. This shows that in 2010 the tertiary-educated made up 22.5% of the employed workforce, which is just smaller than the 22.8% they make up of the pool of potential workers (Table 4.7). However this very small difference could be explained by the recent influx of new tertiary graduates, who will have had less time to find jobs. By contrast, 25.0% of the employed population had at least an upper secondary education, versus 26.0% of the pool of potential workers, showing that, in relative terms, individuals with at least some tertiary education were more likely to be employed than those with at least an upper secondary education. The latter occurred even with a substantially higher increase in the relative and absolute supply of workers with at least tertiary education: clearly, the labour market is absorbing high-skilled workers at reasonable rates.

The numbers of employed tertiary workers grew by 53.1% between 2003 and 2010, more than the 51.2% by which the numbers of economically active tertiary-educated people grew (Table 4.7), and far more than any other group. The next-biggest increase was for people with upper secondary education: their share of employment increased by 30.6% between 2003 and 2010, while the economically active population with upper secondary education grew by 22.9%. These were the only two categories where employment share increased even though the pool of potential workers increased, and it should be noted that the tertiary pool increased by much more than did the upper secondary pool.

Table 4.9 **Educational distribution of the employed population, 2003-2010**

Highest education level	2003	2007	2008	2009	2010	2003-2010 absolute change	2003-2010 % change
None	1 141 978 6.9%	957 922 5.6%	869 166 5.0%	964791 5.3%	959 688 5.0%	-182 290	-16.0%
Preschool/ primary	5 748 205 34.8%	5 382 863 31.6%	5 412 822 30.9%	5 663 661 30.9%	5 914 924 31.0%	166 719	2.9%
Lower secondary	3 006 438 18.2%	2 873 276 16.9%	2 863 705 16.4%	3 036 115 16.6%	3 147 649 16.5%	141 211	4.7%
Upper secondary	3 656 597 22.2%	4 263 423 25.0%	4 276 259 24.4%	4 626 361 25.3%	4 776 471 25.0%	1 119 874	30.6%
At least some tertiary	2 811 171 17.0%	3 547 930 20.8%	4 068 942 23.3%	4 025 748 22.0%	4 302 568 22.5%	1 491 397	53.1%
Total	16 495 250 100.0%	1 031 442 100.0%	17 495 472 100.0%	18 321 360 100.0%	1 106 396 100.0%	2 611 146	15.8%

Note: Data are for the second trimester.

Source: DANE - GEIH. GFPT-DGPT-MPS calculations based on 2005 Census population projections.

As Table 4.10 shows, unemployment rates for individuals with at least some tertiary education have remained below those for individuals with upper secondary education for the period under study. (This was also the case with respect to individuals with lower secondary education, with the exception of 2010, when the unemployment rate for tertiary-educated individuals was 13.2%, versus 13.0% for those with lower secondary.) It is true that the unemployment rate for high-skilled workers did not experience as dramatic a fall between 2003 – when unemployment levels were at their highest for the 2003-2010 period – and 2010 as that for upper-secondary-educated workers, but, as already mentioned, the supply of high-skilled individuals rose by 51.2% during this period whereas the number of upper-secondary-educated individuals in the labour market rose by only 22.9%.

The strength of the demand for highly-skilled workers is corroborated by longer time-series data. These show that, although the proportion of the working population without tertiary education has fallen during the last 15 years (from 80% in 1996 to 67% in 2010), this fall has been more dramatic for formal sector workers (from 70% to 47%) (López, 2011). López also confirms that 87% of new formal employment in 2010 went to people with at least some tertiary education.

Table 4.10 **Unemployment rate by level of education, 2003-2010**

Highest education level	2003	2007	2008	2009	2010	2003-2010 absolute change
None	7.2%	4.9%	6.1%	6.4%	6.6%	-0.6 p.p.
Preschool/primary	9.8%	7.8%	7.9%	9.4%	8.5%	-1.3 p.p.
Lower secondary	15.5%	12.3%	12.1%	13.5%	13.0%	-2.5 p.p.
Upper secondary	20.2%	15.5%	15.0%	15.7%	15.2%	-5.0 p.p.
At least some tertiary	14.2%	11.4%	11.0%	12.0%	13.2%	-1.0 p.p.

Note: Data are for the second trimester.

Source: DANE - GEIH. GFPT-DGPT-MPS calculations based on 2005 Census population projections.

The labour market data above show that there is demand in the Colombian labour market for a growing proportion of workers with tertiary education. With the recent signing of a Free Trade Agreement with the United States, as well as pending Free Trade Agreements with Turkey and South Korea, this demand may well continue into the future. But even if demand were to fail to outpace supply, the wage premium for tertiary-educated workers should remain at high levels: currently, even workers with a T&T degree can expect to earn more than twice as much as their high-school-educated counterparts.

Labour market information available to students and tertiary institutions

The MEN's Labour Observatory for Education (OLE, *Observatorio Laboral para la Educación*) has been tracking graduates of tertiary education since 2001 and their labour market outcomes since 2005, though SENA graduates, are not included in OLE. OLE tracks labour market outcomes by matching recent graduate data with social security records, providing the percentage of recent graduates who are working and contributing to social security (*i.e.* working in the formal sector).[15] The remaining percentages include recent graduates who work independently and do not contribute to social security, who are unemployed, out of the labour market, or living outside the country. OLE also provides data on earnings (more specifically, the income on the basis of which workers contribute to social security).

The percentage of workers contributing to social security gives potential students a good guide to their chances of finding work upon graduation. Household survey data show that tertiary graduates are highly likely to work

in the formal sector: therefore, the percentage of recent graduates contributing to social security is likely to mirror their overall employment rate. Earnings data provide additional labour market information, and can also be used to evaluate the returns to tertiary education. Again, because roughly over 80% of tertiary-educated workers to contribute to social security, earnings data from OLE can be considered to be fairly reliable. Data can be broken down by type of tertiary degree, tertiary education institution (TEI), department, region and discipline. Potential students can thus evaluate labour market outcomes for different types of programmes and degrees or even for specific TEIs. As will be discussed more fully in Chapter 8 on Information and Transparency, however, the OLE system is difficult to navigate and many students are unaware of its existence. Students must provide their own analysis of the data, increasing the likelihood of misinterpretation. While this information could also help TEIs to evaluate the quality and relevance of their programmes, it is seldom taken into account in evaluations and strategic plans. Therefore a very valuable information system is currently being underutilised by students and TEIs, in part because the information is not consolidated in a way that can be useful to stakeholders. A further problem is that, although OLE has been tracking recent graduates since 2001, available data only cover the last four years, currently providing a very limited time horizon for analysis. Finally, an important drawback of OLE is that SENA graduates are not included. This is an important caveat to keep in mind for any analysis of the employability or earnings of graduates from T&T programmes, as SENA graduates make up a significant proportion of this population.

Trends in earnings and employment among recent graduates

Despite only being able to examine a very limited time horizon, as well as the absence of data on SENA graduates, the review team attempted to use the OLE data to analyse the labour market outcomes of recent graduates by degree, discipline and region, with the results shown in Tables 4.11, 4.12 and 4.13. Average real starting earnings one year after graduation for the 2007, 2008 and 2009 graduating cohorts are compared to those earned by the 2006 cohort, by degree type, discipline, and region. As an example, for the 2007 cohort, real earnings a year after graduating, *i.e.* in 2008, are compared with the real earnings of the 2006 cohort in 2007. The cohort sizes themselves are also compared with those of the 2006 cohort, as an indicator of changes in supply.

Table 4.11 shows average per cent changes in real entry-level earnings and cohort sizes for the 2007-2009 cohorts, versus the 2006 cohort, by degree type. The table indicates that doctorate degree earners were the only ones who experienced a real rise in earnings, despite large increases in

cohort size. Those with technician or specialisation degrees suffered the lowest ratio of fall in earnings to percent increase in graduates, with ratios of 0.17 and 0.19 respectively. Those with master's and technologist degrees fared similarly in terms of their fall in earnings relative to the increase in cohort size: the ratio is 0.24 for both sets of graduates. Those with a bachelor's degree had the highest ratio, 0.30.

Table 4.11 **Average per cent change in graduation cohort size and real starting earnings with respect to the 2006 cohort, by degree type**

	Average % change in graduation cohort size (with respect to 2006 cohort size), 2007-2009 cohorts	Average % change in 2008-2010 real starting earnings (with respect to 2006 cohort), 2007-2009 cohorts	Ratio of real starting earnings decrease to cohort size increase
Technician title	66.5%	-11.2%	0.17
Technologist title	40.7%	-9.7%	0.24
Bachelor's degree	19.0%	-5.7%	0.30
Specialisation	44.3%	-8.3%	0.19
Master's degree	23.3%	-5.5%	0.24
Doctorate	46.9%	1.4%	-0.03

Note: Graduation cohorts are for the years 2007, 2008 and 2009 (base year 2006); starting earnings are for the years 2008, 2009 and 2010 (base year 2007). Starting earnings from OLE for a particular year represent the *Ingreso Base de Cotización* (the income reported for social security contributions) for workers who graduated during the previous year; earnings of workers who do not contribute to social security are not included. As is the case with data from the OLE, SENA graduates and their earnings are not included. Changes in earnings are expressed in real terms using the CPI published by Colombia's Central Bank (Banco de la República).

Source: Authors' calculations based on MEN, Labour Observatory for Education (OLE).

Data by discipline for recent graduates in Table 4.12 show that, while all disciplines have seen handsome annual increases in graduate numbers, the education sciences have increased the most (72.3% per annum), and have also seen a small annual rise in earnings of 1.9%. Recent mathematics and natural science graduates, as well as those who studied social sciences and the humanities, experienced a greater annual rise in earnings (2.5% and 5.1% respectively), and their cohort size increased annually by only 15.2% and 27.3% respectively. Relative to changes in cohort size, earnings decreases are the greatest for recent graduates in health sciences, followed by economics, management, accounting, and related disciplines. On the other hand, although their earnings did fall, disciplines such as engineering, architecture, urban studies and related disciplines, fine arts, and agriculture, veterinary and related disciplines showed greater resilience when the average annual increase in graduation cohort size is taken into account.

Table 4.12 **Average per cent change in graduation cohort size and real starting earnings with respect to the 2006 cohort, by discipline**

Discipline	Average % change in graduation cohort size (with respect to 2006 cohort size), 2007-2009 cohorts	Average % change in 2008-2010 real starting earnings (with respect to 2006 cohort), 2007-2009 cohorts	Ratio of real starting earnings decrease to cohort size increase
Agriculture, veterinary & related disciplines	40.3%	-9.7%	0.24
Fine arts	42.4%	-9.4%	0.22
Education sciences	72.3%	1.9%	-0.03
Health sciences	19.3%	-9.6%	0.50
Social sciences and humanities	27.3%	5.1%	-0.19
Economics, management, accounting & related disciplines	25.4%	-7.8%	0.31
Engineering, architecture, urban studies & related disciplines	23.9%	-3.0%	0.12
Mathematics and natural sciences	15.2%	2.5%	-0.16

Note: Graduation cohorts are for the years 2007, 2008 and 2009 (base year 2006); starting earnings are for the years 2008, 2009 and 2010 (base year 2007). Starting earnings from OLE for a particular year represent the *Ingreso Base de Cotización* (the income reported for social security contributions) for workers who graduated during the previous year; earnings of workers who do not contribute to social security are not included. As is the case with data from the OLE, SENA graduates and their earnings are not included. Changes in earnings are expressed in real terms using the CPI published by Colombia's Central Bank (Banco de la República).

Source: Authors' calculations based on MEN, Labour Observatory for Education (OLE).

Table 4.13 analyses changes in real starting earnings and cohort sizes by region, though it should be borne in mind that not all graduates stay to work in the region where they studied (see Table 3.19), so cohort sizes may be an even more imperfect representation of the supply of recent graduates in regional labour markets. Annual increases in cohort size were exceptionally large in the Orinoquia-Amazonia (279.4%) and Pacific (124.9%) regions, which account for less than 4% of total graduates in the country and have acquired tertiary provision more recently than most. Despite the cohort size increases, earnings in the Pacific region fell by only 1.6% annually, and in Orinoquia-Amazonia they rose by 17.4% annually, reflecting a strong demand for tertiary-educated graduates in these two regions. The Atlantic and Oriental regions also show labour market dynamism for recent graduates, with ratios of earnings decrease to cohort size increase of -0.04 and 0.05 respectively. Bogota, Antioquia and Valle experienced relatively

large earnings decreases when compared to their increases in cohort size. Note, however, that Antioquia and Valle are home to Medellin and Cali, Colombia's second and third largest cities. If recent graduates from other regions are migrating to these cities, cohort size increases could be underestimated. This is of course especially true of Bogota, which receives many workers from the Central region.

Table 4.13 **Average per cent change in graduation cohort size and real starting earnings with respect to the 2006 cohort, by region**

Region	Average % change in graduation cohort size (with respect to 2006 cohort size), 2007-2009 cohorts	Average % change in 2008-2010 real starting earnings (with respect to 2006 cohort), 2007-2009 cohorts	Ratio of real starting earnings decrease to cohort size increase
Antioquia	12.3%	-4.4%	0.36
Atlantic	49.6%	1.9%	-0.04
Bogota DC	15.3%	-4.4%	0.29
Central	36.7%	-6.3%	0.17
Oriental	60.1%	-3.1%	0.05
Orinoquia-Amazonia	279.4%	17.4%	-0.06
Pacific	124.9%	-1.6%	0.01
Valle	36.4%	-10.6%	0.29

Note: Graduation cohorts are for the years 2007, 2008 and 2009 (base year 2006); starting earnings are for the years 2008, 2009 and 2010 (base year 2007). Starting earnings from OLE for a particular year represent the *Ingreso Base de Cotización* (the income reported for social security contributions) for workers who graduated during the previous year; earnings of workers who do not contribute to social security are not included. As is the case with data from the OLE, SENA graduates and their earnings are not included. Changes in earnings are expressed in real terms using the CPI published by Colombia's Central Bank (Banco de la República).

Source: Authors' calculations based on MEN – Labour Observatory for Education (OLE).

Findings and conclusions

Institutional diversity

Based on institutional visits in a number of regions to a broad range of tertiary institutions of all kinds, public and private, including SENA centres, the team considers that the diverse missions and focus of the TEIs and the capacity of SENA together constitute a strength of the current system of tertiary level provision in Colombia, and will support the government's programme for growth in participation and for a tertiary system that is increasingly relevant to the labour market.

Maintaining and improving quality with growing enrolments

The government's plans to increase enrolment at all levels and in all institutions, but particularly in T&T programmes, should in the team's view develop the required human capital for Colombia's economic growth. The data available to the review team suggests that this policy is sound and that the labour market demand for tertiary degrees justifies the expansion, though it would be desirable to undertake a more rigorous analysis of the evolution of wage premia for secondary, T&T and bachelor's degrees. However, it is important to ensure that this massification of tertiary education does not come at the expense of quality. This is a trade-off that must be managed by aggressive monitoring of quality assurance and of learning outcomes, especially in non-accredited institutions of all kinds. High levels of enrolment in business and legal studies, compared to other disciplines more demanded by employers, may also be an issue.

The review team considers that the strength of CERES lies in their regional focus and emphasis on stakeholder involvement. However, currently these centres serve a relatively small number of those wishing to avail of third level educational opportunities. The uneconomic scale of individual centres visited by the team, the relatively outdated training they were providing and their value for money are real causes for concern. A thorough external evaluation of CERES seems indicated.

Academic qualifications

An immediate priority for Colombia is to develop a strong academic culture in its TEIs. The review team noted that Colombia has made considerable progress in raising the academic qualifications of staff over the last seven years; by 2011, 46% of academic staff held a graduate degree and 14% held a PhD. The government is aware that, because academics with PhDs or other high level appropriate qualifications are so important in building up the teaching, learning and research capacity of Universities, this must be a key priority for the improvement of the system overall. The government is also aware that the numbers of highly qualified academics in the Colombian system continue to be very low by international standards, which could compromise efforts to improvement quality overall. Therefore there are ambitious targets to build up the quality of existing staff and to attract good new staff to the system. Given that upgrading existing staff will inevitably be a slow process, attracting new highly-qualified staff must be a substantial part of the solution.

Other measures that might help improve teaching quality include *(i)* encouraging peer observation of teaching, and *(ii)* developing indicators of teaching quality, to be included in performance appraisals of tertiary institutions.

Quality and relevance of programmes

Given where Colombia is in terms of its competitiveness and of its desire to improve the relevance of its higher education system, the MEN focus on the development of a competency-based approach in both education and training systems is clearly right. However, from meetings with institutions and with employers the team concluded that employers' input to curriculum design and identification of competencies needed to be considerably strengthened in the public universities; also that links between public universities on the one hand and the business community, professional groups and local employers on the other, were relatively weak. Except perhaps in those private TEIs which have attained full institutional accreditation, there does not seem to be the capacity to introduce significant curriculum or pedagogical innovations or to develop a curriculum that integrates teaching and research.

Relevance, employability of graduates and responsiveness to employers' needs could be improved by including in as many programmes as possible: *(i)* modules in the broad competencies that employers in every country want (how to analyse problems, how to organise time, to write well and to work in teams and groups); *(ii)* work placements as an integral part of the programme; *(iii)* assessments of students' progress which incorporate feedback from employers who hosted work placements. The review team suggests also that some curriculum developers and faculty staff need to help to develop their own awareness of how to relate competencies to employers needs, and how to refer to the desired outcomes of tertiary education, when designing curricula.

Chapter 2 has already recommended the inclusion of industry and employer representation on the governing bodies of all tertiary institutions. As well as helping the institution to develop increased understanding of employers' needs and how to meet them, this would help employers to a better understanding of what graduates from the institution can bring to their business.

Articulation of the system and the implementation of a national framework of qualifications

The team considers that existing MEN polices to improve the transition between secondary and tertiary level are excellent in principle, as is the concept and design of the propaedeutic cycles. If these policies and concepts are implemented as intended, they will provide opportunities for mobility throughout the system, which will contribute to equity, raise the educational standards of the population and increase the stock of human capital.

However, full implementation has yet to be achieved. In particular, the gap between technological title completion standards and professional degree entry standards threatens realisation of the objectives of the propaedeutic cycles. The TIs and PTIs, together with SENA, do provide access and some limited pathways through the system but, apart from the issue of there not being enough places, some of these programmes currently lead in practice to a dead end. Mobility from a technical institution to a public university seems particularly difficult, often impossible, as recognition of prior learning is so limited in universities. In 2011, only 4% of university programmes could be accessed by graduation from TI & PTI programmes. The target for 2012 is to increase that percentage to 10%, but the team believes that it will be necessary to go much further than that.

Policy-makers in Colombia understand the purposes and advantages of a national framework of qualifications, which are to help expand access and improve the quality of learning opportunities by setting clear learning standards and identifying progression routes through levels of learning. However, not enough progress has yet been made on designing the methodology for recognising learning outcomes throughout the tertiary system. And there is still a long way to go to get a common credit accumulation and transfer system worthy of the name.

Labour market information

The labour market data discussed above show that there is a high individual return to tertiary education in Colombia, that tertiary graduates are highly likely to work in the formal sector and that demand for workers with tertiary education is expected to increase in the future. Since 2005, the MEN's *Observatorio Laboral para la Educación* (OLE) is the main source of data on graduate labour market outcomes. Because OLE data on earnings can be broken down by programme and institution, students are potentially able to evaluate labour market outcomes for different types of programmes and degrees or even for specific TEIs. However, as will be discussed more fully in Chapter 8 on Information and Transparency, the OLE system is

difficult to navigate and many students are unaware of its existence. While this information could also help TEIs to evaluate the quality and relevance of their programmes, it is seldom taken into account in evaluations and strategic plans. Therefore a very valuable information system is currently being underutilised by students and TEIs, in part because the information is not consolidated in a way that can be useful to stakeholders. A further problem is that, although OLE has been tracking recent graduates since 2005, using data on graduates from 2001 onwards, available data only cover the last four years, providing a very limited time horizon for analysis. Another issue, also discussed in Chapter 8, is that although SENA has its own labour market database (OLO, Colombian Labour and Occupational Observatory, *Observatorio Laboral y Ocupacional Colombiano*), its scope is different from OLE's: OLO only tracks information on job placement through SENA's labour intermediation service, rather than earnings of all formally-employed graduates, based on social security contributions. Valuable as OLO information may be, it is important to integrate data on SENA graduates with OLE, so as to provide full data on their employability.

Recommendations

Maintaining and improving quality with growing enrolments

The government is recommended to look for additional ways of ensuring the quality of programmes and learning outcomes in non-accredited tertiary institutions, particularly private providers of professional technician and technologist programmes.

The Ministry of National Education should commission an external evaluation of CERES, with wide participation from stakeholder groups. The purpose of the evaluation should be to identify the strengths and weaknesses of CERES programmes relative to other T&T programmes (including those at SENA centres), with particular reference to quality of programmes, cost to students, value for money, impact on employability and long-term financial sustainability and governance.

Academic qualifications

The review team recommends that vigorous efforts continue to be made to attract highly-qualified new staff and upgrade the qualifications of existing staff. Additional measures recommended to help improve teaching quality are *(i)* encouraging peer observation of teaching, and *(ii)* developing indicators of teaching quality, to be included in performance appraisals of tertiary institutions.

Quality and relevance of programmes

It is recommended that as many tertiary programmes as possible should include modules in the broad competencies that all employers want their employees to possess (analysing problems, organising time, writing well, working in teams and groups) and work placements following which employers' feedback would form part of student assessments.

Also, initiatives should be launched to help curriculum developers and faculty staff to improve their skills in relating competencies to employers' needs and describing the desired outcomes of tertiary education.

Labour market information

As Chapter 2 has already recommended, the government should commission a study on the supply and demand for workers with tertiary education, taking into account factors such as ability and self-selection, drawing on Colombian household surveys. The study should aim to provide a clearer understanding of the relevance of tertiary education and the relative demand for graduates with different levels of tertiary degree, to inform future policies, plans and targets.

Mobility and a National Qualifications Framework (NQF)

A National Qualifications Framework (NQF), supplemented by a national credit transfer system, should be developed and implemented as a priority, to promote student mobility and create pathways through the system. The team recommends that Colombia draws on international experience to find effective model frameworks and ways of involving other stakeholders in defining learning outcomes and designing the NQF – particularly private TEIs, which have greater business links, and employers. Establishment of a national credit recognition centre to advise on and promote credit transfer is also recommended.

The team also recommends that the Ministry of National Education should find and publicise examples of successful ascent of the propaedeutic cycles ladder, to encourage students to choose T&T programmes in the confidence that they are not "dead ends".

Notes

1. The *Global Competitiveness Report 2011-2012*, World Economic Forum. It should be borne in mind, though, that all the rankings quoted are based on Executive Survey opinions, which can be influenced by whether expectations within a country are high or low.
2. Chapter on Education and Presentation of the Minister of National Education to the review team (MEN, 2011*b*).
3. The role of SENA in the provision of third level education in Colombia will be more fully discussed later in this chapter.
4. In order to operate, all tertiary education institutions and programmes must obtain the Qualified Registry, granted by CONACES, a consultative agency of the Ministry of National Education. To obtain the Qualified Registry, institutions must show compliance with 15 minimum quality standards. More information on this is presented in the chapter on quality assurance.
5. The Escuela Naval de Suboficiales ARC Barranquilla and the Escuela de Suboficiales de la Fuerza Aérea Colombiana Andrés M. Díaz, which provide training for non-commissioned officers in the Colombian Navy and Air Force.
6. Presentation made by the Minister of National Education to the review team, 18 October 2011 (MEN, 2011*b*). These measures are related to the National Vocational Education System (*Sistema de Calidad de Formación para el Trabajo*), SCAFT.
7. www.colombiaaprende.edu.co.
8. For more detail on initiatives to strengthen rural partnerships in technical education and to create linkages between secondary education and technical education, see the Project to Strengthen Technical and Technological Education (CONPES, National Council of Social and Economic Policy, *Consejo Nacional de Política Económica y Social*).
9. SENA Presentation.
10. However, the 2011 figure includes staff currently pursuing their doctoral degrees.
11. For example, in Ireland, the average university typically recruits more than 80% of Academic Full Time Equivalent Staff with doctorates.

12. "*The success of a student's education is greatly influenced by supportive teachers, available resources and an environment conducive to learning (or the lack thereof)*", OECD, AHELO.
13. www.oecd.org/edu/ahelo.
14. The benefits to equity of this policy have been discussed in Chapter 3.
15. There are alternative ways of defining the formal labour market, one of which is workers who contribute to social security.

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Chapter 5. Quality assurance of the Colombian tertiary education system

This chapter examines the current status of quality assurance in Colombia's tertiary educational system. It does so by looking at the institutions involved, the processes in the certification of programmes and institutions, the history of the quality assurance legislation, and the mechanisms and instruments used for the evaluation of outcomes.

The chapter closes with a summary of main findings and recommendations, including suggestions addressing the need to (i) increase the resources devoted to quality assurance, (ii) achieve independence of organisations involved in quality assurance, and a strengthened role for ICFES (iii) introduce stricter controls for Registration of Qualified Programmes, and (iv) continue the improvement of instruments designed to evaluate outcomes and value added, as in the SABER 11 and new SABER PRO exams.

Introduction

How best to assure the quality of tertiary education institutions and systems is one of the most discussed issues in education. Most OECD countries have processes in place, both to measure the quality of programmes and to assess their outcomes. Given the importance of tertiary education for the social and economic development of a country, there is a clear policy need to establish accountability processes and mechanisms for the review, assessment and accreditation or certification of tertiary education quality.

The process of quality assurance and institutional and programme accreditation in Colombia is structured around two institutions: CONACES, the National Intersectorial Commission for Higher Education Quality Assurance, and the National Accreditation Council (CNA, *Consejo Nacional de Acreditación*). CONACES has a consultative function for the Ministry of National Education (MEN), and its main task is to advise the Ministry on whether programmes deserve to be put onto the Register of Qualified Programmes, on which all Colombia tertiary education programmes must

appear to be allowed to operate. CONACES has also been charged with advising on the establishment of programmes, including graduate programmes.

The second institution, the CNA, also a consultative organ of the Ministry of National Education, advises on whether tertiary institutions and programmes which have chosen to apply for high quality accreditation should be awarded this status. The CNA is a purely academic council which operates under guidelines from the CESU, the National Council of Higher Education.

Colombia's tertiary education system faces major quality challenges. Recent rapid expansion, a continuing need to increase coverage further, increasing diversity of programmes and institutions, the competitiveness pressures of increased globalisation and the need to cater for students from an ever-widening ability range have together created a situation in which Colombian tertiary education institutions are expected to do a great deal, with limited and unequally-allocated resources, and to do it to high quality standards that will meet the needs of both students and their future employers.

One of the main barriers to the integration of the lower socio-economic sectors into the Colombian labour market is their lack of adequate and relevant skills. It is therefore extremely important that the country establishes quality assurance arrangements designed to ensure that tertiary education improves the employability and labour market prospects of all the young people who enrol in it, but particularly those who enrol in the institutions which cater for the most students in the lower socio-economic groups (World Bank, 2009).

Historical perspective

Law 30 of 1992 opened up the possibility of introducing new degree programmes in any university. Tertiary education institutions had to inform ICFES (then known as the Colombian Institute for the Promotion of Higher Education) of their new programmes, and ICFES would register them on SNIES, the National System of Higher Education Information. There were limited opportunities to ensure quality because, although both CESU and CNA had set quality guidelines, neither of these institutions had been given the necessary regulatory power to influence the quality of the programmes.

This lack of adequate quality regulation continued through the 1990s, while the number of programmes grew apace, from 1 800 in 1991 to almost 3 000 in 1997. Decree 272/1998 finally established that all academic programmes would need to achieve minimum requirements, and the responsibility for this quality control was delegated to the CNA.

Finally, with the creation of CONACES (Decree 2230/2003), the Register of Qualified Programmes was established. To get their programmes onto the Register, tertiary education institutions had to prove that they met minimum quality requirements. At the same time, the CNA was charged with administering the voluntary high quality accreditation system. Decree 2904/1994 defined the accreditation function, and two agreements from CESU established accreditation policies and the by-laws of the CNA.

ICFES was given the sole authority to evaluate the outcomes all levels of education, including tertiary education. ICFES devised what are now known as the SABER PRO tests, but were originally called ECAES (*Exámenes de Calidad de la Educación Superior*), which evaluates achievement outcomes of students at the end of their undergraduate programmes, to establish the level of basic and specific competences achieved by students in each of the fields of study.

These tests were voluntary to start with, but from 2009 were made mandatory for all tertiary education students at the end of their programmes. The SABER PRO system attempts to measure the institutional input variables and the outcomes of educational programmes in order to inform policy and educational strategies (MEN, 2011*a*).

Articulation of the various quality assurance components

The overall quality assurance system in Colombia is composed of various entities which have specific functions and audiences, as Table 5.1 shows. Students, programmes and institutions are each evaluated. For students, access to the system of tertiary education is determined by individual institutional requirements and usually by the results of standardised national exams (SABER 11). Their continued progress towards their degrees and qualifications is monitored by the tertiary education institutions, and their exit requirements include national standardised tests (SABER PRO), as well as institutional requirements. For programmes, their creation and operation is regulated by CONACES, which also grants access to the Register of Qualified Programmes. Additional voluntary high quality accreditation for both programmes and institutions is granted by the CNA, advising the CESU. The CESU was created in 1992 by Law 30. It is formed of 16 members elected by the organisations and institutions they represent. CESU's functions are primarily related to policy, co-ordination and nominating members of CONACES and the CNA. Currently, CONACES is organised by *salas* (desks), one which evaluates the academic standing of master's and PhD programmes and another which reviews applications for the establishment of programmes.

Table 5.1 **Institutions in the quality assessment process in tertiary education**

Students	•	Admissions (ICFES, TEI)
	•	Progress (TEi)
	•	Graduation (ECAES, TEI)
Programmes	•	Register of Qualified Programmes (minimum standards) (CONACES)
	•	Functioning (CONACES)
	•	High Quality Accreditation (CNA)
Institutions	•	Register of Qualified Programmes (minimum standards) (CONACES)
	•	Functioning (CONACES)
	•	High Quality Accreditation (CNA)

Source: Presentation made by the Minister of National Education to the review team (MEN, 2011*b*).

In 2010, the CNA decided to undergo an external evaluation process with the collaboration of INQAAHE (the International Network for Quality Assurance Agencies in Higher Education) and RIACES (the Ibero-American Network for Higher Education Accreditation). The process was entrusted to an international panel of four experts, of whom two were appointed by INQAAHE and two by RIACES, two were from Latin America and the other two from Europe. Recently INQAAHE has awarded a five-year certificate confirming that the CNA adheres fully to INQAAHE's Guidelines of Good Practice.

Assurance of minimum standards

The role of ensuring that both programmes (technical, professional, technological, university, specialisations, master's and doctorates) and institutions meet minimum standards is one of the main functions of CONACES. CONACES consists of 33 academic members, selected by the CESU to represent a variety of areas of study and geographic regions. Three also represent MEN, ICFES and COLCIENCIAS, two also represent CESU and CNA.

Initially regulated by Decree 2566 of 2003, under Act 1188 of 2008 a system was put in place to ensure minimum quality standards. Decree 1295 of 2010, which currently regulates the system, stipulates that to be admitted to the Register of Qualified Programmes, programmes must meet fifteen minimum quality-related conditions, in the following areas.

1. Academic denomination of the programme.
2. Justification of the programme.
3. Curricular considerations.
4. Organisation of formative activities by academic credits.

5. Research orientation.
6. Social projection.
7. Selection and evaluation of students.
8. Academic personnel.
9. Educational media.
10. Infrastructure.
11. Academic-administrative structure.
12. Self-evaluation.
13. Policies and strategies for follow-up of graduates.
14. University well-being.
15. Financial resources.

