Reviews of National Policies for Education

Higher Education in the Dominican Republic



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Higher Education in the Dominican Republic 2012



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Foreword

The Dominican Republic has one of the strongest economies among the middle income countries of the world, and the government has set itself ambitious goals for its social and economic development. The development capacity of the country, however, depends on its human capital – an area with considerable shortcomings due to major deficiencies in the education sector at all levels.

Following the 2008 OECD review of education policies in the Dominican Republic, the examining team was asked to assess the condition of higher education in the Dominican Republic, to evaluate policies for higher education and research, and to identify future policy options to help meet the nation's needs.

Against information and data supplied by the Dominican authorities, and information provided in meetings in the course of the site visits, this OECD report provides an analysis of the higher education sector within the economic, social and political context of the Dominican Republic. It looks into access, quality and relevance, the effectiveness and governance of the system, its financing as well as its research and innovation capacity. The report concludes with a list of pragmatic recommendations for policy action.

This review was undertaken as part of the Global Relations work of the OECD Directorate for Education. The financing for the review was provided by the Government of the Dominican Republic, with in-kind support from the World Bank.

Members of the review team were: Michael Gallagher (Australia), *Rapporteur*, Executive Director, Group of Eight Australian Universities; Ian Whitman (OECD Secretariat), *Team Leader*, Head of the Programme for Co-operation with Non Member Economies of the OECD Directorate for Education; Mary Canning (Ireland), member of the Higher Education Authority of Ireland, of the Royal Irish Academy and of the Governing Authority of the National University of Ireland, Maynooth, and former Lead Education Specialist, World Bank; Francisco Marmolejo (Mexico), Executive Director, Consortium for North American Higher Education

Collaboration (CONAHEC) and Vice President for Western Hemispheric Programs at the University of Arizona, United States; Javier Luque (World Bank), Human Development Department for Latin America and the Caribbean; Mihaylo Milovanovitch (OECD Secretariat), Policy Analyst, Programme for Co-operation with Non Member Economies of the OECD Directorate for Education; Simon Schwartzman (Brazil), President, Institute for Studies on Labour and Society (IETS, *Instituto de Estudos do Trabalho e Sociedade*).

Barbara Ischinger
Director for Education

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Acronyms

ADOZONA	Dominican Association of Free Zones, Inc.
	Asociación Dominicana de Zonas Francas, Inc.
ADRU	Dominican Association of University Rectors
	Asociación Dominicana de Rectores de Universidades
AIRD	Association of Industries of the Dominican Republic, Inc.
	Asociación de Industrias de la República Dominicana, Inc.
CARICOM	Caribbean Community
	Comunidad del Caribe
CEI-RD	Centre for Export and Investments of the Dominican Republic
	Centro de Exportación e Inversión de la República Dominicana
CESAL	NGO CESAL, Co-operation for Development
	ONG CESAL, Cooperación al Desarrollo
CIDT	Council for Innovation and Technological Development
	Consejo de Innovación y Desarrollo Tecnológico
CNC	National Council of Competitiveness
	Consejo Nacional de Competitividad
CONAHEC	Consortium for North American Higher Education Collaboration
	Consorcio para la Colaboración de la Educación Superior en América del Norte
CONEP	National Council of Private Companies
	Consejo Nacional de la Empresa Privada
CONESCyT	National Council for Higher Education, Science and Technology
	Consejo Nacional de Educación Superior, Ciencia y Tecnología
CONIAF	National Council for Agriculture, Livestock and Forestry Research
	Consejo Nacional de Investigaciones Agropecuarias y Forestales
CPI	Consumer Price Index
CURNE	Regional University Centre of the Northeast in San Francisco de Macorís (UASD)
	Centro Universitario Regional del Nordeste en San Francisco de Macorís (UASD)
CURSA	Regional University Centre of Santiago
	Centro Universitario Regional de Santiago

EC	European Commission
ECLAC	Economic Commission for Latin America and the Caribbean
	Comisión Económica para América Latina y el Caribe (CEPAL)
FAO	United Nations Food and Agricultural Organization
FFIDT	Financing Fund for Innovation and Technological Development
	Fondo de Financiamiento a la Innovación y el Desarrollo Tecnológico
FIES	Research Fund for Economic and Social Research
	Fondo para el Fomento de la Investigación Económica y Social
FONDEC	Competitiveness Fund
	Fondo de Competitividad
FONDOCYT	National Fund for Innovation and Scientific and Technological Development
	Fondo Nacional de Innovación y Desarrollo Científico y Tecnológico
FTAA	Free Trade Area of the Americas
	Área de Libre Comercio de las Américas (ALCA)
FTZ	Free Trade Zone
FUNDAPEC	APEC (Action for Education and Culture) Foundation for Educational Credit, Inc.
	Fundación APEC (Acción Pro Educación y Cultura) de Crédito Educativo, Inc.
GDP	Gross Domestic Product
GTZ	German Company for Technical Co-operation (GTZ) Ltd., Germany
	Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH
HE	Higher Education
HEI	Higher Education Institution
ICT	Information and Communication Technology
IDIAF	Dominican Institute of Agriculture, Livestock and Forestry Research
	Instituto Dominicano de Investigaciones Agropecuarias y Forestales
IETS	Institute for Studies on Labour and Society
	Instituto de Estudos do Trabalho e Sociedade
IIBI	Institute of Innovation for Biotechnology and Industry
	Instituto de Innovación en Biotecnología e Industria
IMF	International Monetary Fund
	Fondo Monetario Internacional
INAFOCAM	National Institute for the Training and Preparation of Teachers
	Instituto Nacional de Formación y Capacitación del Magisterio
INDOTEC	Dominican Institute of Technology
	Instituto Dominicano de Tecnología

INDOTEL	Dominican Institute for Telecommunications
	Instituto Dominicano de las Telecomunicaciones
INFOTEP	National Institute for Technical and Professional Training
	Instituto Nacional de Formación Técnico Profesional
INTEC	Santo Domingo Institute of Technology
	Instituto Tecnológico de Santo Domingo
ISCED	International Standard Classification of Education
ITLA	Las Americas Institute of Technology
	Instituto Tecnológico de Las Américas
MEPyD	Ministry of Economy, Planning and Development
	Ministerio de Economía, Planificación y Desarrollo
MESCyT	Ministry of Higher Education, Science and Technology
	Ministerio de Educación Superior, Ciencia y Tecnología
NAP	National Action Plan for the Strengthening of Capacities Related to Trade: Confronting the Challenges of Globalisation
	Plan de Acción Nacional para Fortalecer las Capacidades Relacionadas con el Comercio: Enfrentando los Retos de la Globalización (PAN)
NDS	National Development Strategy
	Estrategia Nacional de Desarrollo (END)
ONAPI	National Office of Industrial Property of the Dominican Republic
	Oficina Nacional de la Propiedad Industrial de República Dominicana
POMA	Test of Orientation and Academic Measure
	Prueba de Orientación y Medición Académica
PROMIPYME	Promotion and Support Programme for Micro, Small and Medium-Sized Enterprises
	Programa de Promoción y Apoio a la Micro, Pequeña y Mediana Empresa
PUCMM	Pontifical Catholic University Madre y Maestra
	Pontificia Universidad Católica Madre y Maestra
R&D	Research and Development
R&D&I	Research, Development and Innovation
S&T	Science and Technology
SEESCyT	State Secretariat of Higher Education, Science and Technology
	Secretaría de Estado de Educación Superior, Ciencia y Tecnología
SME	Small and Medium-Sized Enterprise
SERCE	UNESCO Second Regional Comparative and Explanatory Study
	Segundo Estudio Regional Comparativo y Explicativo de la UNESCO

SNIDT	National System for Innovation and Technological Development
	Sistema Nacional de Innovación y Desarrollo Tecnológico
UASD	Autonomous University of Santo Domingo
	Universidad Autónoma de Santo Domingo
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund

Executive Summary

The Dominican Republic has one of the strongest economies among the middle income countries of the world, but is one of the least equitable societies.

The government has set ambitious goals for the social and economic development of the Dominican Republic.

Attention is being given to institutional reform, development of infrastructure, investment in the energy and finance sectors, and enlargement of the formal sector of the economy principally through the formation of small and medium sized enterprises.

The development capacity of the country is seriously hampered by deficits in human capital reflecting major deficiencies in the education sector at all levels. Those deficits also compound the problems of social inequality.

The review team was asked to assess the condition of higher education in the Dominican Republic, to evaluate policies for higher education and research, and to identify future policy options to help meet the nation's needs.

Assessment of the condition of higher education, science and innovation in the Dominican Republic

Access and success

There appears to be a reasonable provision of higher education in many parts of the country. Admissions systems are based on transparent requirements. There is no apparent bias in enrolments on the basis of age or gender.

Given the large number of free university places in the Autonomous University of Santo Domingo (UASD, *Universidad Autónoma de Santo Domingo*), the major financial barrier, other than the opportunity costs of

attending higher education, is the limited availability of scholarships or low interest loans for the neediest students who may wish to attend a private higher education institution.

The review team considers that the principal barrier to access to higher education is the poor quality and low effectiveness of schooling. There are poor learning outcomes at both the primary and secondary levels. At the secondary level there can be limits to opportunity and high rates of student disaffection and dropout.

Additionally, students can progress from one year to another, and through to the culminating award of secondary education, the *bachillerato*, without demonstrated acquisition of adequate literacy, numeracy and reasoning competencies for further education, and their readiness for work is also insufficient.

Learning deficits from schooling do not only constitute barriers to initial access to postsecondary education. As higher education institutions attempt to compensate for deficiencies in the preparedness of entering students they may either induce high rates of post-entry attrition or compromise the quality of higher education and the standards of graduates.

The higher education participation rate of 29.1% for the age cohort 18-24 years reflects substantial and rapid increases in higher education enrolments since the mid 1980s.

However, the average apparent attrition rate between commencement and completion of a degree course is around 50%, ranging from 10% in one institution to 80% in the nation's largest university. Dropout rates vary also according to field of study.

This high wastage rate is inefficient for the nation and futile for the individuals involved.

There are multiple leakage points in the educational pipeline from initial schooling to higher education. Students who fall through the gaps at any one point in the pipeline have real difficulty returning to education.

Quality and relevance

There is a high level of informal sector employment (50-60%) in the Dominican Republic. In order to raise its competitiveness and create a more equitable society, it is an imperative for the nation to reduce informality and expand the formal sector with better jobs for more workers with better pay and conditions.

The education attainment levels of the Dominican Republic's work force have been rising, particularly over the last decade, going from fourth to seventh grade.

It appears that the Dominican Republic has higher rates of tertiary education participation and attainment but lower rates of pre-tertiary achievement – both quantitatively and qualitatively – than its comparator countries of the Latin America and Caribbean area.

Tertiary-educated entrants to the labour market, and existing employees who have upgraded their qualifications, have tended to occupy public sector jobs, especially in education, health and administration.

Completion of tertiary education increases private earnings for all groups of workers at all income levels, in both the formal and informal sectors.

There is evidence of increasing graduate over-supply and under-employment.

Private rates of return to education have been declining for new entrants to the labour market over the last decade. Income premiums for those with incomplete tertiary have registered an even stronger decline.

The government has taken concrete steps to raise the overall quality of higher education in the Dominican Republic – in terms of inputs, processes and outputs. Nevertheless its present condition remains low by international standards.

With the exception of only a few fields and institutions, there is a high level of employer dissatisfaction with the knowledge and skills of graduates.

Labour requirements

The changing Dominican labour market requires higher levels of skills formation across the workforce.

Having available a small cadre of highly skilled people is important for the development of leading-edge innovations.

Concentrated investment in advanced human capital formation, in those areas that have the best capacity to grow stronger, will be necessary for the Dominican economy to seize opportunities for new advances.

However, the main requirement is for qualified technical and professional personnel to underpin expansion and productivity improvement in the formal sector, particularly in small and medium-sized enterprises.

Building capacity for effective and credentialed training, particularly in secondary school and post-secondary vocational education and training, is a major priority in the Dominican Republic. Indeed, at this stage in the country's development, it must be a higher priority than enlarging traditional higher education.

Such a strategy will require the social status of vocational education and training to be raised in Dominican Republic. Otherwise the community will find itself with the compounding dilemma of rising costs of wasteful participation in higher education of marginal utility to its workforce needs, and that would be a source of increasing frustration and discontent.

The critical priority for Dominican higher education is to raise the productivity of teaching and the effectiveness of learning.

Future student demand

Demographically-driven student demand alone could add around 9 500 enrolments per year on average to the higher education system over the next decade. Raising the participation rate to 35% would add 11 500 enrolments per year.

Raising the participation rate to 50% of the 18-24 age cohort by 2018, as proposed in the *Ten-Year Plan for Higher Education 2008-2018* (*Plan Decenal de Educación Superior 2008-2018*; SEESCyT, 2008*a*) would expand the system by 33 536 per year.

Doubling graduate output as well by 2018, another goal of the Ten-Year Plan, would add 36 950 enrolments per year.

Reducing attrition by 20% progressively over the decade, at the current rate of participation, would increase graduate output from 34 412 in 2009 to 86 097.

In the view of the review team, the clear priority should be to reduce attrition and let graduate output rise as a consequence.

To enable reduced rates of attrition to be achieved, increases in participation should be deferred or at least constrained until better prepared cohorts flow through the schooling system, qualitative improvements and structural reforms are introduced in higher education, and higher expectations of higher education standards are embedded.

A realistic upper limit of participation increase over the next fifteen years would be around 35% of the age cohort.

Structure of provision

The Dominican Republic needs a much more diversified structure of higher education to meet the varying needs and circumstances of learners cost-effectively and to produce the range of graduates with the mix of skills required by the changing economy.

The development of two-year community colleges focusing on work-relevant and work-based learning is an important development for the Dominican Republic. However, the initiative will need to be professionally and patiently marketed to the community, and employers will need to directly engage with and commit to the development.

Opportunities arise for the Dominican Republic to consider some involvement of transnational providers of higher education employing modern communications systems and teaching and learning technologies. Particular benefits could be gained from the participation of specialised providers of pathway programmes.

At the same time, a strong public sector role in higher education is essential for sustaining balance, equity and excellence in higher education and research, especially in areas where market incentives for provision are weak.

The public higher education sector in the Dominican Republic needs to develop a more dynamic and differentiated set of roles.

The policy framework supporting diversification will need to include a system for national accreditation of higher education providers, a national qualifications framework, agreed mechanisms for credit transfer and recognition of prior learning, and means-based financial aid for poor students.

Funding adequacy and effectiveness

Over the past decade, the Dominican government has been progressively increasing its funding for higher education in absolute terms and as a proportion of GDP. Nevertheless, current spending at around 0.3% of GDP remains very low by international comparisons.

No progress appears to have been made towards a more consistent and principle-based allocation of resources to institutions.

Resource utilisation remains inefficient, principally because of low levels of teaching and learning productivity as manifested in high rates of student wastage.

The government's intention to increase incentives for performance improvement in university teaching will be an important reform, albeit a challenging one.

Science, technology and innovation

Since 2007 the Dominican Republic has adopted a wider view of the national innovation system than that it had in 2001, and its *Strategic Plan for Science, Technology and Innovation 2008-2018* (*Plan Estratégico de Ciencia, Tecnología e Innovación 2008-2018*; SEESCyT, 2008*b*) sets its aspirations in this wider context.

To date, little progress has been made towards meeting the ambitious goals of the Plan, some of which are overly ambitious. However, the associated stock take of Dominican capacity and performance in science and technology provides a useful set of references by which to monitor improvements over time.

The output of scientific publications is at a very low level but there are signs of growth in internationally co-authored papers in health fields.

A very low proportion of the academic workforce is qualified to PhD level. The government has been expanding the provision of fellowships for graduate education abroad, one to two years for Master's and three to four years for doctoral study. Little is known about the employment of graduates on completion of their studies.

Outside the universities only two institutions conduct ongoing research.

The government has increased funding through FONDOCYT (National Fund for Innovation and Scientific and Technological Development, *Fondo Nacional de Innovación y Desarrollo Científico y Tecnológico)* for scientific projects but uptake is low.

Very few firms are innovating, and the great majority of those that are innovating are making incremental process and product improvements through adoption and adaption of technology.

The government is providing incentives for clusters of universities and firms in the agricultural and industrial sectors. Some promising examples of co-operation are beginning to develop, particularly in the agricultural sector.

Governance

Higher education institutions in the Dominican Republic enjoy considerable academic, institutional and administrative autonomy.

The different institutions have evolved different modes of internal governance.

The private institutions generally have greater strategic and operational flexibility than the UASD (Autonomous University of Santo Domingo) which has a complex tradition of collegial decision making amid over-centralised administrative arrangements.

Several reviews have underlined the necessity for UASD improve admissions, curriculum, teaching and student learning. Improvement in these and other areas will not be possible without governance reform and structural change.

The Ministry of Higher Education has data sets to conduct analysis for assessing needs and capacities and monitoring trends and performance. Its capacity is increasing as it builds up a statistical data base and implements the programme of institutional evaluations.

Evaluation of current policies for higher education and research

The review team finds that the Dominican government is pursuing a purposeful public policy approach to improving what has long been an under-performing and under-resourced system of higher education and which has been failing to meet the needs of individuals and serve the development imperatives of the nation.

Much needs to be done, and achieving the necessary improvements will require persistent resolve, openness to new ideas, international exchanges and foreign investments, as well as increased productivity across the range of domestic activities.

The review team broadly endorses the directions set out in the *National Development Strategy 2010-2030* (NDS, *Estrategia Nacional de Desarrollo*) for consolidating a higher education system of quality that is responsive to the social and economic development needs of the nation, and strengthening the national science technology and innovation system.

Many aspects of the *Ten-Year Plan for Higher Education 2008-2018* are consistent with these broader goals. The Ministry of Higher Education, Science and Technology has made a thoughtful analysis of the challenges faced and the policy options available. It has determined to make progressive gains in priority areas as resource capacity permits.

The targeted scholarships for students, especially for advanced study abroad, and English language immersion initiatives, are well conceived and appear to be well implemented.

The five-yearly institutional evaluations have provided important insights into institutional capacity and performance. The evaluations and the constructive responses of institutions to them lay a firm foundation from which to launch further reform driven primarily by the institutions themselves.

The review team has been particularly impressed by the work of the follow-through commission in gaining institutional engagement, monitoring improvements on an institution by institution basis, and helping to disseminate good practice.

Government actions to establish a national accreditation system of higher education institutions, reform curricula, raise the qualifications of higher education teachers, professionalise teaching and introduce performance-based pay together promise to underpin continuous improvement.

However, it is essential that employers are engaged purposefully in the next phases of improving the responsiveness of higher education in the Dominican Republic.

In the view of the review team, the directions set by the Ministry, with the few exceptions outlined below, form a sound basis on which to build further improvements.

The review team considers that the combined targets of the *Ten-Year Plan for Higher Education 2008-2018* (*Plan Decenal de Educación Superior 2008-2018*), across a wide range of initiatives, are too ambitious given capacity constraints. They cannot all be afforded in the likely context of medium-term financing capacity and other priorities. They cannot all be implemented without over-stretching administrative capacity. They constitute a busy agenda the complexity and haste of which may be counterproductive in the context of reactive institutional cultures.

The principal risk is that quantitative goals will be preferred over qualitative improvement, in contradiction to the basic challenge for the Dominican Republic of raising the quality of education at all levels.

In particular, the goal set out in the *Ten-Year Plan for Higher Education 2008-2018* of raising spending to 2.2% of GDP by 2018 is highly ambitious. Demonstrable improvements in performance should be a precondition of increased spending.

The goal of raising higher education participation to 50% by 2018 for the age group 18-24 years is far too high and would result in greater wastage, given the low preparedness of learners, insufficient structural capacity and flexibility, and the need to improve the performance of the current system.

The *Strategic Plan for Science, Technology and Innovation 2008-2018* is overly ambitious in terms of human resource and scientific outputs but less ambitious than required in terms of funding inputs.

The target of increasing the number of PhD qualified personnel by 300 each year to a level of 3 000 by 2018 would require a major programme of international fellowships, both sending Dominicans abroad to study and bringing expatriate and foreign doctorate-qualified people to the Dominican Republic.

Future policy options and recommendations

Considering the formidable challenges faced by the Dominican Republic, recognising the improvements it is making in its higher education and science and technology systems, and with a view to sharpening the focus of those improvement efforts, the review team makes the following recommendations.

Recommendation 1

Improve access by providing pathways and additional qualifications for students who wish to continue their studies in a higher education institution and who have reached a sufficiently good standard in their first post secondary course. This can be assisted by a focus on counselling services at school level and by developing linkages which will facilitate progression between second and third levels and among the National Institute for Technical and Professional Training (INFOTEP, *Instituto Nacional de Formación Técnico Profesional*), the proposed new community colleges and other higher education institutions with recognised pathways to higher degree granting institutions where appropriate.

Recommendation 2

Continue to improve teacher education as a major means of improving learning effectiveness in schools and readiness for higher education:

a. Prioritise the development of a national strategy to improve the quality of teacher education and in service training in HEIs.

b. Invest in the redesign and upgrading of teacher education in the HEIs, especially in the UASD which educates a high proportion of teachers.

c. Develop selection criteria for the teaching profession based not only on the standard admission procedures but on aptitude tests and on interviews.

d. Create incentives for talented individuals to enter the profession.

e. The review team strongly recommends that implementation of the list of recommendations on Teacher Education in the OECD 2008 Review be prioritised (OECD, 2008).

Recommendation 3

Give high priority to reducing higher education attrition by 20% by 2018. Increasing higher education progression and completion will lead to higher levels of graduate output, thereby better meeting labour market requirements and reducing wastage.

Recommendation 4

Improve retention through the following measures:

a. The collection of better data to analyse the factors that contribute to repetition and dropouts.

b. The expansion of improved counselling services during the first year of third level studies.

c. The development of a more nuanced admission policy in UASD. Here the challenge will be to find the right mix of aptitude tests, remedial teaching and course offerings so that the social mission of the University will not be compromised.

Recommendation 5

Involve employer bodies in the programme of higher education curriculum renewal. More relevant and up-to-date curricula will raise the utilisation of graduates and general productivity in the Dominican labour market.

Recommendation 6

Establish a high-level national body that brings together the interests of the economy, labour and higher education portfolios of government with public and private sector employers, and higher education institutions.

Recommendation 7

Diversify the structure of higher education provision. To improve quality and equity within affordable limits, especially as the higher education system expands, it will be necessary to achieve structural reforms through diversification of the system. Two major structural additions need to be considered:

a. The development of two-year community colleges focusing on work-relevant and work-based learning is an important development for the Dominican Republic. This initiative will need to be professionally and patiently marketed to the community, and employers will need to directly engage with and commit to the development across a range of regions.

b. The presence of quality transnational providers of higher education employing modern communications systems, teaching technologies and learning methods attuned to work-based and work-ready learning. Particular benefits could be gained from the participation of innovative providers of pathway programmes.

Recommendation 8

Strengthen the national policy architecture for a more diverse and responsive higher education system of assured quality:

a. Develop a national system for the accreditation of all higher education institutions.

b. Develop a national accreditation system for graduate education, involving international assessors.

c. Construct a national qualifications framework which describes the learning outcomes expected for each level of qualification offered in the Dominican education system.

d. Develop a set of comparative indicators on the capacity, offerings and performance of all higher education institutions as a guide for informing student choice.

Recommendation 9

Improve the availability of financial support for students in need:

a. Increase the number of national scholarships.

b. Increase the capital available to FUNDAPEC (Action for Education and Culture Foundation for Educational Credit, Inc., *Fundación APEC de Crédito Educativo, Inc.*); with the goal of providing more loans at lower interest rates.

c. Explore the possibility of setting up an income contingent student loan system whereby loans would be repaid out of future graduate earnings, with lower interest rates than those currently being charged.

Recommendation 10

Establish advanced research and graduate programmes or research centres in institutions with demonstrable capacity to participate at a high internationally-benchmarked standard:

a. Establish a transparent competitive process for identifying the best placed institutions to grow their strengths in research, using international evaluators.

b. Provide initial block funding at a substantial level for a five-year period against robust performance improvement indicators.

Recommendation 11

In supporting university research, allocate resources directly to researchers or research groups through competitive peer-reviewed processes.

Recommendation 12

The government should build upon its successful International Scholarships System and increase the availability of study abroad scholarships for Dominican students to undertake Master and doctoral degrees at leading universities around the world, while assuring a more explicit connection to national and institutional capacity building plans.

Recommendation 13

The Ministry of Education, Science and Technology (MESCyT, *Ministerio de Educación Superior, Ciencia y Tecnología*) should continue to develop its strategy and strengthen its capacity for collecting and analysing data on the higher education system in the Dominican Republic. Specifically, MESCyT should:

a. Further specify what information (e.g. student enrolments, progression and graduation rates, and faculty profiles) is to be collected for each higher education institution.

b. Provide better information on the Ministry website for students and their families to make informed study choices.

c. Encourage higher education institutions to improve their accountability by publishing more transparent and verifiable information about the quality of their courses, their faculty and the labour market outcomes of their graduates.

Recommendation 14

A well-functioning UASD is important to the future of the Dominican Republic. But its potential to play a dynamic role is hindered by its out-of-date Statute, its slack admissions arrangements, its academic insularity and its cumbersome administration. Evaluation reviews have underlined the necessity for UASD to improve admissions, curriculum, teaching and student learning, and to consider governance and structural reform.

Working closely with MESCyT, the UASD should agree a series of short and medium term measures adopted from the recommendations of the Evaluation teams, together with an implementation timetable.

Recommendation 15

Priority should be given to the modification of the University Statute to enable the development of a new governance structure in UASD which will, in turn, create the conditions for reform in other areas such as improved admission systems and management in the Regional University Centres. Specific measures to be agreed for a new Statute should include:

a. The immediate extension of the period of tenure of Rector from three to five years to ensure that a reform process can be initiated.

b. The creation of new and more accountable Governing Bodies at Central and Regional levels with external representation.

c. The reform of the election process so that the next appointment of Rector will be made with the participation of external stakeholders.

d. The establishment of a task force to improve the effectiveness and responsiveness of the internal governance and management of UASD.

e. The devolution of responsibility for admissions, budgetary, and academic functions to Regional University Centres.

f. Finally, as a medium to longer term measure, the design of a process for creating a new network of autonomous universities based in the existing Regional University Centres.

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Chapter 1: Introduction

This chapter presents the purpose of the review, introduces the review team and describes the scope of the review and the sources of information used. It concludes with a definition of tertiary education programmes internationally and in the Dominican Republic.

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

Purpose and scope of the exercise

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

> Tertiary education exercises a direct influence on national productivity, which largely determines living standards as a country's ability to compete in the global economy. Tertiary education institutions support knowledge-driven economic growth strategies and poverty reduction by *(a)* training a qualified and adaptable labour force, including high-level scientists, professionals, technicians, teachers in basic and secondary education, and future government, civil service and business leaders; *(b)* generating new knowledge; and *(c)* building the capacity to

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

Request from the Dominican Republic

In 2008, the OECD produced a report on education in the Dominican Republic titled *Reviews of National Policies for Education: Dominican Republic* (OECD, 2008). That report contained a brief chapter on tertiary education. Subsequently, the Minister for Higher Education, Science and Technology requested a more detailed examination of higher education, science and technology in the Dominican Republic. In response to that request, the OECD with in-kind support of the World Bank, in 2011, formed a team of examiners to follow up on matters raised in the 2008 review, and to take stock of further government initiatives.

The review team

Members of the review team were: Michael Gallagher (Australia), *Rapporteur*, Executive Director, Group of Eight Australian Universities*;* Ian Whitman (OECD Secretariat), *Team Leader*, Head of the Programme for Co-operation with Non Member Economies of the OECD Directorate for Education; Mary Canning (Ireland), member of the Higher Education Authority of Ireland, of the Royal Irish Academy and of the Governing Authority of the National University of Ireland, Maynooth, and former Lead Education Specialist, World Bank; Francisco Marmolejo (Mexico), Executive Director, Consortium for North American Higher Education Collaboration (CONAHEC) and Vice President for Western Hemispheric Programs at the University of Arizona, United States; Javier Luque (World Bank), Human Development Department for Latin America and the Caribbean; Mihaylo Milovanovitch (OECD Secretariat), Policy Analyst, Programme for Co-operation with Non Member Economies of the OECD Directorate for Education; Simon Schwartzman (Brazil), President, Institute for Studies on Labour and Society (IETS, *Instituto de Estudos do Trabalho e Sociedade*).

Scope of the review

The review team was invited to comment broadly on the condition of higher education in the Dominican and matters relating to its future development. At the outset, the Minister identified several areas of policy concern and attention, and invited the review team to address *inter alia*:

- The strengths and weaknesses of the Dominican Republic's higher education system relative to international capacity and performance.
- Graduate output quality and relevance to the social and economic requirements of the Dominican Republic.
- The effectiveness of the transition from secondary to tertiary education.
- The respective roles of public and private providers of higher education.
- The place of research within the higher education system.
- Options for sustainably financing the growth of the system and the structure of financial incentives for performance improvement in higher education institutions.
- The extent to which the government's own policies and regulations for the development of higher education are appropriate, well directed and effective.

A particular interest of the Minister, and the focus of this report, is the extent to which the Dominican Republic has made progress since 2008 in tertiary education, and in science, technology and innovation, and what more needs to be done to make sustainable the progressive reform outlined in the Education Plan 2008-2018.

Sources of information

The review team visited the Dominican Republic and conducted site visits and consultations from 28 March to 1 April 2011. The team benefited greatly from the information collated by the Ministry of Higher Education, Science and Technology (MESCyT) and other government agencies, and from the visits and meetings with students and staff of higher education institutions. The willingness of government officials, business people, faculty and administrators of higher education institutions, and students to engage in dialogue was greatly appreciated.

In 2011, MESCyT produced a very detailed data set of statistics on the higher education system during the period of 2006-2009 (*Informe General sobre Estadísticas de Educación Superior 2006-2009*; MESCyT, 2011) that provided a useful source of information about the development of higher education in the Dominican Republic.

An important source of insight and information, which complemented the assessment of the review team members themselves, was the extensive interviews with stakeholders during the team's visit to the country. In several instances, through want of contemporary comparative data, the team was unable to gauge how widely some of the views presented to it may apply.

Definitions of tertiary education programmes

International statistical conventions define tertiary education in terms of programme levels: those programmes at ISCED[1] levels 5B, 5A and 6 are treated as tertiary education, and programmes below ISCED level 5B are not.[2] In some countries the term higher education is used more commonly than tertiary education, at times to refer to all programmes at levels 5B, 5A and 6 and at times to refer only to those programmes at levels 5A and 6. An additional complication is presented by the practice, in some countries, of defining higher education or tertiary education in terms of the institution rather than the programme. For example, it is common to use higher education to refer to programmes offered by universities, and tertiary education to refer to programmes offered by institutions that extend beyond universities.[3]

This review follows standard international conventions in using higher education to refer to all programmes at ISCED levels 5B, 5A and 6, regardless of the institutions in which they are offered.

In the Dominican Republic, students completing their secondary education are awarded a *bachillerato*, and may enter higher education at either a technical level (two-year programmes) or "graduate" level (four-year programmes) leading to a graduation degree or *licenciatura*. Master and doctoral programmes are considered "post-graduate" degrees. There are three types of higher education institutions: universities, technical institutes (*Institutos Técnicos de Estudios Superiores*), and specialised institutes (*Institutos Especializados de Estudios Superiores*).

Notes

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

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

3. In the case of the Dominican Republic, higher education is defined in the Article 4 of Law 139-01 on Higher Education, Science and Technology as follows: "Higher education is a permanent process conducted after secondary education leading to the awarding of a technical superior degree or postgraduate". Law 139-01 also establishes that "higher education has the purpose of providing scientific, professional, humanistic, artistic and technical preparation at the highest possible level. It should contribute to economic competitiveness and sustainable human development. It should promote the creation, development and dissemination of knowledge in all its forms; it should contribute to the preservation of the national culture, and develop the attitudes and values required for the preparation of responsible individuals who are ethical, reflective, creative, critical, able to improve the quality of life, and respectful of the environment and of the institutions of the country and democracy".

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Chapter 2: Context

This chapter gives a description of the national context for the review, including the Dominican economy and demography, the social role of education and the educational attainment of the adult population in the Dominican Republic. It describes previous OECD recommendations on higher education in the Dominican Republic, and responses and initiatives of the government, notably the National Development Strategy 2010-2030, the Ten-Year Plan for Higher Education 2008-2018, and the Strategic Plan for Science, Technology and Innovation 2008-2018.

Background

The Dominican Republic is a relatively small country with a population of just over 10 million people. Its land mass is 48 670 square kilometres. The resident population is predominantly Spanish speaking and Roman Catholic in religious affiliation. It is a middle-income country, with the largest economy of Central America and the Caribbean. Geographically in the Antilles, it occupies the Eastern part of the island of Hispaniola which it shares with Haiti broadly on a 2:1 ratio.

Economy

The Dominican Republic has long been viewed primarily as an exporter of sugar, coffee, and tobacco, but in recent years the service sector has overtaken agriculture as the economy's largest employer, especially due to growth in telecommunications and tourism. Manufacturing has also grown within free trade zones (FTZ). The manufacturing sector in the export-oriented FTZ produces mainly textiles, jewellery and electronics. Non-FTZ manufacturing involves mostly food processing for the domestic market.

During the nineteenth century, much later than the rest of the West Indies, the Spanish side of Hispaniola had slowly developed a plantation economy. When tobacco prices fell later that century, US companies

invested in the large-scale cultivation of sugar (Library of Congress, 2007). During the US occupation from 1916 to 1924, Dominican tobacco, cacao and sugar, previously exported to French, German and British markets, were shipped instead to the United States. Subsequently, the big US sugar companies came to dominate banking and transportation, and they benefited from the partition of former communal lands, which allowed the companies to augment their holdings (Library of Congress, 2007).