This same decree defines the Register of Qualified Programmes for both undergraduate and graduate cycles, and establishes that only after the above-mentioned minimum quality conditions have been verified by academic peers, can the MEN decide to authorise the programmes. It also establishes that once on the Register of Qualified Programmes, programmes – including programmes based on propaedeutic cycles – must renew that status every seven years.

It was also established that a tertiary education institution can offer academic programmes anywhere in the country, as long as it demonstrates that the fifteen minimum conditions have been verified. It makes clear that there is no limit on the number of programmes an institution can offer on sites other than its main location. It also establishes a mechanism for inspection and control of academic programmes, as well as a mechanism for the improvement of any deficiencies noted.

In order to verify that minimum quality standards are met, so as to authorise the establishment of new institutions and programmes, the Ministry of National Education, with CONACES as the advisory body, has established a series of steps for the institutional evaluation of the documentation presented by the institutions, and the verification of reports from external academic peers. These steps include:

- Formal application through the TEI.
- Review of documentation.
- Selection of academic peers.
- Logistic co-ordination of the peer review process and other consultants and commissioners.

- External audit by academic peers.
- Evaluation of documentation and external evaluation reports.
- Granting or not of the certification of compliance issued by the Ministry of National Education.

Of the 11 593 programmes offered at the national level by tertiary institutions, 60% (6 950) are at undergraduate level and 40% (4 643) are specialisation, master's or doctoral level programmes.[1] The distribution of programmes on the Register by level is shown in Table 5.2, the distribution by area of studies in Table 5.3.

Table 5.2 **Programmes on the Register of Qualified Programmes by level**

Level	Number of programmes[1]
Professional technical	760
Technological	1 566
University	4 216
Specialisation	3 384
Master's	791
Doctorate	123
Total	**10 840**

Note (1): Does not include programmes at the Universidad Nacional, but does include SENA programmes.
Source: MEN, SACES. Information as at 2 October 2011.

Table 5.3 **Programmes on the Register of Qualified Programmes by area of studies**

Area	Number of programmes[1]
Agronomy, veterinary and related fields	465
Arts	381
Education	1 556
Health sciences	1 067
Humanities and social sciences	1 635
Economy, administration, accounting and related fields	3 004
Engineering, architecture, urban studies	2 621
Mathematics and natural sciences	111
Total	**10 840**

Note (1): Does not include programmes at the Universidad Nacional, but does include SENA programmes.
Source: MEN, SACES. Information as at 2 October 2011.

Table 5.4 shows the total number and percentage of programmes by level, the percentages of each offered by public and private institutions, and the percentages on the Register.

Table 5.4 **Programmes offered nationally and percentages on the Register of Qualified Programmes**

Level	Number of programmes offered[1]	% of all programmes offered	% in public TEIs	% in private TEIs	% on Register
Technical	906	8%	41%	59%	83.88
Technological	1 727	15%	49%	51%	90.68
University	4 317	37%	39%	61%	97.66
Specialisation	3 538	31%	31%	69%	95.65
Master's	931	8%	52%	48%	84.96
Doctorate	174	2%	68%	32%	70.69
Total	**11 593**	**100%**	**40%**	**60%**	**-------**

Note (1): Includes SENA and UNAL programmes.

Source: MEN, SACES. Data as at 2 October 2011.

Voluntary accreditation of high quality standards

This voluntary high quality accreditation is carried out by the CNA, which represents the academic and scientific community. Its most relevant functions are: *(i)* to guide the institutions in the self-evaluation process; *(ii)* to set the quality criteria, instruments and technical indicators for the external evaluators to use; *(iii)* to carry out the final evaluation and to make recommendations to the MEN. The CNA is composed of seven members. These are nominated by CESU to serve for a period of five years, after which they cannot be re-appointed.[2]

The voluntary high quality accreditation (VHQA) process is designed to achieve continuous self-evaluation, self-regulation and institutional/programme improvement. It is carried out following guidelines established by the CNA for institutional and/or programme accreditation, as well as for the VHQA of master's and doctoral programmes.

VHQA of programmes

Factors taken into account for the high quality accreditation of undergraduate programmes are:

- Institutional goal and mission
- Students

- Professors
- Academic processes
- Institutional well-being
- Organisation, administration and management
- Alumni and impact on society
- Financial resources and infrastructure

For graduate programmes, three additional factors are included:

- Research, new knowledge/artistic production
- Articulation with society and innovation
- Internationalisation and insertion in scientific networks

Each one of the factors is associated with certain characteristics that have been identified as indicators of high quality programmes in tertiary education, and which define the factor as well as help to establish the expected level of performance. These characteristics have empirical referents, or indicators, including quantitative and qualitative information, which describe each characteristic and provide observable evidence of performance in a given academic context.

The process of high quality programme accreditation has the following steps, which on the average are currently completed in 11.4 months (2010 data).[3]

- Initial conditions set
- Self-evaluation carried out by programme staff
- Visit by external peer evaluators
- Report from the external peer evaluators
- Comments from programme staff and rector
- Final report from CNA
- Accreditation decision from the Ministry of National Education

Table 5.5 shows the outcomes of VHQA of programmes by the end of 2010 – making clear that this has been a very active process in Colombia.

Table 5.5 **VHQA Programme outcomes, 1998-December 2010**

	Basic Indicators of VHQA Programme (1998-December 2010)	Number of programmes
1	Number of programmes evaluated	1 213
2	Number of total accreditations granted	1 046
3	Number of programmes not accredited (on this occasion)	167
4	International evaluations for accreditation	3
5	Number of programmes with first (primary) accreditation	762
6	Number of re-accredited programmes	284
7	Number of programmes with current accreditation (10/2011)	646
8	Number of programmes with lapsed accreditation (12/2010)	139
9	Number of programmes under re-accreditation (12/2010)	76
10	Number of programmes which have not began re-accreditation (12/2010)	63
11	% of programmes with lapsed accreditation which went for re-accreditation	83.7
12	% of programmes with lapsed accreditation not seeking re-accreditation	16.2
13	% of programmes with lapsed accreditation over all accredited programmes	3.8
14	% of programmes which have not obtained accreditation	14

Source: CNA Presentation, October 2011.

Table 5.6 shows undergraduate programmes with current VHQA by area of studies. By far the highest number of accredited programmes is in the field of engineering, architecture and urban studies, followed by humanities and social sciences and then economy, administration and accounting. Table 5.7 breaks down the same programmes by type of tertiary education institution. The percentage of programmes with VHQA rises with institutional level.

VHQA of institutions

Table 5.8 shows the number of institutions with high quality accreditation and how this rose over the years 2007-2011. By 2011 there were 23 institutions with VHQA (9 public and 14 private), representing 8% of the 288 TEIs in Colombia. Table 5.9 lists them. Table 5.10 shows the percentages of public and private universities with this status. Though nine public institutions have VHQA, only seven of them are universities coming under the auspices of the MEN – the other two are military schools under the auspices of the Colombian Ministry of Defence – therefore the percentage of private universities is higher.

Table 5.6 **Programmes with current VHQA by area of studies**

Area of studies	Number of programmes
Agronomy, veterinary and related fields	16
Fine arts	17
Educational sciences	61
Health sciences	72
Economy, administration, accounting and related fields	97
Engineering, architecture, urban studies	236
Mathematics and natural sciences	36
Humanities and social sciences	111
Total	**646**

Source: CNA, 2 October 2011.

Table 5.7 **Programmes with current VHQA by type of TEI and VHQA programmes as percentage of those offered nationally by each type**

Type of TEI	Public institutions	Private institutions	Total	% of programmes with VHQA
Technical	4	2	6	0.8
Technological	15	9	24	3.1
University Institution	33	58	91	11.9
University	348	293	641	84.1
Total	**400**	**362**	**762**	**100**
Percentage	**52.5%**	**47.5%**	**100%**	

Source: CNA, August 2011.

Table 5.8 **Total number of tertiary education institutions (TEIs) and number of TEIs with VHQA, 2007-11**

Year	TEIs	TEIs with VHQA
2007	279	13
2008	280	15
2009	283	16
2010	286	20
2011	288	23

Sources: CNA and MEN, SNIES (October 2011).

Table 5.9 **Public and private tertiary institutions with full institutional VHQA**

Public	Private
- Universidad de Antioquia	- Universidad de los Andes
- Universidad Industrial de Santander	- Universidad EAFIT
-Universidad Tecnológica de Pereira	- Universidad Externado de Colombia
- Universidad del Valle	- Fundación Universidad del Norte
- Universidad de Caldas	- Pontificia Universidad Javeriana
- Escuela Naval de Suboficiales ARC Barranquilla	- Universidad Nuestra Señora del Rosario
- Universidad Nacional de Colombia	- Universidad de la Sabana
- Universidad Pedagógica y Tecnológica de Colombia	- Universidad Pontificia Bolivariana
- Escuela de Suboficiales de la Fuerza Aérea Colombiana Andrés M. Díaz	- Universidad de la Salle
	- Universidad de Medellín
	- Escuela de Ingeniería de Antioquia
	- Universidad ICESI
	- Universidad Tecnológica de Bolívar
	- Universidad Santo Tomás

Source: MEN, SNIES.

Table 5.10 **Public and private universities, and percentages of each with VHQA as institutions**

Type of TEI	Public	% public with VHQA	Private	% private with VHQA	Total	% total with VHQA
University	32	21.9	48	29.2	**80**	**26.25**

Source: MEN, SNIES.

Since 2008, the CNA has worked to achieve continuous improvement in the national VHQA system. And in 2010, institutional re-accreditation began. (How soon institutions have to apply for re-accreditation depends on the length of the original accreditation, which can last from three to ten years.) Four institutions were re-accredited in 2010. One of the main objectives of this new process is to validate and document all quality improvements in tertiary education, noting any impact that could be attributed to the voluntary accreditation programme. Re-accreditation is also intended to verify improvement plans and goals cited by institutions in their original accreditation. This new re-accreditation programme has an increasingly important international perspective.

Assessment of outcomes from education

An important element in any assessment of the quality of tertiary education should involve the assessment of outcomes, first by evaluating how much students have learnt in the course of their tertiary programmes, and secondly by tracking labour market outcomes after they leave the tertiary education system. Discussion in this chapter will focus on the first aspect, evaluating how much students have learnt; the second aspect is discussed in Chapters 4 and 8. The institution in charge of student evaluation at all education stages is ICFES, the Colombian Institute for Education Evaluation.

ICFES: history and activities

ICFES was created in 1968 as the Colombian Institute for the Promotion of Higher Education (*Instituto Colombiano para el Fomento de la Educación Superior*), with a mission to provide a national admission exam for tertiary education, and conduct all national and international standardised assessments. The official name was changed to the Colombian Institute for Educational Evaluation (*Instituto Colombiano para la Evaluación de la Educación Superior*, though still under the acronym ICFES) by Law 1324 of 2009, and the organisation was restructured as a public institution with autonomous funding and became a non-profit "public business unit", providing services to individuals and organisations, both public and private. ICFES is governed by a board of directors, consisting of a MEN representative plus four members appointed by the president of Colombia for a fixed period of four years.

ICFES carries out research into factors determining quality outcomes in education, psychometric methods, item development, and validity and reliability studies of the exams it provides. It is responsible for all national and international assessments, which include:

- National Basic Education Assessments
  - SABER 5 (5^{th} grade).
  - SABER 9 (9^{th} grade).

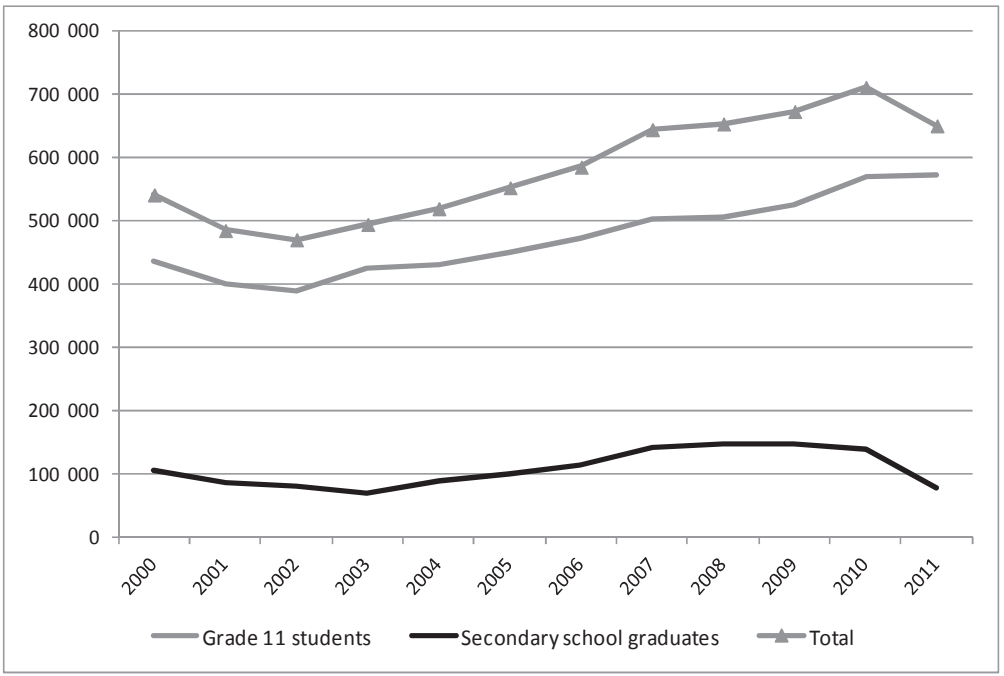
These exams assess quality of education at school and regional levels. They are compulsory for schools, but not for individual students. The exams produce measures including learning outcomes and performance trends. But the assessments most relevant to this review are:

- National State Examinations
  - SABER 11.
  - SABER PRO.

- International Studies
  - PISA (OECD Programme for International Student Assessment).
  - TIMSS (Trends in International Mathematics and Science Study).
  - AHELO (OECD's Assessment of Higher Education Learning Outcomes, in development).

SABER 11 is a secondary education exit examination. It provides information for admissions to tertiary education, and it is taken by a large majority of those who graduate from secondary education, although it is compulsory only for those seeking access to tertiary education. This set of tests, in the areas of biology, social sciences, philosophy, physics, English, language, mathematics and chemistry, also provides valuable indicators of secondary education quality, such as learning outcomes and performance trends. The number of test takers has risen steadily, as Figure 5.1 shows.

Figure 5.1 **Number of test-takers – SABER 11 tests**



Source: ICFES.

This examination programme started in 1969, in order to respond to the request for a national admissions test from several universities. It became compulsory for entry into tertiary education in 1980. Starting in 2000, the exams underwent a fundamental change, shifting the focus of the assessments from knowledge and abilities to competencies, while at the same time bringing the blueprint of the assessments closer to the curriculum taught in secondary schools. The psychometric quality of these exams also improved significantly following these major revisions to content and psychometric indicators.

Table 5.11 **Average "reliability" of the SABER 11 exams**

SABER 11 Exams	Average reliability
Biology	0.715
Social Sciences	0.783
Philosophy	0.663
Physics	0.555
English	0.795
Language	0.715
Mathematics	0.725
Chemistry	0.640

Source: ICFES (2011*a*), "Transition to New SABER PRO", October 2011.

"Reliability", in the technical sense of a measure of the potential error built into the reported scores, is useful to estimate the extent of misclassifications that could occur at a given decision point in the reporting scale of an exam – that is, the number of students considered to have satisfied the criteria (in this case, reached the minimum score necessary for admission to a particular institution) who have not actually done so because their "true score" is below the minimum, and also the numbers of students considered not to have satisfied the criteria even though their "true score" is above the minimum. Reliability is therefore a measure of the accuracy of the score and the accuracy of the decisions made based on using the score. As they stand now, the average reliabilities for each SABER 11 exam as reported in Table 5.11 are relatively low for a summative examination, and too low to be the sole basis for decisions between borderline candidates for entry to a tertiary education institution. If SABER 11 results are used on their own, therefore, they could introduce into admission decisions a higher level of error than is desirable. However, these examinations are currently

being redesigned (see later in this chapter), and the new versions of the exams have been planned and designed by ICFES to follow a much better approach, based on general competencies and providing a useful baseline for the SABER PRO tests.

Currently, some 78% of tertiary education institutions in Colombia use SABER 11 results to select the students they will admit; but most (72%) complement the results information with other evidence, from individual interviews, other exams, secondary school marks, etc.[4]

SABER PRO (formerly ECAES). SABER PRO is a set of tertiary exit examinations. These exams assess individual competencies of final-year undergraduate students, and have been compulsory for graduation since 2010. Their purpose is to produce indicators of higher education quality, including learning outcomes, value-added estimates and performance trends. This important and quite exceptional programme gives a true assessment of outcomes from tertiary education. It is at the forefront of current thinking on how to measure tertiary outcomes and provides valuable accountability information, as well as measures of value added by tertiary education institutions when combined with SABER 11 results.

Development for the ECAES programme began in 2003. A total of 55 different assessments were developed between 2003 and 2007. However the number of students taking each exam varied greatly, with 5 ECAES exams (law, administration, accounting, industrial engineering and systems engineering) accounting for 44% of the students assessed, while 14 ECAES exams (mathematics, French, phonoaudiology,[5] nutrition and diet, optometry, occupational therapy, agricultural engineering, petroleum engineering, forest engineering, agricultural-industrial engineering, electronic technician, chemistry, physics and geology) had only between 72 and 271 students taking them and assessed only 3% of students between them. These very low numbers represented a major challenge to the psychometric integrity of the tests, making the test development process and test calibration very difficult.

Law 1324 of 2009 established the ECAES exams as mandatory for graduation and required that the test structure should be maintained for periods of not less than 12 years. Also in 2009, Decree 3963 regulated the gradual adoption of the new structure of examinations comprising the ECAES assessment system, divided into tests of specific and generic competencies, and established the objectives for the programme, which are:

- To provide information for the development of indicators for the evaluation of quality in programmes and institutions of tertiary education.

- To provide information for the evaluation of institutional processes and to inform educational policy and decision making at all levels of the educational system.

- To establish the level of competencies achieved by students at the time of graduation from their tertiary education programmes, and to inform the process of continuous improvement of the educational system.

- To produce indicators of value added from tertiary education programmes, taking into account the level of similar competencies at the time of entry into the tertiary education system.

In 2009, 55 ECAES tests of specific competencies were developed and administered, together with two tests of generic competencies which were used by all academic programmes: English and reading comprehension. For those academic programmes which did not have their own specific competencies test, ECAES used a battery of generic skills tests, including testing of critical thinking, problem solving, interpersonal communication and writing.

In the first semester of 2010, ECAES exams measuring specific competencies in 33 content areas were developed and administered. At this time, it was also decided to discontinue examinations in areas that evaluated less than 1 000 students per year. The two generic skills tests administered by all programmes were continued, as well as the generic skills tests for programmes with no specific competencies test. In the second semester of 2010, Resolution 782/2010 adopted the name of SABER PRO for the ECAES examinations and Decree 1295/2010 established specific quality indicators. A total of 31 SABER PRO exams for specific academic competencies were developed and administered. The areas of administration and medicine each had their own specific competencies and generic skills exams, each of them a half-day exam. All other programmes continued to administer the generic skills tests as before.

In the first semester of 2011, administration, medicine, engineering, educational sciences, natural and exact sciences, technical and technological programmes in engineering all started to use six tests of generic competencies – English, reading comprehension, critical thinking, problem solving, interpersonal understanding and writing – and these six generic

tests continued to be used by programmes with no specific competency tests of their own. In addition, for the first time, three "common competencies" exams were administered in three academic areas: educational sciences, engineering programmes, and basic sciences.

In the second semester of 2011, all specific competencies tests were eliminated, for some of the reasons explained before in the terms of the psychometric difficulties of obtaining the required quality level, and because of the shift to generic skills tests and common competencies exams. Programmes in all fields now use the six generic competencies tests. In collaboration with the MEN and the academic community, ICFES established 30 reference groups bringing together academic programmes with similar characteristics. These 30 reference groups facilitate the process of obtaining comparable results across disciplines for "common competencies" exams, and they differentiate the analysis of results for three levels of institutions: technical, technological, and universities. The 30 reference groups were established using the MEN's SNIES system and UNESCO's CINE system. They are (ICFES, 2011*a*):

- 14 groups at university level;
- 6 groups at technological level;
- 6 groups at technical level;
- 2 groups for technical and technological levels;
- 1 group for all levels;
- 1 group for upper level teachers' institutions.

Furthermore, all programmes now require a generic competencies test with the following modules: quantitative reasoning, critical reading, writing and English. For the "common competencies" exams, the first modules have been developed which allow each programme to select the combination of contents in each module best suited to the academic profile of the programme. The total number of programmes in these reference groups, by October 2011, was 17 823 programmes in 22 academic areas. The 22 academic areas, by tertiary education level involved, are shown in Table 5.12.[6]

Table 5.12 **Reference groups by area and type of TEI**

Reference groups by academic area	Type of TEI
Administration and tourism	Technical Technological
Architecture and urban studies	University
Art – design – communication	Technical Technological
Fine arts – design	University
Agricultural/farm sciences	Technical Technological University
Economic and administrative sciences	University
Military and naval sciences	University
Natural and exact sciences	University
Social sciences	University
Communication – journalism - advertising	University
Law	University
Education	University
Humanities	University
Engineering	University
Engineering – industry – mines	Technical Technological
Judiciary	Non-university
Medicine	University
Military and police	Non-university
Teacher's College (high level)	Teachers' Colleges
Sports and recreation	All
Health	Technical Technological University
Information & communications technology	Technical Technological

Source: ICFES, Presentation (October 2011).

The main characteristics of the new SABER PRO examinations, which transform this programme into a leading programme in the world in terms of outcomes evaluation for tertiary education, are:

- They assess the whole of Colombia's tertiary education population.

- The indicators obtained allow comparisons and establish performance levels for similar groups.
- The exams are developed and maintained following standard psychometric procedures that maintain the measurement scale and the comparability of results across time and groups. This is achieved by the application of appropriate psychometric principles for large-scale standardised assessments.
- They evaluate common competencies between diverse programmes.
- They will be able to measure value added in tertiary education, using the new SABER 11 exams as the entry measure, because the new SABER 11 exams will measure many of the same competencies.
- The SABER PRO exams concentrate on the assessment of more basic skills, not expected to fluctuate, and which are the outcome of an aggregation of educational content and processes over the course of the whole tertiary education programme.
- They leave the assessment of specific competencies in content areas to the tertiary education institutions.
- They provide the information needed to inform the pedagogical process and institutional approaches to tertiary education, with reliable data on performance outcomes.
- By placing performance in the context of comparable reference groups, these exams provide more than just scores – they establish performance levels for all modules and for different disciplines.

SABER PRO results are communicated to students and to institutions. They are reported by module; there is no aggregate score for the whole battery of tests.

When students receive their results by module, they receive their scores; their level of performance descriptor; the average scores in the corresponding reference group; and the standard deviation of the scores of the corresponding reference group.

When institutions receive their results by module, they receive individual student scores (for students of the institution); distribution by levels of performance (quintiles); and their average scores in relation to the averages and standard deviations of scores of the reference group and the national data.

The final design of the new SABER PRO examinations will involve a full-day examination. In the morning section the following generic competencies will be evaluated:

- Critical reading (will also be evaluated by the SABER 11 exams).
- Quantitative reasoning (will also be evaluated by the SABER 11 exams).
- English (will also be evaluated by the SABER 11 exams).
- Writing.

In the afternoon, specific common competencies will be assessed. Each programme has to establish, according to their reference group, which combination of common specific competencies modules to use to evaluate the students in a given programme, from the 20 which have been developed. The choice of module combinations is from the 50 defined combinations developed for the various reference groups.

Revision of the SABER 11 tests

A full discussion of the new SABER PRO exams would not be complete without a description of the new SABER 11 exams ICFES have been developing since 2009, to be administered at the end of secondary education and used in admissions by most tertiary institutions. ICFES's project has identified three main goals:

1. Improve the SABER 11 exams' power to predict performance in higher education. To achieve this goal in particular, the battery of exams is being designed to include the evaluation of generic skills and to achieve more reliable measurement along the entire spectrum of skills of students entering tertiary education.
2. Enable the accurate observation of educational trends and effects of educational policies. To achieve this goal requires, in addition to improving the reliability of the SABER 11 examinations as mentioned above, more detailed specification of what is tested in each of the exams.
3. Achieve better articulation between the SABER 11 and SABER PRO examinations. In particular, ensure the possibility of producing value-added measures of higher education outcomes from comparing SABER PRO results with SABER 11 results.

The development work now being carried out is intended to lead to new-style SABER 11 exams which are more than an aggregation of scores in various academic content areas. Instead of simply corresponding to the

curricular areas in grades 10 and 11 of secondary school (language, mathematics, natural sciences, social sciences, and citizenship), these new exams will address basic generic competencies achieved throughout the secondary education cycle. They are being designed so as to better inform the process of admissions to tertiary education, and provide a baseline for value-added calculations made using the results of SABER PRO.

A tentative design being considered, shown in Table 5.13, includes the following modules – critical thinking, interpersonal understanding, quantitative literacy, analytical reasoning, use of concepts – within the various curricular areas.

This design would allow very valuable comparisons with outcomes from the new SABER PRO exams, and would enable the calculation of value-added measures for the various programmes (ICFES, 2011*b*).

Table 5.13 **Possible design of the new SABER 11 examination modules by curricular area**

	Natural sciences	Social sciences	Language/ humanities	Mathematics
Critical reasoning	X	X	X	
Interpersonal understanding		X	X	
Quantitative literacy	X	X		X
Analytical reasoning	X	X		X
Use of concepts	X	X	X	X

Source: ICFES (2011*b*), "Restructuring the *Examen de Estado* for Secondary Education".

Findings and conclusions

The quality assurance system as a whole

Colombia's plans and objectives for the quality assurance of tertiary education are sound in principle and, if fully and correctly implemented, could result in a reasonably effective national quality assurance system. The review team commends Colombia on having a robust design for quality assurance which includes both measures to assure minimum quality and measures to promote continuous improvement. It notes the many positive benefits of the implementation of the system to date. It also notes the particular need to improve the impact of quality assurance measures at the technical and technological levels.

The review team also recognises the merits of the standardised exam systems administered by ICFES, and applauds that organisation's efforts to continue to improve the exams. Colombia is to be congratulated on positioning itself to be a world leader in the assessment of value added in tertiary education. Colombia should however redouble efforts to integrate evaluation data from the exam system into the overall quality assurance system. It will be especially important to maximise the exams' use as a diagnostic tool for quality, while ensuring that TEIs do not over-estimate the reliability and validity of the exam results as a means of distinguishing between the performance of individual students, for example when deciding which students to admit.

Articulation of the various quality assurance components

There are two interlocking agencies (CNA and CONACES) in charge of various aspects of quality assurance at the tertiary level. While there are some clear areas of responsibility, there is also the potential for conflicts of interest, including the participation of the same individuals in different roles in different agencies. Although the fact that commissioners and directors belong to tertiary education institutions provides opportunities for institutional participation and recognition within their own academic communities, it also means that some of these agencies are headed by individuals who are themselves interested parties in tertiary education institutions, with roles that puts them in charge of quality control of not only their own institution but also those of their peers. The review team considers that as Colombia's tertiary education system grows, as the range and diversity of programmes increases and particularly as the proportion of T&T programmes increases, such a system becomes less appropriate. The team suggests that Colombia now needs a tertiary quality assurance body that is to a large degree independent of both the Ministry of National Education and the tertiary institutions, and that is led and administered by professional staff who have experience of the tertiary sector but who are not currently employed by any tertiary institution. Such a body would continue to ensure that quality assurance decisions are based on peer review and peer advice, while also ensuring that peer review teams include people who can offer a range of relevant experience (including from employing past graduates) and innovative approaches.

Assurance of minimum standards

During institutional visits, the team noted that the minimum standards ensured by the processes laid down for admittance to the Register of Qualified Programmes are quite low. While many institutions comfortably exceed these low minimum standards, this is not true of many others,

particularly technical and technological institutions. The review team found that many technical and technological institutions have no credible system of institutional quality assurance in terms of assessment of student outcomes. In several of these institutions, students told the team that everyone or almost everyone passed the exams, and those individuals who did not were allowed to try again until they did. When such institutions were asked about retention, they tended to respond that students who left did so because of financial difficulties, rather than academic difficulties. This reinforced the team's impression that in these institutions the academic bar is being set very low. It is possible, too, that students leave because they realise that the education they are receiving represents poor value for the fees they are paying.

From checking statistical data for the Register of Qualified Programmes, the team also noted that few institutions fail this minimum standard. Under Decree 1295/2010, those institutions that do not immediately secure renewed admittance to the Register of Qualified Programmes are given recommendations to help them secure it when they reapply. Meanwhile they may continue to function provided they submit a contingency plan, but with existing students only – they are not allowed to recruit new ones.

Voluntary accreditation of high quality standards

This part of the quality assurance system was observed to function better. Standards were clear and enforced. As a result, very few institutions have gained full accreditation (of all their programmes or at the institutional level). In technical and technological institutions, relatively few programmes have received high quality accreditation.

A particularly useful aspect of the voluntary high quality accreditation process has been its emphasis on internationalisation.

Assessments for entry to tertiary education (SABER 11)

The national SABER 11 examinations have been significantly improved from those used several years ago. Nevertheless, current SABER 11 tests have what test experts call relatively low "reliability levels",[7] which make it problematic to use the results as the sole criterion for high stakes purposes such as deciding which borderline applicants to admit to tertiary institutions. Other issues are that the risks of misclassifying applicants as below or above the entry standard vary, depending on their subject specialty and which year they took the tests; and the well-researched fact that if tertiary education entry decisions are based on achievement tests, the effects of having attended different secondary schools (usually associated with socio-economic factors) is greatly increased.

Therefore, the modification of the SABER 11 exams planned by ICFES is a very welcome development, which should result in significant benefits to the educational system and lead to fairer assessment of students in the context of tertiary admissions. Because the new SABER 11 exams will give greater weight to generic abilities, the impact on test results of students' socio-economic differences or the different schools they attended should be reduced. For all these reasons, the current exploratory work being carried out at ICFES on a redesign of the SABER 11 examinations should proceed rapidly, so that improved testing and more reliable tests are available as soon as possible.

There have been few studies of how well the results of the current SABER 11 exams predict future performance or success at tertiary level, and those studies that have been done are all by universities which set high academic entry standards. However the new SABER 11 examinations are being designed specifically to provide a valid baseline for the evaluation of value added by tertiary education programmes, which would otherwise be very difficult to establish.

Assessment of outcomes from tertiary education (ECAES and SABER PRO)

As mentioned before, some technical and technological institutes visited appeared to have no institution-level arrangements for evaluating student outcomes. Recent developments and improvements in the national ECAES/SABER PRO external evaluations of outcomes, and the fact that these tests will now be mandatory in all institutions, seem likely to be very beneficial to the tertiary system.

Previous versions of the ECAES exams, in particular those exams testing specific competencies in various academic areas, had serious psychometric problems wherever numbers of test takers were low. The new SABER PRO exams, with their combination of generic and common specific competencies, should prove much more useful. Also, the fact that the new plan establishes reference groups, each with agreed common competencies, will allow a level of comparability impossible to achieve under the previous system.

The fact that ICFES has independent status, and thus is better able to provide impartial and high quality external evaluations, is a very good feature of the quality assurance system.

Recommendations

The quality assurance system as a whole

The review team recommends that MEN should increase the resources devoted to quality assurance, so that it can raise the overall quality level in tertiary education faster, further and more comprehensively. There should be greater financial incentives for institutions to prove that their programmes meet high quality standards, and perhaps penalties for those institutions where quality is found wanting.

Also recommended is greater co-operation between ICFES and CONACES/CNA, so that student assessment information is used to improve the overall design and operation of the quality assurance system.