For more than three decades, Trujillo's primary means of self-enrichment was the national sugar industry, which he rapidly expanded in the 1950s despite a depressed international market. In the process of establishing his wealth, he forced peasants off their land and acquired for his family and supporters more than 600 000 hectares of improved land and 60% of the nation's sugar, cement, tobacco and shipping assets (Library of Congress, 2007).

In 1950 agriculture had employed 73% of Dominican labour, but by the end of the 1980s it accounted for as little as 35%. Industry and services had incorporated approximately 20% and 45%, respectively, of displaced agricultural labour (Library of Congress, 2007).

Diversification away from sugar had begun in the late 1960s. By 1980 the mining industry had become a major foreign exchange earner; exports of gold, silver, ferronickel and bauxite constituted 38% of the country's total foreign sales. In the 1980s, the assembly manufacturing industry, based in tax-exempt FTZs, began to dominate industrial activity. During this decade, the number of people employed in assembly manufacturing rose from 16 000 to nearly 100 000, with that sector's share of exports jumping from 11% to more than 33%. Tourism experienced a similarly dramatic expansion during the 1980s, when the number of hotel rooms quadrupled (Library of Congress, 2007).

Seventy percent of the employees in FTZs were women. As greater numbers of FTZs opened in the late 1980s, the rate of employment for females more than doubled the rate of employment for males. This shift represented a major transformation in the labour force; previously, the percentage of women in the Dominican work force had been lower than that for any other Latin American country (Library of Congress, 2007). Men continued to dominate agricultural jobs in the late 1980s. These were among the lowest paid jobs in the country. The highest salaries were earned in mining, private utilities, financial services and commerce. The distribution of income among workers was highly skewed; the top 10% earned 39% of national income, while the bottom 50% garnered only 19% (Library of Congress, 2007).

During the 1980s, in order to protect domestic industries, the authorities often resorted to trade-restricting measures. This policy resulted in a highly protected domestic industry, which was ill-prepared to enter an increasingly competitive world market (Young, 2002). The first important steps in the direction of free trade were taken during the first Fernández presidency (1996-2000). His government relied on regional and sub-continental integration, as embodied in the 1998 free trade agreements with the Caribbean Community (CARICOM, *Comunidad del Caribe*) and Central America. Since 2002, free trade agreements have been put into effect with Costa Rica and El Salvador. The Dominican Republic is a member of the Free Trade Area of the Americas (FTAA). The free trade agreement with the United States was negotiated in 2004 and via it the Dominican Republic joined the United States-Central America-Dominican Republic Free Trade Agreement (Bertelsman Transformation Index, 2006).

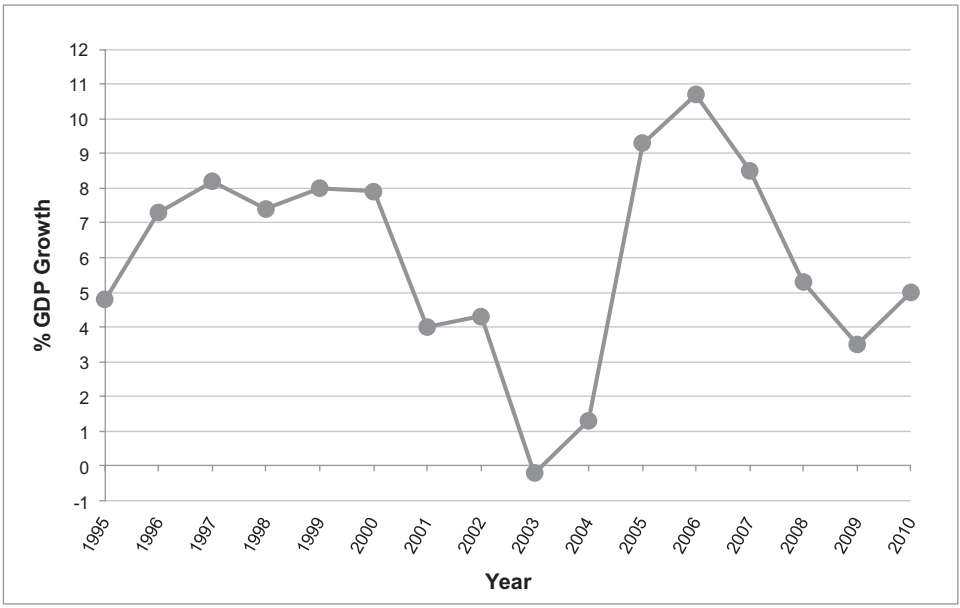
As the Dominican economy has become more internationally integrated and trade exposed its rates of growth in production have become more volatile (see Figure 2.1). Impressive rates of growth were experienced through the 1990s but growth faltered in the early 2000s as several of the Dominican Republic's main trading partners suffered recessions, thus reducing demand for manufactures. Additionally, the textiles industry faced intense competition from Asia. The global economic crisis, and in particular the US recession, started to impact the Dominican economy in 2008. Remittances, exports, and tourism fell, and continued to fall throughout 2009, driving down government revenue. In October 2009, seeking to shore up dwindling revenues and improve its ability to secure more favourable rates with private lenders, the Fernández administration negotiated a new 28-month, USD 1.7 billion standby agreement with the International Monetary Fund (IMF). Among other goals, the agreement aims to address the unrealised reform from the previous agreement by addressing electricity sector inefficiencies and improving fiscal management (Seelke, 2011).

Table 2.1 shows the sectoral composition of gross domestic product and the labour force in 2010.

GDP per capita in US dollars has risen from USD 1 374 in 1991 to USD 2 920 in 2001 and to USD 5 232 in 2010 (Central Bank of Dominican Republic, National Accounts and Economic Statistics Department).

The growth of the Dominican Republic's economy rebounded in 2010 from the global recession, and remains one of the fastest growing in the region (World Bank, 2010). However, the economy is highly dependent upon the United States, the destination for nearly 60% of exports (World Bank, 2010).

Figure 2.1 **Rates of growth in GDP, Dominican Republic, 1995-2010**



Source: Seelke (2011), *Dominican Republic: Background and US Relations*, Washington DC.

Table 2.1 **Production and labour force by sector, estimates 2010**

Sector	Contribution to GDP	Composition of Labour Force
Agriculture	11.5	14.5
Industry	21.0	22.3
Services	67.5	63.1

Source: National Labour Force Survey, October 2010, Central Bank of Dominican Republic, National Accounts and Economic Statistics Department.

External debt in the Dominican Republic represented 25% of GDP in 2008 and is expected to increase to 29% in 2011 and ease progressively thereafter (World Bank, 2010).

Remittances from the Dominican Diaspora, predominantly located in the United States (some 1.2 million persons) and Spain (0.1 million persons), account for around 8% of GDP and compensate considerably for the deficit on the balance of payments current account. Revenues from remittances registered in the balance of payments grew from USD 1.7 million in 2000 to USD 3.1 million in 2008, equalling the foreign currency inflows from

tourism (Dominican Republic Central Bank, 2009). Remittances were used by recipients mainly for daily expenses (60%) and education expenses (17%) (Center for Latin American Monetary Studies, 2010). Of the remittance income used by families for education expenses in 2007, 46% of remittance beneficiaries were students in primary schooling, 32% were secondary students and 16% were students in higher education (Center for Latin American Monetary Studies, 2010).

The fiscal position of the Dominican Republic has tightened with the shift from economic stimulus through public investment expenditures through 2009-10 to fiscal consolidation since mid 2010 (World Bank, 2010).

The Dominican Republic has moderate tax rates. Personal income tax is progressively collected at a rate of 15% for taxable incomes from DOP 330 302 to DOP 495 450, and at 20% for incomes between DOP 495 450 and DOP 688 125. The top tax rate of 25% applies to taxable incomes above DOP 688 125. Corporations are subject to a flat rate of 25%. Other taxes include a value-added tax (standard rate of 16%), an estate tax, and a net wealth tax. In the most recent year, overall tax revenue as a percentage of GDP was 15%.

Dominican Republic Free Zone provides reduced or zero tax rates for those starting a business in the zone with exemption from corporate taxes, the value added tax, transfer taxes, capital gains taxes, business and incorporation taxes, export duties and exemption from municipal taxes. The initial fifteen-year tax exemption period is renewable. Another tax advantage is that import duties are also waived for vehicles, production equipment and materials needed for the business activities of companies in the Free Zone.

An inefficient energy sector and the weakness of public institutions add to the challenges of extensive poverty and high dependency on external economies.

The social role of education

The political-economic history of the Dominican Republic continues to resonate also in the contemporary higher education environment.

Education expanded at every level in the post-Trujillo era. By the mid-1980s, universal primary school education was almost achieved, but only 45% of those of secondary school age were enrolled. Higher education enjoyed the most spectacular growth. At Trujillo's death there was one university, the University of Santo Domingo (Universidad de Santo Domingo), with roughly 3 500 students. By the late 1980s, there were more than 26 institutions of higher education with a total enrolment of over

120 000 students. By 2000, the number of higher education institutions had risen to 31 with 245 000 students. In 2009, there were 47 higher education institutions enrolling some 373 000 students.

Enrolments in private schools also expanded during the post-Trujillo era. Private schools, most of them operated by the Roman Catholic Church, enjoyed a reputation for academic superiority to public schools. By the 1970s, they appeared to be the preferred educational option for the urban middle class. As noted in the 2008 OECD report on education in the Dominican Republic, political turbulence in the post-Trujillo era tended to politicise parts of the public sector, including the public education system, and those who could afford to shift to private institutions did so. A stratified education system is the legacy, and it functions as a structural source of social inequity.

Thus, concurrently, education, and higher education especially, functions in part as a basis for human capital formation and, in part, as a signalling mechanism. Possession of higher education credential confers social status but does not necessarily lead to or denote skills acquisition and competence.

Importantly, the Autonomous University of Santo Domingo (UASD, *Universidad Autónoma de Santo Domingo*), the major public institution of higher education, has been "a space for the expression of struggle and for the ideals of democracy, personal freedom and social equity, often in opposition and confrontation to authoritarian rulers and dictatorships" (OECD, 2008). However, in the contemporary era of intensifying global economic competition, the need arises to balance the important legacy of the national university with the imperative for national productivity improvement. Thus a central challenge is to redefine the role of one of the major public institutions of the Dominican Republic in the future knowledge economy, alongside the need to diversify opportunities for the growth in future learners.

Population

Around one third of the population of the Dominican Republic, or 1.6 million young people, are aged under 15 years. The adolescent population aged 10 to 19 years approximates 2 million, representing 20% of the population. Education provision will continue to be a major social and economic priority over the next 20 years.

In 2006, 75% of the population was less than 40 years old and 5% was aged over 65 years. In 2010 that proportion is estimated to have risen to 6.5%, totalling 650 000.

Population ageing, and the associated reduction in the size of the working age population, will become a growing concern although it will not become problematic over the medium term. The *potential support ratio* (PSR) – the number of persons aged 15 to 64 years per person aged 65 and over – while declining only moderately from 16.2 in 1950 to 14.5 in 2000, is projected to fall to 4.2 by 2050 (United Nations, 2006). The social costs of the ageing population will put more pressure on the government budget and require increased workforce participation and productivity. Greater attention to skills formation will be required over the next decade to build the capacity necessary for making the necessary productivity gains.

The ethnic composition of the population has been estimated at 16% white, 11% black, and 73% mulatto. Descendants of early Spanish settlers and of black slaves from West Africa constitute the two main racial strains (Nationsencyclopedia, accessed July 2010). There is also a large number of immigrants from Haiti, most of them undocumented, numbering between half to one and a half million, or about 10% of the population according to various estimates. These immigrants and their descendents do not have access to basic public services and access to public education beyond primary school, and work mostly in low-pay, menial jobs (Ferguson, 2003).

The urbanisation rate was estimated to be 69% in 2008, with an annual rate of growth in urbanisation of 2.6% over 2005-2010 (CIA World Factbook, 2010).

A national population census in 2010 indicated the spread of the resident population across the provinces. The capital, Santo Domingo, represents one quarter of the population. The four largest provinces, comprising Santo Domingo, Santiago, Distrito Nacional and San Cristóbal, together account for one half of the population. As shown in Table 2.2, the ten largest provinces, account for 70% of the population, while 30% of the population reside in the rest of the country.

This distribution of the resident population presents challenges for access to higher education opportunity and the associated provision of higher education services. As indicated in Table 2.3, there are significant urban/rural and gender differences in levels of educational participation and attainment. Rural youth do not persist in education as long as urban youth. Urban boys do not persist as long as urban girls. Rural girls do not persist as long as rural boys. These differences appear to reflect socio-economic conditions and deep-seated cultural factors, including attitudes and practices relating to adolescent girls in rural areas (UNESCO, 2011).

Table 2.4 provides an overview of key indicators for the country.

Table 2.2 **Resident population of the Dominican Republic by province, 2010**

Largest provinces by population	Residents in 2010
Santo Domingo	2 359 327
Santiago	942 509
Distrito Nacional	935 058
San Cristóbal	557 270
La Vega	379 372
Puerto Plata	328 195
San Pedro de Macorís	300 207
Duarte	290 375
La Altagracia	268 314
La Romana	250 220

Source: MEPyD (2011).

Table 2.3 **School enrolment among 10-17 year olds, Dominican Republic, 2007**

Percentage of adolescents aged between 10-17 years old currently in school				
Age	Urban		Rural	
	Girls	Boys	Girls	Boys
10	95.6	93.9	94.6	95.2
11	96.6	94.2	95.5	95.9
12	94.5	95.4	94.7	93.5
13	94.2	91.5	95.6	94.3
14	94.8	90.2	92.9	90.9
15	91.1	92.3	88.2	85.4
16	85.9	84.9	76.9	80.9
17	81.8	75.4	67.3	69.1

Source: Population Council (2009).

Table 2.4 **The Dominican Republic: Key Indicators, 2010**

Population, total (millions)	10.1
Population growth (annual %)	1.4
Fertility rate (births per woman)	2.7
Birth rate (per 1 000 population)	22.4
Life expectancy at birth, persons (years)	73
Mortality rate, infant (per 1 000 live births)	27
Gross National Income (USD, billions)	45
GNI per capita (Atlas method, USD)	4 550
Unemployment, persons (% of total labour force)	14.0
Inflation (CPI estimate)	7.6
Literacy rate, female (% aged 15 and above)	88.0
Literacy rate, male (% aged 15 and above)	88.0

Source: World Bank, Statistical data base.

The country suffers from marked income inequality; the poorest half of the population receives less than one-fifth of GDP, while the richest 10% enjoys nearly 40% of GDP. High unemployment and underemployment remains an important long-term challenge (World Bank, 2010).

Two percent of the population is estimated to be below the international poverty line of USD 1 00 per day (Dominicana en Cifras, 2011). However, in their poverty assessment of 2006, using other poverty lines which relate to country-specific circumstances, the World Bank, the Inter-American Development Bank and the Technical Secretariat of the Presidency of the Dominican Republic identified higher levels of poverty than expected:

> This report finds that poverty and the incomes of the poor saw virtually no improvements during the growth bonanza of 1997-2002 and that the 2003-2004 economic crisis brought a dramatic deterioration of real incomes and poverty levels. About 16% of the Dominican populations (1.5 million) became poor and about 7% (670 000) fell into extreme poverty (incomes too low to afford the food basket of minimum calorific intake) in the last two years. In 2004, 42 out of each 100 Dominicans were poor, and 16 of them were living in extreme poverty. Income inequality remained unchanged over the last seven years at a Gini coefficient of 0.52, the average for Latin America and the Caribbean, the most unequal region in the world. These millennium development goals indicators continued to be below the expected levels given the country's economic development. (World Bank, 2006)

A number of observations from that assessment are relevant to the matters of concern to this review of higher education. First, there was unequal growth in labour earnings over the period observed (1997-2002), benefiting the National District and other more affluent regions, workers with university education, and sectors which have a relatively lower demand for unskilled labour. Second, the low incomes of the poor result largely from low labour productivity rather than from their inability to leverage their skills into better paying jobs. Third, the main reason for low labour productivity is that many low income children leave school too early to accumulate the minimum level of skills demanded by the labour market. Fourth, the Dominican Republic's education system is simultaneously an over-achiever in school enrolments and an under-performer in school attainment. Fifth, the schooling system displays extremely high repetition rates which cause the equity in enrolment to translate eventually into inequity in years of learning, favouring girls, urban residents and high-income children. Sixth, under-performance in education is the result of low levels of spending in the education sector, poor quality of teachers and low levels of teacher education, bottlenecks in the supply of secondary schools, and large management inefficiencies (World Bank, 2006).

A particularly intractable problem is that of youth unemployment. In 2008, the unemployment rate for the 15-19 age group was 29.7% (31.3% for the urban population, 19.5% for males and 47.7% for females). The unemployment rate in the same year for the 20-24 age group was 24.4% (16.1% urban, 15.1% for males and 36.9% for females) (Central Bank, Labour Force Survey, 2008). Surveys of the reasons for high youth unemployment point to lack of literacy and numeracy skills acquisition at school and school dropout (USAID, 2010).