Articulation of the various quality assurance components

The component organisations of the quality assurance system should be genuinely independent of each other. Members of one organisation should not also have roles in another, sometimes with potential conflicts of interest. It is recommended that the roles of the different agencies be reviewed, with a view to eliminating common membership, overlapping functions and shared responsibilities. International experience suggests that in countries where tertiary institutions have as much autonomy as they do in Colombia, a single national agency, independent of government, can handle all important aspects of quality assurance in tertiary education.

It is also recommended that the role of ICFES should be strengthened and its independence from the Ministry of National Education should be guaranteed, to ensure that it serves as a truly external evaluator of education quality. It could, for example, become an independent organisation reporting directly to the Congress or the Presidency, like similar institutions in other countries.

Assurance of minimum standards

The review team recommends that this aspect of quality assurance be strengthened. There should be additional checks before a programme is admitted onto the Register of Qualified Programmes. Specifically, *(i)* external evaluators should scrutinise more thoroughly the readiness of institutions to provide the programmes for which they apply; *(ii)* all institutions should be required to present evidence of sound, impartial outcome evaluations and careful monitoring of student progress for existing programmes, and to demonstrate that their infrastructure is adequate.

The team also recommends making clear that registration criteria must be fully met, by refusing applications from institutions who submit weak applications and by de-registering institutions which fail to deliver the quality standards promised in their applications. The MEN may wish to consider changing the application process so that it provides for initial and final approval. The initial approval process, which could be quite swift, would check that basic quality standards were met; the final approval process would be more rigorous. It would be helpful to provide incentives to encourage institutions to proceed to full approval, either in the form of "carrots" (financial incentives) or "sticks" (setting a time-limit on operating with initial approval only).

Accreditation of voluntary high quality standards

This part of the system is generally functioning well, though an increase in the number of international participants in the peer review system is recommended.

Assessments for entry to higher education institutions

The review team recommends that ICFES proceeds with and indeed accelerates the development and implementation of major improvements to the SABER 11 exams, which will introduce more emphasis on generic skills and common specific skills and improve system capacity to assess the value added by education institutions. ICFES should also conduct extensive research to ascertain the new exams' validity and appropriateness for use in admissions to various types of tertiary institution and various tertiary programmes.

Assessment of outcomes from education

The team also strongly endorses the action ICFES has in hand to develop improved SABER PRO exams, and recommends that ICFES be given all necessary funding and support. The revised exams will be a significant improvement over the previous exams, and will enable full value-added assessment of tertiary education programmes. Value-added assessment will be key to demonstrating the quality of particular tertiary programmes and the value to students of undertaking them. Value-added measures will also allow judgments to be reached on how effectively different institutions have used the resources invested in them by students and the public purse, and so enhance accountability. The team therefore sees this development as a priority for the educational system and for educational spending.

It is recommended too that ICFES assessments of outcomes and value added should encompass all programmes in the technical and technological institutions, which are in some respects the weakest link in the tertiary quality chain. The fact that many of these institutions function as family businesses makes it especially important to monitor their quality carefully, using impartial external evaluators and evaluation methods.

Notes

1. Ministry of National Education-SACES. Data as at 2 October 2011. Includes SENA programmes with and without Register of Qualified Programmes, as well as UNAL programmes.
2. CAN, *www.cna.gov.co*.
3. CNA Presentation, October 2011.
4. ICFES Presentation, October 2011.
5. Phonoaudiology is the study of how the auditory system perceives the sounds that make up human speech. A phonoaudiologist is someone who diagnoses and manages hearing disorders related to speech.
6. ICFES Presentation, October 2011.
7. In the technical sense relating to the ability of the test scores to be replicable, for example from one test occasion to another.

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Chapter 6. Internationalisation of the Colombian tertiary education system

This chapter documents the growing importance of internationalisation for governments and tertiary institutions around the world, and analyses the international dimension of tertiary education in Colombia.

The chapter closes with the review team's recommendations, including (i) introduction of a comprehensive approach to internationalisation in Colombia;(ii) including the international dimension of tertiary education in national policy discussions; (iii) encouraging institutions to introduce international elements into curricula; (iv) encouraging more students to acquire competency in a second language; and (iv) efforts to increase levels of student and academic mobility, improve internationalisation information on SNIES and co-ordinate support for scholarship programmes for graduate studies abroad.

Introduction

In recent years, the internationalisation of higher education has grown in importance in policy making at both government and institutional level in many parts of the world, particularly in OECD countries. Even the concept of internationalisation itself has evolved into a more integral idea, which includes the adoption of an international dimension into the teaching, research and public functions of higher education institutions.

Colombia has not been exempt from this trend. Internationalisation was identified as a priority in the National Policy on Education 2011-14 (MEN, 2011), and is also included in the strategic plans of the majority of tertiary education institutions.

Nevertheless, important work remains to be done, since in too many cases internationalisation is limited to student mobility and the signing of international agreements by institutional leaders.

This chapter analyses the international dimension of tertiary education in Colombia and concludes with recommendations for consideration by government, educational agencies and institutions.

The growing importance and changing nature of internationalisation

For many years, internationalisation was seen as a marginal activity by the majority of tertiary education institutions, and was barely considered by national governments when establishing national educational or foreign trade policies.

However, as part of the increasingly globalised world, the international dimension of tertiary education has gained growing importance, and it has adopted varied and more sophisticated forms. These include the internationalisation of academic programmes offered by institutions, the creation of joint and dual academic programmes in conjunction with foreign institutions, the opening of branch campuses of institutions abroad, the international certification of skills and degrees, the accreditation of higher education institutions and programmes by foreign agencies, the creation of language centres and the establishment of bilingual or trilingual graduation requirements in tertiary education institutions, the growing participation of researchers on international teams with peers from other countries, the acceptance of distance education-based courses offered by foreign providers as part of the regular curriculum of domestic students, the participation in international consortia, and the desire of institutions and governments to be part of world university rankings.

At the government level, many countries have included international higher education as a key component of their foreign trade policy, as well as part of their migratory policies aimed at attracting and retaining talent from abroad. In other countries, it is a core part of their foreign public policy diplomacy.

All of the above has stimulated higher education institutions to pay more attention to their international agenda. They have given this area a more central role in their overall strategies and established better support infrastructure. A good indicator of such growing importance at the institutional level is found at the 3rd Global Survey on Internationalization of Higher Education by the International Association of Universities (IAU) (Egron-Polak and Hudson, 2010), which surveyed 745 higher education institutions worldwide in 2009. Among other findings, the survey showed that:

- Eighty-seven percent of participating institutions have formally included internationalisation in their institutional mission statement.

- In 65% of participants institutional leadership assigns a high level of importance to internationalisation. The level of importance has significantly increased in recent years in the majority of institutions in comparison with previous surveys conducted in 2003 and 2005.

Latin America and, for that matter, Colombia, has not been immune to such trends. In addition to actions motivated by the establishment of regional integration agreements signed by governments, more higher education institutions see the need to strengthen their international work as a response to the impacts associated with globalisation (García Guadilla, 2010).

Nevertheless, the reasons behind the decision to give more importance to internationalisation vary from country to country and from institution to institution. According to the IAU Global Survey, the top five rationales for internationalisation of higher education identified by participating institutions are, in order of importance, the improvement of student preparedness, internationalisation of the curriculum, enhancement of the international profile of the institution, strengthening research and knowledge production, and increasing and diversifying the source of students (Egron-Polak and Hudson, 2010).

Interestingly the IAU Survey confirms that government policies at national, regional or local levels and demands from business and industry are by far the two most important external drivers for increased internationalisation of higher education institutions around the world. In Latin America, as indicated by Gacel-Ávila (2010), institutions generally attribute less importance to government policies than elsewhere, which is due to the lack of public policies in the region aimed at fostering internationalisation of higher education.

On a global basis, at the same time as institutions have been diversifying their international activities, the most traditional form of internationalisation – mobility of students – remains small in percentage terms compared to the overall student enrolment in higher education institutions, though it has been growing in volume in recent years and it is expected to continue growing in future years (Macready and Tucker, 2011; Bhandari and Belyavina, 2012).

Internationalisation of tertiary education in Colombia

Internationalisation at national level

In line with trends in other parts of the world and elsewhere in Latin America, universities in Colombia have embraced the concept of internationalisation. Its importance is gradually growing in the public

discourse of university leaders, as well as in government discussions of educational policy. Efforts in this direction have been supported by the Ministry of National Education through the Promotion of Internationalisation of Higher Education Project, and different agencies have established a variety of internationalisation activities. Key challenges remaining are: establishing and supporting bold policies, co-ordinating the efforts of different entities and, most importantly, implementing a coherent and comprehensive set of specific internationalisation programmes and activities.

In recent years important advances have been achieved in internationalisation matters. At institutional level, many institutions have established formal offices dedicated to international affairs and there is increased professionalisation of the individuals working in this area, as seen in the work done by the Colombian Network for the Internationalisation of Higher Education (RCI, *Red Colombiana para la Internacionalización de la Educación Superior*), established officially in 1998, which conducts periodic professional development conferences, among other activities. In addition, ICETEX runs a reciprocity programme, which supports foreign teachers, researchers and language assistants to come to Colombia and teach their respective native languages in a range of tertiary institutions.

There is a still small but growing presence of Colombian tertiary institutions and government agencies in international education conferences and fairs, and an active involvement of Colombian institutions and organisations in a variety of international networks and consortia, mostly in the Latin American and the Ibero-American context. In addition, Colombia intends to become a hub for internationalisation of higher education in Latin America through the creation of the Annual Latin American and Caribbean Higher Education Conference (LACHEC), which is co-sponsored by the Colombian government.

At the policy level, one of the most significant recent achievements in this area is the increased recognition at the top level of government circles of the critical importance of internationalisation. It is encouraging to observe that internationalisation has been formally identified as one of the pillars for the future development of tertiary higher education in the country, which is expected to help drive an increase in Colombian competitiveness and international presence in the knowledge-based global economy. As expressed in the National Development Plan 2010-14, democratic prosperity in the country can only be achieved by fostering growth and competitiveness, in an environment characterised by peace and equality of opportunities for prosperity. All of the above require policies aimed at assuring good governance, innovation, environmental sustainability and, finally, international relevance (DNP, 2011). In other words, the current

government strategy provides a very strong basis for internationalisation to take a more central role. The National Policy on Education 2011-2014 (MEN, 2011) includes the promotion of internationalisation as one of 10 specific strategies to be implemented in the tertiary education sector, and recognises the need to align the tertiary education system with regional and international trends. In addition to the Ministry of National Education, other entities and organisations supporting internationalisation work include COLCIENCIAS, ICETEX, the National Accreditation Commission and the Colombian Ministry of Foreign Affairs.

Within the Ministry of National Education, a useful project has been implemented to promote the internationalisation of tertiary education by advising institutions on strengthening internationalisation strategies; promoting Colombian tertiary education abroad, especially at the regional level; and establishing international alliances to strengthen national policies. Colombia is working on promoting regional integration in Latin America and Caribbean, and facilitating collaboration between their universities and universities abroad. One of the main strategies to achieve this goal is to promote recognition agreements between Colombia and other countries in order to facilitate academic mobility within the region. These recognition agreements are based on quality assurance criteria. Also, the changes the government proposed to Law 30 in 2011 also mentioned the internationalisation agenda, though without going into detail.

The review team recommends, therefore, that in future, policy discussions and consideration of legal changes should include the international dimension of tertiary education when relevant, and that there should be specific programmes to implement policies in this area.

Internationalisation at institutional level

At the institutional level there are clear signs of the growing importance of internationalisation. Although involvement of specific institutions in international activities is nothing new in Colombia, not until the last decade was significant progress apparent, as can be seen from a survey conducted in 2002 by Jaramillo (2007).

A comprehensive survey conducted in 2006 by the Colombian Network for the Internationalisation of Higher Education (RCI) describes a stratified level of development by types of institutions. As expected, both public and private universities have the highest level of development and support infrastructure for internationalisation, while professional technical institutes and technological institutes have a much lower level of development. Also, there is the perception of important differences between urban institutions, especially the ones located in the major metropolitan areas, and institutions

in less developed regions and rural areas. For instance, although 43% of institutions participating in the survey indicated that they have a formal office dedicated to conducting international activities on campus, only 6% of professional technical institutes and technological institutes had such an office, while 29% of university institutions and 71% of universities have such support infrastructure (ASCUN, 2007).

Of course, having an office dedicated to attending to international affairs is not enough to internationalise an institution, especially when its purpose is unclear, when it is not properly staffed, and when it is not centrally connected to the overall mission and institutional priorities.

Towards comprehensive internationalisation of tertiary education in Colombia

As John Hudzik (Hudzik, 2011) said, "Comprehensive internationalisation is a commitment, confirmed through action, to infuse international and comparative perspectives throughout the teaching, research, and service missions of higher education. It shapes institutional ethos and values and touches the entire higher education enterprise. It is essential that it be embraced by institutional leadership, governance, faculty, students, and all academic service and support units. It is an institutional imperative, not just a desirable possibility. Comprehensive internationalisation not only impacts all of campus life but the institution's external frames of reference, partnerships, and relations. The global reconfiguration of economies, systems of trade, research, and communication, and the impact of global forces on local life, dramatically expand the need for comprehensive internationalisation and the motivations and purposes driving it."

It is clear that internationalisation has been adopted in the public discourse in higher education in Colombia, both at government and at institutional level, and that on both levels there is interest in and excitement about continuing improvement in this arena. There is evidence that some efforts are underway. However, in most cases actions are small, marginal and have a very limited impact. An overall comprehensive approach to internationalisation is still lacking, and needs to be introduced, bearing in mind that the approach adopted should contribute to the relevance of higher education, to the success of graduates of institutions, and, ultimately, to the incorporation of Colombian tertiary institutions into the global knowledge-based economy.

This does not mean establishing a completely new and separate internationalisation strategy for tertiary education, but, rather, incorporating internationalisation into the overall strategy for improvement of tertiary

education, both systemically and at the institutional level. Ultimately, internationalisation activity on campus is useful only if it contributes to the fulfilment of tertiary education's main purposes. What is the connection between graduates having a second language competence and their overall preparation for work? What is the contribution of hosting foreign scholars and students on campus to the international awareness of local students and academic staff? What is the benefit to domestic academic programmes of establishing dual degrees in connection with other foreign institutions? Those are some of the questions that must be addressed, both in government circles when establishing programmes aimed at stimulating internationalisation of higher education and in institutional decision-making processes.

By properly responding to these questions, both government and institutions may be in a better position to outline goals for internationalisation, specific strategies and concrete programmes to achieve the goals, and suitable metrics to evaluate performance.

The need to internationalise tertiary education in Colombia has been expressed by the same Colombian institutional leaders and practitioners on many different occasions (ASCUN, 2003; Rizo P. *et al.*, 2009). As expressed in the conclusions of the 2009 meeting of the Colombian Network for Internationalisation of Higher Education, "since Colombia is not in an advantageous position to compete with other countries in matters related to internationalisation of higher education strategies, the country cannot afford the luxury of internationalising just in order to fulfil a requirement. It should internationalise its higher education with pertinence and taking in consideration its strengths and needs." (Rizo P. *et al*., 2009)

Since 2009, this lack of vision at the national level has been changing. National government authorities and agencies have increasingly worked together to promote internationalisation and to provide the conditions in which Colombian higher education institutions can strengthen their own internationalisation strategies and processes. The government has established a National Programme for Advising Higher Education Institutions on Internationalisation, led by the Ministry of National Education in collaboration with a group of accredited universities. The overall goal of this programme is to create institutional internationalisation capacity and to promote the Colombian higher education system abroad. A major pillar of the strategy has been the active involvement of the 23 accredited universities in advising the less internationalised institutions through sharing knowledge and experience. According to information provided by the Ministry of National Education, between 2009 and 2011 this programme advised 69 tertiary institutions nationwide, resulting in the development of a comprehensive internationalisation strategy in each. The

programme also includes activities aimed at promoting the Colombian higher education system and its institutions abroad, through an aggressive advertising campaign and participation in leading international education fairs abroad. And it is intended to promote regional integration in Latin America and the Caribbean by fostering collaboration between Colombian higher education institutions and partners abroad.

Nevertheless, there is still scope for a more comprehensive approach, based on the positive outcomes and lessons learnt from current efforts and activities at the government and institutional levels. Table 6.1 summarises the different domains of a comprehensive internationalisation strategy for consideration in tertiary education in Colombia.

Table 6.1 **Components of a comprehensive internationalisation strategy for Colombian tertiary education**

Domain	Current status	Recommendations for change
Global dimension in curriculum	• Only in international discipline-based programmes.	• Include, where feasible, as integral part of curriculum of all academic programmes in all institutions. • Proper training/incentive to faculty members. • Linking internationalisation to the accreditation processes, as well as approval and review of academic programmes.
Second language competence	• Some institutions have established a second language graduation requirement. In most cases, extra-curricular courses will be paid. • Overall, low competency level in second language relative to international standards.	• Articulating second language courses at higher education level with previous levels of education. • Properly staffing institutions with qualified teachers/technical support. • Mainstreaming second language programmes into the curriculum rather than making them a graduation requirement.
International student and faculty mobility	• Extremely low relative to international standards and trends. Within the system there are important asymmetries between types of institutions/regions. • Credit and degree recognition from abroad is subject to excessively bureaucratic procedures.	• Programmes of national scope for international student mobility targeting undergraduate students. • Review of migratory regulations for exchange students, and of credit recognition from abroad, in order to expedite processes. • Greater support to student and faculty mobility in targeted areas, which will contribute to institutional strengthening.

Domain	Current status	Recommendations for change
International partnerships	• A growing trend mostly responding to institutional inertia with limited vision of national/regional priorities.	• Incentives to institutions developing national / international/cross-sector partnerships for teaching, research and public services. • Reviewing and addressing potential implications in terms of regulations.
Linkage of international human development policies and programmes with institutional capacity building	• Available funding streams for graduate full-degree seeking abroad, mostly based on individual requests and preferences, with limited input from potential beneficiary institutions, and limited connection to institutional plans for advanced graduate and research infrastructure.	• A more co-ordinated approach between COLCIENCIAS and higher education and research institutions regarding the scholarship programmes for graduate studies abroad. • More collaboration between COLCIENCIAS and COLFUTURO in the decision-making process for scholarships awarded with government funds. • Launching of institution-based development strategies for graduate and research programmes in areas of strategic national interest, for which preparation of faculty abroad is considered, and for which funding agencies can provide scholarships.
Presence of Colombia in relevant international fora and organisations.	• Increasing but still marginal presence in key international fora and fairs. A new national initiative called Colombia Challenge Your Knowledge has been established to promote Colombia as a destination for academic and scientific collaboration in key relevant international fora.	• A more co-ordinated effort aimed at more visible participation of Colombian higher education in relevant international fora, organisations and international education fairs. The Colombia Challenge Your Knowledge Campaign could be institutionalised as a basis for this. • A more aggressive promotional campaign to targeted international audiences, disseminating information on Colombian higher education institutions. • Establishment of incentive programmes aimed at attracting more international students and scholars to Colombia.
Co-ordination and communication between offices of international education in order to share practices and co-ordinate international presence.	• Basic level of co-ordination and common professional development through RCI. • Limited trust between accredited and non-accredited institutions.	• Further evolution of RCI (into a network of individuals devoted to internationalisation of higher education, rather than an appendix of ASCUN (Association of Colombian Universities, *Asociación de Universidades Colombianas*).

Source: Elaborated by the review team.

Internationalisation of the curriculum

Internationalisation efforts aimed solely at international student mobility will in the end benefit only a very small fraction of the overall student population. In fact, the most effective way to internationalise the academic offerings of tertiary education institutions is by adding a relevant international dimension to the curriculum of all programmes. Only by adding such a dimension to the regular curriculum can a majority of students benefit. This does not automatically mean that all academic offerings at an institution should become *de facto* international, but adding global dimensions into the curriculum where relevant enables students to acquire very important additional skills and a comparative perspective.

Institutions have gained some expertise in such matters where they have developed complete academic programmes in which there is a natural international dimension (such as undergraduate degrees in international relations or in international business). For instance, according to a survey conducted by RCI-ASCUN, in 2006 there were a total of 144 academic programmes in Colombia with an international focus, offered at 39% of the institutions participating in the study (ASCUN, 2007).

At the same time, some institutions in Colombia have offered dual and joint academic programmes in conjunction with universities abroad, mostly from Spain, the United States, China, Brazil and Mexico. According to the RCI Survey in 2006, there were also 31 Colombian higher education institutions offering academic programmes abroad, either through regular courses or through distance learning (ASCUN, 2007).

However, all institutions can consider the addition of an international dimension to regular academic programmes when they conduct their periodic reviews and update their academic offerings. Academic staff must be properly trained both in pedagogy and subject content to make such curriculum modification effective. The Ministry of National Education can, for its part, establish mechanisms to foster the addition of the international dimension as part of the regular procedures for admitting academic programmes to the Register of Qualified Programmes, or considering programmes for high quality accreditation. The high quality accreditation procedures and guidelines should be modified to encourage institutions to consider and incorporate an international dimension wherever this would improve graduates' job chances.

The Ministry of National Education is recommended to develop the quality assurance system so as to encourage tertiary institutions to consider introducing international elements into the curricula of all academic programmes, and other programmes where relevant.

Second language competency

A variety of programmes aimed at fostering competency in a second language have been established in Colombia in recent years, although their effectiveness remains unproven. The most recent effort has been the National Programme for Bilingualism 2004-2019, which established new standards for communicative competency in English as a foreign language. The programme was initiated by the previous national government, with an assessment of the competencies of elementary and secondary teachers and a follow-up strategy aimed at providing significant training in order to enhance their level of English and their pedagogical skills at least to a B2 level. In addition, in 2006 the Colombian government developed and established the basic standards for English as a Foreign Language. The Colombian government has been on the right track in identifying the second language proficiency policy as applicable to the entire educational system with emphasis on the elementary and secondary education levels. As has been demonstrated in other countries, it is unfeasible to have higher education institutions bear all of the responsibility for second language competency. Having a high quality and articulated second language curriculum from elementary to tertiary level is necessary to achieve widespread competency in a second language.

However, no evidence was shown to the members of the review team of the effectiveness of the Colombian bilingual initiative, seven years after its launch. Though it should be recognised that the impact of such a measure can only be evaluated over a long period of time, the preliminary results of the most recent SABER 11 tests are unimpressive. In private – mostly bilingual – schools, only 23.5% of test takers achieved a B1 competency level or higher, while in public schools only an insignificant 2.2% had a B1 level or higher (Fernández, 2011).

Bearing in mind that tertiary education institutions are receiving students with limited English proficiency, they have made significant efforts to address the problem of foreign language competencies. In 2006, more than half of tertiary institutions in Colombia – mostly the private ones – had established as a prerequisite for graduation at the undergraduate level presentation of a certificate of English competency. Also, more than two thirds of the universities participating in the ASCUN-RCI Survey (72%) offered their students the possibility of studying languages other than English, including French (30%), German (17%), Italian (14%) and Mandarin (7%) among others (ASCUN, 2007).

Nevertheless, the results of the ECAES/SABER PRO test may indicate that the effectiveness of the aforementioned efforts has been rather limited. During the period 2007-2010, the great majority of the test takers soon to be graduating from selected academic programmes in tertiary institutions lacked English competency. While in 2007, 73% of test takers were in levels A1 to A2 (and only 27% scored B1 and higher level), in 2010 77% of test takers had levels A1 to A2 and only 22% had B1 and higher levels (Fernández, 2011). Average proficiency in English needed to rise, but was actually falling. The fact that enrolment had been rising since 2002, bringing students with a wider range of prior academic preparation into the tertiary system, may have been a contributory factor but should not be regarded as an excuse.

A third proxy for foreign language competency level – specifically English – can be seen in Table 6.2, showing results from the 2011 EF English Proficiency Index (EPI) in which Colombia was ranked as number 41 out of 47 countries surveyed worldwide with a score of 42.77, which means "Very Low Proficiency". Norway, ranked first, has an EPI score of 69.09 (EF, 2011).

To sum up, Colombia continues to be a country with a very low English competency by international standards, and the efforts made by the government and institutions to boost competency dramatically in students have shown no signs, as yet, of bearing fruit.

The review team considers that Colombians must recognise the issue of second language competency of tertiary graduates as a top priority, if the country seriously aspires to become a knowledge-based economy. Concerted action is needed at all levels of the educational system to achieve this, including but not confined to more effective preparation of teachers, incentive programmes for students and more resources for language centres. However, the country's policy towards bilingual education ought to take account of the varying degrees to which English or another foreign language confers benefits on future graduates. While in the ideal world all students would gain second-language proficiency by the end of tertiary education, this proficiency is more important to some career paths and degree programmes than others. Likewise, some students can include second language studies in their programmes with fewer trade-offs against learning goals in their discipline than others. National policy development and implementation should incorporate these considerations, while maintaining the overall goal of second-language proficiency.

Table 6.2 **English proficiency level in selected countries, 2011**

Rank	Country	EF-EPI Score	Level
1	Norway	69.09	Very high proficiency
2	Netherlands	67.93	Very high proficiency
3	Denmark	66.58	Very high proficiency
4	Sweden	66.26	Very high proficiency
5	Finland	61.25	Very high proficiency
9	Malaysia	55.54	High proficiency
15	Portugal	53.62	Moderate proficiency
16	Argentina	53.49	Moderate proficiency
17	France	53.16	Moderate proficiency
18	Mexico	51.48	Moderate proficiency
22	Costa Rica	49.15	Low proficiency
24	Spain	49.01	Low proficiency
27	Guatemala	47.80	Low proficiency
28	El Salvador	47.65	Low proficiency
29	China	47.62	Low proficiency
30	India	47.35	Low proficiency
31	Brazil	47.27	Low proficiency
33	Dominican Republic	44.91	Very low proficiency
35	Peru	44.71	Very low proficiency
36	Chile	44.63	Very low proficiency
37	Ecuador	44.54	Very low proficiency
39	Venezuela	44.43	Very low proficiency
40	Panama	43.62	Very low proficiency
41	**Colombia**	**42.77**	Very low proficiency
42	Thailand	39.41	Very low proficiency
43	Turkey	37.66	Very low proficiency
44	Kazakhstan	31.74	Very low proficiency

Source: EF (2011).

It is recommended that the Ministry of National Education commission a specific external evaluation of its National Bilingual Programme in order to establish its effectiveness and define a course of action with concrete achievable goals in terms of proper second language competency for all graduates of tertiary education institutions.

It is also recommended that tertiary institutions work more effectively with previous levels of education and on the organisation of their own programmes, to boost the chances of all graduates concluding their undergraduate studies with functional competency in a second language. Second language competency should be embedded as an integral part of the regular curriculum in all academic programmes and, where relevant, other programmes, rather than just being a requirement for graduation.

Student and faculty mobility

An important component of the internationalisation of tertiary education is related to the international mobility of both students and academic staff, especially when the acquired experience abroad benefits not only the mobile individual but also student and faculty peers.

On a global basis, international student and faculty mobility has grown in recent years and is expected to continue to grow. In the case of students, OECD (2011) reports that:

- Over the past three decades, the number of students enrolled outside their country of citizenship has risen dramatically, from 0.8 million worldwide in 1975 to 3.7 million in 2009, a more than fourfold increase.
- In descending order, Australia (21.5%), the United Kingdom (15.3%), Austria (15.1%), Switzerland (14.9%) and New Zealand (14.6%) have the highest percentages of international students among their tertiary enrolments. The average in OECD countries is 6.4%.
- In absolute terms, the largest numbers of international students are from China, India and Korea. Asian students represent 52% of foreign students enrolled worldwide.
- Some 83% of all foreign students are enrolled in G20 countries, while 77% of all foreign students are enrolled in OECD countries. These proportions have remained stable during the past decade.
- The dominance (in absolute numbers) of English-speaking destinations (Australia, Canada, New Zealand, the United Kingdom and the United States) reflects the progressive adoption of English as a global language. It may also be because students intending to study abroad are likely to have learned English in their home country and/or wish to improve their English language skills through immersion in a native English-speaking context. Given this pattern, an increasing number of institutions in non-English-

speaking countries now offer courses in English to overcome their linguistic disadvantage in attracting foreign students. This trend is especially noticeable in countries in which the use of English is widespread, such as the Nordic countries.

It has been argued in many studies that the number of international students will probably continue to grow, considering among other factors that: expected demographic growth is largely concentrated in developing countries with rising birth rates and increasing demand for education; the emergence of some countries as major economic powers reinforces demand for higher education; high importance continues to be placed on foreign language competencies; and non-tertiary educational mobility has continuing growth potential. At the same time, factors limiting the potential growth in international mobility include the perceived risk of brain drain in sending countries; the growth of transnational education which makes some types of international education available to students without the need for them to go abroad; and the potential impact of the financial crisis (Macready and Tucker, 2011). The review team's ability to analyse international student and faculty mobility trends in Colombia was limited by the fact that, currently, no consistent information on the subject is being produced and disseminated by the Ministry of National Education. Apparently this issue will be addressed in a future version of the data collection process conducted annually among tertiary education institutions. However, the following information is available from the Survey conducted by RCI in 2006.

- Sixty-four percent of participating institutions reported having sent students abroad in the last five years, and 53% reported receiving foreign students.
- A total of 3 349 students enrolled in Colombian higher education institutions were studying abroad in 2006. That same year, Colombian institutions enrolled 1 424 foreign students (ASCUN, 2007).

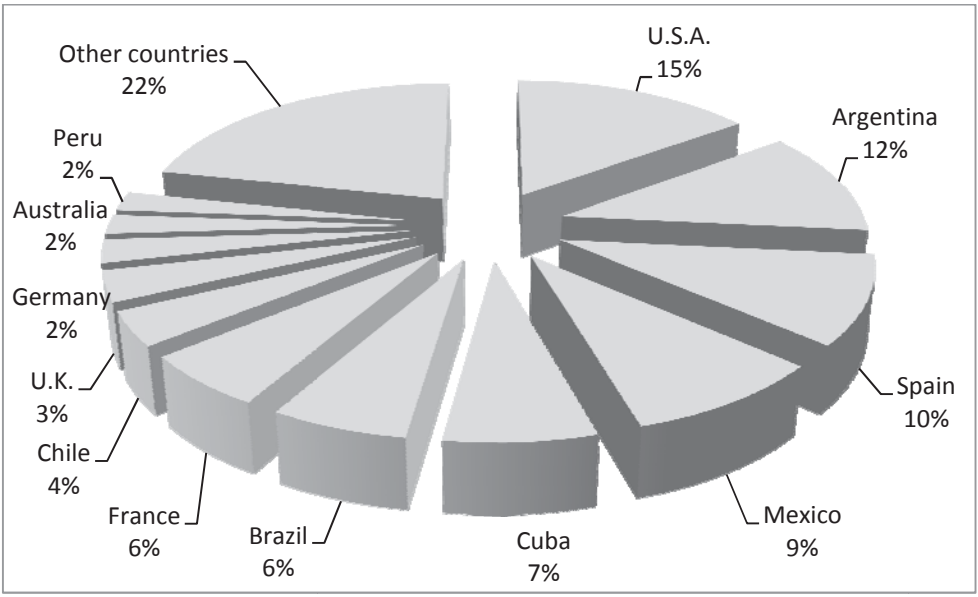
A review of data for 2011 entered by Colombian tertiary education institutions in SNIES is consistent with the overall numbers reported by RCI-ASCUN in 2006. According to SNIES, in 2011 there were 4 801 Colombian tertiary students abroad, mostly in the United States, Argentina, Spain, Mexico, Cuba, Brazil, France, Chile, England, Germany, Australia, and Peru (see Figure 6.1).[1] Forty three per cent of Colombian students abroad were spending a semester at another institution as part of academic exchange schemes, 32.9% were on an internship or practical training, 17.5% were on short term courses and 6% participated in a medical rotation abroad (see Table 6.3).

Table 6.3 **Distribution of Colombian higher education students studying abroad per country and type of mobility, 2011**

Country	Type of student mobility					
	Short course	Internship or practice	Medical rotation	Academic semesters exchange	Total	%
United States	177	303	73	164	**717**	**14.9**
Argentina	99	178	30	251	**558**	**11.6**
Spain	15	80	101	277	**473**	**9.9**
Mexico	206	98	11	124	**439**	**9.1**
Cuba	28	289	1	4	**322**	**6.7**

Source: Calculations by the authors based on SNIES data.

Figure 6.1 **Distribution of Colombian higher education students studying abroad, 2011**



Source: Calculations by the authors based on SNIES data.

Considering that there are 1.6 million students enrolled in the Colombian tertiary education system, this means that a very low 0.19% of them were studying abroad in 2010. These data are not comparable with those reported in receiving countries, but such analysis gives some

indication of trends for Colombian higher education. For instance, in 2008 there were 23 306 Colombian students[2] enrolled in tertiary education institutions in OECD countries, either as full-degree seeking or as participants in temporary mobility programmes (see Table 6.3). Mexico and Brazil send more students abroad than Colombia, but Colombia's number is quite high bearing in mind that Mexico and Brazil both have much larger populations and enrolments in tertiary education. Nevertheless, Colombian students represented only 10% of the 228 835 international students from South America (the Colombian population makes up about 12% of the total South American population).

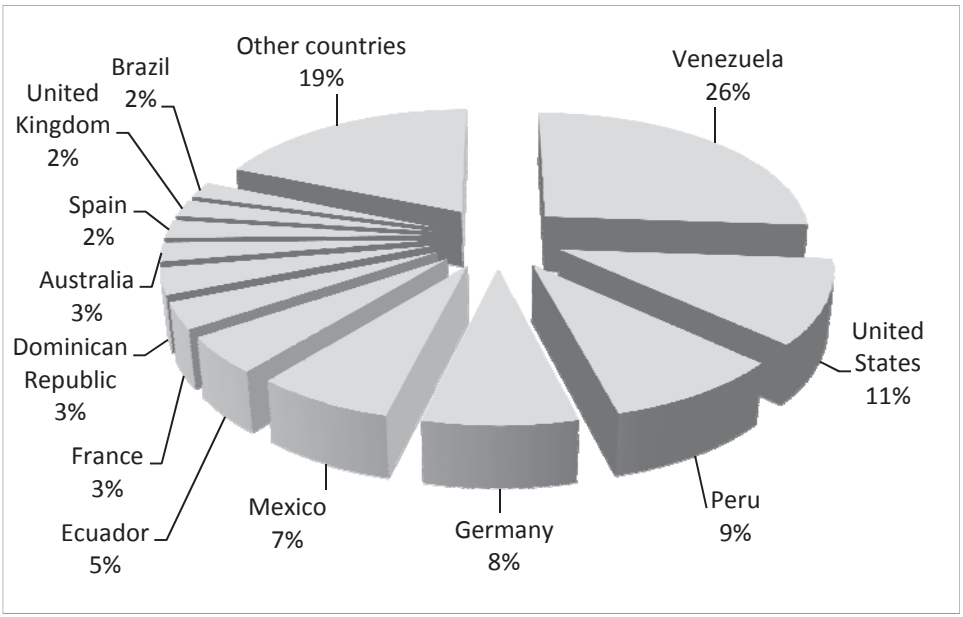
Table 6.4 **Foreign students by selected countries of origin enrolled in tertiary education in OECD and partner countries, 2008**

Rank	Country of origin	Number of students
1	China	510 842
2	India	184 801
3	South Korea	115 464
4	Germany	94 408
5	Turkey	65 459
6	France	63 081
7	Russia	58 983
8	Japan	52 849
9	United States	52 328
10	Malaysia	51 434
14	Canada	45 157
25	United Kingdom	28 712
26	Mexico	28 627
28	Brazil	27 571
34	Spain	24 983
38	**Colombia**	**23 306**
41	Cameron	20 317

Source: OECD *Education at a Glance 2010*, reported by Macready and Tucker (2011).

As regards foreign students enrolled in Colombian tertiary institutions, data from SNIES 2010 indicates that there were 1 457 such students, mostly from Venezuela, the United States, Peru, Germany and Mexico (see Figure 6.2).

Figure 6.2 **Countries of origin of foreign students enrolled in Colombian tertiary education institutions, 2010**



Source: Calculations by the authors based on SNIES data corresponding to 2010.

Limited information exists on the mobility of academic staff. The ASCUN-RCI 2006 Survey reports that 72% of RCI participants in the study had their academic staff conducting some type of academic activity abroad. In 2006, a total of 2 127 faculty members from Colombian institutions participating in the study conducted international activities (ASCUN, 2007). In addition, at least in the case of the United States – a major recipient of worldwide visiting scholars – Colombia ranks consistently among the top 30 sending countries, surpassed in South America only by Brazil and Argentina (Table 6.5).

As can be seen from the previous information on students and scholars, it is evident that some institutions in Colombia have advanced significantly in the establishment of inter-institutional relationships with a wide variety of peer institutions and specialised agencies from abroad, and in the development of local expertise in handling the many logistical, legal, and financial aspects required to both send abroad and receive from abroad students and academic staff. It is encouraging to see that there is growing interest on the part of government entities, foreign governments, and specialised agencies in increasing opportunities for more international mobility of students and academic staff to and from Colombia.

Table 6.5 **Top countries of origin of visiting international scholars in the United States**

Rank	Country	2008/2009	% of total	2001/2002	% change 2008/2001
1	China	26 645	23.1	15 624	70.5
2	India	10 814	9.5	6 249	73.1
3	South Korea	9 975	8.8	7 143	39.6
4	Japan	5 635	5.0	5 736	-1.8
5	Germany	5 300	4.7	5 028	5.4
6	Canada	4 692	4.1	3 905	20.2
7	France	4 171	3.7	2 985	39.7
8	Italy	3 548	3.1	2 257	57.2
9	United Kingdom	2 846	2.5	3 314	-14.1
10	Spain	2 481	2.2	1 822	36.2
11	Brazil	2 363	2.1	1 493	58.3
16	Mexico	1 371	1.2	1 068	28.4
19	Argentina	991	0.9	837	18.4
26	**Colombia**	**684**	**0.6**	**514**	**33.1**
	World	113 494	100.0	86 015	

Source: IIE (2011) (2003), Open Doors.

Nevertheless, despite these efforts and good intentions it is fair to say that, by international standards, international student and faculty mobility in Colombia is extremely low.

In the case of student mobility, institutions face important barriers to establishing sound mobility initiatives that may benefit larger number of students. These include financial limitations, uneven exchange programmes, limited linguistic proficiency and academic and visa regulations. Some of these are discussed below.

An important assumption in the establishment of international exchange programmes with foreign institutions, especially in the case of undergraduate students participating in reciprocal schemes, is that students will flow in both directions. Colombian higher education institutions have had to contend with the country's negative image abroad for its level of insecurity and violence, which limits the institutions' capacity to attract foreign students and, consequently, to send Colombian students abroad. Also, the fact that the great majority of Colombian institutions do not offer regular academic courses in English means that they can only attract foreign students already fluent in Spanish, or students interested in learning Spanish.

Another important challenge faced by institutions – especially those serving students with limited economic resources – is the lack of financial support to help students meet the costs associated with travelling and staying abroad. Although ICETEX plays an important role in providing financial aid, still the financial factor constitutes a critical limitation, triggering other problems such as discouraging the award of visas by foreign governments.

Also, the limited proficiency of the majority of students in a second language, as described before in this chapter, becomes an important barrier for students thinking about studying abroad in countries in which a language other than Spanish is used for instruction.

Finally, at least in some institutions visited by the review team, students indicated that those who have studied abroad confront difficulties in having their academic credits being properly recognised upon their return to Colombia.

To sum up, international mobility of students and academic staff is an essential part of the internationalisation of higher education in Colombia. When such mobility is strategically and properly handled, a limited number of participating students and scholars can have a much wider effect in internationalising the outlook of peers unable to travel abroad.

The review team recommends bringing together the efforts of institutions, employers, international agencies and government entities to launch a carefully designed initiative aimed at dramatically increasing the number of Colombian students and scholars participating in international mobility, as well as increasing the number of foreign students and scholars coming to Colombia.

A major initiative on these lines will need the active involvement of stakeholders. It will require willingness on the part of tertiary institutions to modify their academic offerings and processes where necessary, to make human and logistical infrastructure available, to train and professionalise institutional practitioners, to involve the business sector, to use financial resources as incentives to the development of partnerships with international peers, to support targeted marketing campaigns abroad, to participate actively in relevant networks, to develop financial aid mechanisms to support students and scholars travelling abroad, and to make necessary changes in academic credit recognition processes.

Other regions and countries have adopted a range of innovative policies and schemes to increase student and academic staff mobility; Colombia could study and learn from these examples.

A final important element in decisions related to academic mobility and internationalisation of higher education, both at government and at institutional level, is high quality, consistent, reliable and easily available information on these subjects.

The Ministry of National Education is recommended to further develop, expand and make available to the public the data on SNIES related to internationalisation of Colombian tertiary education institutions.

Supporting Colombians to study advanced degrees abroad

Historically, the Colombian government and society have invested considerable financial resources to support talented Colombians to conduct advanced graduate studies in selected higher education institutions abroad. In the United States during the 2009/10 academic year a total of 3 113 out of the 6 920 Colombians enrolled in US higher education institutions were postgraduate students, making Colombia the third largest Latin American sending country after Mexico with 3 911 and Brazil with 3 121 (IIE, 2010). Many of the Colombian students conducting graduate education abroad are financially supported by COLCIENCIAS, COLFUTURO or ICETEX either separately or jointly, and/or supported by scholarships provided by foreign governments or institutions. Current plans are to continue these arrangements and to increase the overall numbers.

COLCIENCIAS, for example, has established an ambitious goal of supporting the preparation of 3 600 new PhDs in strategic areas by 2019 – a good number of them abroad – to help meet Colombia's need for advanced human resources for research and innovation. COLCIENCIAS has also implemented initiatives to attract recent doctoral graduates to Colombian companies, to follow up Colombian graduate students abroad and to establishing communication channels with highly trained Colombians living abroad (COLCIENCIAS, 2011).

COLFUTURO, since its inception in 1992, has supported a total of 904 Colombians studying for a doctoral degree abroad. In total 4 998 Colombians have received support through COLFUTURO for graduate studies abroad between 1992 and 2011. They have studied in the United States (33%), United Kingdom (22%), Spain (8%), France (7%), Germany (6%), Netherlands (5%), Italy (5%), Australia (5%), Canada (3%) and other countries (COLFUTURO, 2011).

COLFUTURO has its critics, but it has had remarkable success in a relatively short time. In recent years, it has made efforts to support more Colombians living outside Bogota, more graduates of public universities and more students from lower socio-economic strata. These efforts should continue.

One issue around the scope of COLFUTURO's work is that, as a business-backed private entity, COLFUTURO has been willing to support any discipline or field of study for which talented applicants have requested support. Yet an important funding source for the scholarships COLFUTURO administers is the government, through COLCIENCIAS. There is a legitimate public interest in ensuring that public funds support study abroad in fields aligned with the areas of strategic interest for the development of the country. The COLFUTURO approach does not seem particularly well articulated with the achievement of national goals of advancing human capital development in these strategic areas.

By contrast, the support programmes of COLCIENCIAS and ICETEX could better take account of the strategic areas and their international dimension and improve articulation with institutional priorities. It is therefore desirable to achieve a more co-ordinated approach between COLCIENCIAS/ICETEX and the higher education and research institutions as regards scholarship programmes for graduate studies abroad. The review team suggests that they co-ordinate to launch institution-based development strategies for graduate and research programmes in areas of strategic national interest, which could involve both faculty mobility and scholarship-funded student mobility.

The review team recommends greater co-ordination between COLCIENCIAS and ICETEX on the one hand and higher education and research institutions on the other, to develop mutually-agreed scholarship programmes for graduate studies abroad, particularly in study fields of strategic national interest.

Summary of recommendations

The review team recommends that:

- An overall comprehensive approach to internationalisation should be introduced, bearing in mind that the approach adopted should contribute to the relevance of higher education, to the success of graduates of institutions, and, ultimately, to the incorporation of Colombian tertiary institutions into the global knowledge-based economy.

- In future, national policy discussions and consideration of legal changes should include the international dimension of tertiary education, and that there should be specific programmes to implement policies in this area.

- The Ministry of National Education should develop the quality assurance system so as to encourage tertiary institutions to consider introducing international elements into the curricula of all academic programmes, and other programmes where relevant.

- The Ministry of National Education should commission an external evaluation of the National Bilingual Programme in order to establish its effectiveness, and define a course of action with concrete achievable goals in terms of proper second language competency for all graduates of tertiary education institutions.

- Tertiary institutions should work more effectively with previous levels of education and on the organisation of their own programmes, to boost the chances of all graduates concluding their undergraduate studies with functional competency in a second language. Second language competency should be embedded as an integral part of the regular curriculum in all academic programmes and, where relevant, other programmes, rather than just being a requirement for graduation.

- Institutions, employers, international agencies and government entities should work together to dramatically increase the number of Colombian students and scholars participating in international mobility, as well as increasing the number of foreign students and scholars coming to Colombia.

- The Ministry of National Education should further develop, expand and make available to the public the data on SNIES related to internationalisation of Colombian tertiary education institutions.

- There should be greater co-ordination between COLCIENCIAS and ICETEX on the one hand and higher education and research institutions on the other, to develop mutually-agreed scholarship programmes for graduate studies abroad, particularly in study fields of strategic national interest.

Notes

1. In both cases, the 2006 RCI-ASCUN Survey and the 2010 SNIES data, it is assumed that the information reported corresponds to regular students abroad on a temporary basis and, consequently, does not include full-degree-seeking students abroad and/or Colombian students enrolled in foreign institutions and not affiliated with a domestic Colombian institution.
2. See previous footnote for clarification about the type of students being considered and the apparent dissonance with respect to the number reported in Colombia.

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Chapter 7. Research and innovation in Colombia

This chapter considers the range and development of research and innovation in Colombia.

The chapter closes with the review team's recommendations, including (i) significantly increasing scientific and technological investment; (ii) linking up and encouraging collaboration between researchers in better-established and smaller research centres; (iii) COLCIENCIAS to stimulate and support centres of excellence and networking and co-operative projects; (iv) natural sciences, social sciences and humanities all deserve research support.

Introduction

Universities, according to the classic model established by the Humboldt University in the early 19th century, should combine scholarship, research and education. More recently, another demand was made on higher education institutions: that they should not only do research, but also innovation, meaning that their research should be linked to the productive system and respond to society's needs.

This ideal model is still the source of inspiration for many universities today, but in practice, as research became more expensive and specialised and the number of institutions and students in higher education increases dramatically everywhere, a division of labour has started to emerge in all countries, with a small number of selected institutions holding to the Humboldtian model in its contemporary version, but most of the others dealing only or mostly with teaching.

Science and innovation, however, happen not only in universities, but also in public research institutes and private firms. The amount and importance of research and innovation that takes place in higher education institutions varies from country to country, depending on their institutional traditions; it also varies over time. In France, science and technology

developed in public institutions created as government agencies and the *Centre Nationale de la Investigation Scientifique*, CNRS, while higher education institutions provided certification for the professions, a model followed by most Latin American countries. This is a very different pattern from that of England and the United States, where leading universities also became leading research centres. Today, there is a general consensus that university-based research has many advantages over isolated research institutions, particularly when the universities are able to work together and link out to the private sector and public agencies requiring advanced knowledge and expertise, a condition which may apply to selected institutions, but seldom to higher education systems as a whole.

The concept of "national innovation systems" was introduced in the 1990s to describe the network of institutions that interact in a country to make knowledge flow among research institutions, firms and government agencies (Nelson 1993). A recent OECD document noted that:

> "The study of national innovation systems focuses on flows of knowledge. Analysis is increasingly directed to improving performance in "knowledge-based economies" – economies which are directly based on the production, distribution and use of knowledge and information. Knowledge, as embodied in human beings (as "human capital") and in technology, has always been central to economic development. But only over the last few years has its relative importance been recognised, just as that importance is growing. Economic activities are becoming more and more knowledge-intensive as seen in the growth in high-technology industries and the increasing demand for highly skilled people. Investments in knowledge, such as in research and development, education and training, and innovative work approaches are considered key to economic growth." (OECD, 1997)

Innovation in Colombia

Compared with most other Latin American countries, Colombia's conception of science, technology and innovation, as expressed in the legislation, is particularly well conceived and modern (Hansen *et al*, 2002). On the other hand, however, the amount of resources invested in the science, technology and innovation sectors has been limited, they have suffered from institutional instability, and their achievements have not been very significant.

Colombia has only started to focus on the development of science, technology and research during the last couple of decades. Law 29 of 1990 and the 1991 Constitution started to pave the way by establishing that "the

state is in charge of creating incentives so that people and institutions can develop and promote science and technology among other cultural manifestations and will offer special stimuli to those who are involved in these tasks." More recently, Colombia has reinstated its national policy for science, technology and innovation based on a rigorous assessment of its conditions. According to the official document from the National Council of Social and Economic Policy (CONPES, *Consejo Nacional de Política Económica y Social*) in 2009, innovation in the country was characterised by *i)* low levels of innovation in firms; *ii)* weak institutional consolidation of the science, technology and innovation system; *iii)* insufficient human resources for research and innovation; *iv)* limited social appropriation of science and technology achievements; *v)* lack of focus on long-term strategic areas; and *vi)* regional disparities in scientific and technological capabilities (CONPES, 2009, Vol. 3582, p. 11-12) .

Six strategies were proposed to deal with this situation:

- To stimulate innovation in the productive sector through a series of instruments with enough resources and operational capabilities to support entrepreneurs and innovators.

- To strengthen the National System of Science and Technology, by creating a national fund for science and technology, the Fondo Francisco José de Caldas, and transforming COLCIENCIAS, previously an institute, into the Administrative Department of Science, Technology and Innovation (acronym DACTI, though the name COLCIENCIAS is still much more widely used in Colombia and is used in this report). DACTI/COLCIENCIAS is responsible for the co-ordination of the National System of Science, Technology and Innovation.

- To increase the country's capabilities in research and innovation, through an investment project proposed by COLCIENCIAS.

- To promote the social appropriation of knowledge through diffusion in the mass media, the training of science and technology mediators, and support for institutions involved in these dissemination activities.

- To focus public investments in strategic sectors requiring long-term investments, characterised by the production of goods and services of high scientific and technological content and high added value.

- To develop and strengthen regional competencies in science and technology, including through co-operation plans for science and technology and providing the regions with support for the acquisition of robust equipment and the development of complementary capabilities. The Council recommended the establishment of regional systems of Science, Technology and Innovation (STI) that could improve the regional bodies' ability to plan, organise, implement and assess their activities in this sector.

The document expressed the hope that "with this strategy, investments in science, technology and innovation activities in Colombia, currently at around 0.47% of the national product, could reach 2% by 2019, with 500 PhDs graduating every year in the strategic knowledge areas. This combination of increased human resources and investment should allow Colombia to export the equivalent of USD 17 500 per capita by 2019, increasing the per-capita income of all Colombians". It should be noted that the figure of 0.47% quoted here corresponds to all science and technology activities, including R&D. The same document notes that the percentage of GDP devoted to investment in R&D hovered around 0.18% in 2006, a very low figure compared to the average for the Latin America and the Caribbean region of 0.63% and even more so compared to the OECD average of 2.26%. By 2011, there was no indication that Colombia was yet on track to fulfil the document's targets in terms of investment (the corresponding figure for investment in STI activities was 0.49%) or the number of PhDs graduating.

The first graduate and research programmes in Colombia's universities date from the 1990s, and they make use of external support, particularly from the Inter-American Development Bank. In the 1990s, research was transferred from the Ministry of National Education to the National Planning Department; science and technology became part of a national system of innovation; and there was a concerted effort to make research and innovation more relevant to an open, internationally competitive economy. This principle remains in place, with the introduction of additional institutional reforms to make the system more consistent and to consolidate the country's research capabilities (Jaramillo Salazar, 2009).

To implement the proposed system of innovation, a fairly complex institutional framework was established (Vestergaard, 2005). The key agencies are COLCIENCIAS; the Councils of the National Programmes of Science and Technology; the Regional Commissions of Science and Technology; and the Colombian Observatory of Science and Technology.

COLCIENCIAS, originally established in 1968, is the central government's agency for the promotion and development of science and technology. Its overall objectives are to promote technological and scientific advancement; to incorporate science and technology into programmes for the social and economic development of the country; to formulate medium- and long-term plans for science and technology development in Colombia; and to act as the main advisor to the government on all science and technology matters. A key concern for COLCIENCIAS is to establish mechanisms that promote interaction between universities and the private sector, with a view to stimulating the innovative capacity of the productive sector and to strengthen scientific investigation and technological development more generally. In brief, COLCIENCIAS is charged with the task of continuously improving the Colombian system of innovation.

COLCIENCIAS is chaired by the President of the Republic and also includes the Head of the National Planning Department, the Ministers of Economic Development, Agriculture and Education, the Rector of the Universidad Nacional, a rector of a private university, a member of the scientific community, a member of the private sector, a representative of the Regional Commissions of Science and Technology and the Director of COLCIENCIAS. There are 11 National Science and Technology Programmes in Colombia. Each of these has a national council which is responsible for approving research, promotion and funding policies within that sector, and for guiding and approving the allocation of funds between the various projects. The Councils are also responsible for monitoring and evaluating. At present, there are National S&T Programmes in the following sectors: agriculture, basic sciences, biotechnology, electronics, telecommunications and data processing, environment, education, health, human and social sciences, industrial development, marine, mining and energy. There are also Regional Commissions of Science and Technology, responsible for the co-ordination and direction of the National Innovation System at the regional level. These Regional Commissions were created in 1994, in seven regions in Colombia (Amazon, East Central, Atlantic Coast, Capital District, North Occident, Orinoquia and Pacific). The Colombian Observatory of Science and Technology (OCyT, *Observatorio Colombiano de Ciencia y Tecnología*) is a research centre that studies science and technology activities in Colombia. It produces indicators for the area of science, technology and innovation, carries out bibliometric studies, collaborates with COLCIENCIAS in the constitution of databases and national indices and participates in linking Colombia with international systems of scientific information.

In spite of these efforts and the high expectations of the 2009 CONPES document mentioned earlier, research in Colombia remained underdeveloped and with weak links with the productive sector. In 2011, according to data from OCyT, the percentage of GDP devoted to STI still remained low at 0.18%, compared to 0.4% in Mexico and Argentina, 0.9% in India and Brazil, 2.3% in Germany, and 2.7% in the United States.[1] Table 7.1 gives the main indicators of science, technology and innovation for Colombia in comparison with selected Latin American countries for 2009. The size of scientific production in terms of papers indexed in the Science Citation Index, 2 386, is not only smaller than in Brazil and Mexico, but also smaller than in Chile and Argentina, which have smaller populations. No country in the region has a significant number of patents granted to residents, and Colombia is not better. The number of doctors graduated in 2009 as reported in this table, 152, is somewhat smaller than the official figure of 173 reported by OCyT. According to the latest data from the Ministry of National Education, Colombia had, in 2010, 2 326 students in doctoral programmes and 24 309 in master's programmes, and graduated 208 students with doctorate degrees and 5 861 with master's degrees. This is a very small number in relation to the size of the country's higher education sector.

Table 7.1 **Main indicators of research activities and graduate education, selected Latin American countries, 2009**

	Venezuela	Peru	Mexico	Colombia	Chile	Brazil	Argentina
Papers in science research, total	1 400	761	9 778	2 386	4 952	34 243	7 739
Papers in science research, % of world total	0.00	0.00	0.68	0.16	0.34	2.41	0.54
Papers in science research per USD million spent on R&D	0.18			6.59	6.31[1]	1.80	4.19
Papers in science research per USD billion GDP	4.29	5.99	11.17	10.22	31.08	21.46	24.94
Patents granted to residents	13	213	20	130[1]	13	529[1]	248
Doctorates granted	19	0	2 724	152	395[1]	11 368	937

Note (1): 2008 figure.

Source: Red Iberoamericana de Indicadores de Ciencia y Tecnología, www.ricyt.org.

An analysis of the publication data from the Web of Science for the period 2000 – 2011 (Table 7.2) led to the identification of 21 051 records with authors with Colombian addresses (of which some 16 thousand were scientific articles), growing from around 800 a year ten years ago to about 3 000 a year recently. Although significant, this growth still leaves Colombia well below the leading Latin American countries, both in absolute and in relative terms. The total should be compared with 325 784 for Brazil, 148 842 for Mexico, 84 498 for Argentina, 50 253 for Chile and 17 285 for Venezuela.

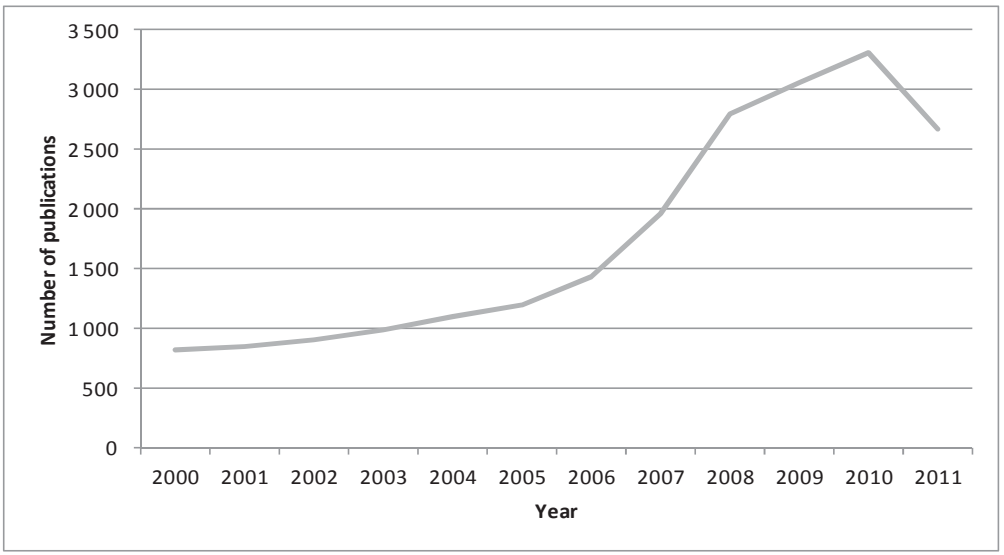
Table 7.2 **Publications in the Web of Science per population, 2000-2011, selected Latin American countries**

Country	Articles	Population (millions)	Articles per million population
Colombia	21 051	44.5	473.1
Brazil	325 784	190.7	1 708.4
Mexico	148 842	112.3	1 325.4
Argentina	84 498	40.4	2 091.5
Chile	50 253	17.3	2 904.8
Venezuela	17 285	28.1	615.1

Sources: Publications: Thompson Reuters, *Web of Science*, consulted 21 Dec. 2011. Populations: World Bank.

Figure 7.1 shows how many of the 21 051 articles by Colombian authors were published in each year from 2000 to 2011. Articles per year rose significantly, from around 1 000 per year in the early 2000s to around 3 000 in recent years.

Figure 7.1 **Publications by Colombian authors, 2000-2011**



Source: Thompson Reuters, *Web of Science*, consulted on 21 Dec 2011.

All these articles came from just seis Colombian institutions, with a high concentration in the Universidad Nacional (see Table 7.3). Of the total, COLCIENCIAS financed 828 articles.

Table 7.3 **Articles with Colombian authors listed in the Web of Science, 2000-2011**

Institution	Number of articles	% of the total
Universidad Nacional de Colombia	4 679	22.23
Universidad de Antioquia	2 891	13.73
Universidad de los Andes	2 360	11.21
Universidad del Valle	1 866	8.86
Universidad Industrial de Santander	795	3.78
Pontificia Universidad Javeriana	683	3.25
Total (one article can have several authors)	13 274	63.06

Source: Thompson Reuters, *Web of Science*, consulted on 21 Dec. 2011.

In terms of fields, the Web of Science identified the largest concentrations of publications in engineering (897), tropical medicine (759), physics (730), plant sciences (712) and public health (667). This corresponds more or less with the main research areas identified by the National System of Higher Education Information (SNIES) of the Ministry of National Education in 2008, namely medicine, agricultural and biological sciences, engineering, physics and astronomy and biochemistry, genetics and molecular biology.[2]

Graduate education is expanding, but from a very small basis. In 2001, there were only 350 people doing doctoral studies in Colombia, and just 33 graduated. In 2010, the figures were 2 326 and 208 respectively, according to MEN-SNIES. The number of students in MA programmes rose over the same period from 6 776 to 23 808, and the number of MA degrees granted rose from 1 740 to 5 861. This expansion is very significant, but still far from what would be necessary to provide the country and its higher education institutions with the critical mass it needs.

Besides its small size in terms of material and human resources, and in spite of the intentions stated in documents from CONPES and COLCIENCIAS, the research that is done in Colombian universities tends to be academic in nature, and not clearly related to the country's economic activities. This becomes very clear in a recent overview of Colombia's innovation and university-related activities using Finland and the United Kingdom as benchmarks (Vestergaard, 2005). The overview noted that "when Colombian economic growth began declining following liberalisation in the early 1990s – just as it had in Finland at that time – the exact opposite policy to that of Finland was adopted. Instead of increasing public funds for science and technology, opting to invest and develop their way out of the crisis, Colombia's commitment to and funding of R&D declined". Summarising his analysis the author concludes that *(i)* science and technology are not seen as core strategies for industrial development in Colombia; *(ii)* funding is small and unstable; *(iii)* it is concentrated in a few institutions; and *(iv)* there is no continuous assessment and evaluation of research and innovation activities.

The comparison may be thought unfair, as Colombia does not have either an excellent general education system like Finland, nor a well-established university tradition like the United Kingdom, based on which a modern innovation system could be established. The policies implemented by both Finland and the United Kingdom assumed that these countries' economies had to be based on knowledge-intensive industries, a notion that cannot be fully transplanted to Colombia and can be questioned even in highly developed economies, where the weight and persistence of more traditional economic activities is sometimes underestimated. Low-tech industries still make a substantial contribution to Western economies and

there is a growing literature criticising the over-emphasis often put on high-tech industries in both policies and economic analyses. It is argued in that literature (Hirsh-Kreinsen and Jacobson, 2008; Smith, 2003; Tunzelmann and Acha, 2005) that the economic relevance of high-tech industries remains small. Quantitatively, between 90% and 97% of GDP is accounted for by low- and medium-tech industries in Western European countries (Hirsch-Kreinsen *et al*., 2003) and despite the debate on and widespread perception of the opposite, this share has remained fairly stable. It is also argued that the low-tech industries too may be innovative, even if they do not display large R&D intensities (Christensen, 2010, p. 2).

Low-technology industries and services also need to innovate if they want to remain competitive, but the kind of innovation they need is different from that of high-tech industries and services, based on sophisticated, knowledge-intensive research and technology. Innovation in firms can relate to products, but also to processes and institutional organisation; it can bring new elements to the firm, the country or the regional market in which it is located, as well as to the world. Innovation for a country or region includes not only what takes place within firms, but also the broader environment that includes the quality of its institutions, human capital, infrastructure, market and business sophistication.

During the last three years, the government of Colombia has taken science and technology to the forefront of its competitiveness strategy, considering it one of the five "locomotives" (*locomotoras*) necessary to promote economic growth (the other four are mining, infrastructure, housing, and agriculture). Recent developments in the realm of STI include the current execution of two World Bank and IDB loans of USD 25 million each, with the objective of strengthening the National System of Science, Technology and Innovation Programme, under the umbrella of CONPES 3582. The main components of the first phase of this project include strengthening COLCIENCIAS' operational and policy-making capacity and institutional strengthening of the Science, Technology and Innovation National System; strengthening COLCIENCIAS' capacity to promote development of human capital for science and technology and to promote research and innovation; and promoting social dissemination of STI and institutional communication.