Educational attainment of the adult population of the Dominican Republic

As shown at Table 2.5, as at 2007, almost half the adult population (47.5%) had no secondary schooling, and fewer than one in five had a tertiary education qualification. There has been a gradual increase in the stock of the workforce with tertiary education qualifications, rising from 6.4% in 1997, to 10.3% in 2000, to 18.7% in 2007 (ILO, 2010). There is a slightly higher proportion of women than men who are tertiary educated. Of note is the absence of population with (ISCED 4) post-secondary non-tertiary qualifications which are designed to prepare students for studies at Level 5 or programmes designed to prepare students for direct labour market entry.

Table 2.5 **Educational attainment of the population aged 25 years and older, by highest level of attainment, Dominican Republic, 2007**

	25+ years (000s)	No schooling (%)	Incomplete primary (%)	Primary (ISCED 1) (%)
Males	2 381	8.8	35.9	13.6
Females	2 393	9.3	35.7	11.7
Persons	4 774	9.0	25.8	12.7

	Lower secondary (ISCED 2) (%)	Upper secondary (ISCED 3) (%)	Tertiary (ISCED 5-6) (%)
Males	13.4	12.3	16.0
Females	10.0	12.1	21.2
Persons	11.7	12.2	18.7

Source: UNESCO (2009).

Table 2.6 shows educational attainment for a range of comparator countries. The available data for several countries lags that shown at Table 2.5 for the Dominican Republic, whose growth in the tertiary educated population has been rapid since the late 1990s. Nevertheless, it is evident the Dominican Republic has a higher proportion of its workforce with higher education qualifications.

Table 2.6 **Educational attainment of the population aged 25 years and older, comparator countries, persons by highest level of attainment, various years**

Country	25+ years (000s)	No schooling (%)	Incomplete primary (%)	Primary (ISCED 1) (%)
Argentina (2001)	20 362	4.3	14.9	35.0
Bahamas (2000)	159	1.4	0.1	8.3
Barbados (2000)	184	-	13.6	8.3
Belize (2005)	115	6.2	25.1	42.9
Brazil (2004)	97 070	15.7	15.3	26.5
Costa Rica (2007)	2 376	5.1	16.9	28.9
Cuba (2002)	7 483	0.2	13.8	17.2
El Salvador (2006)	3 219	21.3	26.6	15.2
Guatemala (2006)	4 819	37.1	29.6	14.2
Panama (2000)	1 465	9.1	14.5	28.7
Paraguay (2006)	2 643	5.4	30.4	25.3
Peru (2006)	13 603	9.5	18.2	20.6
Uruguay (2006)	2 048	1.9	15.1	35.8
Venezuela (2006)	13 545	6.9	18.2	28.1

Country	Lower secondary (ISCED 2) (%)	Upper secondary (ISCED 3) (%)	Post-secondary non-tertiary (ISCED 4) (%)	Tertiary (ISCED 5-6) (%)
Argentina (2001)	11.6	23.2		11.1
Bahamas (2000)	19.1	51.5	18.7	0.3
Barbados (2000)	53.8	8.5	14.6	1.1
Belize (2005)		13.6		10.9
Brazil (2004)	13.0	21.2		8.1
Costa Rica (2007)	13.8	18.5		15.0
Cuba (2002)	28.4	31.0		9.4
El Salvador (2006)	12.5	13.8		10.6
Guatemala (2006)	3.9	11.2		3.7
Panama (2000)	13.7	22.4	0.7	10.4
Paraguay (2006)	11.4	16.1	7.5	3.7
Peru (2006)	5.4	26.0		16.3
Uruguay (2006)	22.4	15.1		9.6
Venezuela (2006)	10.7	21.7		12.8

Source: UNESCO (2009), *Global Education Digest 2009: Comparing Education Statistics across the World*, UNESCO Institute for Statistics, Montreal.

Previous OECD advice regarding higher education in the Dominican Republic

The 2008 OECD review made ten recommendations in respect of higher education, science and technology (see Box 2.1).

Box 2.1 **Recommendations of the 2008 OECD Review on Education**

a. Evolve towards a Bologna-type, three-tier system of tertiary education. Focus the first two to three years on technical education and general education to prepare students both for the labour market and for advancement to the next level of tertiary education; the next two or three years for professional or Master's level degrees; and the last two or three years for graduate and advanced professional education. Establish clear rules for certification at each level.

b. Establish through a step-by-step process over a period of five to ten years a subsystem of public community technical institutes (*Subsistema Público de Institutos Técnicos Comunitarios*) in accordance with the project developed by the State Secretariat for Higher Education Science and Technology. At the end of the ten-year period, these institutes should be operating in every region of the country.

c. Consolidate the quality assessment system for higher education, based on peer review, to inform the public about the quality of institutions and career opportunities and the quality of the system as a whole and the programmes within it, and to provide clear criteria for resource allocation and the authorisation for granting higher level degrees.

d. Develop a nationwide system of course-programme (or career) assessment, based on the achievements of the graduating students.

e. Strengthen the competitive research grants programme within the State Secretariat for Higher Education, Science and Technology, based on peer review.

f. Increase the amount of public resources devoted to tertiary education in line with the requirements of Article 91 of the Law on Higher Education, Science and Technology, to reach at least the level other countries in the region of about 1% of GDP, compared to the current level of 0.3% of GDP.

g. Develop a comprehensive, integrated, coherent set of financing policies for tertiary education consistent with national goals and priorities.

   – Recognise that private (student and other private) sources cannot be a substitute for continued public funding to ensure that the tertiary education system responds to major public priorities.

- Insist that increases in public funding and revenues from student fees be matched by more effective academic and institutional practices, clear assessments of need, capability and results, and implementation of necessary institutional forms.

8. For the public sector, align the allocation of public resources to results, in terms of academic achievement and number of students graduating in different fields, rather than on existing costs. This policy would require a good system of indicators of achievement, clear rules for resource allocation, and a transition period from the current regime.

9. Base funding of private institutions on clear public goals with related public accountability for results, and cease funding of these institutions based on historical reasons.

10. Regarding the Autonomous University of Santo Domingo (UASD): (also applicable to other public institutions):

    - Evolve from a centralised to a decentralised structure, giving more autonomy to regional locations in the creation and management of their own course programmes.
    - Allow different academic units and departments to develop their own extension and research programmes, and administer their own resources.
    - Combine the existing open-admissions system at the first level with selective admission procedures.
    - Bring research to the university mainstream, turning researchers into teachers, and stimulating research among the academic staff.
    - Improve the management of human resources by recruiting for new vacancies through open competition, not limited to the existing academic staff; improve the existing career system, moving from promotion through seniority by promotion through merit; and limit tenure to a small group of high achievement academics, rather than to all.
    - In graduate education, make sure that the joint doctoral programmes are developed in partnership with high quality institutions. Diversify from the current concentration on Spain, to include the best universities in the United States, Europe and Latin America.
    - Create a programme to support a small number of students going for advanced degree programmes in first-class universities abroad.

Source: OECD, 2008.

Responses and initiatives of the Government of the Dominican Republic

Having regard, *inter alia*, to the recommendations of the World Bank, the International Monetary Fund, the OECD and other agencies, and its own analysis of challenges and options, the Government of the Dominican Republic has embraced an ambitious, long-term reform agenda, as reflected in the *National Development Strategy* of the Ministry of Economy, Planning and Development (MEPyD), the *Ten-Year Plan for Higher Education 2008-2018* of the Ministry of Higher Education, Science and Technology, and the *Strategic Plan for Science, Technology and Innovation 2008-2018*.

National Development Strategy

In 2010, the Ministry of Economy, Planning and Development (MEPyD) issued an outline of its National Development Strategy 2010-2030 (NDS, *Estrategia Nacional de Desarrollo*). This Strategy was converted into the "Law for the National Strategy of Development for the Dominican Republic 2030" approved on 25 January 2012. The strategy is based on the following long term vision:

> Dominican Republic is a prosperous country where people live in dignity, attached to ethical values and within a framework of participatory democracy that guarantees a social and democratic state of law and promotes equity, social justice and a more egalitarian society which manages and enhances its resources to develop in an innovative, sustainable and territorially integrated way and that inserts itself with competitiveness in the global economy. (MEPyD, 2010)

The NDS aims to reduce poverty substantially from the current 34% to 15% and ensure education coverage for 100% of the population. The development goals of the strategy include reducing the proportion of the population in extreme poverty from 10% to 5% between 2010 and 2020, and increasing gross income per capita from USD 4 390 in 2010 to USD 7 753 by 2020.

The NDS addresses four key targets: *(i)* the realisation of a state that serves the citizens by the rule of law, transparency and efficiency; *(ii)* greater social cohesion, with a substantial reduction in poverty and inequality; *(iii)* developing a robust and innovative economy capable of competing in global markets; and *(iv)* addressing environmental challenges and climate change.

With regard to economic development, the NDS supports the development of new niche products that will enable the country to position itself competitively in the global economy. The NDS also seeks to raise the confidence of investors and aims to join the top 30th percentile of the Global Corruption Perception Index, where it currently sits in the top 55%.

Education, Science and Technology are seen as playing key roles in the strategy. Particular attention is given in the strategy to raising participation and quality in schooling, increasing adult literacy and strengthening vocational training.

With regard to higher education, the *National Development Strategy 2010-2030* outlines the following lines of action for meeting the specific objective to "consolidate a higher education system of quality that responds to the development needs of the nation":

- Update the curricula of higher education to achieve international quality standards.
- Establish an academic career and a national accreditation system for higher education teachers.
- Creating a critical mass of research faculty through the training of teachers and doctors in recognised world-class universities and the attraction of high level professionals living abroad, with equal opportunities and criteria.
- Creating a system of incentives to institutions and students, incorporating rational criteria of fairness, to ensure the training of professionals in the areas of science and technology and other specialties that are key to national development and competitiveness, such as the preparation of teachers.
- Establish admission quotas (*numerus clausus*) for overcrowded careers at universities that receive public funds;
- Develop community colleges to facilitate the entry of young people and women into the labour market.
- Develop distance and virtual education in higher education institutions as a way to expand access to the entire population.
- Establish a national accreditation system of higher education institutions to ensure an orderly and efficient growth in the supply of higher education and quality assurance.

- Strengthen mechanisms such as educational loans and scholarships in order to ensure equality of opportunity between different population groups in access and retention in higher education.
- Strengthen strategic alliances with foreign higher education institutions as a means of improving the quality of local institutions.
- Promote continuing education curricular offerings that makes possible the professional development of university graduates.
- Promote entrepreneurship in higher education programmes.
- Establish a mandatory entrance orientation and academic aptitude test aimed at knowing if the student has the minimum required knowledge and abilities to initiate tertiary education studies.
- Strengthen higher education institutions' remedial programmes aimed at levelling the knowledge of those students who did not pass the aforementioned test, in preparation for a second test, and guaranteeing equality of opportunities.
- Promote the certification of professional competencies for graduates of higher education institutions
- Enable the regional decentralisation of the administrative and academic functions in the public system of higher education as a way to foster greater articulation of the academia with regional development needs, and to promote the specialisation of campuses based on knowledge areas.
- Establish a system to identify future needs in the preparation of professionals and technicians, based on the development needs of the country.

A set of actions is also outlined with a view to "strengthening the national science, technology and innovation system to respond to the economic, social and cultural demands of the nation and foster integration into the knowledge society and economy":

- Strengthen the national science, technology and innovation system, based on the integration of capabilities and needs of public and private agents and on a close link between business, universities and research centres.
- Prioritise and encourage research, development and innovation (R&D&I) as well as technological adaptation in areas and sectors with potential to impact significantly on the improvement of production, the sustainable use of natural resources and the quality of life of the population.

- Promote the development of nuclear energy applications in the fields of medicine, industry and environment.
- Promote the use of information contained in the records of Intellectual Property as a tool to adapt and incorporate technological innovation in the production process.
- Strengthen scientific publication at the university and national levels.
- Facilitate the proper dissemination of the results of national research, its applicability and market potential.
- Create awards for excellence in scientific and technological innovation and promote its general publication.

Complementing the NDS is the NAP (National Action Plan for the Strengthening of Capacities Related to Trade: Confronting the Challenges of Globalisation; *Plan de Acción Nacional para Fortalecer las Capacidades Relacionadas con el Comercio: Enfrentando los Retos de la Globalización*) an initiative based in the negotiating process of the Free Trade Area of the Americas (FTAA). Work began on the first NAP in 2007. The second NAP, produced in 2010, focuses on areas where international co-operation could play a significant role in complementing national efforts and policies, with priority given to institutional strengthening and compliance with commitments made in trade agreements signed by the Dominican Republic in recent years. Attention is given in the NAP to increasing to raise the viability of rural production especially for vulnerable populations, developing R&D for dairy products, promoting of the use of information and communication technology (ICT) in small and medium-sized enterprises (SMEs), and promoting a quality culture more generally throughout the community.

Ten-Year Plan for Higher Education 2008-2018

In recent years, the Ministry of Higher Education, Science and Technology (MESCyT) has worked vigorously to achieve consensus on a vision for the modernisation of higher education in the Dominican Republic while developing the regulatory environment for quality assurance through a rigorous process of institutional evaluations. MESCyT has also taken the lead in such key areas as the scholarship programme, the reform of teacher education, medical education and the internationalisation of the system.

The *Ten-Year Plan for Higher Education 2008-2018* (*Plan Decenal de Educación Superior 2008-2018*; SEESCyT, 2008*a*), prepared by the Ministry, sets out a series of ambitious targets for reform based on, *inter alia*, the promotion of a culture of innovation and a vision for the system that focuses on greater co-operation and collaboration between and among higher education institutions (HEIs). The Plan also aims to promote greater participation between government, HEIs, businesses and civil society. The Ten-Year Plan is structured on three phases of achievement: the "emergency" phase, in 2010; the "modernisation" phase, by 2014; the "consolidation" phase, by 2018.

New legislation that would be more responsive to global trends in higher education will be prepared as will programmes to improve access and student welfare services and to develop a technology platform with free access to support student registration and services for libraries, communication and teaching aids. There is a recognition that additional financial resources will be necessary for these programmes but no specific reference as to how they might be obtained or from where.

The Ministry's own modernisation plan will focus on strengthening its co-operation with HEIs and on building more capacity for planning and information. All HEIs will be encouraged to undertake multi-year strategic planning exercises with the involvement of a gradually increasing number of staff in each institution and in liaison with MESCyT. Institutional plans will be expected to comply with the Strategic Plan for Higher Education, Science and Technology and with government budgetary planning.

Objective 1

Increase access, retention and the number of graduates in undergraduate and graduate degree programmes to significantly expand equity of opportunity in higher education.

Intended results

- At the end of the planning decade, at least 50% of the population group aged 18-24 will be participating in higher education, involving an enrolment of 659 800 students, and representing a doubling of 2005 enrolments of 322 300 students.
- By 2018, the output of higher education graduates will be doubled to 73 900 graduates per annum.
- Dropout rates in higher education will be reduced by 20%.
- At least eight technical community colleges will be established by the end of 2012.

- At least 30 new courses will be developed through community colleges focusing on community and national needs.

Objective 2

Improve the quality of teaching and learning in higher education to bring the Dominican Republic closer to international quality standards; transform higher education curricula in the Dominican Republic, consistent with national development and competitiveness objectives; create economic communities committed to the production of knowledge and best teaching practices in a framework of values, making curricula and research in HEIs more responsive to the needs and demands of the productive sector.

Intended results

- All study programmes will be reviewed and curriculum redesign will have been carried out in all HEIs.
- Six courses will be revamped in the emergency phase, 50% of all courses in the modernisation phase and all courses by the end of the planning period.
- At the end of the second year of the Ten-Year Plan, teaching methods will have been transformed and techniques for the teaching of values designed, tested and applied in 100% of HEIs.
- Concrete action will be taken to incorporate ethics and values, with implementation in 25% of HEIs during the emergency phase, 75% in the modernisation phase, and 100% of the HEIs in the consolidation phase.
- Annual professorial evaluation programmes will established at each HEI.
- All academic programmes and curricula of higher education institutions, designed in accordance with the guidelines, policies and methodologies in place. Proposed curriculum innovations applied and evaluated in 100% of HEIs (2015-2018).
- Training programmes will be designed and implemented for 100% of key stakeholders of the HEIs (2009).

Objectives 3

Promote the relevance of higher education programmes in the Dominican Republic to meet the needs of national development, as well as the demands of different regions of the country.

Intended results

- One hundred per cent of university students from households in poverty will have benefited from full scholarships with stipends and 50% with study-only scholarships.
- Ten thousand international scholarships will be awarded for study at prestigious universities in key areas for national development and competitiveness, of which 20% would be allocated to research and teaching staff of HEIs.
- Fifty thousand national scholarships will awarded in Dominican universities and other higher education institutions in key areas relating to national development and competitiveness, of which 10% (5 000) would be allocated to research and teaching staff HEIs.
- Many more courses will be offered in English, through enhanced immersion mode, and programmes will be initiated in Mandarin, French and Portuguese, also by immersion.
- Digital screens in HEIs will be quadrupled.
- Fifty thousand students and teachers of limited means will benefit from laptops and future technological developments.
- Hundred thousand students with limited financial resources will be granted incentive vouchers.
- College students nationwide will be eligible for transport allowances.
- Enrolments in diverse programmes offered by the European Commission will be doubled.
- The ratio of graduates enrolments to total enrolments in higher education will be increased, with graduate enrolments rising from 7 900 in 2005 to 66 200 by 2018.
- Adults who have left university classes in the past, and today are part of the EC workforce, will be given opportunities to work in rural and marginal urban areas.