Also of note is the fact that the government of Colombia has taken important steps to increase significantly the percentage of GDP invested in STI: As of January 2012, 10% of the country's natural resource royalties have been allocated to the newly-created Science, Technology, and Innovation Fund (*Fondo de Ciencia, Tecnología e Innovación*). With these new resources, Colombia hopes to at least double investment in research and development in STI as a percentage of GDP, bringing it up to par with Mexico and Argentina.

The fund's resources will be distributed across regions. Regional authorities are expected to propose their own research and development projects and define priorities. However, given the limited capacity for research and innovation at the regional level, it remains to be seen how effectively the resources will be allocated to projects in the strategic areas stipulated for regional projects by the government of Colombia.[3] As already mentioned, Colombia's research capacity is highly centralised in a small number of universities, many located in Bogota. Though it is commendable in principle to allocate a large amount of resources to regional investment in R&D, viable mechanisms must also be put in place for regional capacity building and inter-regional collaboration in order to guarantee an efficient and effective use of resources.

Findings and conclusions

In recent years, Colombia has made important progress in trying to strengthen its science and technology sector, with the emphasis on university research, creating appropriate funding mechanisms and linking research more closely to the country's economy. This effort has led to a significant growth in the number of internationally-indexed scientific publications, from about 800 a year in 2000 to about 3 000 or more currently. These publications are based on research supported in part by COLCIENCIAS, but are also produced in partnership with researchers from the United States, Spain, Brazil, France, England, Mexico, Germany and Argentina (in this order), evidence that Colombian scientists are part of much broader international scientific networks.

However, the amount of resources invested in science and technology in the country is very limited, and research is concentrated in a few universities, with the Universidad Nacional dominant. Even the Universidad Nacional, with 44 000 students in professional programmes but only around 400 doctoral students,[4] cannot be described as a true "research university".

It is important to increase the volume of resources and to stimulate research in other institutions and regions outside Bogota, and therefore commendable that Colombia has taken steps to increase regional resources and decentralise investment through its new Science, Technology, and Innovation Fund. However, it is also important to understand that Colombia's economy is not likely to become, in the near future, a "knowledge-based economy" like Finland, but will continue to be based, in large part, on natural resources, agriculture and low technology industries; and that its higher education institutions, as a whole, will not become research-intensive institutions, but will remain, at best, good places for general and professional education.

Without this realisation, there is the risk that the limited resources available for research and innovation will be spread too thinly throughout the country, without creating the critical mass necessary for any high-quality research and technology activities to put down roots and prosper. Colombia now has plenty of data on scientific publications, the number of researchers and research groups,[5] both nationally and by regions, but does not seem to include more qualitative types of assessment of which institutions or research teams, in which fields, are strong enough or have the potential to reach the quality levels and self-sustaining momentum needed for excellent graduate education and research. Once these institutions and research teams are identified, they should receive enough support to allow them to perform according to the best standards, making use of appropriate materials and equipment and maintaining contacts and interchange with counterparts in the country and abroad.

For institutions, research groups or individual researchers below the minimum threshold of critical mass, the best policy is to link them with existing groups, stimulating collaboration with the better-established research centres. Thanks to the resources provided by modern information technology, access to high quality libraries can be in large part replaced with access to international electronic bibliographic sources and databases, and communication and interchange among scientists depend much less on physical proximity than in the past.

The concern expressed in official documents by COLCIENCIAS about the need to link research with economically productive activities is important, but should not be the only one. The facts, noted by many observers, that Colombian firms do not invest much in in-house research and are not very interested in working with universities should not be considered just a cultural trait, but also an expression of the fact that they are not high technology firms, and that the kinds of innovations they need are mostly related to incremental product and process improvements, rather than advanced technological innovation. Therefore, if better links are to be forged between research and business, more needs to be done to encourage university researchers to work with private firms. Colombia could draw on good examples from the United States and Europe, where, increasingly, universities are linking rewards such as academic promotion and compensation to knowledge transfer activities and collaboration with the private sector. Box 7.1 describes how this is done in the University of Manchester. Often, too, United States and European researchers receive a share of revenues from the intellectual property that they develop (patents, licensing, spin-offs, etc.); this does not appear to happen in Colombia.

Box 7.1 **Incentives to external collaboration in the University of Manchester, England**

Applicants submitting a case for academic promotions are asked to set out the key contributions they have made in the following areas, among others.

For promotion to professor

- Evidence of effective research collaboration with other institutions or organisations.
- A significant record of transfer of intellectual property into the wider economy.
- Evidence of significant influences on the formulation of policies or of practice in organisations outside the university.
- Research, consulting or advisory relationships with other organisations.
- A significant record of enrichment of the wider culture through, for example, literature, the visual and performing arts.
- A significant contribution to the development of academic enterprise.
- A significant contribution to research or policy development in the field of knowledge transfer.
- Evidence of effective interactions with key stakeholders, to include public and community engagement.
- Exceptional contribution to developing and managing links with external organisations.

For promotion to reader

- A substantial contribution to the development of academic enterprise across a broad range of enterprise or cultural activities.
- Demonstrable leadership in academic enterprise, notably new academic enterprise processes designed, initiated and managed.
- A sustained record of supervision of postgraduate students on new business creation and technology or knowledge transfer projects.
- High visibility involvement in regional, national and international enterprise bodies.

For promotion to senior lecturer

- Promoting and maintaining links with industry, business, the professions or the community that are of value to the university.
- A significant contribution to the development of academic enterprise across a broad range of enterprise or cultural activities.
- Significant involvement in knowledge creation and transfer in conjunction with partner organisations in industry, commerce, government or NGOs. This could be in the form of externally funded research and/or consultancy.
- Involvement in creation of and/or commercial exploitation of intellectual property.
- Success in transferring research results to commercial, professional or other practical use.
- A record of continued successful postgraduate supervision in the area of academic enterprise or knowledge transfer.
- A significant involvement in regional, national and international enterprise bodies.

While it is highly desirable to stimulate research teams in universities to move up to "mode 2" or "third mission" activities by linking more strongly with government agencies and private firms (Etzkowitz, 2008; Gibbons *et al*., 1994), university research is also scholarship in the broad sense, through which academics and students learn about science, technology and culture and maintain the intellectual density which is a central component of any institution of higher learning.

Thus, the best strategy for COLCIENCIAS seems to be a combination of *(i)* giving strong support to selected, high quality and promising centres of excellence, both academic and applied, to stimulate networking and co-operative projects among institutions and regions; and *(ii)* keeping its doors open to applicants with worthy projects, whatever and wherever they are.

There are many good reasons to give priority to research in the natural sciences, particularly when they yield important practical results. The review team believes that in Colombia there are also good reasons to invest more in the social sciences and the humanities than has been done so far. One reason is that the social sciences and humanities are a central component of culture and scholarship in any university environment. Another is that they are as important as the natural sciences in practical terms, considering the many problems Colombian society faces in terms of poverty, inequity, social, economic and political violence and economic underdevelopment. Social sciences and humanities are more controversial and less amenable to quantitative assessments based on publications and citations than the natural sciences, but this should not be a reason not to support them.

Recommendations

The review team recommends that:

- The resources invested in science and technology in Colombia should be significantly increased, and further efforts should be made to stimulate research in institutions beyond the Universidad Nacional and outside Bogota. Bearing in mind however that Colombia's economy is not likely to become, in the near future, a "knowledge-based economy" that needs all or indeed many universities to become research-intensive institutions, the government should avoid spreading research resources too thinly.
- In the interests of more and better research, researchers working outside the better-established research centres should be linked up and encouraged to collaborate with those centres, making full use of electronic communications technology.

- Researchers should be encouraged and incentivised to work with private firms, in the ways suggested in this chapter, for example; but in the awareness that low-tech as well as high-tech innovations can be very useful to Colombia's economy.
- COLCIENCIAS should support high quality and promising centres of excellence, both academic and applied, and also stimulate networking and co-operative projects among institutions and regions and support worthwhile projects that do not fit into these categories.
- Research of practical value in the natural sciences should continue to receive strong support, but there is also a good case in Colombia for investing in social sciences and humanities research.

Notes

1. www.battelle.org/aboutus/rd/2011.pdf.
2. www.mineducacion.gov.co/sistemasdeinformacion/1735/w3-article-245356.html.
3. The strategic areas are: agricultural development; water, biodiversity and natural resources; mines and energy; information and communication technologies (ICT); social and human sciences; capacity building in STI; training of human capital for research and development; innovation for production, giving added value to the productive development; and security and defence
4. http://en.wikipedia.org/wiki/National_University_of_Colombia.
5. Colombia collects data on "research groups", a concept derived probably from the work of Frank Andrews later adopted by UNESCO in a research project (Andrews, 1979; Stolte-Heiskanen, 1979). Since many of these groups are short-lived, the official statistics include thousands of "inactive" research groups that do not actually exist, as for instance in (OCyT, 2010, Table 3.3).

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Chapter 8. Information and transparency in Colombia's tertiary education system

This chapter provides an overview of the information available on Colombia's tertiary education sector, analysing its reliability, completeness, relevance, usefulness and ease of access. The transparency of processes and decisions in the tertiary education system are also discussed.

The chapter closes with the review team's recommendations, including the need to (i) make information systems more user-friendly for the general public; (ii) systematically check data with alternative sources of information; (iii) commission an external review of admissions processes and criteria at public and private universities and university institutions; (iv) ensure that all TEIs that receive any public funds, directly or indirectly, make detailed financial information public in a standardised, systematic manner.

Introduction

Information is a key aspect of any education system. Knowledge about educational institutions, students and graduates provides a basis on which to evaluate and make informed decisions regarding access, equity, relevance, quality, financing and governance, all aspects that have been covered in this report. Potential students need information in order to make decisions on if, what and where to study, and how to finance their course of study. Tertiary education institution (TEI) administrators also require information in order to design, plan, manage, and evaluate their programmes and institutions. And information on the characteristics of students, TEIs and programmes is crucial for guiding, monitoring, and evaluating the decisions of policy makers charged with ensuring that the country has a labour force with the skills commensurate with an open, modern economy.

The scope and quality of information that is publicly available to students, TEIs and policy makers is linked to the concepts of transparency and accountability. Educational institutions and public agencies should always aim for transparency, and do their best to make clear, reliable, complete, and relevant information available to the public and interested parties in user-friendly ways. Transparency of information is not only

important for the decision-making process, it also makes it possible for stakeholders to hold each other accountable. Accountability and transparency are two sides of the same coin and are of vital importance for good governance and a well-functioning democracy.

This chapter provides a brief overview of the information available on tertiary education in Colombia, focussing on the Ministry of National Education's information systems. Then it considers issues related to the transparency of information, including its relevance, clarity and ease of access and use. Then it discusses the transparency of the system itself, including processes such as admissions and financing decisions. Finally, it summarises main findings and the review team's recommendations.

Information available in the tertiary education system

A vast amount of information about Colombia's tertiary education system is publicly available, ranging from sophisticated information systems run by government agencies to individual institutions' websites, brochures and advertising material. What follows is a brief description of the main information sources available to citizens, TEIs and policy makers.

The main source of information on the tertiary education system as a whole is the Ministry of National Education (MEN). Starting in 2002, the Ministry has been systematically gathering information from TEIs and government agencies, and consolidating it into four main information systems that are continually updated: *(i)* the National System of Higher Education Information (SNIES, *Sistema Nacional de Información de la Educación Superior); (ii)* the Higher Education Institutions Dropout Prevention and Analysis System (SPADIES, *Sistema de Prevención y Análisis de la Deserción en las Instituciones de Educación Superior*); *(iii)* the Labour Market Observatory for Education (OLE, *Observatorio Laboral para la Educación)*; and *(iv)* the Higher Education Quality Assurance Information System (SACES, *Sistema de Aseguramiento de la Calidad en la Educación Superior*). Individuals and TEIs can access all these information systems through the Ministry's website.

SNIES, regulated by Decree 1767 of 2006, is a comprehensive system including data on all programmes and TEIs on Colombia's Register of Qualified Programmes. The system collects and organises information about institutions, programmes, faculty and staff, students (including applicants and admitted and enrolled students), graduates, research, internationalisation, infrastructure, student well-being, finances, standardised test scores (SABER 11 and SABER PRO), tuition and fees, and financial aid and loans. For the most part, data are collected from TEI administrators entering information online at specified dates throughout the academic year. The

MEN considers the TEIs themselves, current and potential TE students and their parents, career counsellors, employers, researchers, and governmental and non-governmental organisations as the target audience for this system.

SPADIES is a tool for monitoring and analysing dropout from tertiary education institutions; information on total enrolment, graduation and dropout, including student characteristics, from SNIES, ICFES, ICETEX and TEIs themselves is included in this system. The data, available by semester starting in 1998, can be disaggregated by sex, socio-economic variables, SABER 11 test scores, access to financial and academic assistance and type of institution and programme. The intended audience includes students and career counsellors, TEIs, researchers and governmental and non-governmental organisations.

Labour market information for tertiary education graduates is provided by OLE. This database contains salary information for individuals who gained a tertiary degree from 2001 onwards, provided they are working and contributing to the social security system. Average earnings and the percentage of degree holders currently contributing to the social security system can be tracked by type of degree, discipline, institution and geographic location. OLE has also at times carried out employer and graduate surveys to obtain labour market information covering both the supply and demand sides.

SACES is an information system for TEIs to monitor their registered qualified programmes and accreditations. The system was created to enable TEIs to perform automatically the steps associated with the registration and accreditation processes, as well as other institutional procedures to do with the institution's legal status, approval of feasibility studies for public TEIs, changes of character, recognition as a university, and permissions to offering propaedeutic cycles, etc. The system is used exclusively by TEI administrators and those involved in the registration and accreditation processes, that is, the MEN, CONACES, and the CNA.

In addition to these information systems, the Ministry has a web portal called Colombia Learns (*Colombia Aprende*) that serves as a virtual meeting point for the educational community in Colombia. Here, users can interact with each other and retrieve a variety of information related to the education sector. Teachers and administrators of primary, secondary and tertiary education institutions can access resources and services. Potential tertiary education students can be directed to the appropriate information systems for choosing a TEI and a particular programme, as well as information about student loans and ICFES tests. Researchers in education can contact their counterparts throughout the world and exchange documents of interest. At the same time, all these educational community members are invited to share

their experiences and become part of networks and virtual communities offered by the portal. Colombia Learns was the primary source of information and discussion on the recently withdrawn proposals to reform Law 30.

Aside from information compiled by government entities, there is a vast amount of information on tertiary education available to potential students via the internet, and advertising venues such as billboards and newspaper advertisements. For instance, *universidadescolombia.com* is a directory of tertiary education institutions with a search tool for over 6 000 undergraduate programmes. The Colombian University Observatory (*Observatorio de la Universidad Colombiana,* www.universidad.edu.co) is a private initiative of the *Instituto Latinoamericano de Liderazgo*. The Observatory disseminates information about universities in Colombia. On its website, potential students can retrieve useful data (university rankings, tuition fees, etc.), while researchers and other stakeholders can download legislation, research documents and opinion pieces.

Overall, the amount and scope of information on tertiary education available in Colombia is indisputably impressive. It is worth mentioning that the strides in collecting and consolidating a series of information systems made by the Ministry rival those of any developed country. The review team was very impressed by the range of information available in Colombia, as well as by its level of detail.

Transparency of information

Information is transparent if it is reliable, complete, clear, accessible and useful.

Reliability and completeness

Reliability relates to whether information is accurate and trustworthy, whereas completeness relates to whether all relevant information is made public. Taking completeness first, the team found that although the MEN's information systems are generally very comprehensive, information about SENA is not always included, as is the case, for instance, in OLE. Given that SENA accounted for 55% of total enrolment in T&T programmes in 2010, SENA's absence represents a significant information gap. And it is not always clear to users of MEN's information systems that SENA is excluded (or included), meaning that users may well misinterpret data. This represents a lack of transparency, and hinders data comparability.

SENA runs the Colombian Labour and Occupational Observatory (OLO, *Observatorio Laboral y Ocupacional Colombiano*). This observatory tracks demand for job placements using data from SENA's National Public Employment Service, as well as private and public investment and expansion projects at a departmental and national level. This information

would undoubtedly be more useful if integrated with data from the OLE. Additionally, SENA graduates should be included in OLE, so as to allow for the monitoring of their employment and earnings. Chapter 2 has already recommended that increased efforts be made to integrate SENA into the Colombian tertiary education system. SENA's inclusion in data collection, reporting, and analysis systems should be a crucial part of that integration – which should be possible without great effort, given the data collection and information system mechanisms already in place.

One way of checking the reliability of information is against alternative data sources. Not only can these serve as alternative measures for different indicators, they can also complement information that the Ministry does not gather directly from TEIs. Data from household surveys such as those administered by the National Administrative Department of Statistics (DANE, *Departamento Administrativo Nacional de Estadística*) can be particularly useful. The review team was surprised to find that the MEN does not regularly or consistently exchange information with DANE, particularly as the information collected by the two agencies is clearly complementary. For example, the information on the socio-economic makeup of the student population on SPADIES comes from a survey questionnaire students fill out when sitting the SABER 11 test. It serves its primary purpose of helping SPADIES identify causes of dropout, but information is only available on the limited number of students who actually answer the survey questions. The data is thus not the best tool for analysing access and equity in the system – DANE surveys yield more reliable and comprehensive socio-economic data, which would undoubtedly be useful for education policy makers. Ways should be found of maximising the incorporation in MEN information systems of useful data from DANE and other official sources.

As well as providing the aggregated data on standardised test scores available on SNIES, ICFES makes microdata available to researchers. This includes individual socio-economic characteristics gathered from a survey students fill out when sitting the test. Individual student identification numbers for both SABER 11 (taken at the end of secondary education) and SABER PRO (taken at the end of tertiary education) test scores make it possible to link an individual student's results in both tests and determine the "added value" of tertiary programmes. Many countries are struggling to develop a SABER PRO type of tertiary level exit exam, in order to use its results to improve teaching and learning. However, when the review team asked campus stakeholders if they used SABER tests to learn about and improve the effectiveness of teaching and learning, the answer was generally that this had not been considered. The review team noted two contradictory perceptions with regard to the SABER tests. The first and most widespread was a belief in the total reliability of SABER 11 to measure individual students' academic potential.

This, as Chapter 5 has shown, is erroneous – the reliability levels of the subject tests can be quite low, particularly at the lower end of the ability range, which is why ICFES is redesigning SABER 11 to test more generic competencies and thereby increase reliability across the range. The second was the perception that test results were not comparable across years, so it would be difficult for TEIs to gauge student abilities from cohort to cohort; though ICFES assured the review team that the results of its standardised tests are indeed comparable. Nonetheless, as already mentioned in Chapter 3, one significant drawback of SABER 11 test results is that only students who intend to attend tertiary education sit the test. Requiring all grade 11 students to sit the SABER 11 test would provide better information on the overall quality of secondary school provision in Colombia, including information on the competencies or knowledge that students have upon leaving secondary school, or how well secondary school prepares students in general for tertiary education. It would also help policy makers to address equity issues in access to tertiary education.

For information to be useful, it must be not only reliable but also trusted. Unfortunately, the review team found, levels of trust in government data in general are extremely low. The review team could not find a rational basis for this perception, but noted that it was quite widespread. Data from MEN, as well as from DANE, and the National Planning Department (DNP, *Departamento Nacional de Planeación*), often lacks the credibility that its technical level of quality merits. This may be partly due to current issues with some MEN information systems, which depend on TEIs themselves to provide reliable and complete information. There is scope for MEN to do more to check the information it is given, to ensure that it makes sense and is accurate and up-to-date.

Relevance, usefulness and ease of access

There is without a doubt a great deal of data available, for which Colombia should be commended. The main challenge is to improve the quality of the data and in general to make information systems more user-friendly. For instance, the information on SNIES is relevant for planning, evaluation, assessment and monitoring of the sector, but more needs to be done to organise and present the information in ways that will enable users to take full advantage of it. Continued improvement of data quality, along with improvements to the technical notes and the presentation formats, will help stakeholders, particularly institutions and individuals, to make better-informed decisions.

The review team identified a number of cases where users cannot find the complete answer to a simple question in one place, because the information required for the answer is split between different databases which are not

linked, or not easily linked. For instance, research institutions looking for potential sources of funding have to go to the websites of several different organisations, which do not offer information on what is available from the others. "Choose your programme" (*Escoge tu carrera)* in Colombia Aprende is an excellent step in the right direction, as it directs students aspiring to tertiary education to the information systems holding the information they seek (*e.g.* OLE and SNIES), but students must still access each source separately to get the full picture. For instance, potential students can find information on SNIES on all registered higher education institutions and the programmes they offer (names of programmes and institutions, type of degrees offered, number of faculty and qualifications, fees charged, number of applicants, admitted and enrolled students), but information on the earnings of recent alumni by type of institution, specific institution, specific programme, geographical location and gender must still be accessed through OLE, while information on each institution's dropout rate can only be found on SPADIES. Also, information platforms are different for each system, and often the information is not consolidated and organised so as to be easy to access.

It would be much more helpful to students if they could enter the criteria important to their choice of institution (*e.g.* geographical location, student body size, percentage of full-time faculty) and have the system rank universities according to these criteria. As of now, the information is available, but users must extract, consolidate, and analyse it on their own. With close to 300 TEIs and over 11 000 programmes, researching the tertiary education system without a ranking tool can prove a daunting task. The "last mile" of the information systems is missing.

As far as content is concerned, the labour market information in OLE could be improved by strengthening the feedback loop between employers and education providers, through a standard periodic survey. This would help to identify the reasons behind certain labour market outcomes; for instance, whether low wages in a particular sector indicate low demand or (in employers' view) low tertiary programme quality. Although employers have been surveyed in the past, this is not a systematic practice. This type of information is important not only for potential students but also for TEIs, so that they can receive feedback on the competencies and skills of their graduates and how these educational outcomes are actually applied on the job. The data could also point to new markets for education, by identifying potential career and degree ladders.

Moreover OLE, as mentioned before, has information on all individuals who have graduated from a TEI in Colombia since 2001. This information, currently used only to track labour market employability and wages, has tremendous potential for allowing employers to verify that the degrees presented by job-seekers are genuine. Fake diplomas have been a growing

problem in Colombia; a recent study found more than one out of 10 diplomas submitted in job applications to be fake (Portafolio, 2011). An employer can already verify whether the institution and programme mentioned on the diploma actually exist, by looking up SNIES lists of TEIs and programmes on the Register of Qualified Programmes. However, employers may also need to verify that a diploma purporting to come from a *bona fide* TEI really did so. Publishing the lists of all graduates from secondary and tertiary education institutions would make it harder to falsify diplomas. Chile provides an example here, having recently submitted a bill to Congress[1] proposing a National Registry of Titles and Degrees, to make public the lists of individuals holding tertiary titles and degrees.

Transparency of processes and decisions

The Ministry of National Education has made great strides in making processes and decisions transparent. Under decrees to protect consumers, establishments whose publicity is misleading or false can be closed. The portal Colombia Learns strives to keep stakeholders up-to-date on all matters related to education policy, and provides venues for stakeholder participation. However, the review team found that there is room for improvement in the transparency of the decisions of TEIs, SENA and ICETEX on admissions and financing, because students and the general public have little understanding of how these decisions are made.

The financial information available on both public and private TEIs could be improved because, although institutions send financial information to SNIES and public institutions are audited by the national audit agency (*Contraloría General de la República*), few TEIs make such information publicly available in a comprehensive, standardised manner. Entities that are financed by public funds – directly as public institutions and/or indirectly through student fees paid with, in many cases, ICETEX support and perhaps also research funding – should make available to the public more and better information on what they do with the money. This accountability is essential in a democratic society. If the public do not know and cannot find out, they may well suspect waste in public institutions and profiteering in private institutions. In an attempt to counter such perceptions, other countries have taken specific action. For instance, Chile recently drafted two bills intended to make their tertiary institutions more transparent, not only about their finances but also about their organisational structure (see Box 8.1). The review team considers that a measure of this type, for all TEIs regardless of the origin of their funds, would help to promote greater transparency in Colombia – especially important given the perception that there may be private institutions functioning as de facto profit-making institutions.

Box 8.1 **Chilean State-Financed Education Institutions Transparency Bill**

Two bills[1] calling for greater transparency of state-financed education institutions were recently submitted to the Chilean Congress. The bills build upon the Transparency Law, which came into effect in April 2009 and requires all public institutions to make relevant information regarding the use of public funds public. They propose that all educational establishments in Chile that receive state funds, either directly or indirectly through government guarantees, tax deductions, or student aid mechanisms, be required to exercise transparency. Violations of the law carry a maximum penalty of suspension of state funds.

Specifically, the bills state that all education institutions that receive state funds must make permanently available to the public the following information:

- Their organisational structure.
- The faculties, functions and powers of each one of their units or internal organs.
- Applicable normative frameworks.
- Staff directory, including contractors, with respective salaries.
- Contracts for the supply of real and personal property required for the provision of services, as well as study and consulting contracts related to investment projects, indicating contractors and main partners and shareholders of the societies or lending companies.
- Transfers of funds, including any and all expenditures, investments and withdrawal of earnings and profit sharing, according to established formats that clearly distinguish the resources devoted to educational activities, research and any other purpose.
- Transactions and requirements with which interested parties must comply in order to access services provided by the respective educational institutions.
- The origin and amount of all funds received during a calendar year, including state contributions, tuition, grants or other.
- Declarations of interest and equity of donors, directors and partners.
- Audited financial statements.

In this spirit, the 2012 Budget Act states that all educational establishments must submit to the Ministry of Education 2011 financial statements, providing all income and expenses of each in a disaggregated manner. They must also submit an updated list of all full partners or board member and directors. Universities must submit an updated financial report of the entities on whose property the university has a holding equal to or greater than 10%, and corporations or foundations under whose statutes the university can choose at least one member of the board or governing body.

Note (1): Chilean Congress Bulletins 7913-04 and 7929-04.

Greater transparency is also desirable in relation to admissions decisions, as Chapter 3 has already mentioned. The criteria TEIs use to decide which applicants are given places are not usually shown in full on their websites. Though all institutions give out the dates by, on or from which applications should be submitted, and may indicate the minimum criteria applicants should satisfy – such as a minimum score in the SABER 11 tests – it is rarely, if ever, clear from institutional websites what criteria will be used to allocate places between applicants if there are more eligible applicants than places. As Chapter 3 also recorded, the review team was interested to hear from the Universidad del Atlántico, a public university on the Caribbean coast of Colombia, that some years ago the institution outsourced its admissions process to the Universidad Nacional in order to avoid the undue pressures previously exerted by local politicians. The Universidad Nacional now manages the entire admissions process, including administering the entrance exam, and sends the Universidad del Atlántico the list of admitted students. This effort to reduce inappropriate interference in internal institutional decision-making is commendable. It suggests, however, a real need to open to public gaze the admissions processes of all TEIs including SENA centres, the criteria they use to decide between candidates at all stages, and the results of applying these criteria in terms of the characteristics of students accepted and rejected (see recommendations in Chapter 3). The review team also suggests an external review of admissions processes and criteria at public and private universities and university institutions, which would also consider the possibility of establishing standardised processes and criteria, at least for all public universities.

Findings and conclusions

The team was impressed by the amount and type of information that the Ministry of National Education gathers from institutions and makes available to the public through its various information systems. Colombia has built the foundations of a state-of-the-art information system that many developed countries would envy. The next step is greater consolidation and better presentation of information for the general public, education sector stakeholders and policy makers. Below are the review team's main recommendations. These are intended to improve transparency and establish a comprehensive, user-friendly suite of information systems that will enable students, TEIs and policy-makers to find all the information they seek about the tertiary education system and to make better-informed choices and decisions.

Recommendations

The review team recommends that the Ministry of National Education's current information systems should be supplemented to include more analyses and indicators and, where possible, be made more user-friendly. This would include consolidating information into one place so that users need not access different systems to get the "big picture" and creating indicators useful to the public, such as admittance rates and returns to investment based on programme fees and expected salaries. Improved technical notes on how information should be interpreted, and tools such as rankings based on user preferences, would allow users to make more informed decisions. Finally, as the public is not well informed about the government's information systems, more promotion and marketing would be helpful to make the available information more widely known, particularly to secondary schools. Teachers, guidance counsellors and secondary students should all be made aware of the existence of these information systems, as well as how to use them.

Ministry data should be systematically cross-checked with other sources of information, such as DANE household surveys, and the alternative information should also be made available to the public. Household survey data can provide useful information on access and equity as well as labour market outcomes. This information serves not only to check the validity of the Ministry's information (which would improve their credibility), but also to shed light on areas not covered by Ministry information, such as tertiary coverage rates by income quintiles.

The review team recommends increased efforts to integrate SENA fully into the Colombian tertiary education system, and into tertiary data collection, reporting, and analysis systems.

The review team recommends a study to check for possible biases in SPADIES data and in the socio-economic data gathered by ICFES. The number of observations in SPADIES analyses varies significantly, depending on the variables examined. This may be because data come from different sources (mainly TEIs, ICFES and ICETEX) and merging databases is rarely problem-free, but, as already explained in Chapter 3, is also because the socio-economic data is gathered from a self-administered survey when students sit the SABER 11 test. If students with particular characteristics are either more likely, or less likely, than average to respond to certain questions about socio-economic status, the resulting sample is non-random and may produce biased estimates. It is worth examining whether that is the case.

The review team recommends an external review of admissions processes and criteria at public and private universities and university institutions. The review should also consider the possibility of standardising processes and criteria, at least for all public universities.

The review team recommends establishment of a legal framework to ensure that all TEIs that receive any public funds, directly or indirectly, make detailed financial information public in a standardised, systematic manner.

Note

1. Chilean Congress Bulletin 7.880-04.

References

Chilean Congress Bulletin 7.880-04, 7913-04 and 7929-04.

Portafolio (2011), "Uno de Cada Diez Diplomas Académicos en Colombia es Falso", published on 31 May 2011, Portafolio, www.portafolio.co/portafolio-plus/uno-cada-diez-diplomas-academicos-colombia-es-falso; original write-up of the study: www.portafolio.co/archivo/documento/CMS-4541137.

Webpage www.universidad.edu.co.

Webpage www.universidadesdecolombia.com.

Chapter 9. Financing of tertiary education in Colombia

This chapter examines the availability of financial resources in support of Colombia's tertiary education development, looking in particular at resource mobilisation, utilisation and allocation.

The chapter closes with a summary of main findings and recommendations, including suggestions addressing the need to (i) increase public funding in tertiary education, (ii) reach a more equal distribution of public subsidies among public tertiary education institutions, and (iii) introduce performance-based mechanisms to allocate public resources to tertiary education institutions.

Introduction

The success of the Colombian government's ambitious plan to reach a 50% enrolment rate in tertiary education by 2014 hinges, in large part, on the availability of sufficient financial resources and increased reliance on allocation methods that encourage innovation among tertiary education institutions. To assess the impact and coherence of the financing strategy for tertiary education, this chapter examines the following dimensions:

- Resource mobilisation: is Colombia investing sufficiently at the tertiary education level?
- Resource allocation: are public resources distributed in a manner that encourages innovation and rewards performance?
- Resource utilisation: are available resources used in an effective manner?

Bearing in mind that Colombia aspires to become a member of the OECD, this chapter relies, for benchmarking purposes, on comparisons not only with countries in Latin America and the Caribbean (LAC) but also with advanced industrial nations.

Resource mobilisation

Overall Funding

The priority given to education by successive Colombian governments is reflected in relatively high funding levels. At about 8% of GDP, total expenditure on all levels of education has been quite constant and significant during the last decade. As shown by Table 9.1, tertiary education expenditure represents a fourth of the total, in the order of 2% of GDP.

Table 9.1 **Expenditure on education in Colombia (2000-2010)**

		2000	2003	2005	2007	2008	2009	2010	2011
Education (all levels)	Public expenditure on education as % of GDP	4.3	4.4	4.4	4.4	4.4	4.8	4.7	4.7
	Private expenditure on education as % of GDP	3.6	3.3	3.1	2.9	3.0	2.9	2.9	2.9
Tertiary Education	Public spending on tertiary education as a proportion of GDP	1.0	0.9	0.9	0.8	0.9	0.9	1.0	1.0
	Public spending on tertiary education as % of total expenditure on tertiary education[1]	46	45	45	46	45	48	50	50
	Total spending on tertiary education as % of GDP	2.1	1.9	1.9	1.8	1.9	2.0	2.0	2.0
Education (all levels)	Total expenditure on education as % of GDP	7.9	7.7	7.5	7.3	7.4	7.7	7.6	7.6

Notes:

(1) 2011 Preliminary data.

Sources: MEN; GDP 2000-2007: DANE; GDP 2008, 2009, 2010 and 2011: DNP.

Seen in the regional and international context, Colombia's resource mobilisation efforts for education are laudable. According to the statistics in Table 9.2, total spending on education, at more than 7% in 2008, is way above the OECD average of 5.9% and LAC average of 5.3%. The same is true of tertiary education expenditure, which amounted to 1.9% of GDP, compared to an OECD average of 1.5% and LAC average of 1.3%, respectively, in 2008.

Table 9.2 **Expenditure on education as a proportion of GDP in selected countries, 2008**

Countries	Expenditure for all levels of education – public and private sources (2008)	Total expenditure on tertiary education – public and private sources (2008)	Public expenditure on tertiary education (2008)
Denmark	7.1	1.7	1.6
Finland	5.9	1.7	1.6
Sweden	6.3	1.6	1.4
OECD average	**5.9**	**1.5**	**1.0**
France	6.0	1.4	1.2
Israel	7.3	1.6	0.9
Austria	5.4	1.3	1.2
Ireland	5.6	1.4	1.2
United States	7.2	2.7	1.0
Germany	4.8	1.2	1.0
Netherlands	5.6	1.5	1.1
New Zealand	6.6	1.6	1.1
Mexico	5.8	1.2	0.9
Portugal	5.2	1.3	0.9
Spain	5.1	1.2	1.0
United Kingdom	5.7	1.2	0.6
Brazil (3)	5.3	NA	0.8
Australia	5.2	1.5	0.7
Italy	4.8	1.0	0.8
Korea	7.6	2.6	0.6
Japan	4.9	1.5	0.5
Chile (1)	6.4	2.0	0.3
Argentina	6.1	1.2	0.9
Colombia (2)	**7.2**	**1.9**	**0.9**
LAC Average	**5.3(4)**	**1.3(5)**	**0.7(6)**

Notes:

1. *Education at a Glance 2010: OECD Indicators*. Data 2008.
2. Ministry of National Education.
3. Public expenditure only.
4. Average includes nine Latin American countries: Argentina, Brazil, Chile, Colombia, El Salvador, Guatemala, Mexico, Panama, Peru. Source: Author's estimates based on: UNESCO UIS, "Total Expenditure on Educational Institutions and Administration as a % of GDP". All sources. All levels. Retrieved on 21 December 2011; http://stats.uis.unesco.org/unesco/TableViewer/tableView.aspx.
5. Average includes eight Latin American countries: Argentina, Brazil, Chile, Colombia, Guatemala, Mexico, Panama, Peru. Source: Author's estimates based on: UNESCO UIS, "Total Expenditure on Educational Institutions and Administration as a % of GDP". All Sources. Tertiary. Retrieved on 21 December 2011.
6. Average includes nine Latin American countries: Argentina, Brazil, Chile, Colombia, Costa Rica, Guatemala, Mexico, Panama, Peru. Source: Author's estimates based on: UNESCO UIS, "Total Expenditure on Educational Institutions and Administration as a % of GDP". All sources. All levels. Retrieved on 21 December 2011.

Source: *Education at a Glance 2011: OECD Indicators.*

As reflected in the distribution of spending between public and private sources, Colombia's high expenditure rate, especially for tertiary education, is due to a relatively prominent level of private contributions linked to the high enrolment in private institutions. Private expenditure represents exactly half of overall spending at the tertiary education level in 2011 (Table 9.3).

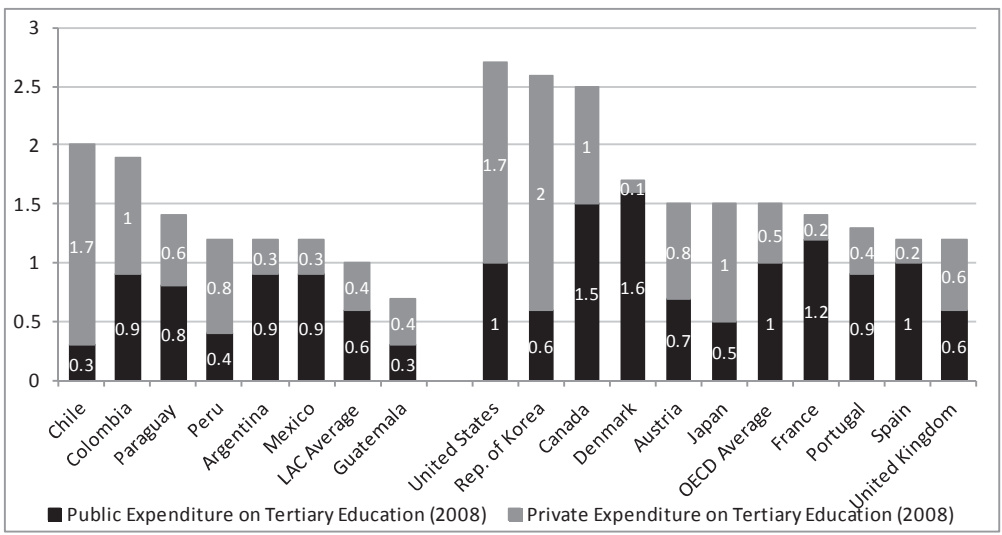
Table 9.3 **Evolution of public and private expenditure on tertiary education in Colombia (%)**

	2007	2008	2009	2010	2011
Public expenditure on higher education / GDP	0.86	0.87	0.94	1.08	0.98
Private expenditure on higher education / GDP	0.99	1.00	1.02	0.99	0.98
Total expenditure on higher education / GDP	1.84	1.87	1.96	2.06	1.96

Source: MEN (2011), Presentation made by the Minister of National Education to the review team, 18 October 2011.

This high proportion of private expenditure (between 55 and 50%) is significantly more than the OECD average of 31% and the LAC average of 46%. In the region, Colombia has the second highest proportion of private expenditure after Chile, as indicated by Figure 9.1.

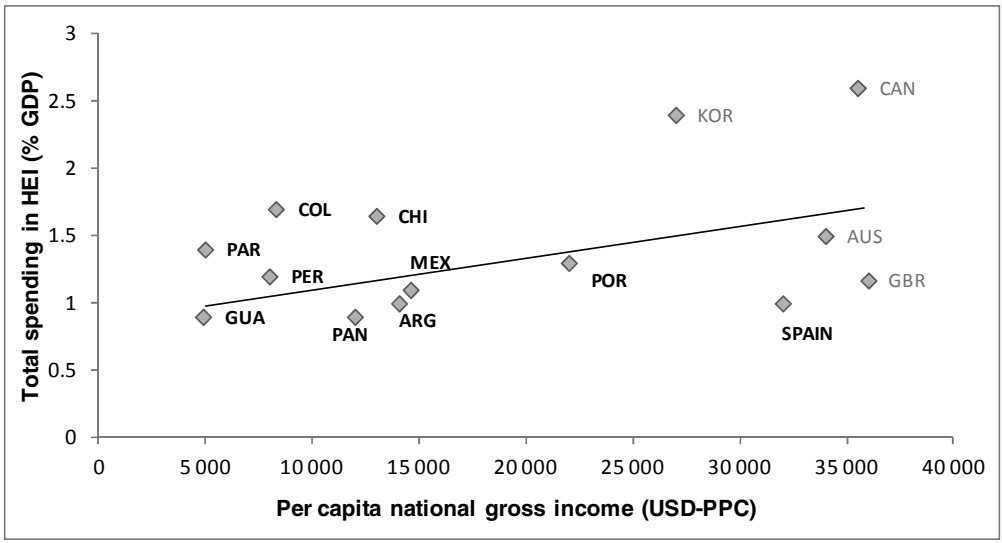
Figure 9.1 **Expenditure on tertiary education institutions as % of GDP, by sources of funding (private vs. public) 2008**



Sources: OECD *Education at a Glance* 2011 and 2010*;* CINDA (2011). Based on UNESCO, *Global Education Digest 2010.*

Considering Colombia's economic development level, this national effort on behalf of tertiary education is well above that in most countries worldwide, as illustrated by Figure 9.2, which shows the level of tertiary education expenditure related to per capita income.

Figure 9.2 **Level of economic development and tertiary education expenditure (2008)**



Source: Brunner (2011), *Educación Superior en Iberoamérica: Informe 2011*, CINDA.

Another way of benchmarking Colombia's spending performance is to look at expenditure per tertiary student as a proportion of GDP per capita. At 26.2% in 2008, Colombia was similar to OECD members with an average of 25.6%. In fact, Colombia has one of the highest percentages in the Latin American region, after Mexico and Brazil. However, Brazil is known for its high unit costs due to a lack of efficiency in resource utilisation (Salmi, 2008).

Public funding

Over the past decade, education expenditures have increased faster than GDP. The growth in education expenditure was 48.4%, compared to an overall increase in GDP of around 40% during the same period. Public expenditure has risen slightly faster than private expenditure. From 2002 to 2010, public spending increased by 67.3%, while private spending grew by only 25% (Table 9.4).

Table 9.4 **Total spending on education by levels (2002-2010, COP billions)**

	2002	2003	2004	2005	2006
Total expenditure on education	28.4	29.2	31.0	32.0	35.4
Public expenditure	15.6	16.7	18.2	18.6	21.3
Total public expenditure on primary and secondary education	11.9	12.9	14.1	14.6	16.9
Total public expenditure on tertiary education	3.4	3.4	3.7	3.7	4.0
Other expenditure, public sector	0.4	0.4	0.4	0.3	0.4
Private spending	12.8	12.5	12.9	13.4	14.1
Total private expenditure on primary and secondary education	5.4	5.0	4.9	5.2	5.3
Total private expenditure on tertiary education	4.2	4.1	4.4	4.5	4.9
Other expenditure, private sector	3.2	3.4	3.6	3.8	3.9

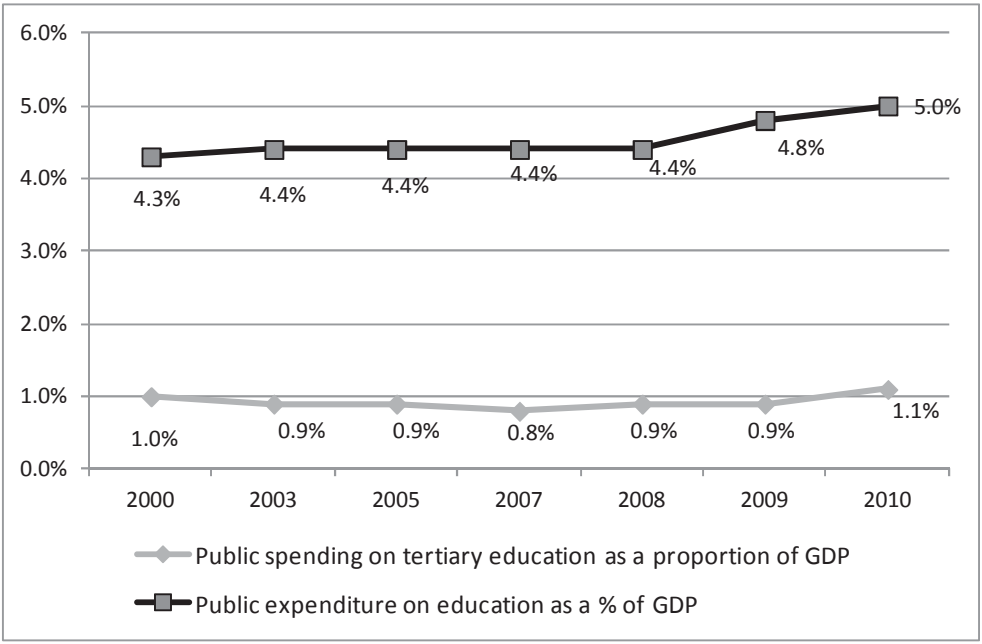
	2007	2008	2009	2010	Increase
Total expenditure on education	36.7	37.9	40.1	42.1	48.4%
Public expenditure	22.2	21.4	24.6	26.1	67.3%
Total public expenditure on primary and secondary education	17.7	18.1	19.5	20.1	69.6%
Total public expenditure on tertiary education	4.2	4.2	4.8	5.7	67.6%
Other expenditure, public sector	0.3	0.3	0.3	0.3	-25.0%
Private spending	14.6	15.0	15.5	16.0	25%
Total private expenditure on primary and secondary education.	5.5	5.6	5.8	6.0	11.5%
Total private expenditure on tertiary education	4.9	5.1	5.2	5.4	28.2%
Other expenditure, private sector	4.2	4.3	4.5	4.6	44.3%

Note: Values in COP billions, 2010.

Source: *Memorias Revolución Educativa 2002-2010: Acciones y Lecciones* (MEN, 2010). Based on: Public Sources: National Budget (Presupuesto General de la Nación). Private sources: DANE – Survey on income and spending until 2007. Years 2008-2010: estimations by the Office of Planning and Finance, Ministry of National Education.

Available statistics indicate that public expenditure on education in Colombia accounted for 15% of total government expenditure in 2008, which is significantly higher than the OECD average (12.9%). However, within the education budget, the proportion of expenditure going to tertiary education has tended to decline slightly over the past few years, from just under a quarter in 2000 to just over a fifth in 2010, as illustrated by Figure 9.3.

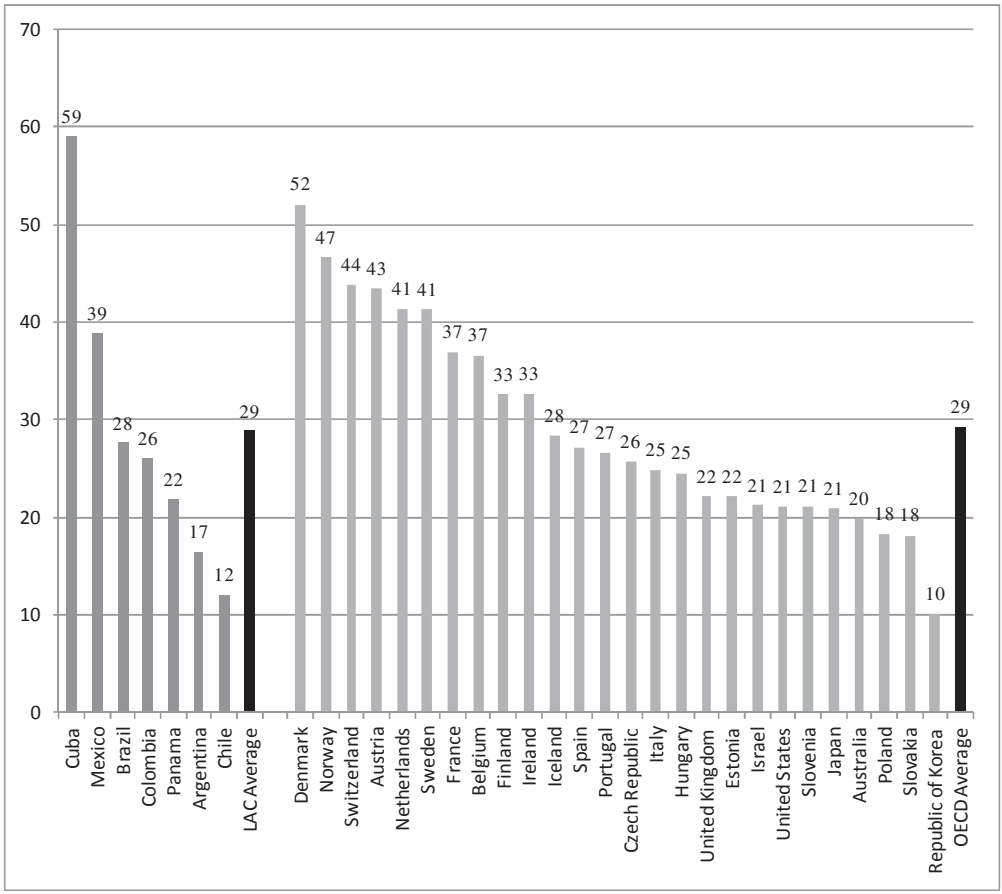
Figure 9.3 **Evolution of education expenditure (2000-2010, %)**



Source: MEN, retrieved on 20 December 2011, http://201.234.245.149/seguimiento/estadisticas/principal_ind.php?seccion=21&id_categoria=4&consulta=gasto_porc_sector&nivel=21&dpto=&mun=&ins=&sede=.

The level of Colombia's public commitment to tertiary education is less impressive than its overall spending. This is illustrated by Figure 9.4 which looks at per student public spending in an international perspective. Compared to Latin American countries as well as OECD nations in general, Colombia's contribution is in the middle range.

Figure 9.4 **Public expenditure per tertiary education student as % of GDP per capita (2008)**



Note: LAC average and OECD average are calculated on the basis of the countries in the graph.

Source: UNESCO, UIS, retrieved on 23 December 2011, http://stats.uis.unesco.org/unesco/TableViewer/tableView.aspx.

Public resources for tertiary education are channeled through five main sources, namely the Ministry of National Education, departments, municipalities, SENA and ICETEX. These contributions, and their evolution over time, are presented in Table 9.5.

Table 9.5 **Evolution of public spending by institutional channel (COP million)**

Categories	2000		2004	
National transfers to TEIs	1 174 043	82.6%	1 601 004	76.1%
Transfers to TEIs from decentralised entities[1]	78 197	5.5%	109 371	5.2%
SENA Professional Technical	N/A	N/A	29 340	1.4%
SENA Technological	N/A	N/A	10 844	0.5%
ICETEX	105 164	7.4%	243 463	11.6%
Operational expenditure MEN (all levels)	15 133	1.1%	17 727	0.8%
MEN investment in quality, promotion, etc.	0	0.0%	43 733	2.1%
ICFES	49 028	3.5%	49 512	2.4%
Total	1 421 565	100.0%	2 104 994	100.0%

Categories	2008		2010	
National transfers to TEIs	1 964 417	62.9%	2 350 887	59.4%
Transfers to TEIs from decentralised entities[1]	154 587	4.9%	169 780	4.3%
SENA Professional Technical	114 900	3.7%	8 036	0.2%
SENA Technological	115 309	3.7%	360 866	9.1%
ICETEX	559 950	17.9%	794 377	20.1%
Operational expenditure MEN (all levels)	33 539	1.1%	45 744	1.2%
MEN investment in quality, promotion, etc.	148 179	4.8%	159 945	4.0%
ICFES	31 313	1.0%	68 487	1.7%
Total	3 122 194	100.0%	3 958 122	100.0%

Notes (1): Exact values of transfers to TEIs from decentralised entities are provided until 2006 and values for 2008, 2010 and 2011 are based on MEN estimates. The resources transferred to ICETEX represent government subsidies that are used by ICETEX in combination with its own resources. ICFES serves the entire education system through the tests that it organises.

Sources: MEN, SENA.

These figures show a clear trend, over the past ten years, of a relatively lower budget share going to the public universities and technical institutes, and increased funding for SENA programmes and ICETEX. This corresponds to a strategic choice in favour of expanding coverage through vocational training (SENA) and private provision, with appropriate student aid (ICETEX).

Income diversification

Colombian public universities and non-university institutions have two principal funding sources to supplement the government's budgetary contribution: tuition fees and income generation from contracts and donations. With respect to the first source of additional income, Table 9.6 shows the average level of tuition fees paid in Colombian public universities in COP and USD equivalents.

Table 9.6 **Average fees in public and private universities in Colombia**

Average yearly fees (2 semesters per year)	2009	2010	2011
Public universities (average 18 public universities)	COP 1 232 085 *(USD 688)*	COP 1 194 426 *(USD 617)*	TBC
Private universities (average 59 private universities)	COP 5 619 660 *(USD 3 136)*	COP 5 907 429 *(USD 3 297)*	COP 6 220 077 *(USD 3 471)*

Note: USD figures based on USD exchange rate of 2 April 2012: COP 1 792/USD.
Source: MEN.

Even though tuition fees in Colombian public universities are about six times less than in private ones, seen in the regional context they are significant compared to most Latin American countries. Table 9.7 shows the distribution of LAC countries by level of tuition fees.

Table 9.7 **Tuition fees in public universities in Latin American countries (2011)**

No Fees	Argentina, Brazil, Cuba, Ecuador, Guatemala, Honduras, Nicaragua, Venezuela
Less than USD 500	Bolivia, El Salvador, Mexico,[1] Panama, Peru, Uruguay
Between USD 500-1 000	Colombia, Costa Rica
More than USD 3 000	Chile

Note (1): Only in a few universities in the Northern states (Aguascalientes, Baja California, Nuevo Leon, Sonora).

Source: *Education at a Glance 2007: OECD Indicators*, for Chile; for the other countries, field visits by Jamil Salmi.

Contrary to what happens in other regions of the world, which are characterised by very diverse funding situations across countries in terms of levels of public investment and cost sharing in tertiary education, Latin America shows a very homogeneous pattern. With two exceptions – Chile with high levels of private funding and Cuba with high levels of public funding – all countries have low levels of cost sharing and low to medium levels of public funding. Colombia fits into the latter category (Table 9.8).

Table 9.8 **Patterns of public funding and cost-sharing in Latin America**

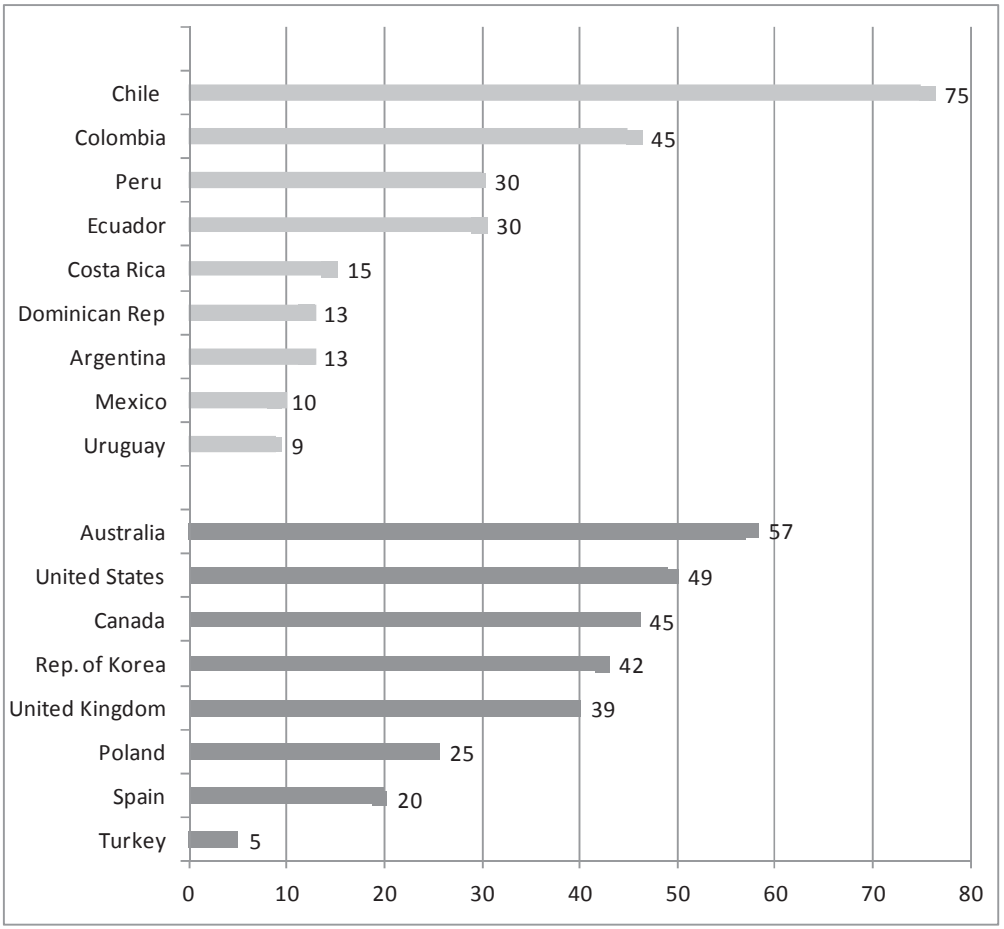
		Tertiary education public expenditure as % of GDP in LAC		
		0.5	0.5 – 1	1
Tuition as % of unit cost in public universities	40	Chile	None	none
	20 - 40	none	None	none
	20	Guatemala, Peru, Dominican Republic, El Salvador	Argentina, Brazil, Colombia, Mexico, Paraguay	Costa Rica, Cuba, Jamaica, Venezuela

Sources: UIS and CINDA (2011), UIS retrieved on 3 Jan 2012, http://stats.uis.unesco.org/unesco/TableViewer/document.aspx?ReportId=136&IF_Language=eng&BR_Topic=0.

Colombian public universities have other income sources besides tuition fee payments, such as donations, contract research, consultancies, continuing education and other miscellaneous activities. Some universities also benefit from dedicated fiscal resources. For instance, Law 122 of 1994 authorises the issue of special administrative stamps to benefit the University of Antioquia, for an annual value not to exceed COP 200 million (about USD 120 million). The resources generated through the sales of these special administrative stamps are dedicated to investment, infrastructure maintenance, sport and arts equipment, ICT, libraries and laboratories.

Overall, the proportion of self-generated resources in Colombian public universities, including tuition fees and research contracts, amount to 45% of their total income. This represents significant progress over the past two decades, up from 18% in 1993 and 27% in 2003. Today, the income generation performance of Colombian public universities is above the average of Latin American countries as well as many OECD countries (Figure 9.5). Relevant experience from Europe is presented in Box 9.1.

Figure 9.5 **Self-generated income in public universities as a proportion of total resources (c. 2010)**



Note: Self-generated income represents principally tuition fees and income from consultancies and research contracts.

Sources: CINDA. For Poland and Turkey, database of the International Comparative Higher Education Finance and Accessibility Project, downloaded on 21 February 2008 from www.gse.buffalo.edu/org/IntHigherEdFinance/. For the United States, National Center for Education Statistics database, downloaded on 4 January 2012 at http://nces.ed.gov/programmes/digest/d10/tables/dt10_364.asp?referrer=list.

Box 9.1 **Lessons from fund-raising efforts in Europe**

A recent European Commission survey on the fund raising efforts of European universities found that success was related to three main factors. The first is what is defined as institutional privilege, *i.e.* the wealth and reputation of the university, as well as pre-existing relationships with potential donors. The second is the level of commitment of senior academic leaders and other research staff in this regard. The third and final factor has to do with the environmental of a university, namely its location and the geo-political context in which it operates.

With regards to the type of donors, the survey showed that European universities raise money mostly from private corporations, while contributions from alumni are much less frequent.

Experience indicates that successful fund-raising involves the following dimensions:

- Commitment of management and governing bodies.
- Full participation of academic staff.
- Financial and human investment in fund-raising activities.
- Rewards for staff successful in attracting philanthropic donations.
- Production and dissemination of materials for fund-raising purposes, such as a website, leaflets and brochures.
- Use of a database to maintain and update records on interactions with donors.
- Reporting on philanthropy in universities' annual financial reports.

One of the successful cases of effective fund-raising efforts came from the United Kingdom, where a government-sponsored matching funding scheme was set up in 2008 following similar positive experiences in Singapore and Hong Kong. Since August 2008, the government has matched any eligible gift made to a participating tertiary education institution, for an amount not to exceed GBP 200 million.

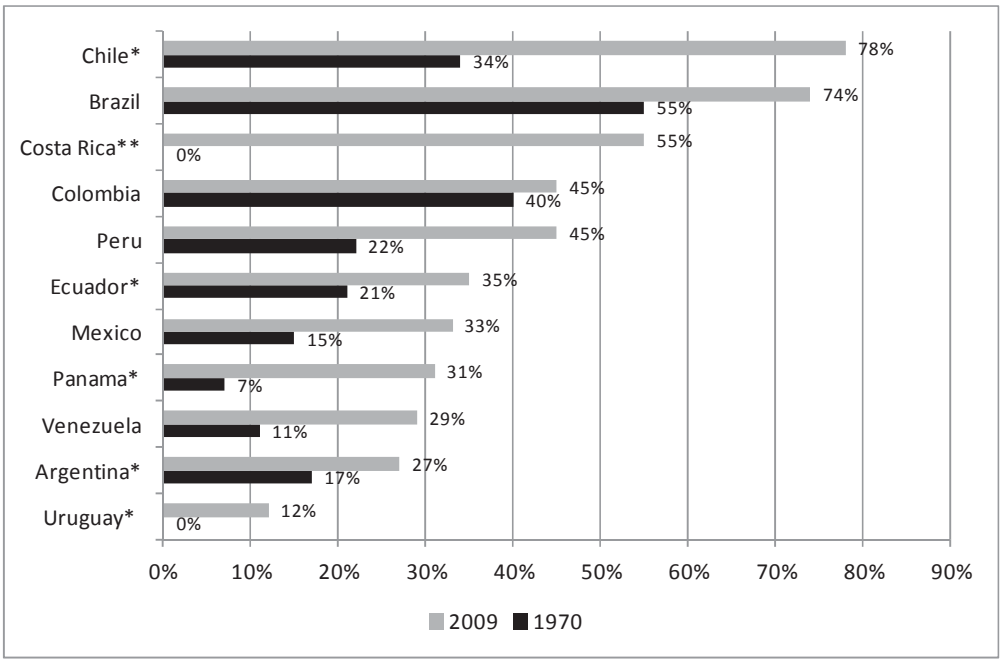
Sources: European Commission (2011), *Giving in Evidence: Fundraising from Philanthropy in European Universities*, Brussels, http://ec.europa.eu/research/era/docs/en/fundraising-from-philanthropy.pdf.

Universities UK (3 April 2008), "Information for Members: Formal Launch of the Matched Funding Scheme for English HE institutions", *Investor in People*, London.

Private tertiary education

For more than two decades, Colombia has been among the Latin American countries with the highest proportions of private sector enrolment in tertiary education, reaching 60% in the late 1990s (Figure 9.6). Only Costa Rica, Brazil and Chile have a higher share.

Figure 9.6 **Share of private tertiary education enrolment in selected Latin American countries (1970, 2009)**



Notes:
* 2008 data.
** 2006 data.
Sources: UNESCO, UIS, retrieved on 9 August 2011; CINDA, 2009 and García Guadilla, 1998.

As discussed earlier, the resources invested by private providers, combined with the tuition fees paid by students and their families, have represented a significant share of the total investment in tertiary education, complementing the state's contribution.

But against the general trend observed not only in Latin America but also in most parts of the world, Colombia is now seeing a gradual diminution of private sector enrolments, as illustrated by Table 9.9. Between 2002 and 2010, the share of enrolment in private institutions has gone down

from 58% to 45%, even though these private institutions continue to account for 72% of the total number of tertiary education institutions in the country, up from 70% in 2001.

Table 9.9 **Evolution of private sector enrolment, 2002-2010**

Year	Public	Private	Total	Public (%)	Private (%)
2002	416 722	583 426	1 000 148	41.67%	58.33%
2003	470 532	579 500	1 050 032	44.81%	55.19%
2004	541 274	572 452	1 113 726	48.60%	51.40%
2005	588 051	608 639	1 196 690	49.14%	50.86%
2006	661 612	622 453	1 284 065	51.52%	48.48%
2007	739 468	621 680	1 361 148	54.33%	45.67%
2008	827 259	665 035	1 492 294	55.44%	44.56%
2009	877 346	707 949	1 585 295	55.34%	44.66%
2010[1]	930 307	761 490	1 691 797	54.99%	45.01%

Note (1): Preliminary data.