Objective 4

Professionalise and dignify staff of Dominican higher education, requiring the HEIs to establish professional development programmes, enabling them to conduct their functions of teaching, research and outreach, at the highest level.

Intended results

- The number of teachers in HEIs with a doctorate will be increased by 10% and the number of teachers employed full time or part time by 25%.
- A minimum of 200 PhDs per year will be trained in different areas, with emphasis on scientific and technological research. HEIs will be encouraged to invest 3% of their budget on research and development.
- Dominican universities will have 50% of faculty with PhD degrees and at least 25% will be hired on a full time basis.
- Following the emergency phase attention will be given to the academic career development and accreditation of teachers.
- A performance related academic salary system will be introduced in the emergency phase and implemented gradually over the next stages, with a view to ensuring satisfactory performance of teachers in their tasks and promoting training and updating in their fields of competence.
- During the execution of the Ten-Year Plan, the National Accreditation of Academic and Career teachers will have reached the following coverage:
  - 20% of teachers at the end of the emergency phase;
  - 50% at the end of modernisation phase;
  - full coverage (100%) after the consolidation phase: that is, some 26 500 teachers will be incorporated into the scheme by 2018.
- A specialised MESCyT and HEIs Fund will be applied with a view to achieving by 2018:
  - that 100% of teachers have Master's level qualifications in their area of teaching;
  - that 50% of teachers and researchers have Doctorate degrees;
  - training and updating staff in higher education covering 26% (6 859 persons) in the year 2010, 38% (13 202 people) in 2014 and 50% (22 443) in 2018.

Objective 5

Modernising Dominican higher education, to promote internationalisation, advance innovation processes, strengthen MESCyT, the HEIs, the use of ICT, and open up new forms of education and lifelong learning.

Intended results

- A new Law on Higher Education for the Dominican Republic will be adequately developed, managed and implemented.
- Between 1.5% and 3% of the budget will be allocated to a programme of institutional modernisation in HEIs.
- Procedures for administrative and academic management will be established and operational in 50% of HEIs in the first phase, and at least 90% at the end of the Ten-Year Plan, using modern automated systems.
- Modern higher education infrastructure, incorporating architecturally-designed spaces and facilities will be built in all HEIs, with attention given to accessibility and student welfare services.
- Interconnected technological platforms will be established in all HEIs, with freely available digital registry, offices and library services, communication and teaching aids consolidated in 80% of them.
- INTERNET2 will be accessible in 2009 for the development of content and materials for teaching and research, including networked infrastructure with the Technopark.
- ITC will be used in at least 50% of HEIs to strengthen the creation of new learning environments for traditional classroom education, and mixed-mode learning, and virtual and distance education mode.

Objective 6

To achieve the creation of research groups in HEIs, as well as the creation of inter-university research networks, and strengthen university-industry programmes.

Intended results

- The number of teachers with a doctorate in higher education institutions will increase by 10% and the number of teachers employed on a full-time or part time basis will increase by 25%.
- A minimum of 200 PhDs per year will be trained in different areas, with emphasis on scientific and technological research. HEIs will invest 3% of their budget on research and development.
- The Dominican universities will have 50% of faculty with doctoral degrees and 25% employed full time.
- All universities and business will participate in creating opportunities for the exchange of knowledge and experience.
- The financing fund, FONDOCYT (National Fund for Innovation and Scientific and Technological Development, *Fondo Nacional de Innovación y Desarrollo Científico y Tecnológico*), and the Financing Fund for Innovation and Technological Development (FFIDT, *Fondo de Financiamiento a la Innovación y el Desarrollo Tecnológico*) will be increased by 25%, to strengthen research and development activities.

Objective 7

Encourage the development and expansion of university-industry programmes.

Intended results

- The following outcomes will be achieved in the first four years of the Ten-Year Plan:
  - 25% of HEIs in the Dominican Republic will have effective mechanisms to link with the productive sectors in the dimensions of teaching, research and extension.
  - 25% of HEIs will offer support services to the productive sectors.
  - 15% of the national HEIs will develop a culture of entrepreneurship.
  - 50% of HEIs will have established agreements with at least 4 firms and will be undertaking some joint programmes.

- At the end of the Ten-Year Plan, the Dominican Republic will have established a network between academia and business, which promotes the exchange of information and effective support for innovation, for the mutual benefit of both sectors.

Objectives 8

Significantly increase state support for higher education, as well as the household and the private sector.

Intended results

- 2.2% of GDP will be allocated to higher education, science and technology (MESCyT included).
- Policies and strategies will be defined to generate additional income and diversify resources from public, private and external sources.
- There will be increased financial contribution of the Dominican State to the Autonomous Santo Domingo University, and subsidies for other public universities and other institutions of higher education.
- A Trust Fund for the Financing of Higher Education will be operational.

The Strategic Plan for Science, Technology and Innovation 2008-2018

The *Strategic Plan fro Science, Technology and Innovation 2008-2009* (*Plan Estratégico de Ciencia, Tecnología e Innovación 2008-2018*; SEESCyT, 2008*b)* envisages the Dominican Republic increasing its international competitiveness by shifting to an economic model based in the generation of knowledge, technology transfer and innovation in the more strategic sectors of the economy, and raising the qualifications of its labour force to that end.

The plan proposes actions to develop a coherent institutional framework; provide incentives for technology-based ventures; develop a well-educated and skilled workforce; build an efficient innovation system, which connects universities and public and private institutions; and develop information and communications technology as tools for the dissemination of knowledge.

The four main programme objectives of the plan are: *(i)* to strengthen the financial and institutional resources for science and technology; *(ii)* to develop a research programme for science, innovation and technological

development; *(iii)* to increase the qualifications of the country's human resources; and *(iv)* to educate the public and get society involved in issues of science and technology (SEESCyT, 2008*b*).

The plan includes a set of quantitative targets, one of them being that the Dominican Republic will be investing 0.5% of its GDP on Science and Technology by 2018. The total amount for resources to be invested in the ten-year period is USD 1 450 million, growing from 113 million in 2009 to 180 million in 2018. Initially, 50% of this would come from the government, with the expectation that 40% would come from fiscal incentives to investments in the productive sector, and about 10% from international co-operation. By 2018, the government investment would be reduced to 40% (SEESCyT, 2008*b*).

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Chapter 3: Access to Higher Education

This chapter gives a description of participation in and provision of higher education in the Dominican Republic. It discusses admissions criteria and selection processes, student retention and students' preparedness for higher education; which lead the review team to the following conclusions: (i) lack of preparedness of students transferring from the general education system into higher education; (ii) importance of providing relevant information, career orientation and counselling services to students both before they enter higher education and again as part of student support services for new entrants; and (iii) absence of accurate comparable data from HEIs to facilitate policy making, either because data is not being collected or is not being made available to the Statistics Department of the Ministry.

In most countries, a major challenge for policy makers is to develop appropriate instruments to ensure that access to higher education is fair and open. Concerns about barriers to entry usually focus on inequity of opportunities at the school level, the relationship of secondary schooling with higher education, post-school admissions processes, and the costs to students and their families of participating in higher education.

In the Dominican Republic, the government goal is that everyone, without exception, must be treated equally both in gaining access and participating within the higher education system. Thus, one of the main objectives of the *Ten-Year Plan for Higher Education 2008-2018* (SEESCyT, 2008) is to increase access for vulnerable groups, to improve retention and graduation rates and to provide better opportunities in rural areas by strengthening regional provision of post-secondary education services. This chapter considers these challenges.

Participation in higher education

In 1950, only 1 987 students were enrolled in higher education in the Dominican Republic. By 2009, that number had grown to 372 433 students or 29.1% of the 18-24 age cohort. Table 3.1 shows the population growth

between 1950 and 2009 and the accompanying steady growth of participation rates in higher education and in the establishment of Higher Education Institutions (HEIs).

Table 3.1 **Enrolment in higher education in comparison to the population, 1950-2009**

Year	HEIs	Enrolment	Population total	Aged 18-24	Gross coverage (%)
1950	1	1 987	2 135 900	307 777	0.6
1960	1	3 729	3 047 100	390 253	10
1970	4	20 602	4 009 500	499 383	4.1
1985	19	123 748	6 416 289	958 739	12.9
1990	23	102 069	7 179 330	1 031 717	9.8
1995	28	136 467	7 885 758	1 060 472	12.9
2000	31	245 056	8 553 739	1 141 547	21.5
2005	43	322 311	9 226 449	1 247 708	25.8
2009	43*	372 433	9 755 954	1 277 827	29.1

Note (*): Only includes HEIs for which statistical information has been processed. (In 2009 there were 47 HEIs but two were merged, two were established that year and one more was not considered for analysis.)

Source: MESCyT, Statistics Department.

Comparisons with other Latin American countries show that the Dominican Republic is slightly above average in terms of gross enrolment in higher education during the period 1994-2007 though it fell to the average in 2008 (MESCyT , 2010).

Table 3.2 shows that the bulk of the growth in higher education since 2006 has continued to be at the undergraduate level. Of note is the flat share of enrolments in technical level higher education.

Gender

On average, between 2006-2009, women accounted for 64% of the total enrolment in higher education in the Dominican Republic. Overall, women were in the majority in all degree courses, except for Systems, Civil and Industrial Engineering courses. There were especially high female enrolments in Early Childhood Studies (97%), Bio-Analysis and Psychology 89% (Statistics, Table 30).

Table 3.2 **Enrolment in higher education by level, 2006-2009**

	2006-1		2007-1		2008-1		2009-1	
Level	**ABS**	**%**	**ABS**	**%**	**ABS**	**%**	**ABS**	**%**
Total	**286 966**	**100.0**	**310 582**	**100.0**	**352 169**	**100.0**	**372 433**	**100.0**
Technical Superior	4 717	1.6	5 280	1.7	6 566	1.9	6 401	1.7
Undergraduate	267 861	93.3	287 923	92.7	328 011	93.1	348 683	93.6
Graduate	9 660	3.4	11 517	3.7	10 981	3.1	9 399	2.5
Not specified	4 728	1.7	5 862	1. 9	6 611	1.9	7 950	2.1

Source: Tables No. 32 to 35 of the Appendix to the General Report on Higher Education Statistics 2006-2009 (*Informe General sobre Estadísticas de Educación Superior 2006-2009*), MESCyT, Statistics Department (MESCyT, 2011).

Rates of enrolment per member of the age cohort are a deceptive measure of participation in higher education because many enrolled students are only part-time, and may spread their university careers over many years. As shown in Table 3.3, in 2009, only 55% of students enrolled in higher education were aged less than 26. Age does not appear to be a barrier to accessibility.

Table 3.3 **Age structure of enrolment in higher education, 2009**

Age	%
Less than 15	1.4
15-20	15.6
21-25	38.3
26-30	18.4
31-35	8.0
36-40	4.1
over 40	4.1
Unspecified	10.2

Source: Tables No. 16 to 19 of the Appendix to the General Report on Higher Education Statistics 2006-2009 (*Informe General sobre Estadísticas de Educación Superior 2006-2009*), MESCyT, Statistics Department (MESCyT, 2011).

Provision of higher education

Table 3.4 shows the growth in number of providers of higher education between 2006 and 2009 by type of institution. Of note is the growth, albeit modest, in only one type of provider, the specialised higher education institutes.

Table 3.4 **Growth in higher education provision by type of provider, 2006-2009**

Type of institution	2006	2007	2008	2009
University	33	33	33	33
Specialised higher education institutes	6	6	7	9
Institutes for technical superior studies	4	4	4	4
Total number of institutions	43	43	44	46

Source: MESCyT, Statistics Department (MESCyT, 2011).

Regional variations in provision

From 1970 onwards there has been a steady growth in the number of HEIs and an expansion of the provision of higher education beyond Santo Domingo to encompass almost all of the regions either through the development of new private HEIs or through the 17 Regional University Centres of the UASD. Table 3.5 shows the 46 HEIS and the total of their 72 campuses by region. In 2009, the largest concentration (54.5%) of students was within the Metropolitan Region (Santo Domingo and the National District), the second largest group (17.2 %) in the Cibao Norte Region (Santiago), with Duarte and La Vega in third and fourth place respectively.

The aspiration of the Ten-Year Plan is to develop additional institutions and campuses outside the metropolitan area to stimulate regional development and to encourage students to stay in their home region. The decentralisation and diversification of higher education provision is discussed in Chapter 6.

Admissions criteria and selection processes

Higher education institutions determine their own admission criteria which are more or less selective depending on the institution. In all cases, student admissions are based on the necessary classroom evaluations from secondary schooling and on a successful mark in the *bachillerato*, the National Test that completes secondary education. In addition, each HEI has further requirements which may be the assessment test developed by MESCyT (the *Prueba de Orientación y Medida Académica*, POMA), or its own admission test with or without a psychometric test.

Table 3.5 **Higher education institutions in regions and provinces, 2009**

	Regions and Provinces	HEIs	Campuses
Total		**46**	**72**
Cibao Norte Region		**6**	**12**
1	Santiago	6	6
2	Espaillat		3
3	Puerto Plata		3
Cibao Sur Region		**4**	**4**
4	La Vega	2	3
5	Sánchez Ramírez	1	
6	Monseñor Nouel	1	1
Cibao Nordeste Region		**1**	**4**
7	Duarte	1	1
8	Hermanas Mirabal		1
9	Maria T. Sánchez		2
10	Samaná		
Cibao Noroeste Region			**5**
11	Montecristi		1
12	Santiago Rodríguez		1
13	Valverde		2
14	Dajabón		1
El Valle Region			**3**
15	San Juan		3
16	Elías Pina		
Enriquillo Region		**1**	**2**
17	Barahona	1	1
18	Bahoruco		1*
19	Independencia		
20	Pedernales		
Metropolitan Region		**30**	**26**
21	Santo Domingo y Distrito Nacional	30	26
Valdesia Region		**2**	**8**
22	San Cristóbal	1	5
23	Peravia		2
24	Azua	1	
25	San José de Ocoa		1
Higüamo Region		**1**	**3**
26	Monte Plata		
27	San Pedro de Macorís	1	2
28	Hato Mayor		1
Yuma Region		**1**	**5**
29	La Romana		3
30	El Seybo		
31	La Altagracia	1	2

** Branch office of UASD Campus in Barahona (CURSO)*

Note: Dominican Republic has ten regions, according with Decree # 36 from 30 July 2004.

Source: MESCyT, Statistics Department (MESCyT, 2011).

The POMA seeks to measure:

- Contents (in verbal expression, mathematics, space-structural concepts, natural sciences, social sciences and personal behaviour and maturity).
- Mental process (the mastery of basic knowledge, instruments and skills to work properly in tertiary education, the mastery of academic skills needed for successful learning, reasoning ability mental flexibility and problem-solving ability)
- A series of cognitive competencies and skills (OECD, 2008).

While UASD makes use of the POMA, it operates an open access policy which effectively means that it has no admission standards. Even in the case of students who have successfully passed the test, UASD finds that it is necessary to provide extensive remedial teaching in order to bring many of them up to a minimum acceptable standard.

The review team was informed that 30% of UASD student intake is from private schools, but was cautioned not to assume that these students are from privileged backgrounds. In fact, the main reason the University does not insist on a universal entry test is that the authorities consider there is too much inequity in the earlier phases of the education system. However, in an effort to improve retention and progression rates, UASD has introduced an entry examination for medicine, dentistry and mathematics, and computer studies.

Las Americas Institute of Technology (ITLA, *Instituto Tecnológico de Las Américas*) is a small publicly supported institution that is highly selective and whose intake is students of high academic potential from less well off families. In addition to excellent school completion and National Test results, it requires an admission test and a psychometric test. However, the team was informed that, even with relatively stringent admission criteria, it has a "fairly high" dropout rate.

Apart from standardised English and psychometric tests, the Pontificia Universidad Católica Madre y Maestra (PUCMM) administers its own admission test in Spanish, Mathematics, and General Studies. Only 17-20% of their intake comes from public schools; nonetheless, some of this group require additional help, usually in English and Mathematics.

Private HEIs have their own admission policies which are based on a combination of the National Certificate of completion of studies provided by the Ministry of Education together with the official record of classroom evaluations as discussed above. They also usually require their own admissions test or the POMA and/or a psychometric test.

Preparedness for higher education

The OECD's 2008 report noted that the first two years of all tertiary education courses are typically used for remedial education, and this is when most of the student dropout takes place. Additionally, the financial necessity for students to work while studying and deficiencies in the delivery of education, results in fewer than 20% of students completing their degrees in five years or less, with most never completing.

The OECD Review of Education (2008) raised issues about the quality of school level education noting that while the aims and ambitions of the policy initiatives and curriculum reform proposed by the government were excellent and should have led to improved student learning:

> "the reality was that graduates' knowledge, skills and competencies did not reflect the expectancy of the newly-developed curriculum. The problems causing this included infrastructure conditions, working conditions for teachers, limited time available for instruction and limited use of the new approaches to teaching and learning." (OECD, 2008)

The OECD 2008 report also discussed the finding of the POMA test which demonstrates the difficult transition of students from school to university:

(The POMA) "reveals significant gaps in the preparation at the secondary level (*nivel medio*) for university level study. No statistics are available on the socio-economic characteristics of students in the public and private universities but a comparison of the preliminary results reveal significant differences likely attributable to the quality of the students' prior education."

The OECD judged that most of the students entering private HEIs are better prepared because "they are more likely to have attended private middle-level schools, citing studies carried out by the Ministry which indicate:

> "a clear stratification between students in public and private institutions, with the candidates of the Santo Domingo Institute of Technology (INTEC, *Instituto Tecnológico de Santo Domingo*) obtaining the highest scores in all dimensions of the test (POMA), and the candidates of UASD getting the lowest, a clear indication of the different quality of the education they received previously." (OECD, 2008)

In March 2011, the Harvard Report (Harvard, 2011) commented on the quality of the Dominican Republic education system. Harvard is more negative than OECD about private schools which enrol 20% of students and which, the report states, are as much to blame for the "systemic" failure as is

the public education system. The results of the UNESCO Second Regional Comparative and Explanatory Study (SERCE) and the Latin American Laboratory for Assessment of Quality of Education (LLECE website) are cited as showing no statistical difference between the academic performance of students in private schools and public schools.

From a total of 139 countries, the World Economic Forum report on Competitiveness, 2010, ranks the overall quality of schools in the Dominican Republic at #133. The low ranking for Mathematics and Science (# 136 from 139) gives grave cause for concern (World Economic Forum, 2010).

Of particular concern is the low levels of educational effectiveness in the Dominican Republic, as indicated by the results of SERCE assessments in 2006 (UNESCO-OREALC, 2008). The Dominican Republic had the lowest percentage of primary grade three students reaching the highest level of reading comprehension (0.6%) compared with Costa Rica (44.3%), and the highest percentage of students below the minimum level of proficiency (44.3%) compared with Cuba (0.6%). For sixth grade students, the Dominican Republic had the lowest percentage of students achieving the highest level of reading comprehension. Similarly in mathematics, the percentage of third grade students at the highest achievement levels ranged from 0.1% for the Dominican Republic to 54.5% for Cuba, while the percentage of those under the minimum level ranged from 1.1% (Cuba) to 41.3% (Dominican Republic). The percentage of sixth grade students who achieved the highest level of performance in mathematics ranged from 0.2% (Dominican Republic) to 51.1% (Cuba) while the percentage of those under the minimum level ranged from 0.1% (Cuba) to 57% (Dominican Republic).

Research conducted by MESCyT and quoted in the Final UASD Evaluation report suggests that nationally about 30% of students entering higher education have greater potential than indicated by their performance in admissions tests, thus further emphasising the inadequacy of school based teaching and learning. In the case of UASD, OECD concluded that 55% of students were not prepared for university level. Harvard cites a report of a study based on the results of the admission test by UASD's Teacher Education Faculty, which provided evidence that students had, on average, an academic level equivalent to the sixth grade of primary education, much the same as the results reported in a similar study of 1986-1987. In order to remediate these difficulties, UASD runs an "equalisation programme" for between 6 000-7 000 of the annual 30 000-35 000 intake which aims to help students to correct some of the deficiencies of their earlier academic preparation.

The above mentioned OECD (2008), UNESCO-OREALC (2008) and Harvard (2011) reports all agree on the underlying reasons why, in spite of so many efforts and good initiatives, school based learning remains such a barrier to further education in the Dominican Republic. Besides the low number of classroom hours, inadequate learning materials and the poor infrastructure, the fundamental issue is the quality of teaching and of teacher training – regarded internationally as "the single most important school variable influencing student achievement" (OECD, 2005).

A detailed analysis of the standards, relevance or outcomes of the teacher training and in-training courses offered in the HEIs was outside the scope of this review. The following remarks are therefore based on the chapter on *Teacher Education and the Teaching Career* in the 2008 OECD report, in the 2008 OECD Review, as well as in the UNESCO 2008 report. Both reports concur that there appears to be no shared national vision on what constitutes an adequate teacher training course with standards or expected outcomes. In general in the Dominican Republic, teacher education courses have a heavy emphasis on theory with comparatively little practical work. Insufficient attention is paid to teaching and learning strategies, class planning and management. However, since those reports were published, the Dominican authorities have made a concerted effort to raise the capacity and quality of the teaching workforce and new entrants to it.

Nevertheless, low salaries and hard conditions in rural areas make the teaching profession less attractive to talented individuals even when scholarships are provided as an incentive. Research carried out in 2002 on students applying to PUCMM revealed that only 2% of students from private schools and 8% from public schools chose Teacher Education studies as a career (Sanchez, F. "*La Problemática del Magisterio en República Dominicana*", cited in Harvard, 2011).

In-service teaching training is available but follow-up or continuous refreshment opportunities are rare and are not linked to other incentives for the improvement of teachers and teaching in the classrooms. Excessive centralisation of policy making and policy implementation reduces teacher participation.

Student retention

It is difficult to estimate higher education progression and attrition rates with any accuracy. The 2011 Statistics Report (*Informe General sobre Estadísticas de Educación Superior 2006-2009*; MESCyT, 2011) notes that low efficiency, dropouts and repetition are important issues and are still inadequately studied in the Dominican Republic. Nevertheless, the Statistics Report does use a rough indicator to show the difference between those who

enter and those who complete (even though the latter may be from different cohorts) which concludes that the approximate overall dropout rate is 50% with private HEIs having a better retention record. It is recognised that these data are unsatisfactory as students who enrol and do not complete in one HEI may actually graduate somewhere else in the system. As expected, the first years of study have the greatest rates of dropouts. Medicine and engineering have especially poor progression rates with less than 20% of each class managing to graduate with their own cohort; the comparable figure for business, law and education is 40% (Statistics, p. 167). Three reasons for dropping out are posited: lack of financial resources, family reasons and inadequate academic preparedness.

At its meetings at UASD, the OECD team was advised that there are no reliable data on dropouts because many students change course after the first semester, or may attend part time or may simply take extra time to graduate. The External Evaluation of UASD estimates that the University enrols three or four times more students than it graduates and that a third of the students in UASD do not finish within the prescribed time. UASD authorities suggest that, in addition to academic difficulties, it is likely that students who are working are unable to give the needed attention to their studies. Also their primary and secondary education may be deficient.

As already noted, ITLA also referred to problems with dropouts in spite of small classes and the availability of counselling. Only in PUCMM was there a more positive estimate with the team being informed that after four years a comparatively low 10% of students have dropped out, a rate that the authorities attribute to robust follow up and proactive counselling services.

Several conclusions emerge from the discussion of admission systems and progression rates: *(i)* the lack of preparedness of students transferring from the general education system into higher education; *(ii)* the importance of providing relevant information, career orientation and counselling services to students both before they enter higher education and again as part of student support services for new entrants; and *(iii)* the absence of accurate comparable data from HEIs to facilitate policy making, either because data is not being collected or is not being made available to the Statistics Department of the Ministry.

Summary

The analysis in this chapter indicates that there appears to be a reasonable provision of higher education in many parts of the country, that admissions systems are based on transparent requirements, that no age discrimination exists, and that there is no apparent gender bias in enrolments. Given the large number of free university places in UASD, the

only financial barrier, other than the opportunity costs of attending higher education, is the limited availability of scholarships or low interest bearing student loans for the neediest students who may wish to attend a private higher education institution.

The review team considers that the major barrier to access to higher education is the poor quality and low effectiveness of school-based learning. Learning deficits from schooling do not only constitute barriers to initial access. As higher education institutions attempt to compensate for deficiencies in the preparedness of entering students they may either induce high rates of post-entry attrition or compromise the quality of higher education and the standards of graduates.

The higher education participation rate of 29.1% for the age cohort 18-24 years reflects substantial and rapid increases in higher education enrolments since the mid 1980s. However, the average apparent attrition rate between commencement and completion of a degree course is around 50%, ranging from 10% in one institution to 80% in the nation's largest university. Dropout rates vary also according to field of study. This high wastage rate is inefficient for the nation and futile for the individuals involved.

Prioritisation of measures to improve the quality of initial teacher education and in-service training could greatly enhance the quality of students who apply to all tertiary education and training institutions in the Dominican Republic. Teaching quality improvement in primary and secondary schooling is one of the keys to the further development of the entire education system and will contribute greatly to access to and success in higher education in the Dominican Republic.

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Chapter 4: Quality, Relevance and Effectiveness

This chapter explores the extent to which conditions in the Dominican Republic are conducive to increasing human capital formation and contributing to economic growth. The conditions identified are: (i) that students complete tertiary education, (ii) that the curriculum is relevant to labour market requirements, (iii) that the education experienced is of good quality, and (iv) that the economy has capacity to absorb graduates productively.

The chapter also gives a description of the national labour market, notably the very large informal sector in the Dominican Republic, and refers to recommendations from the World Bank on this issue. This chapter also describes the changes of educational attainment of the population, the position of higher education graduates in the labour market and private returns to higher education. It provides information on completion of higher education and graduation ratios. It also deals with employer views of higher education and the quality of higher education, stating that quality improvement is the primary challenge for higher education in the Dominican Republic. The chapter concludes with a discussion of the programme of five-yearly evaluation of higher education institutions and other planned initiatives to improve higher education quality.

It is generally expected that higher levels of higher education attainment among a nation's labour force increases its long-term economic growth. Workers who have completed tertiary education are generally found to have access to good quality jobs and higher incomes than those without tertiary qualifications. Nonetheless, in order for those positive outcomes to materialise at the individual and aggregate level, the four necessary conditions are that: *(i)* students complete tertiary education, *(ii)* the curriculum is relevant to labour market requirements, (iii) the education experienced is of good quality, and *(iv)* the economy has capacity to absorb graduates productively. This chapter considers the extent to which these conditions are met in the Dominican Republic.

The Dominican labour market

As of October 2010, the population aged 10 years and over totalled 7.98 million, of which 3.59 million (45%) were not in the labour force. Of the labour force totalling 4.39 million, 14.1% were unemployed (National Labour Force Survey, October 2010). The distribution of the employed population by employment and economic sector is shown in Table 4.1. The public administration and defence sector, including public education and health services, accounts for only 5% of employment.

Table 4.1 **Population 10 years and over by employment and economic sector, persons, Dominican Republic, October 2010**

	Population	Employed	%
Agriculture, livestock, fishing and forestry	559 759	547 591	14.5
Mining	10 828	10 358	0.3
Manufacturing	450 479	394 043	10.5
Electricity, gas and water	40 665	37 943	1.0
Construction	257 296	239 051	6.3
Wholesale and retail trade	867 766	808 833	21.5
Hotels, bars and restaurants	263 192	229 269	6.1
Transportation and communication	296 561	285 665	7.6
Financial services	101 902	94 402	2.5
Public administration and defence	192 476	184 964	4.9
Other services	1 021 839	936 243	24.8
Population without sector	3 917 869	0	
Total	7 980 632	3 768 362	100.0

Source: National Labour Force Survey (*Encuesta Nacional de Fuerza de Trabajo*), October 2010, Central Bank of Dominican Republic, National Accounts and Economic Statistics Department.

The informal economy

More than half of employed persons work in the informal economy. The informal sector is defined as consisting of legal activities that do not comply with labour, taxation and other regulations (World Bank, 2006). An estimated 54% of the occupied Dominican labour force is in informal activities. That proportion reaches 65% when the informality is measured based on the registration for social security (Perry *et al.*, 2007). Informal workers are of two kinds: first, wage-earning informal workers in micro and non-registered companies, and second, independent informal workers,

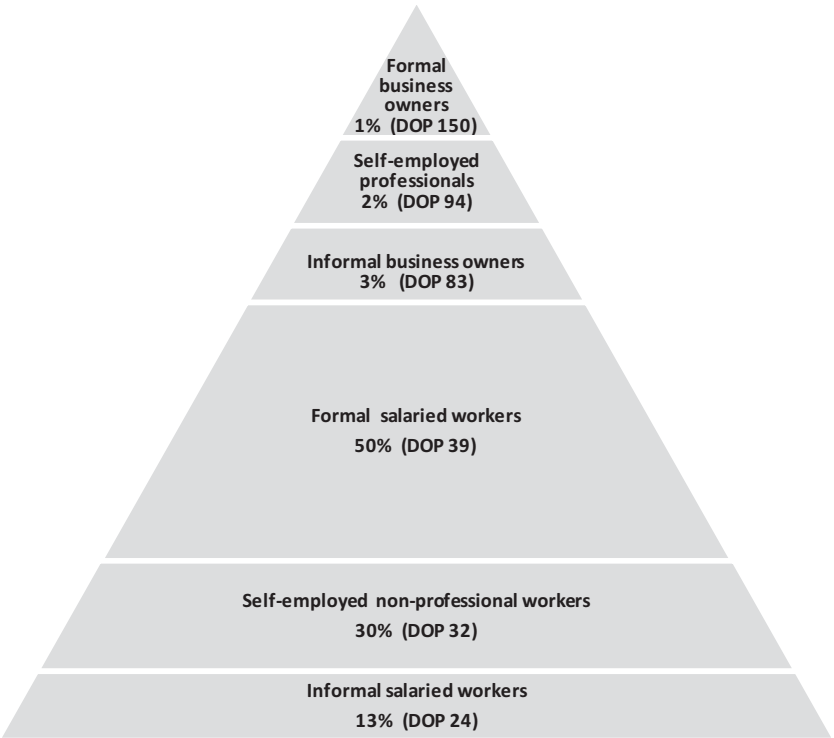
including owners of particular businesses, *e.g*. public transport drivers, taxi drivers, craftsmen, construction workers and others. Some 60% of Dominican informal wage-earners are independent, informal workers (SEEPyD, BCRD and World Bank, 2007). Only some 30% of workers are employed in firms that are licensed to operate (World Bank, 2006).

Figure 4.1 depicts the employment and earnings structure of the Dominican workforce in 2002.

Within the different occupational categories there is heterogeneity of remuneration.

Informality may be voluntary on the part of workers given their preferences, skills, competing earnings prospects and the little value attached to low quality social benefits (*e.g*. public health insurance, uncertain pension benefits) and other non-wage benefits of being informal (*e.g*. flexibility of working time for women) (World Bank, 2006).

Figure 4.1 **Earnings pyramid – average hourly earnings (DOP) and percentage of employed workers by occupational category, 2002**



Source: World Bank, 2006.

Of particular note is the finding that educational attainment significantly increases earnings in both formal and informal occupations. Completion of tertiary education increases private earnings for all groups of workers at all income levels, in both the formal and informal sectors:

> Education wage premia are higher for workers that cling to the best paid jobs for their skills in each sector except for better educated workers (secondary and above) in informal salaried jobs. A college or secondary education are better rewarded in salaried jobs while workers with primary or no education enjoy better earnings prospects as self-employed. Completing tertiary education increases earnings per hour for *all* groups of workers at all earnings levels. However, high and medium earnings formal employees would benefit more from completing tertiary education than low earnings formal employees. Informal employees with complete tertiary education earn up to 150% more than workers with no education or primary incomplete. For self-employed workers, completing tertiary education can increase earnings by more than 100%. Completing secondary education has a large impact on high and medium earnings formal employees, all informal employees, and high earnings self-employed. (World Bank, 2006)

However, in order to raise its competitiveness and create a more equitable society, it is an imperative for the Dominican Republic to reduce informality and expand the formal sector with better jobs for more workers with better pay and conditions.

Achieving more pro-poor growth: advice from the World Bank

The 2007 World Bank Report, *Informality: Exit and Exclusion* (Perry *et al.*, 2007), suggested that to reduce informality, policymakers should focus their efforts on improving the conditions that promote formal sector productivity and growth and addressing the barriers, costs and benefits for informal firms and workers to participate in the formal sector. The report drew attention to the need for a better investment climate to help formal businesses grow and increase their wages, and for measures to improve skills among the poor to enable a greater number of workers to find better paid jobs.

The 2006 Poverty Assessment (World Bank, 2006) identified a "matrix of key policy actions" over the short, medium and longer terms. Of relevance to this review of higher education, science and technology are several of the policy directions arising from the poverty assessment. First, there is the need to maintain the conditions for fostering sustainable economic growth, including improvements to system and institutional governance, and improvements to the business environment and competitiveness. Second,

there is the need to expand growth opportunities for the poor, including by improving the functioning of the labour market. Specifically it is necessary to enhance young workers' employability through youth training programmes designed to expand access to job opportunities in growing urban sectors for both young men and young women. Third, there is the need to increase the productivity of micro and small and medium sized enterprises, including business development services, incentives for business registration, product certification, support to innovation and exports, and use of remittances as working capital for business start-ups.