Source: MEN, SNIES. Web Page MEN, retrieved on 9 August 2011.

According to interviews during the team's field visits, this unusual evolution in Colombia is due to the perceived better quality of the public universities and their much lower cost. This will have a significant bearing on the prospects for achieving a financially sustainable expansion strategy.

Implementing the government's expansion and improvement plans: searching for financial sustainability

The cost of the government's ambitious and laudable tertiary education development plan, aiming at expanding coverage up to 50% of the age group and improving the quality and relevance of teaching and learning across the board, has not been calculated in detail. It is therefore important to develop a projection model and run a series of scenarios to assess the financing gap carefully, and to explore various alternatives that would allow the plans to be implemented in a financially sustainable way. Under any scenario, the need for additional resources will be considerable.

In any country, five avenues to a sustainable financing strategy are available: *(i)* increasing public subsidies, *(ii)* improving internal efficiency, *(iii)* introducing greater cost-sharing in public institutions, *(iv)* relying more on private sector investment and provision, and *(v)* investing more in short duration or distance education programmes. In Colombia, these five approaches have varying potential for resource mobilisation.

First, according to government sources, there is little room for significant increases in budgetary support for the tertiary education sector. Part of the new fiscal resources coming from the mining sector (*regalías*) will benefit some of the public universities through additional research funds channeled through COLCIENCIAS, but there is limited fiscal space to raise the recurrent budget to any significant extent. One of the main demands of the student movement in 2011 was to reallocate resources from the defence budget to the education one. No one can argue against this demand in theory. But in practice, the prospects of such budget reallocation appear very limited in a country that still faces armed insurrection.

The second avenue is increased internal efficiency. As will be shown in the third section of this chapter, there is a lot of room for freeing up public resources through reduced dropout rates and shorter time to degree completion. The challenge will be to make progress in that direction without compromising the quality of teaching and learning.

Cost sharing in public tertiary education institutions is the third option for increased resource mobilisation. In theory, the case for moving in that direction is strong. In Colombia as in most Latin American countries, public universities that continue to offer "free" education are likely to be more regressive than those that charge fees, because of the high proportion of students from wealthier families – well prepared in elite private high schools – who gain access to the top public universities without having to contribute to the cost of their tertiary education (see Chapter 3 on Access and Equity). A recent study by researchers at Jorge Tadeo Lozano University revealed that the probability of entering university for a high school graduate from strata 5 or 6 is almost 4 times higher than that of a graduate from strata 1 or 2. According to the former Rector Isaza, "what university education does is perpetuate social inequalities in the country, preparing the rich for leadership positions and the poor to be workers" (Isaza, 2011). An estimate of the benefits incidence of public subsidies in tertiary education shows that the richer quintiles receive a disproportionately high share of resources (Table 9.10). Students from the fifth and highest quintile, for instance, obtain almost half the total amount of subsidies going to public universities.

Table 9.10 **Benefits incidence of public subsidies in public universities, 2008**

Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
3.7%	6.7%	15.4%	28.4%	45.8%

Source: Núñez Méndez (2009).

The present level of tuition fees in the Colombian public universities is certainly not prohibitive for students from strata 4, 5 and 6, as illustrated by Table 9.11 which shows fees as a percentage of per capita income in several countries.

Table 9.11 **Tuition fees as percentage of per capita gross national income**

Country	Public universities	Private universities
Australia	11.3%	21.9%
Canada	10.0%	N/A
Japan	11.8%	18.5%
South Korea	16.3%	31.1%
New Zealand	6.5%	N/A
United Kingdom	5.2%	4.9%
United States	11.4%	42.0%
Italy	3.3%	11.5%
Netherlands	4.4%	4.4%
Israel	12.0%	29.2%
Chile	27.9%	32.0%
Colombia	**11.2%**	**55.4%**

Sources: *Education at a Glance 2007: OECD Indicators*; *Background Report* [MEN, 2011]; *World Economic Indicators*, World Bank.

Unfortunately, few democratic countries in the world have managed to introduce tuition fees in public universities in the recent past. Australia, the Netherlands, New Zealand and England stand out as exceptions in that regard. Any attempt to introduce or increase tuition fees in Latin America has been met with strong political opposition, as vividly illustrated by the ten-month strike at the UNAM, Mexico's flagship university, in 1999. More recently, the 2011 student protests in Chile, echoing similar complaints against excessive fees in South Korea, have challenged the viability of maintaining high levels of tuition fees in these two countries that have the most extreme levels of cost sharing in the world. The irony is that if higher fees are introduced, Colombia, with its well-established student loan system (see Chapter 3), has the right student aid support mechanism to ensure that no academically qualified student from a poorer family need be denied access to tertiary education for financial reasons; meanwhile, better-off students would be contributing a fairer share of the cost of their own studies.

The fourth avenue for resource mobilisation is increased reliance on the private sector, but the prospects are not promising. As signalled earlier, Colombia is one of the few countries in the world where the proportion of private enrolment has gone down in recent years. Furthermore, the vehement opposition to the government's proposal to allow for-profit institutions signals that this avenue has no future in the short to medium term.

The fifth possible approach is to continue diversifying the public provision of tertiary education. The government has already successfully promoted the development of technical and technological institutes and intends to continue in that direction. The review team fully supports this strategy, provided more budgetary resources are transferred to these institutions so as to give the clear message to Colombian society that these institutions are not a second-class option, but an equally effective way of getting a high-quality professional education.

A complementary path would be to develop the type of open universities and distance education programmes that have been found to benefit large segments of population in other parts of the world, such as India, South Africa, Thailand and Turkey. Thailand's two Open Universities, for instance, have been the government's principal instrument for expanding access and reaching out to students from rural areas and the poorest social stratum.

Resource allocation

Anatomy of the present allocation system

Contrary to what happens in basic education, where the Colombian government relies on an innovative funding formula, a very traditional, conservative resource allocation approach is followed in tertiary education. With the exception of the resources dedicated to student loans, the Ministries of National Education and Finance do not apply any real funding formula and the budget that tertiary education institutions receive is linked only marginally to performance measures. As is common in many developing countries, the direct transfer of public funds to universities and other tertiary institutions is principally based on historical trends and negotiations. According to Law 30 of 1992 (article 86), the main reference criteria for distributing direct government contributions to public universities and institutions are the budget and costs recorded in 1993, adjusted for inflation.

The present allocation model does not take unit costs into consideration, which means that no allowance is made for the distribution of students by levels (undergraduate and graduate students) and academic programme. The

model does not reward institutions for efficiency (minimising dropout, maximising completion rates) or relevance (employment outcomes of graduates), and does not even meet the additional costs that institutions incur as a result of increases in the number of enrolled students. This issue was raised and dealt with constructively in the new law that was presented to Parliament in 2011. But since that proposed law was withdrawn after student protests, the same, outdated allocation mechanisms continue to operate.

Only a very small part of the resources allocated by the Ministry of National Education, about 0.1% in 2010, is performance-based. And that tiny part applies only to the universities, not to the technical and technology institutes. The Ministry evaluates each university using variables such as faculty, enrolment, research, outreach and welfare. The results of this evaluation determine an additional contribution (approved by the CESU) allocated to each university on an annual basis.

As a result of the lack of clear and transparent rules and criteria to determine how the bulk of resources are allocated, the present pattern of public resources distribution is characterised by acute disparities. These appear at two levels: first, between universities and university institutions on the one hand and the technical and technological institutes on the other; secondly, among the public universities themselves.

To begin with funding disparities across the various sub-sectors within the tertiary education system, Table 9.12 below illustrates vividly how institutions – and through them their students – are treated very unequally in terms of per student allocation, without any cost, relevance or performance justification. Some public technical or technological institutes do not even receive any government budget to support their operational costs. Out of the 30 public technical and technology institutes in Colombia, only 19 actually receive regular public subsidies.

Table 9.12 **Per-student allocation of public subsidies by type of institution, 2011**

Type of Institution	Number of institutions	Public enrolment	Budget (USD million)[1]	Per student allocation (USD thousand)[1]
Universities	32	537 490	1 094	2 035
University institutions	14	33 622	6	179
Technical and technological institutes	16	63 655	19	302

Note (1): USD exchange rate of 2 April 2012: COP 1 792/USD.

Source: MEN, SNIES.

These figures attest to the fact that public institutions which are not universities are overwhelmingly under-financed. These wide variations are out of step with the situation in most other countries in the world, where the difference in per student subsidies across various types of institutions is not as great. To support that point, Table 9.13 places the Colombian case in an international perspective, showing that the allocation to non-university institutions is possibly one of the lowest in the world.

Table 9.13 **Per-student subsidy in public non-university institutions and universities, selected countries (%)**

Country	Per student subsidy in non-university institutions as % of subsidy in universities
Colombia	2
Australia	56
United States	42
Canada	59
France[1]	107
Germany	48
South Korea	44

Note (1): The higher figure for France reflects the fact that the "classes préparatoires", the "grandes écoles" and the technology institutes are better resourced than the universities.

Sources: MEN and Mikhail (2008).

The second issue of serious concern with respect to resource allocation is the unequal distribution of government subsidies among the 32 public universities in Colombia. Table 9.14, which shows the range of budget contribution per student, is evidence of the need for the Colombian government to move away from the present arbitrary distribution method, which does not take into consideration the number of students enrolled, the performance of a given university, the relevance of its programmes or even the costs involved.

This situation has major implications at two levels. First, it is likely to induce significant differences in performance. The recently published B.O.T. ranking of the top 50 Colombian universities, based on four main criteria (quality of education 40%, employability 15%, income generated through consulting services 15%, research 30%), shows a strong correlation between the rank of the best public universities and the level of public subsidies which they receive (B.O.T., 2011). The universities which are less generously financed will find it difficult to improve their education and research results. Secondly, the unequal distribution of resources has serious negative equity consequences for the students involved. The share of subsidies they receive is mostly determined by their regional origin and has little to do with their academic merit.

Table 9.14 **Per-student government subsidy in public universities, 2011**

University	Budget transfer	Number of students	Per student subsidy COP	Per student subsidy USD[1]
Universidad Nacional de Colombia	445 726 344 793	48 780	9 137 481	5 099
Universidad del Cauca	74 661 572 370	10 803	6 911 189	3 857
Universidad de Antioquia	218 359 754 465	32 733	6 670 936	3 723
Universidad Pedagógica Nacional	48 337 023 606	8 669	5 575 848	3 112
Universidad del Valle	164 032 497 984	30 427	5 391 018	3 008
Universidad de Nariño	45 103 067 213	8 963	5 032 140	2 808
Universidad del Atlántico	83 243 307 019	17 022	4 890 336	2 729
Universidad de Córdoba	53 256 076 882	11 390	4 675 687	2 609
Universidad Surcolombiana de Neiva	40 227 587 225	8 987	4 476 198	2 498
Universidad de Caldas	53 958 683 048	12 516	4 311 176	2 406
Universidad del Pacífico	9 277 092 405	2 214	4 190 195	2 338
Universidad industrial de Santander	87 061 277 191	21 429	4 062 778	2 267
Universidad de los Llanos	22 286 051 427	5 685	3 920 150	2 188
Universidad Pedagógica y Tecnológica de Colombia	91 199 422 490	24 349	3 745 510	2 090
Universidad de Cartagena	57 888 862 221	15.752	3 675 017	2 051
Universidad Tecnológica de Pereira	57 902 995 890	16.069	3 603 398	2 011
Universidad de Sucre	13 493 498 499	4 456	3 028 164	1 690
Universidad Colegio Mayor de Cundinamarca	14 630 925 886	5 099	2 869 372	1 601
Universidad Tecnológica del Chocó "Diego Luis Córdoba"	30 799 815 732	10 974	2 806 617	1 566
Universidad del Quindío	36 968 993 649	13 965	2 647 261	1 477
Universidad de la Amazonia	18 208 590 934	7 069	2 575 837	1 437
Universidad del Magdalena	34 351 031 905	14 023	2 449 621	1 367
Universidad Francisco de Paula Santander - Ocaña	8 787 138 592	3 735	2 352 648	1 313
Universidad de la Guajira	14 068 136 114	7 608	1 849 124	1 032
Universidad Popular del Cesar	20 384 594 102	12 782	1 594 789	890
Universidad del Tolima	32 384 388 675	26 352	1 228 916	686
Universidad Francisco de Paula Santander - Cúcuta	23 767 028 896	20 087	1 183 205	660
Universidad de Pamplona	27 241 160 456	27 390	994 566	555
Universidad de Cundinamarca	9 119 317 364	9.897	921 422	514
Universidad Militar Nueva Granada	9 172 993 545	13 021	704 477	393
Universidad Nacional Abierta y a Distancia - UNAD	30 808 263 815	56 417	546 081	305
Universidad Distrital Francisco José de Caldas	13 295 102 855	28 827	461 203	257

Note (1): USD exchange rate of 2 April 2012: COP 1 792/USD.

Source: MEN.

Towards a more objective and fairer resource allocation system

With the exception of Chile, all Latin American countries rely principally on a traditional historical/negotiated allocation system to distribute the annual recurrent budget among public universities and institutions. To facilitate a more effective use of public resources and encourage tertiary education institutions to be more innovative, the government of Colombia could consider introducing performance-based budget allocation mechanisms that would provide financial incentives for improved institutional results in relation to national policy goals. Four main types of innovative allocation mechanisms can be considered, separately or in combination, for this purpose.

- Output-based funding formulae: output or outcome measures are used to determine all or a portion of a funding formula, for example universities are paid for the number of students they graduate, sometimes with higher prices for graduates in certain fields of study or with specific skills.
- Performance contracts: governments enter into regulatory agreements with institutions to set mutual performance-based objectives.
- Competitive funds: financing is awarded to peer-reviewed proposals designed to achieve institutional improvement or national policy objectives.
- Vouchers: students receive coupons representing a given financial value that allows them to pay for their studies at any tertiary education institution of their choice.

Output-based funding. A more transparent and objective way to distribute funds for recurrent expenditures uses a formula linking the amount of resources spent on inputs such as the number of students or professors to some indicator of institutional performance such as the number of graduates. Examples of countries that have built performance into their funding formulas include:

- Denmark, which has a "taximeter model" in which 30 to 50% of recurrent funds are paid for each student who passes exams.
- The Netherlands, where half of recurrent funding is based on the number of degrees awarded.
- South Africa, where the funding formula takes both the number of students enrolled and the number of graduates into consideration.

- Australia, where funding for doctoral student places is based on a formula comprising graduations (40%), research outputs (10%) and research income, including competitive awards (50%).

A 2004 feasibility study in Malaysia calculated that the tertiary education system could save 10-30% of the operating budget of the public universities if resources were allocated on the basis of a funding formula using unit costs benchmarked against the better-performing institutions (Innovation Associates, 2004).

Performance contracts. Performance contracts are non-binding regulatory agreements negotiated between governments and tertiary education institutions which define a set of mutual obligations, usually performance targets to be achieved by the institution, sometimes with additional funding provided by the government. The agreements may be with entire systems of institutions or with individual institutions. All or a portion of funding may be based on whether institutions meet the requirements in the contracts. The agreements can be prospectively funded or reviewed and acted upon retrospectively.

Examples of countries or sub-national governments with performance contracts include:

- France, which since 1989 has devoted one third to half of the recurrent budget to four-year performance contracts. Payments are made when the contracts are signed, with a post-evaluation to assess the degree and effectiveness of implementation.
- Finland has contracts that set out general goals for the entire tertiary education system as well as specific goals for each institution.
- Denmark uses "development contracts" setting long-term improvement goals for the institutions.
- Spain, where several provinces (*comunidades*) have developed an interesting variation on this model called a "contract programme" (*contrato-programa marco de financiación global*) as a result of the decentralisation policy which has delegated significant powers to the autonomous regions of the country.
- Chile introduced "performance agreements" on a pilot basis in 2007, whereby four public universities are receiving additional resources to implement a carefully negotiated institutional improvement plan with clear progress and outcome indicators. The positive results of the pilot phase have led the Chilean government to announce, in 2011, its intention to extend the opportunity of participating in a performance agreement to all Chilean universities.

- The United States has examples of different types of tertiary education compacts (*e.g.* Maryland, Michigan, North Dakota, Virginia).

Competitive funds. In Latin America, Argentina and Chile are two nations that have used competitive funds to promote quality improvements and build capacity among tertiary education institutions. FOMEC (*Fondo para el Mejoramiento de la Calidad Universitaria*, Fund for University Quality Improvement) in Argentina and MECESUP (*Programa de Mejoramiento de la Calidad y Equidad de la Educación Superior*, Programme for Improvement of Quality and Equity in Higher Education) in Chile have demonstrated their usefulness and value as an effective and flexible resource allocation mechanism to help improve quality and relevance, promote pedagogical innovation, and foster better management – objectives that are difficult to achieve through funding formulae.

The government of Colombia could consider a similar mechanism as one of the principal channels for allocating public investment funds to tertiary education institutions. In this context, the recent positive experience of ICETEX, with its 38 million dollar competitive funding programme to increase coverage, should be carefully reviewed to learn lessons that could be applied to other government funding mechanisms.

As the Argentine and Chilean tertiary education communities have experienced first hand, one of the principal benefits of competitive funds is the practice of transparency and fair play through the establishment of clear criteria and procedures and the creation of an independent monitoring committee. One of the added benefits of competitive funding mechanisms is that they encourage universities to undertake strategic planning activities which help them formulate proposals based on a solid identification of needs and a rigorous action plan from a global institutional perspective that goes beyond the views of individual faculties.

Finally, one of the strengths of competitive funds is that they are more likely to be effective in improving quality than broader-based approaches such as negotiated budgets or funding formulae. Therefore, should the Colombian government consider establishing a competitive fund, it could also link the eligibility of interested tertiary education institutions to participation in the accreditation process, either on a voluntary basis as happened in Argentina or in a compulsory way as is the case in Chile.

Vouchers. The purpose of voucher funding is to promote greater competition among tertiary education providers in response to student interests by giving public support indirectly through the users rather than directly to the providers (Salmi and Hauptman, 2006). While many countries use voucher-type arrangements to pay institutions for enrolments driven by

student preferences, there are few that use demand-side vouchers in the form of coupons provided to students to pay for recurrent expenses. The most prominent examples can be found in the former Soviet Republics of Kazakhstan, Georgia and Azerbaijan which began implementing a voucher scheme in 2001, 2005 and 2010, respectively. In Kazakhstan, for instance, about 20% of the students receive voucher-like education grants that they carry with them to the public or private university of their choice, so long as they choose to study a grant-carrying subject. Eligibility of the students is determined by their score in the highly competitive Unified National Test (equivalent to SABER 11) and their subject choice.

Even after only a few years of operation, the Kazakh voucher system appears to be functioning as an effective allocation instrument to reward those institutions that are perceived as better performing and offer national priority subjects. All tertiary education institutions, public and private alike, are very attentive to their ability to attract education grant beneficiaries. The voucher scheme also seems to be a successful tool to promote the growth of the better quality private institutions which have been able to multiply the number of grant beneficiaries within the past three years (OECD/World Bank, 2007).

Lithuania is another relevant example. Under the voucher system introduced in 2009, 60% of all students are given the flexibility to enrol in the public or private university of their choice. One of the visible benefits of the voucher system has been that several universities had to close down or redesign their low quality programmes which did not attract enough students. Some mergers have also taken place, enabling consolidation into stronger institutions.

The Universities for All programme (ProUni) in Brazil constitutes an interesting variation of a voucher scheme. Under that programme that has been in place since the mid-2000s, the Brazilian government uses tax incentives to "buy" places in private universities for deserving, academically qualified low income students who were not admitted in the top public universities because of the limited number of places.

A similarly innovative programme, called Access with Equity (*Acceso con Equidad*), already exists in Colombia, in the Department of Antioquia. A public-private partnership bringing together the local authorities, a group of private universities and a number of private sector employers offers the opportunity to study in local private universities to academically qualified low income students who could not find a place in a public university. The students get a scholarship equivalent to 75% of the tuition costs and receive an ICETEX loan for the remaining 25%.

Resource utilisation

The third element to be analysed in this chapter on the financing of tertiary education in Colombia is resource utilisation, *i.e.* the extent to which public subsidies for tertiary education are used efficiently and effectively. Four dimensions are worthy of attention in the Colombian case: *(i)* internal efficiency, *(ii)* the deployment of academic staff for teaching purposes, *(iii)* spending on administrative staff and *(iv)* financial controls in the private segment of the tertiary education sub-sector.

Internal efficiency

As mentioned earlier in this report, Colombian universities are characterised by high dropout rates (see Table 9.15). Even though the situation has improved slightly in the past decade, the overall dropout rate is still close to 45% on average. This translates into wasted opportunities for many young Colombians and a poor use of sparse public resources for the country as a whole.

Table 9.15A **Dropout rate in public and private institutions by cohort (%)**

Level	Public	Private
University	43.5	46.6
Technological	55.4	53.0
Technical	60.5	59.2

Source: SPADIES, November 2011.

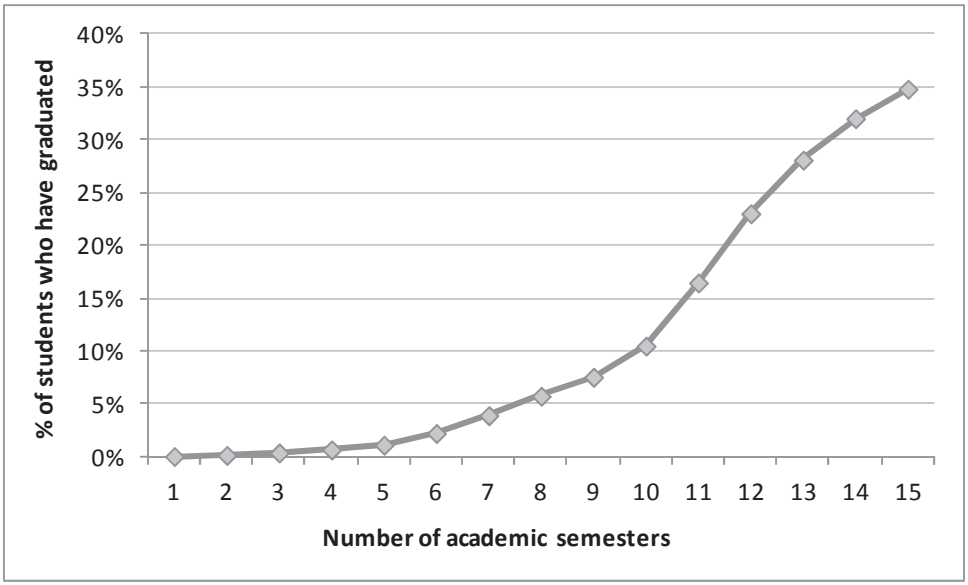
Table 9.15B **Dropout rate in public and private institutions by year (%)**

Year	Public	Private
2007	17.2	19.3
2008	14.1	16.2
2009	13.9	15.6
2010	13.2	14.6
2011	11.2	13.8

Source: SPADIES, November 2011.

Dropout rates vary greatly among institutions, regions, and academic programmes. As Table 9.15B shows, the dropout rate per cohort is a little lower in public than in private universities; but public T&T programmes have slightly higher dropout rates than private T&T programmes. Overall, however, in the years 2007-11 when there were always many more university than T&T students in the system, public institutions have consistently shown a lower annual dropout rate than private institutions.

Figure 9.7 **Graduation rate per cohort**



Source: MEN SPADIES, May 2011.

Another dimension of this problem is that students actually take much longer to graduate than theoretically expected. Figure 9.7 shows the graduation rate for various cohorts of students. Only 10% of the students graduate on time. About 30% of the students graduate with two years of delay, meaning that they take seven years on average to graduate instead of five.

International experience indicates that high levels of dropout are usually due to a combination of financial and non-financial barriers. The best approach, therefore, is to address both factors at the same time, which is the strategy that Colombia has followed. On the one hand, the Ministry of

National Education has supported regional projects developed by tertiary education institutions to assist students with academic problems by providing remedial courses, tutoring and tracking; to provide career guidance for secondary school students interested in entering tertiary education; and to improve institutional processes that help students adjust to university life. Between 2007 and 2010, the Ministry contributed COP 6.3 billion, while the 36 institutions involved matched this amount with another COP 6.8 billion. As a result, 39 663 students have received assistance through direct support programmes. Competency training has begun for 6 457 students through collaboration processes with high schools. Among the first group of 11 supported institutions, the average annual dropout rate decreased from 13.2% in 2007 to 11.5% in 2008. For the 19 institutions supported between 2008 and 2009, the annual dropout rate decreased from 18.7% in 2008 to 17.3% in 2009. The dropout rate among institutions that did not receive support increased slightly from 12.1% in 2008 to 12.4% in 2009. At the beginning of 2010, the Ministry selected 6 more projects.

On the other hand, ICETEX has taken the lead in providing financial support to prevent needy students from abandoning their studies for economic reasons. The impact of this has already been mentioned in Chapter 3. Suffice to mention here that the Colombian government and the concerned institutions are well aware of this serious dropout issue and have begun to address it a consistent and effective way. The next phase should build on the most successful projects implemented so far and scale them up.

Some countries have also used negative incentives to improve degree completion times, on the assumption that subsidised education does not help motivate students to graduate on time. In several German States, for example, students who take more than two years of additional time to graduate have to pay so called “long term fees” as a deterrent.

The long formal duration of first degree studies (five years for a bachelor’s degree) is a structural feature that affects the ability of Colombian universities to operate as efficiently as they could. While a good number of private universities and a few public ones have moved to reduce the duration of their bachelor’s degrees, the majority of public universities are keen on maintaining the traditional degree structure, arguing that shorter degrees would result in a loss of quality.

The review time is not convinced by the public universities' argument. Even if students take no additional time, Colombian first degrees generally take one year longer, often take two years longer, than similar degrees in North America or Europe. This represents a significant social cost for the country, compounding the issue of over-staying. Aligning the duration of Colombian first degrees with international practice would permit the redeployment of a significant proportion of the resources currently used in tertiary education, with resulting savings for students and their families. It should also boost students' chances of completing their programmes and reduce dropout. The MEN could use financial incentives and the accreditation system to encourage Colombian universities to move in this direction.

Deployment of academic staff

While it is not easy to calculate the number of students per teacher due to a lack of consistency in the definition of full-time and part-time lecturers, the data provided by the Ministry reveal a wide range, from 5 students per teacher at the University of Antioquia to 27 at the University of Cucuta (Table 9.16). It is not easy to establish a clear relationship between low student-teacher ratios and high quality, if full institutional accreditation is taken as the mark of high quality. The seven universities[1] with this accreditation are shaded in Table 9.16: their ratios range from 5 to 16 students per teacher. In view of these major differences, it would be useful to undertake an in-depth study of the deployment of academic staff in public universities to see how this relates to the quality of teaching and learning.

Administrative expenditure

Another way of looking at resource utilisation is to compare how much public universities spend on administrative functions relative to educational activities. Table 9.17 shows the proportion of administrative costs in the universities' total budget, ranking them from most efficient to least efficient, and again highlighting in grey those with high-quality accreditation. The data reveal stark differences across universities. The ratio ranges from 16% at Universidad Militar Nueva Grenada to 65% at Universidad Nariño; in universities with VHQA (voluntary high quality accreditation) the ratio ranges from 25% to 63%. In all, seven universities spend more than half their budget on administrative expenses, which may result in insufficient resources being dedicated to the educational side. It would be desirable for the MEN to look into this issue carefully and encourage those universities to explore ways of rebalancing their budget towards more spending for teaching and research.

Table 9.16 **Deployment of academic staff in public universities: student/teacher ratio, 2010**

University	Student/teacher ratio
Universidad de Antioquia	**5**
Universidad Pedagógica Nacional	7
Universidad-Colegio Mayor De Cundinamarca	8
Universidad del Quindío	8
Universidad Militar-Nueva Granada	8
Universidad de Nariño	10
Universidad de Pamplona	10
Universidad Nacional de Colombia	**10**
Universidad de Cartagena	10
Universidad del Pacífico	11
Universidad del Tolima	11
Universidad de La Amazonia	11
Universidad de Cundinamarca-UDEC	12
Universidad del Cauca	12
Universidad de La Guajira	12
Universidad Tecnológica de Pereira - UTP	**13**
Universidad Tecnológica del Chocó - Diego Luis Córdoba	13
Universidad Francisco de Paula Santander - Ocaña	13
Universidad Industrial de Santander	**13**
Universidad de Sucre	13
Universidad de Caldas	**13**
Universidad Popular del Cesar	14
Universidad Surcolombiana	14
Universidad del Valle	**15**
Universidad Pedagógica Y Tecnológica de Colombia	**16**
Universidad Distrital - Francisco José de Caldas	16
Universidad Nacional Abierta y a Distancia UNAD	16
Universidad de Los Llanos	17
Universidad del Atlántico	18
Universidad de Córdoba	18
Universidad del Magdalena	18
Universidad Francisco de Paula Santander - Cúcuta	27
Average	**11**

Source: MEN, SNIES.

Table 9.17 **Administrative expenditure in public universities, USD thousands,[1] 2011**

Universities	Total administrative expenditure – operating expenses	Total expenditure	Administrative expenditure – operating costs
Universidad Militar-Nueva Granada	6 726.6	4 2762.6	15.70%
Universidad Popular del Cesar	4 956.2	2 1824.4	22.70%
Universidad de Sucre	2 775.2	1 1596.5	23.90%
Universidad Pedagógica y Tecnológica de Colombia	16 447.2	65 758.6	25.00%
Universidad de Pamplona	9 953.0	38 376.3	25.90%
Universidad del Cauca	14 685.6	56 046.3	26.20%
Universidad Francisco de Paula Santander -Cauca	5 992.1	20 414.7	29.40%
Universidad de la Amazonia	4 477.1	13 979.8	32.00%
Universidad del Tolima	1 1420.2	35 561.0	32.10%
Universidad del Valle	4 9387.1	150 553.0	32.80%
Universidad Surcolombiana	11 542.0	34 401.0	33.60%
Universidad del Quindío	12 541.2	33 679.2	37.20%
Universidad-Colegio Mayor de Cundinamarca	5 142.0	13 685.7	37.60%
Universidad del Atlántico	13 991.6	36 662.7	38.20%
Universidad del Magdalena	14 544.6	38 057.7	38.20%
Universidad Nacional de Colombia	214 641.8	540 363.5	39.70%
Universidad Francisco de Paula Santander - Ocaña	2 120.3	5 324.9	39.80%
Universidad Tecnológica de Pereira	23 884.3	58 895.8	40.60%
Universidad Industrial de Santander	49 568.6	110 330.9	46.10%
Universidad Distrital-Francisco José de Caldas	40 698.2	86 170.9	47.20%
Universidad de Caldas	26 128.7	55 011.1	47.50%
Universidad de los Llanos	10 106.3	20 548.9	49.20%
Universidad de Cundinamarca	9 352.0	18 871.8	49.60%
Universidad de Córdoba	27 211.1	52 533.8	51.80%
Universidad de la Guajira	11 642.7	20 186.5	57.70%
Universidad de Cartagena	33 079.6	56 990.4	58.00%
Universidad Tecnológica del Chocó - Diego Luis Córdoba	15 442.1	26 421.7	58.40%
Universidad del Pacífico	4 652.5	7 567.6	61.50%
Universidad de Antioquia	191 450.4	305 504.3	62.70%
Universidad de Nariño	38 377.7	59 287.3	65.40%

Note (1): USD exchange rate of 2 April 2012: COP 1 792/USD.

Source: MEN, SNIES.

Generally speaking, the team's field visits showed that public universities are still constrained by rigid civil service rules that prevent them from operating with the management flexibility that modern universities in other parts of the world enjoy. These rules apply in particular when it comes to establishing linkages with firms and NGOs or developing international partnerships (organisation of international conferences, invitations to foreign professors, student mobility, etc.).

The review team also observed, during the field visits, limited interest or willingness to share resources among technical and technological institutes operating in the same cities or parts of a city. The departmental Secretaries of Education should take an active role in helping the local institutes under their jurisdiction to share physical and human resources in a more co-ordinated way.

Financial controls

The lack of rigorous financial oversight of private tertiary education institutions was of concern to several stakeholders interviewed during the field visits. The review team was repeatedly told that, even though all private institutions are supposed to be non-profit according to the existing legislation, in practice a significant number of providers operate like commercial organisations. This has two negative implications. First of all, the MEN ought to consider the risk that the owners of private institutions may be more inclined to maximise their profit share than to re-invest any surplus in the education side of the institution. Second, realising profits under the guise of non-profit status is a form of tax evasion, representing, as such, a social loss to the country. Concerns about money laundering through private tertiary education institutions have also been expressed.

The government of Colombia has been aware of this problem for many years. The present administration was determined to address it by introducing a clear legal and fiscal distinction between for-profit and non-profit providers in the new higher education law presented to Congress early in 2011. Unfortunately, political opposition to the measure was so strong that the President of the Republic intervened personally and instructed the government to cancel that provision in the new law (several months before the law itself was withdrawn).

Notwithstanding the intense political debate and the vocal opposition to for-profit institutions from many quarters of the tertiary education community, the government cannot ignore its duties to protect students from poor quality programmes, or the clear need to have robust controls over the financial practices of private tertiary education providers, as other countries

with an significant private sector have (United States, Brazil for example). It is important, therefore, to promote a dispassionate debate with the education community, in the hope that a future reform proposal meets with less resistance than the 2011 proposal. To facilitate a more objective discussion of the pros and cons of allowing for-profit institutions to operate, the matrix below outlines the main differences between non-profit and for-profit institutions that need to be taken into account.

Figure 9.8 **Key areas of differentiation between non-profit and for-profit private tertiary education institutions**

Non-profit corporation	*Criteria*	*For-profit entity*
	Driving Motive	
Welfare/public good		Profit
	Ownership	
Stakeholders	individual(s), corporation, trust, foundation, other ways of constituting an institution	Shareholders
	Profit Distribution	
Non-distributed (fully reinvested in infrastructure,educational inputs)		Distributed to shareholders
	Tax Liability	
Exempted (revenue, property, duties)	Tax holiday	Fully taxed at corporate rates
	Public Subsidy	
100% eligible		0% eligible

Source: Elaborated by Jamil Salmi, Richard Hopper and Svava Bjarnson.

Conclusion: minding the political dimensions of financing reform

> *There is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success than to take the lead in introducing a new order of things.*
>
> Machiavelli (*The Prince*)

> *Institutional change always implies conflict, and for it to be positive, it always requires consensus as well. No society can exist without conflict, or mechanisms for producing or resolving conflict through consensus.*
>
> Joan Prats (Director, International Institute for Governance, Catalonia)

When it comes to their financing strategy, tertiary education systems all over the world can be divided roughly into four main groups:

- Well-funded systems that rely almost exclusively on public funding (more than 1.5% of GDP) and public provision (Gulf countries, Scandinavian countries, Saudi Arabia, Singapore, Switzerland, Scotland).
- Public systems that are relatively well funded through a combination of public resources and a significant level of cost-sharing with appropriate student aid (Australia, Canada, England, Hong-Kong - China, Iceland, Netherlands, New Zealand).
- Mixed provision systems (more than 25% private enrolment) relatively well funded through public resources and high levels of cost-sharing in both public and private institutions (Chile, China, Japan, South Korea, United States).
- Public and mixed provision systems that tend to be insufficiently-funded overall (rest of the world).

Like most Latin American countries, Colombia belongs to the fourth group. On the positive side, it has a well-functioning student loan system that effectively supports needy students enrolled in private tertiary education institutions. But public funding of tertiary education is still insufficient, a

sizeable share of public subsidies is wasted because of high dropout levels, and the allocation mechanisms are outdated and inefficient. Formulating a sustainable financing strategy is therefore a priority if the Colombian government wants to transform its laudable plans for tertiary education expansion and improvement into reality.

As the events of 2011 have shown, any attempt to reform the present, inadequate funding approach is likely to be met with distrust and opposition. This means that the success of the tertiary education development strategy is conditioned by the government of Colombia's ability to address the political sensitivity of reform in a constructive and effective way. This involves four basic considerations. The first one is a social assessment of the proposed reform in order to review the needs and preoccupations of all major stakeholders. It starts with a scan of the tertiary education landscape with the purpose of identifying all concerned groups by asking the following questions: among all the identified stakeholders, who stands to gain and who stands to lose from the proposed reform? Who benefits in the existing system, and who will in the new one? Who is likely to be indifferent, supportive, or dissenting? This type of analysis and assessment allows distinctions to be made between those groups who may be positively impacted by the proposed reforms and those who are likely to lose privileges or be negatively affected by changes in existing financing modalities and practices. With the results of the social assessment in hand, government authorities can more easily identify potential champions who can be relied on to play a leading part in the implementation of the reform and better anticipate the possible reactions in the camp of potential "losers".

The second and perhaps more crucial step is the consensus-building phase. Translating a reform programme into reality depends to a large extent on the ability of decision-makers to utilise the social assessment tool to build consensus among the diverse constituents of the tertiary education community, allowing for a high degree of tolerance for controversies and disagreements. A potentially effective approach for addressing the political sensitivity of the proposed reforms is to initiate a wide consultation process concerning the need for and content of the envisaged changes. The purpose of consensus-building activities is to make all stakeholders aware of the linkage between the proposed reforms and the likely improvements that they could bring about in teaching and learning conditions. This effort involves a blend of rational analysis, political manoeuvring, and psychological interplay to bring all the concerned stakeholders on board.

Box 9.2 **Consensus-building and cost sharing in Northern Mexico**

The Mexican constitution provides for free public education at all levels, and cost sharing has always been fiercely resisted by the professors and students at UNAM, as demonstrated by the 1999 strike. In northern Mexico, by contrast, the rector of the public University of Sonora was successful in introducing cost sharing after initiating, in 1993, a consensus-building process to explain to the academic staff and students the need for supplementary resources to improve the quality of teaching and learning.

After some initial resistance, including a widely publicised 2 000-kilometre pacific march by protesters from Hermosillo to Mexico City, the students accepted the principle of a yearly payment to generate supplementary resources. A participatory process was to determine the allocation of these resources to equity and quality-improvement initiatives. Since 1994, the students have been paying an annual contribution of about USD 300 for this purpose. A joint student-faculty committee administers the funds, which are used to provide scholarships for low-income students, renovate classrooms, upgrade computer labs, and purchase scientific textbooks and journals. A poster is prepared every year to disseminate information on the use of the money collected from the students at the beginning of the academic year.

A third, key ingredient for facilitating acceptance of reforms that challenge the status quo is the availability of additional resources that can be channelled towards tertiary education institutions and other concerned groups such as the students. This can help transform what could be called an "undoing" reform into a "constructing" reform. Another way to increase political acceptability and avoid disruptions is to introduce 'grandfathering' provisions and transitory funding arrangements that guarantee, for all institutions and beneficiary groups, amounts of resources equal to those they would have received under the previous system, at least for some period of time.

Finally, thinking about the timing and proper sequencing of reforms is important. When the Ghanaian rectors agreed on a plan for raising tuition fees in public universities in January 2005, they presented it in the form of a ten-year graduated increase programme, which facilitated acceptance from the students. Sometimes it is more effective to delay a key decision by a few weeks or even months to allow sufficient time to build a consensus.

Financing reforms are without doubt among the most challenging policy changes that governments face. Cost-sharing, cost containment, resource diversification and changes in budget allocation mechanisms are contentious topics. International experience shows that the implementation of controversial

tertiary education reforms has a higher probability of success when decision-makers manage to assess effectively the social and political contexts of the reform environment, build a consensus among the various constituents of the tertiary education community, mobilise additional resources to provide tangible incentives in support of the reform, and think carefully about the timing and sequencing of reforms. While having a political road map to guide the reform efforts is neither a magic formula nor a guarantee of success, ignoring potential opponents and failing to engage them in a dialogue about the proposed reforms is a recipe for failure.

Findings

Resource mobilisation

Public funding for tertiary education in Colombia has increased slowly over the past years, reaching a reasonable level according to international benchmarks. It is doubtful, however, that the government can mobilise enough additional public resources to fund its impressive expansion and quality improvement goals under the existing fiscal and political constraints.

Resource allocation

The allocation of public resources to the Colombian universities and non-university institutions is linked only marginally to performance criteria.

As a result, the present pattern of public resources distribution is characterised by acute disparities at two levels, first among public universities, and second between universities/university institutions and non-university institutions (technical and technological institutes).

Resource utilisation

The high dropout rates throughout Colombian tertiary education system – 45.3% on average in 2009 – and the ensuing low internal efficiency amount to a momentous waste of resources for both the state and households.

There are big variations between public universities – not obviously related to differences in quality and value – in student-teacher ratios and in the share of operating costs devoted to administrative expenses.

Due to insufficient financial oversight over private tertiary education institutions, the Colombian government is not a position to distinguish effectively between truly non-profit institutions and those that actually operate for a profit under non-profit guise.

Just as in many other Latin American countries, the long duration of first degrees in Colombian public universities compared to similar degrees in North America or Western Europe represents a social cost of significant magnitude for the country.

Recommendations

Resource mobilisation

As the Colombian government moves forward with its plans for tertiary education reforms and development, it should carefully assess the need for increased public funding for both equity and quality reasons, and explore ways of mobilising additional resources as required at the national and sub-national levels.

Resource allocation

There is a pressing need to introduce performance-based funding mechanisms for allocating a much larger part of public subsidies, with the following dual purpose: *(i)* redistributing resources to achieve a more equitable sharing of public subsidies across public tertiary education institutions, and *(ii)* offering incentives to encourage institutions to be more efficient and responsive to development and labour market needs.

Resource utilisation

To reduce dropout levels and increase internal efficiency, the Ministry of National Education should build on the successful practices of those tertiary education institutions that have shown good results in improving retention and degree completion.

The MEN should also undertake an in-depth study of how far the significant differences between public universities in their deployment of academic staff and their spending on administration relate to the quality of teaching and learning.

The Colombian authorities need to explore ways of simplifying administrative arrangements and financial management rules in public universities in order to bring about modern management practices and facilitate effective partnerships between universities and other institutions in the economy and society.

The Ministry of Finance and the Ministry of National Education need to put in place adequate regulations and monitoring capacity to ensure that private tertiary education institutions manage their resources according to transparent accounting practices and prepare annual financial reports that are independently audited.

The Ministry of National Education should encourage public universities, through appropriate incentives, to move gradually towards shorter first degrees in accordance with worldwide trends.

Implementation of financing reforms

Well-designed consultation and communication strategies should accompany any financing reform proposal to rally support from potential winners and reduce the political risks linked to the reaction of groups whose vested interests might be affected (or be perceived to be affected).

Note

1. Of the nine public university-level institutions shown as having VHQA (voluntary high quality accreditation) in Table 5.9, two are schools rather than universities and so do not appear in Table 9.16.

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Chapter 10. Conclusions and recommendations

Conclusions

Strengths

As has been acknowledged throughout this report, the Colombian tertiary education system has many impressive strengths. Participation has been growing, widening and becoming better distributed across the country. The tertiary system covers the full range of the Colombian economy's needs for skilled manpower, if not necessarily to an equal extent. The government has clear and well-founded plans and aspirations for future tertiary growth and development. The Colombian government and people are well aware that they need not only more, but also better and fairer, tertiary provision – growth in coverage must be accompanied by quality, relevance and equitable access.

The country's very best universities are achieving international standards. Colombia has a useful and business-friendly mass education provider in SENA, an excellent student loans organisation in ICETEX, a potentially world-leading educational evaluator in ICFES, a pioneering system for tracking student dropout and its causes in SPADIES system set up to track the incidence and causes of dropout and some very good national data systems informing policy-makers, institutions, students and the public about tertiary education. The accreditation part of the Colombian quality assurance system is effective, though covers only a small minority of tertiary institutions. The Colombian system of propaedeutic cycles is a good step towards allowing students to progress up through the tertiary levels. Colombian tertiary institutions have considerable autonomy, which is valuable in many ways though limiting in others.

Problem areas

Alongside these strengths, the review team sees a number of less impressive areas in Colombia's tertiary system where improvement is needed if the government's plans and the people's hopes are to be realised.

1. Key stakeholders in tertiary education, while generally agreeing with the expansion and equity aims underlying the government's plans, have been reluctant to give the government the means of implementing them. The rejection of the 2011 reform proposals has, for the moment, prevented the necessary new resources being brought into the tertiary system and blocked several other essential or highly desirable changes.

2. The principle of equity in access to and retention in tertiary education – which is commendably widely supported in Colombia – is still quite far from becoming a practical reality. ICETEX's ACCES scheme has immense potential to change this situation, but it requires more resources to meet existing needs along with an improved financial needs assessment instrument.

3. The lack of "college-readiness" of Colombian tertiary entrants needs tackling urgently, for reasons going far wider than tertiary education. Compared to other countries with which Colombia wishes to compete, school-leavers there are younger and have achieved lower educational standards, unless they attended elite private schools. This is a big cause of inequity in the access of less advantaged students, and means that many students who get into tertiary institutions struggle academically and/or drop out. This is not only disappointing for the students but also inefficient and wasteful for the system.

4. The inequitable distribution of public resources between tertiary institutions leads to differences in the fees they charge which have little to do with their quality or career value to students. These differences have unintended consequences, which include skewing student choices and affecting institutional quality and efficiency. Present resource allocation systems need reform to align them better with the country's economic needs, student aspirations, institutional quality, performance and value for money.

5. The review team had doubts about the quality and standards of some programmes, particularly CERES and some other professional technician and technologist programmes. The mandatory part of the Colombian quality assurance system still needs considerable improvement. Technician and technology institutes are and will continue to be important to Colombia's diverse tertiary system and Colombia's economy: too many are seeking to upgrade themselves to university level rather than focusing on becoming excellent T&T institutions.

6. Colombia still has some way to go to establish pathways and ladders through the system for students wishing to progress up through the tertiary levels or change institutions without having to start their tertiary education again from the beginning. The tools that need to be in place to make this possible include a National Qualifications Framework (NQF), a universal system for credit accumulation and transfer, more collaboration between institutions of different types and proof that propaedeutic cycles programmes are succeeding in their aims.
7. Links between institutions, particularly public universities, and employers are not strong and varied enough to ensure that programmes and research are relevant to the needs of the Colombian economy and that graduates are as employable as they could be.
8. Many important processes and decisions, including the financial arrangements of private institutions, could be more transparent. Also, national information and data systems could be more user-friendly.
9. Tertiary institutions are less accountable for their actions, outcomes and use of resources than they should be in a well-functioning, student-centred system.
10. Levels of investment in research and innovation are very low by international standards.
11. Internationalisation of the tertiary system is at a very early stage.

Keys to future success

Previous chapters of this report have offered a number of recommendations, intended to help Colombia to build on its strengths and tackle its problem areas. These recommendations are listed below. The review team sees the keys to future success, the most important steps for the country to take, as follows.

- Pursue determinedly the goal of achieving 50% gross tertiary participation by 2014.
- Understand and build the connections between equity, quality and relevance. Equity aims will not be fully met until all young people (whatever their background) are well-prepared to enter the tertiary system; have fair and equal chances of admission to well-designed programmes that will improve their employability; and can be sure of high-quality, effective teaching that meets their needs and ensures they complete.

- Improve the robustness and reach of the quality assurance system. Enforce higher minimum standards; focus attention on outcomes by linking student assessment to the QA system; give all institutions incentives to keep on improving themselves; and aim for international standards.
- Do not accept complacency or settle for mediocrity. Colombia should aim to make its tertiary system competitive with the best in the world, and be ready to introduce courageous measures and reforms to get there.
- Expand ICETEX student support and improve targeting on the least advantaged groups, by improving the accuracy of socio-economic classification for all education-related purposes.
- Integrate SENA fully into the tertiary system and into national databases.
- Create clearer and more universal pathways (ladders and bridges) between tertiary levels and institutions.
- Build strong links between institutions and business at all tertiary levels.
- Increase investment in post-graduate education, research and development.
- Link financing more closely to performance (quality, outcomes, efficiency and relevance to national and regional economic needs).
- Improve institutional accountability for results and decisions.
- Develop longer-term plans to moderate the recent trend toward increased public provision.

Recommendations

Chapter 2. Vision, structure, governance, and management of the Colombian tertiary system

The review team makes the following recommendations.

- Legislation to reform Law 30 should be reintroduced after a period of review and additional consultation with stakeholder groups. Reform should focus on increasing the capacity of the Colombian tertiary education system to serve additional students, and improving the quality of student outcomes in terms of learning, completion, and employment.

- The current hierarchy of tertiary degrees and qualifications should be reviewed, simplified and clarified. Clear and transparent pathways to higher-level programmes and qualifications should be established throughout the Colombian tertiary education system.
- Stronger policies to prevent unnecessary mission drift should be developed and enacted, while fostering the development of ladders of qualifications, particularly in emerging technology-related fields.
- An external review of the supply of and demand for tertiary education graduates at all levels should be commissioned by the Ministry of National Education or another credible group. The review should take into account employment rates and salary levels related to field of study as well as qualification level.
- Increased efforts should be made to integrate SENA into the tertiary education system. Important areas for integration include data collection, reporting and analysis systems, academic programme planning, strategic planning and quality assurance mechanisms.
- The Ministry of National Education should continue to focus primarily on national goals for tertiary education attainment and improving tertiary education quality assurance (both in terms of learning and relevance).
- The Ministry of National Education and the tertiary education institutions should work together to develop an agreed accountability framework, which makes clear how each institution will play its part in the achievement of the national goals, and what mechanisms and performance indicators the institutions will use to report their progress.
- The composition of institutional governing boards should be reviewed to ensure adequate representation of the public interest, and not just institutional constituencies. The private sector and employers should be represented whenever possible.
- The Ministry of National Education should select an outside entity to review Colombia's tertiary education financial control systems, at both the national and institutional level.
- The national goals for tertiary education should be incorporated into institutional decision-making processes at all levels. Personnel at all levels should be encouraged to reflect on the implications of the goals for their areas of responsibility and to play their part in achieving them.

- The Ministry of National Education should encourage institutions to make more creative use of national data systems, so that decision-making at all levels of the tertiary system becomes more evidence-based.

Chapter 3. Access and equity to tertiary education in Colombia

The review team makes the following recommendations:

- To address the lack of college-readiness of many Colombian school-leavers, particularly boys, the government should consider introducing a 12th grade of schooling. If that is ruled out on cost grounds, the government should introduce an optional bridge year between school and tertiary education, for those with tertiary aspirations or whose knowledge and skills need improving if they are to compete effectively for tertiary places. Bridge year programmes could be run by tertiary institutions, by secondary schools, by both in collaboration or by special new 12th grade colleges. The introduction of Foundation degrees is an option worth exploring.

- Colombia should also intensify efforts to improve the quality and equity of secondary education and seek ways of providing secondary students with independent, personalised advice and guidance on their tertiary choices. To improve the information available on every individual's academic strengths and suitability for different types of tertiary education and training, all year 11 students should be required to take the SABER 11 test.

- To address lack of transparency and student distrust in the admission system and to assure itself and Colombia's young people that admissions operate fairly, the government should collect more information on admission arrangements and criteria, on how they are operated, and on the personal characteristics of accepted and rejected applicants. The information should be published and made available to young people and their families. The government should also set up a central clearing-house to process all applications and eliminate duplicate acceptances, and should take up with the institutions concerned any cases where admissions criteria seem to lack fairness or objectivity.

- The different funding sources for tertiary institutions of different types should be reviewed and rationalised, to avoid student choices being distorted by unwarranted differences in affordability (see Chapter 9).

- ICETEX resources should be increased, ideally to the extent necessary to support the government's plans for tertiary expansion with equity, enable all lower-income students who want and need financial help to access tertiary education to be supported, and make significant inroads into dropout for financial reasons.
- To improve targeting on students from the most needy families, ICETEX should move to a better system for assessing family income, developed in collaboration with the National Planning Department (DNP). The best way forward would be a system that combines SISBEN (Selection System of Beneficiaries of Social Programmes) and other socio-economic data, including verifiable income where possible and particularly in the case of individuals not covered by SISBEN.
- To ease the loan repayment burden on young graduates and reduce default rates, the government of Colombia should continue offering alternatives for repayment (as they are already doing with *cuota escalonada*).
- Disparities between regions in tertiary enrolment should be addressed, as the government proposes, by increasing the number of municipalities with their own provision and expanding distance learning.

Chapter 4. Quality and relevance of tertiary education in Colombia

The review team recommends that:

- The government should look for additional ways of ensuring the quality of programmes and learning outcomes in non-accredited tertiary institutions, particularly private providers of professional technician and technologist programmes.
- The Ministry of National Education should commission an external evaluation of CERES, with wide participation from stakeholder groups. The purpose of the evaluation should be to identify the strengths and weaknesses of CERES programmes relative to other T&T programmes (including those at SENA centres), with particular reference to quality of programmes, cost to students, value for money, impact on employability and long-term financial sustainability and governance.
- Vigorous efforts should continue to be made to attract highly-qualified new staff and upgrade the qualifications of existing staff. Additional measures recommended to help improve teaching quality

are *(i)* encouraging peer observation of teaching, and *(ii)* developing indicators of teaching quality, to be included in performance appraisals of tertiary institutions.

- As many tertiary programmes as possible should include modules in the broad competencies that all employers want their employees to possess (analysing problems, organising time, writing well, working in teams and groups) and work placements following which employers' feedback would form part of student assessments.
- Initiatives should be launched to help curriculum developers and faculty staff to improve their skills in relating competencies to employers' needs and describing the desired outcomes of tertiary education.
- A National Qualifications Framework (NQF), supplemented by a national credit transfer system, should be developed and implemented as a priority, to promote student mobility and create pathways through the system. The team recommends that Colombia draws on international experience to find effective model frameworks and ways of involving other stakeholders in defining learning outcomes and designing the NQF – particularly private TEIs, which have greater business links, and employers. Establishment of a national credit recognition centre to advise on and promote credit transfer is also recommended.
- The Ministry of National Education should find and publicise examples of successful ascent of the propaedeutic cycles ladder, to encourage students to choose T&T programmes in the confidence that they are not "dead ends".

Chapter 5. Quality assurance of the Colombian tertiary education system

The review team makes the following recommendations:

- MEN should increase the resources devoted to quality assurance, so that it can raise the overall quality level in tertiary education faster, further and more comprehensively. There should be greater financial incentives for institutions to prove that their programmes meet high quality standards, and perhaps penalties for those institutions where quality is found wanting.
- There should be greater co-operation between ICFES and CONACES/CNA, so that student assessment information is used to improve the overall design and operation of the quality assurance system.

- The component organisations of the quality assurance system should be genuinely independent of each other. Members of one organisation should not also have roles in another, sometimes with potential conflicts of interest. It is recommended that the roles of the different agencies be reviewed, with a view to eliminating common membership, overlapping functions and shared responsibilities. International experience suggests that in countries where tertiary institutions have as much autonomy as they do in Colombia, a single national agency, independent of government, can handle all important aspects of quality assurance in tertiary education.

- The role of ICFES should be strengthened and its independence from the Ministry of National Education guaranteed, to ensure that it serves as a truly external evaluator of education quality. It could become an independent organisation reporting directly to the Congress or the Presidency, like similar institutions in other countries.

- The assurance of minimum standards should be strengthened. There should be additional checks before a programme is admitted onto the Register of Qualified Programmes. External evaluators should scrutinise more thoroughly the readiness of institutions to provide the programmes for which they apply. All institutions should be required to present evidence of sound, impartial outcome evaluations and careful monitoring of student progress for existing programmes, and to demonstrate that their infrastructure is adequate.

- To make clear that registration criteria must be fully met, applications from institutions which submit weak applications should be refused and institutions which fail to deliver the quality standards promised in their applications should be de-registered. The MEN may wish to consider changing the application process so that it provides for initial and final approval. The initial approval process, which could be quite swift, would check that basic quality standards were met; the final approval process would be more rigorous. It would be helpful to provide incentives to encourage institutions to proceed to full approval, either in the form of "carrots" (financial incentives) or "sticks" (setting a time-limit on operating with initial approval only).

- There should be more international participants in the peer review system for accreditation of high quality standards.

- ICFES should proceed with and indeed accelerate the development and implementation of major improvements to the SABER 11 exams, which will introduce more emphasis on generic skills and common specific skills and improve system capacity to assess the value added by education institutions. ICFES should conduct extensive research to ascertain the new exams' validity and appropriateness for use in admissions to various types of tertiary institution and various tertiary programmes.
- The action ICFES has in hand to develop improved SABER PRO exams should be given all necessary funding and support. The revised exams will be a significant improvement over the previous exams, and will enable full value-added assessment of tertiary education programmes. Value-added assessment will be key to demonstrating the quality of particular tertiary programmes and the value to students of undertaking them. Value-added measures will also allow judgments to be reached on how effectively different institutions have used the resources invested in them by students and the public purse, and so enhance accountability. The team therefore sees this development as a priority for the educational system and for educational spending.
- ICFES assessments of outcomes and value added should encompass all programmes in the technical and technological institutions, which are in some respects the weakest link in the tertiary quality chain. The fact that many of these institutions function as family businesses makes it especially important to monitor their quality carefully, using impartial external evaluators and evaluation methods.

Chapter 6. Internationalisation of the Colombian tertiary education system

The review team recommends that:

- An overall comprehensive approach to internationalisation should be introduced, bearing in mind that the approach adopted should contribute to the relevance of higher education, to the success of graduates of institutions, and, ultimately, to the incorporation of Colombian tertiary institutions into the global knowledge-based economy.

- In future, national policy discussions and consideration of legal changes should include the international dimension of tertiary education, and that there should be specific programmes to implement policies in this area.
- The Ministry of National Education should develop the quality assurance system so as to encourage tertiary institutions to consider introducing international elements into the curricula of all academic programmes, and other programmes where relevant.
- The Ministry of National Education should commission an external evaluation of the National Bilingual Programme in order to establish its effectiveness, and define a course of action with concrete achievable goals in terms of proper second language competency for all graduates of tertiary education institutions.
- Tertiary institutions should work more effectively with previous levels of education and on the organisation of their own programmes, to boost the chances of all graduates concluding their undergraduate studies with functional competency in a second language. Second language competency should be embedded as an integral part of the regular curriculum in all academic programmes and, where relevant, other programmes, rather than just being a requirement for graduation.
- Institutions, employers, international agencies and government entities should work together to dramatically increase the number of Colombian students and scholars participating in international mobility, as well as increasing the number of foreign students and scholars coming to Colombia.
- The Ministry of National Education should further develop, expand and make available to the public the data on SNIES related to internationalisation of Colombian tertiary education institutions.
- There should be greater co-ordination between COLCIENCIAS and ICETEX on the one hand and higher education and research institutions on the other, to develop mutually-agreed scholarship programmes for graduate studies abroad, particularly in study fields of strategic national interest. Currently, there are some advances in this regard, with the support provided to students in areas that the country needs. The investment has reached COP 18.5 billion.

Chapter 7. Research and innovation in Colombia

The review team recommends that:

- The resources invested in science and technology in Colombia should be significantly increased, and that further efforts should be made to stimulate research in institutions beyond the Universidad Nacional and outside Bogota. Bearing in mind however that Colombia's economy is not likely to become, in the near future, a "knowledge-based economy" that needs all or indeed many universities to become research-intensive institutions, the government should avoid spreading research resources too thinly.
- In the interests of more and better research, researchers working outside the better-established research centres should be linked up and encouraged to collaborate with those centres, making full use of electronic communications technology.
- Researchers should be encouraged and incentivised to work with private firms, in the ways suggested in the chapter, but in the awareness that low-tech as well as high-tech innovations can be very useful to Colombia's economy.
- COLCIENCIAS should support high quality and promising centres of excellence, both academic and applied, and also stimulate networking and co-operative projects among institutions and regions and support worthwhile projects that do not fit into these categories.
- Research of practical value in the natural sciences should continue to receive strong support, but there is also a good case in Colombia for investing in social sciences and humanities research.

Chapter 8. Information and transparency in Colombia's tertiary education system

The review team recommends:

- Supplementing the Ministry of National Education's current information systems to include more analyses and indicators and, where possible, be made more user-friendly. This would include consolidating information into one place so that users need not access different systems to get the "big picture" and creating indicators useful to the public, such as admittance rates and returns to investment based on programme fees and expected salaries. Improved technical notes on how information should be interpreted, and tools such as rankings based on user preferences, would allow

users to make more informed decisions. Finally, as the public is not well informed about the government's information systems, more promotion and marketing would be helpful, to make the available information more widely known, particularly to teachers, guidance counsellors and students in secondary schools.

- Systematic cross-checking of Ministry data with other sources of information, such as DANE household surveys, and the alternative information should also be made available to the public. Household survey data can provide useful information on access and equity as well as labour market outcomes. This information serves not only to check the validity of the Ministry's information (which would improve their credibility), but also to shed light on areas not covered by Ministry information, such as tertiary coverage rates by income quintiles.
- Increased efforts to integrate SENA fully into the Colombian tertiary education system, and into tertiary data collection, reporting and analysis systems.
- A study to check for possible biases in SPADIES data and in the socio-economic data gathered by ICFES.
- An external review of admissions processes and criteria at public and private universities and university institutions. The review should also consider the possibility of standardising processes and criteria, at least for all public universities.
- Establishment of a legal framework to ensure that all TEIs that receive any public funds, directly or indirectly, make detailed financial information public in a standardised, systematic manner.

Chapter 9. Financing of tertiary education in Colombia

The review team makes the following recommendations.

- As the Colombian government moves forward with its plans for tertiary education reforms and development, it should carefully assess the need for increased public funding for both equity and quality reasons, and explore ways of mobilising additional resources as required at the national and sub-national levels.
- There is a pressing need to introduce performance-based funding mechanisms for allocating a much larger part of public subsidies, with the following dual purpose: *(i)* redistributing resources to achieve a more equitable sharing of public subsidies across public

tertiary education institutions, and *(ii)* offering incentives to encourage institutions to be more efficient and responsive to development and labour market needs.

- To reduce dropout levels and increase internal efficiency, the Ministry of National Education should build on the successful practices of those tertiary education institutions that have shown good results in improving retention and degree completion.
- The MEN should also undertake an in-depth study of the significant differences between public universities in their deployment of academic staff and their spending on administration, and how far these relate to the quality of teaching and learning.
- The Colombian authorities need to explore ways of simplifying administrative arrangements and financial management rules in public universities in order to bring about modern management practices and facilitate effective partnerships between universities and other institutions in the economy and society.
- The Ministry of Finance and the Ministry of National Education need to put in place adequate regulations and monitoring capacity to ensure that private tertiary education institutions manage their resources according to transparent accounting practices and prepare annual financial reports that are independently audited.
- The Ministry of National Education should encourage public universities, through appropriate incentives, to move gradually towards shorter first degrees in accordance with worldwide trends.
- Well-designed consultation and communication strategies should accompany any financing reform proposal to rally support from potential winners and reduce the political risks linked to the reaction of groups whose vested interests might be affected (or be perceived to be affected).

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Reviews of National Policies for Education

Tertiary Education in Colombia

In Colombia, the beginning of a new century has brought with it a palpable feeling of optimism. Colombians and visitors sense that the country's considerable potential can be realised, and education is rightly seen as crucial to this process. As opportunities expand, Colombians will need new and better skills to respond to new challenges and prospects.

The government is therefore determined to address key challenges confronting tertiary education in the country: expanding enrolment and improving equity, increasing quality and relevance, and making governance and finance more responsive. Colombia has more than a decade of progress under its belt, and the energy to reach ambitious policy goals. Getting there in practice will involve dialogue and consensus-seeking among all stakeholders, as well as new resources and new rules.

Contents

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