Fourth, there is the need to reduce inequities in the education that the poor receive through improved quality and expanded access. Specifically to this end, the poverty assessment pointed to the following actions:

- Increase the allocation of resources to the education sector while improving the efficiency of their use.
  - Given the tight fiscal constraints, the trade-offs among the education sector priorities (secondary versus tertiary) and between the priorities of the education sector and those of other sectors (e.g. social assistance) should be carefully weighed.
  - Formulate a plan for a sustainable increase in the level of real expenditures in the sector to start closing the gap with other LAC countries and the Dominican Republic's own target. Prioritise an increase in per student expenditures in secondary education.
- Continue to enhance output efficiency by improving learning achievement, reducing repetition rates and boosting progression through the implementation of quality-enhancing measures prioritising rural and urban marginal schools:
  - Expand the coverage of a new pedagogical model to rural multi-grade schools; target special interventions (such as acceleration courses for over-age students) to urban marginal schools with the highest repetition rates.
  - Apply national and international standardised tests to assess students' learning achievements in the first grades of primary education.
  - Rationalise teachers' assignments and strengthen management of educational centres by establishing decentralised school boards with enough financial resources to pursue pedagogical and curricular innovations.

  - Reform teachers' training supply and develop pedagogical materials and guides to support teachers' activities and students' learning processes.
  - Enhance human resources management by fully implementing the Teachers' Statute of promotions and re-categorisation system (establishing a set of incentives maximising teachers' performance) and by improving hiring practices on the basis of both quality standards and accurate planning exercises.
  - Improve the management and efficiency of the investment in the sector at the regional, provincial and district level and by education levels.
- Ensure that no child is left behind because of lack of proper documentation.
- Address both rural and urban supply constraints to improve access to education especially among the poor:
  - Expand access to pre-school education.
  - Strengthen the use of micro-planning tools to achieve a more efficient use of resources for the provision of the second cycle of basic education to thousands of small rural multi-grade schools.
  - Increase access to secondary education by investing in infrastructure and, due to existing fiscal constraints, by considering flexible delivery modalities in rural areas, such as distance or semi-distance education. Explore public-private partnerships (public financing/private delivery) in urban areas.
  - Introduce cost recovery for higher education – which currently ends up benefitting the non poor – to free resources for increased high school spending or funding for competitive, merit-based partial and full scholarships for low income students.

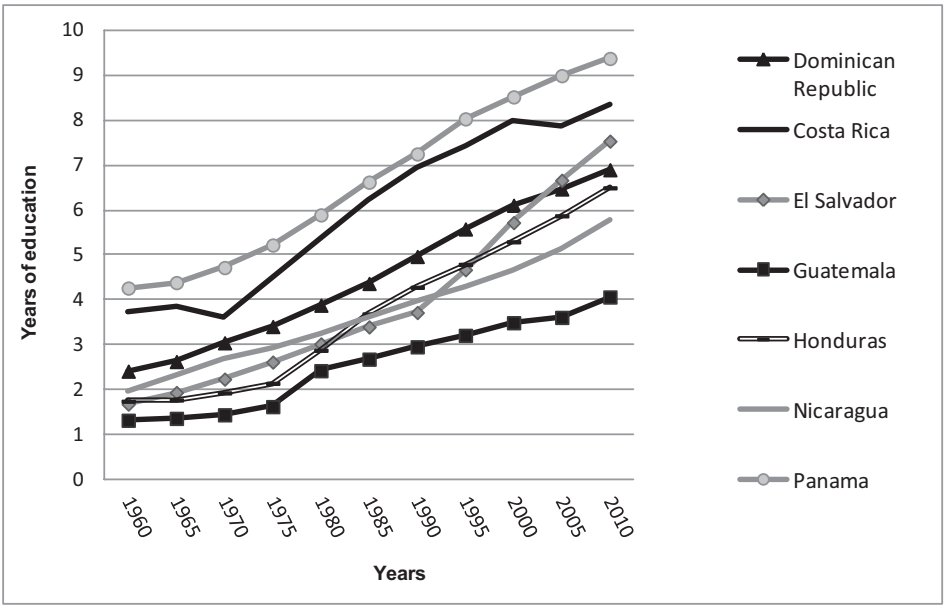
The World Bank's advice, focusing on the reduction of poverty and the development of a competitive economy, is clearly to prioritise secondary schooling and earlier stages of education in terms of public spending. The principal corollaries are: *(i)* that higher education efficiency – in institutional management and student throughput – need to be demonstrably improved before additional public resources are invested, with improvements in secondary and earlier stages of education contributing to increased student

throughput and learning effectiveness; and *(ii)* that on grounds of social equity, the private beneficiaries of publicly-subsidised higher education should pay more of the costs, possibly full costs depending on financial means or access to structured loans. The former appears to be self-evident, although the current funding rates per student are very low by international comparisons, and it is open to question how much can be gained through efficiency that does not erode quality. The latter is arguable, especially as most of the students enrolled with the major public university (UASD) are from the least advantaged families, and their completion rates and times and their graduate destinations are very variable.

Changes in educational attainment

Over the last half century, the Dominican Republic has registered an impressive gain in the educational attainment of its population (see Figure 4.2). This evolution is derived from high enrolments in basic and secondary education and, more recently, the increasing number of secondary education graduates enrolling in higher education.

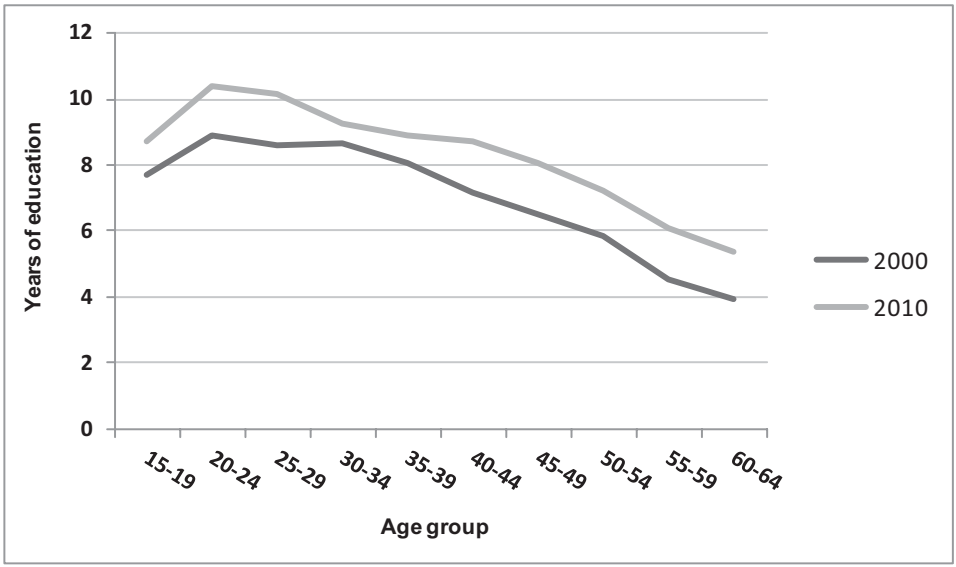
Figure 4.2 **Years of Education: Population 25+**



Source: Barro and Lee (2010).

The recent trend in higher enrolment in the Dominican Republic is the cumulative result of government policies and a higher demand for education. As a result, younger cohorts (between 20 and 24 years old) accumulated more than ten years of education in 2010, an increase of approximately two years in educational attainment relative to the same age group in 2000 (see Figure 4.3). Higher education attainment has been related to an impressive gain in the share of students who start post secondary education; increasing from 25% in 2000 to 32% in 2010 (see Figure 4.4). The rising rates of participation in higher education have not been restricted to the younger age cohorts. Over the past decade, participation has expanded across all age groups.

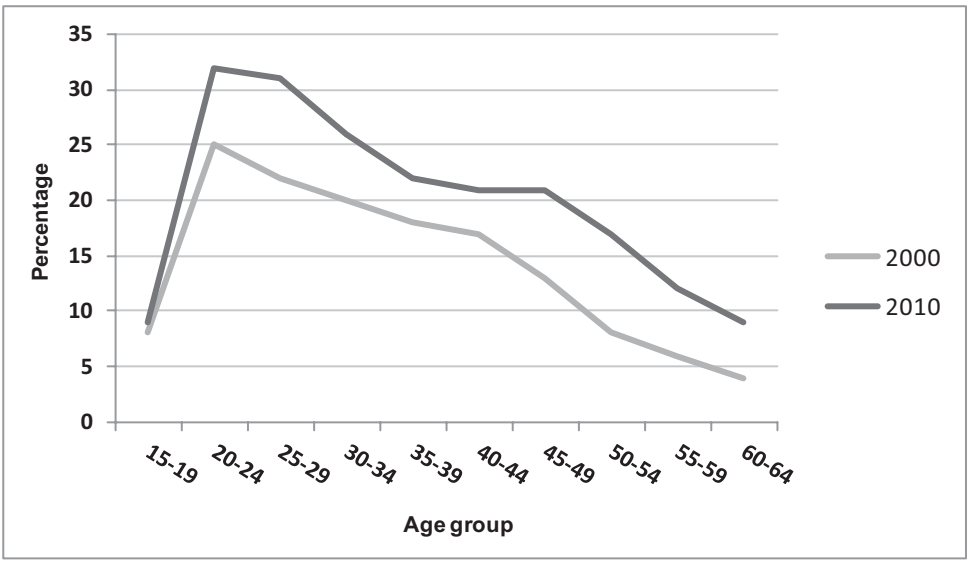
Figure 4.3 **Years of education by age group, Dominican Republic, 2000 and 2010**



Source: National Labour Force Survey (*Encuesta Nacional de Fuerza de Trabajo*), Central Bank of Dominican Republic.

The educational attainment of the population has changed as a result of the new schooling patterns. Between 2000 and 2010 the adult working age population (25 to 65 year-olds) increased by 23%, while the percentage of individuals within the same age group with tertiary education increased by 71%. In light of the recent dynamics in education attainment, 14% of the working age population has a tertiary qualification, an increase from 10% in 2000, while the share with basic education or lower has fallen from 63% to 52% (Table 4.2).

Figure 4.4 **Percentage of population age groups with tertiary qualifications, Dominican Republic, 2000 and 2010**



Source: National Labour Force Survey (*Encuesta Nacional de Fuerza de Trabajo*), Central Bank of Dominican Republic.

Table 4.2 **Change in years of education by age group compared with population growth, Dominican Republic, all persons, 2000 and 2010 (%)**

Years of Education	Population group		Share of total population			
	25-64	25-34	25-64		25-34	
			2000	2010	2000	2010
1-8	0.01	-0.18	0.63	0.52	0.51	0.39
9-11	0.32	0.04	0.12	0.13	0.17	0.16
12	0.69	0.41	0.10	0.14	0.14	0.18
12-15	0.83	0.96	0.05	0.07	0.08	0.14
16	0.71	0.26	0.10	0.14	0.11	0.13
Total	0.23	0.07	1.00	1.00	1.00	1.00

Source: National Labour Force Survey (*Encuesta Nacional de Fuerza de Trabajo*), Central Bank of Dominican Republic.

If one focuses only on the younger generations (25 to 34 year olds), the growth in population is smaller, with an overall gain of 7%, likely reflecting stabilisation in population dynamics. The data show large growth in the number of individuals with incomplete and complete tertiary education levels which increased by 96% and 26%, respectively. At the same time, there has been a decline of 18% in the number of individuals with primary education, as they represent less than 40% of the 25-34 age group. It is important to notice the large increase in individuals with incomplete tertiary level which may reflect the problem of tertiary education inefficiency.

Higher education graduates in the labour market

In the Dominican Republic, employment is predominantly concentrated in the service-sector industries. As shown in Table 4.3, the Education and Health sectors capture the largest share of individuals who have attained higher education qualifications (35%), likely reflecting the importance of teachers among the population with tertiary education. However, the participation of individuals who completed tertiary education is also important in the hospitality sector (17%), real estate and financial services (16%), and government (10%).

Table 4.3 **Structure of employment by economic sector (%)**

	All employees		Completed tertiary education	
	2000	2010	2000	2010
Construction	7	7	4	2
Retail, restaurants and hotels	26	26	9	17
Manufacturing	16	10	10	6
Electricity, Gas and Water	1	1	2	1
Transport and communication	6	8	4	4
Real estate and financial services	5	6	18	16
Public sector	4	6	9	10
Agriculture	15	12	3	1
Mining	0	0	0	0
Education and Health	8	9	27	35
Other	11	14	5	6

Source: National Labour Force Survey (*Encuesta Nacional de Fuerza de Trabajo*), Central Bank of Dominican Republic.

A different analysis (see Table 4.4) reflects the relative importance of higher education for the workforce in different economic sectors. In the education and health sectors, 63% of the workers have completed tertiary education, scaled up from 42% in 2000, likely reflecting higher qualification

requirements for the employment of teachers. In other areas of the public sector, the share of employees with tertiary education has also increased. In the real estate and financial services sectors, the share of employment has remained steady over the last decade.

Table 4.4 **Importance of completing secondary education by economic sector (%)**

	2000	2010
Construction	8	5
Retail, restaurants and hotels	9	10
Manufacturing	7	10
Electricity, Gas and Water	24	23
Transport and communication	8	9
Real estate and financial services	46	45
Public sector	26	31
Agriculture	2	2
Mining	8	7
Education and Health	42	63
Other	**5**	**7**

Source: National Labour Force Survey (*Encuesta Nacional de Fuerza de Trabajo*), Central Bank of Dominican Republic.

In general, the composition of graduate supply by field of study is not evidently inconsistent with the structure of labour market demand for qualifications. However, the OECD's 2008 education review addressed the fit of graduate supply to labour market demand, suggesting that graduate output of a predominantly clerical character was reproducing an uncompetitive economy:

> After education, the largest fields are in the management and clerical professions (accounting, law, administration, marketing), followed by the caring professions (psychology and medicine), and finally in civil and industrial engineering. Information technology (*informática*) is more related to the use of computer applications for business and administrative tasks than to software and hardware innovations, and in this sense should be included in the first group of "management and clerical professions", rather than in technology. This distribution of fields is compatible with the profile of the labour market in the Dominican Republic, dominated by the services sector.
>
> There seems to be a kind of equilibrium between a labour market with little demand for qualified, technical manpower, and a tertiary education system that prepares people mostly for low-skill, administrative and clerical functions. This is not a healthy equilibrium,

since salaries do not improve and the labour market is unable to provide jobs for a sizeable segment of the population, particularly in the younger age brackets.

It would be possible to argue that, given the structure of the Dominican Republic's economy, there would be no point in increasing the level of qualification of its workforce since it would lead either to more unemployment or to emigration of the best qualified to the United States and other places. But it is also possible to argue that there is no long-term future in a society based on low-skilled labour and that, with a better-educated population, the Dominican Republic should be able to develop a more sophisticated, knowledge-intensive economy and benefit more fully from its proximity with the United States, the links with Dominicans abroad, and the global economy more generally. Seen from this perspective, the excessive concentration of tertiary education in clerical activities is an indication that the Dominican Republic should make an effort to diversify the qualifications their universities provide, and to put more emphasis on education in more advanced degrees (OECD, 2008).

Private returns to higher education

Individual investment in higher education is related to accessing jobs with better working conditions. As Table 4.5 shows, three quarters of Dominican higher education graduates are likely to work as dependent workers, either in the public or private sectors, whilst from the total population less than half work as dependent workers. Conversely, approximately 42% of the general population work as self employed, while 14% of the individuals with tertiary education are considered self employed. The share of tertiary education graduates working in the public sector has increased, while those working in the private sector experienced employment declines between 2000 and 2010.

As result of the evolution in educational attainment, the proportion of individuals in the labour force who have completed tertiary education has risen from 12% in 2000 to 17% in 2010 (see Table 4.6). The importance of the increase in tertiary education graduates varies by employment types. In the public sector, 41% of the employees have completed tertiary education, up from 29% in 2000. Interestingly, among those who are classified as employers, 35% of the population has completed tertiary education, up from 14% in 2000. Noticeably, in 2010 individuals with tertiary education represented a larger share (8%) of the unpaid workers, up from 2% in 2000. This increasing under-utilisation of graduates may reflect disconnections between labour market requirements and graduate preparation.

Table 4.5 **Structure of employment by category type**

	Total		Completed tertiary education	
	2000	2010	2000	2010
Employer	0.04	0.05	0.05	0.10
Self Employed	0.40	0.42	0.18	0.14
Dependent worker (public sector)	0.13	0.15	0.29	0.36
Dependent worker (private sector)	0.37	0.31	0.47	0.38
Unpaid worker	0.01	0.01	0.00	0.00
Domestic employee	0.04	0.06	0.00	0.01

Source: National Labour Force Survey (*Encuesta Nacional de Fuerza de Trabajo*), Central Bank of Dominican Republic.

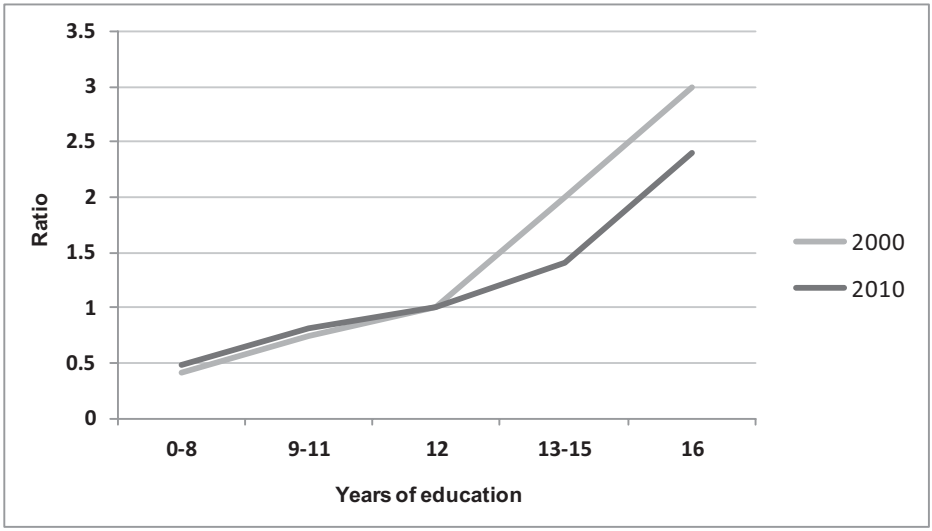
Table 4.6 **Importance of completed higher education by employment type, Dominican Republic, 2000 and 2010 (%)**

	2000	2010
Employer	14	35
Self Employed	6	6
Dependent worker (public sector)	29	41
Dependent worker (private sector)	16	20
Unpaid worker	2	8
Domestic employee	0	2
Total	12	17

Source: National Labour Force Survey (*Encuesta Nacional de Fuerza de Trabajo*), Central Bank of Dominican Republic.

There are important income premiums for attending tertiary education, but they may be decreasing. For those that end up employed there is an important premium to engage in tertiary education (complete or incomplete). As presented in Figure 4.5, which focuses on ages 25-34, the salary gain for those with incomplete tertiary (13-15 years of education) over those that have only finished secondary (12 years) is approximately 50%. However, the premium of completing tertiary is much greater, approximately 150%. Importantly, the premium for ages 25-34 has decreased between 2000 and 2010. Declining premiums may be related to an oversupply of individuals with tertiary education for the current demand and should affect all the population. Figure 4.6 shows that the premium for older cohorts increased during the period. This evolution is consistent with a decline in the average productivity of graduates from tertiary education.

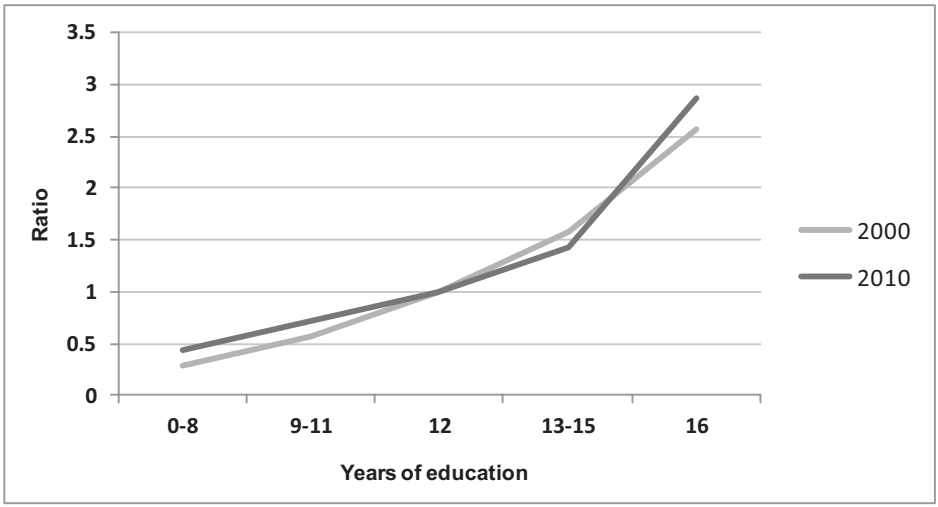
Figure 4.5 **Salary evolution[1] by years of education, 25-34 year-olds**



Note (1): Salaries are expressed in relationship to the salaries of those with 12 years of education.

Source: National Labour Force Survey (*Encuesta Nacional de Fuerza de Trabajo*), Central Bank of Dominican Republic.

Figure 4.6 **Salary evolution[1] by years of education, 36-64 year-olds**

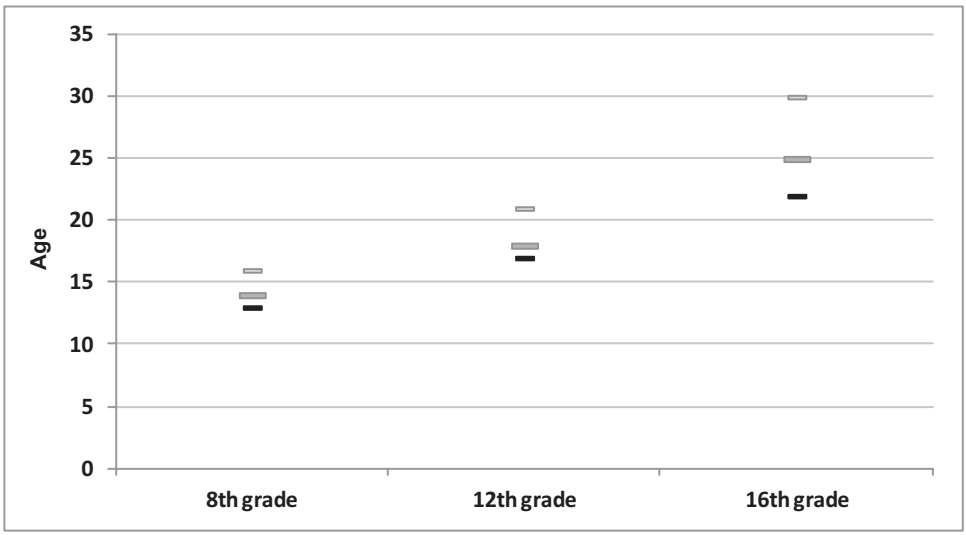


Note (1): Salaries are expressed in relationship to the salaries of those with 12 years of education.

Source: National Labour Force Survey (*Encuesta Nacional de Fuerza de Trabajo*), Central Bank of Dominican Republic.

There is considerable diversity in higher education participation. One indication is the heterogeneity in the age of student attendance. For example, of those attending eighth grade, the median student is 14 years old. The median student attending twelfth grade is 18 years old. However, the median student in sixteenth grade is 25 years old, and has used seven years to add four years of educational attainment. Conversely, students with better progression in the education system – the top 25th percentile – improved from 17 years old in twelfth grade to 22 years old in sixteenth grade, thereby taking five years to gain four years of educational attainment. For those progressing more slowly, the lowest 25th percentile, improved from 21 years old in twelfth grade to 30 years old in sixteenth 16, thereby taking nine years to add four years of educational attainment (see Figure 4.7).

Figure 4.7 **Age of those attending selected schooling years**



Source: National Labour Force Survey (*Encuesta Nacional de Fuerza de Trabajo*), Central Bank of Dominican Republic.

Completion of higher education

According to the Economic Commission for Latin America and the Caribbean (ECLAC, 2007), the completion of at least twelve years of schooling – the time needed typically to complete secondary education in most countries – is the minimum educational capital required for well-being – the educational threshold necessary for staying out of poverty. Completion

of secondary education has been found to provide an individual with a greater than 80% chance of securing a job at a salary that provides an adequate standard of living (ECLAC, 2000).

The net enrolment rate for secondary education in the Dominican Republic has increased by 47.2% between 2000 and 2008 (UNESCO, 2011). This is the second strongest rise in the Latin American and Caribbean (LAC) countries after Guatemala (48.5%). Secondary school completion has also risen and the rate of the rise between the educational attainment levels of different age groups in the young adult population of the Dominican Republic of 35.6% has been higher than for LAC countries on average at 25.7% (UNESCO, 2011).

Comparable data are not available in the internationally published statistics for tertiary education enrolments per 100 000 population in the Dominican Republic. However, a benchmark may be imputed by comparing secondary education attainment levels, where, in 2008, the Dominican Republic was slightly behind Brazil and Panama and just ahead of Paraguay. The respective tertiary enrolment rates for those countries in 2008 were: Brazil, 3 100; Panama, 4 000; and Paraguay 3 000 (UNESCO, 2011). Thus, a tertiary enrolment rate of around 3 000 per 100 000 population would be expected if the Dominican Republic was making advances in tertiary education participation at a commensurate rate. With tertiary enrolments in 2010 at 377 054 and the resident population estimated to be 9 378 819, the apparent net tertiary enrolment rate per 100 000 population for the Dominican Republic in 2010 was 4 020.

It appears that the Dominican Republic has higher rates of tertiary education participation and attainment but lower rates of pre-tertiary achievement – both quantitatively and qualitatively – than its comparator countries. Concerns arise about disproportionate wastage through admission of under-prepared students and, concurrently, graduates of poor quality.

Graduation ratios

Dropout rates are high, as discussed below, and there is no way to know whether a student who has apparently dropped out returns later to the university. As many students convert from full-time to part-time attendance, it is not possible to calculate accurately a graduation or completion rate relative to a commencing cohort of students. In some respects a more useful measure of *effective* participation in higher education is graduation rates per head of a relevant age cohort, (though this is not to imply that partial completion of a university degree is wasted effort). This measure is

necessarily crude, as it relates to only around one third of the participating students by age, although it is the largest age cohort. By this measure, other than in 2007, graduation ratios have grown significantly (see Tables 4.7 and 4.8). In 2009, the ratio of graduates was 21.2% of the 20-24 age cohort.

Table 4.7 shows the number of graduates at all levels of the system between 2006 and 2009.

Table 4.8 shows the graduation ratios as calculated by the OECD team. Of note are the low and declining graduation ratios for technical enrolments.

Table 4.7 **Graduates by level of postsecondary education, 2006 to 2009**

Level	2006		2007		2008		2009	
	ABS	%	ABS	%	ABS	%	ABS	%
Total # of graduates	29 012	100.0	25 034	100.0	31 138	100.0	37 901	100.0
Technical	1 851	6.4	783	3.1	886	2.9	563	1.5
Undergraduate	25 090	86.5	20 994	83.9	26 400	84.8	32 468	85.7
Graduate	1 906	6.6	3 254	13.0	3 720	12.0	4 765	12.6
Not specified	165	0.6	3	0.01	132	0.4	105	0.3

Source: Tables No. 69 al 72 of the Appendix to the *Informe General sobre Estadísticas de Educación Superior 2006-2009*, MESCyT, Statistics Department (MESCyT, 2011).

Table 4.8 **Graduates per head of population aged 20-24**

	2006	2007	2008	2009
Age cohort (persons)	173 714	175 570	177 268	178 901
All graduates (%)	16.7	14.3	17.6	21.2
Technical (%)	1.1	0.4	0.5	0.3
Undergraduate (%)	14.4	12.0	14.9	18.1
Graduate (%)	1.1	1.9	2.1	2.7
Not specified (%)	0.1	0.0	0.1	0.1

Note: Age cohort is defined as the average size of the 20-24 age group.

Source: Calculations by OECD review team.

Employer views of higher education

At its meetings with employer representatives, the review team received the strong message that many graduates are not well prepared for the jobs for which they apply. The team was advised that many graduates have unrealistic expectations about their jobs and remuneration level. Far too many graduates were seen to have narrow skill sets, to lack the necessary professional and "soft" skills, and to be unfamiliar with modern workplace technologies.

The employers suggested that students did not need to make much effort to pass their courses, as the standards bar was set so low. They claimed that curricula and learning materials are outdated, for instance, with some textbooks in engineering dating from the 1970s still being used.

Professors were seen typically to be out of touch with current factory practices and the latest technologies. Additionally many higher education teachers have little engagement with students as many teachers work by the hour, without an office at the university, and professorial remuneration is so inadequate that many have to hold multiple jobs.

At a general level, the employers indicated that higher education teaching and learning was too theoretical and was not well serving the Dominican Republic, as the system is over-producing underprepared graduates who cannot get mainstream jobs.

They also urged reform of curriculum, modernisation of materials, increased work-based learning and professionalisation of higher education teachers. Importantly, the employers indicated a willingness to get involved in such reform, and particularly to help the development of a more entrepreneurial outlook in higher education.

The review team is aware of more positive views among employers. For instance, with regard to IT, university programmes for technical training in the Dominican Republic are seen to be usually robust and focused on the skills companies are seeking: "The main colleges have agreements with ones in the United States, and work to integrate the US course of study into the curriculum here. These programmes are tailored specifically for computer programming and engineering" (George, 2011). The 2010 'Clustersoft' initiative for training 10 000 bilingual software engineers in two years is predicated on the underpinning quality of technical education in the leading Dominican universities.

The quality of higher education

The review team was able to see and learn about some demonstrably good practices in higher education in the Dominican Republic. Several institutions are impressive on a whole-of-institution basis. Some fields of education in a number of institutions are well delivered and their graduates are generally well regarded, outside the Dominican Republic as well as within. These tend to be the more elite professional programmes in which input quality is high.

Nevertheless, the consistent message heard by the review team is that the overall quality of higher education in the Dominican Republic is unacceptably low. The quality of inputs – the readiness of students and the knowledge and skills of teachers, along with learning materials and facilities – while variable, is mostly inadequate. The processes of teaching and learning and assessment are well off the pace in terms of international good practice. The review team was advised that the poor quality of education, including de-motivating curriculum and teaching, and low levels of teacher-student interaction, is a major contributing factor to low rates of student persistence and completion. The outputs of the system – the capabilities of graduates – are often not fit for purpose, either as preparation for employment or for further learning.

Quality improvement is the primary challenge for higher education in the Dominican Republic. This has been recognised by the government and policy makers for some time, and action has been initiated accordingly.

The programme of five-yearly evaluation of higher education institutions

According to Law 139-01, every five years the universities in the Dominican Republic have to undergo a comprehensive evaluation process. The evaluation has as its main purpose to "assess the effectiveness, efficiency and the relevance of the institution daily actions, and to establish the relationship between the mission, objectives and targets with the institutional results. Additionally, Article 66 of Law 139-01 established that the evaluation has two stages: internal and external. According to the Law, Internal evaluations are intrinsic to the post secondary institutions. Externals evaluations are performed by the Ministry of Higher Education, Science and Technology or by private, recognised evaluation institutions, with academic counterparts. The Evaluation Manual established twelve institutional components to be evaluated: institutional philosophy, administrative and

academic organisation, academic offer, organisation of the academic offer, research and outreach, human resources, infrastructure and financial resources, admissions and enrolment, student services, evaluation of the learning process, resources for teaching and research.

In order for the evaluation process to deliver its potential, post evaluation actions are important. The reaction of the authorities to the external evaluation process, and the institutional improvement plan developed after the evaluation, need to be clearly recorded.

The review team was impressed by the progress made with the internal self-appraisals and the external evaluations of higher education institutions. The broad acceptance of the institutional evaluations throughout the higher education sector speaks for the professionalism of those involved in its undertaking. It is having a profound impact at the institutional level, and for the first time provides a set of information about comparative capacity and performance at a reasonably fine level. This information can be of assistance to policy makers, as well as being invaluable to individual higher education institutions looking to improve their effectiveness. The evaluations and the constructive responses of institutions to them constitute a sound basis on which to launch further reform, driven primarily by the institutions themselves.

The review team has been particularly impressed by the work of the follow-through commission in gaining institutional engagement, monitoring improvements on an institution by institution basis, and helping to disseminate good practice.

Planned initiatives to improve higher education quality

The Dominican government is taken further action to raise quality. The *National Development Strategy* (MEPyD, 2010) indicates that action will be taken to modernise curricula, professionalise academic teaching, develop a national accreditation system for higher education institutions, and strengthen links between Dominican and foreign higher education institutions. The *Ten-Year Plan for Higher Education 2008-2018* (SEESCyT, 2008) sets out the timeframe for curriculum reform and professionalisation of teaching faculty.

The Ten-Year Plan also commits to upgrading the qualifications of higher education teachers, and the introduction of performance evaluations linked to pay and promotion. These will be challenging but significant advances. Their successful implementation would increase cost-effectiveness, improve quality and go a long way towards building community confidence in Dominican higher education.

Summary

This chapter has explored the extent to which conditions in the Dominican Republic are conducive for increases in human capital formation to contribute to economic growth. The conditions identified are that: *(i)* students complete tertiary education, *(ii)* the curriculum is relevant to labour market requirements, *(iii)* the education experienced is of good quality, and *(iv)* the economy has capacity to absorb graduates productively.

There is a high level of informal sector employment (50-60%) in the Dominican Republic. In order to raise its competitiveness and create a more equitable society, it is an imperative for the nation to reduce informality and expand the formal sector with better jobs for more workers with better pay and conditions.

The educational attainment levels of the Dominican Republic's work force have been rising, particularly over the last decade. Tertiary-educated entrants to the labour market, and existing employees who have upgraded their qualifications, have tended to occupy public sector jobs, especially in education, health and administration.

All the available evidence points to a decline in the private returns to education in the last decade for the new tertiary-qualified entrants. Income premiums for those with incomplete tertiary have registered an even stronger decline.

There is evidence not only of increasing graduate over-supply and under-employment but also high rates of wastage.

The government has taken concrete steps to raise the overall quality of higher education in the Dominican Republic in terms of inputs, processes and outputs. Nevertheless its present condition remains low by international standards.

With the exception of only a few fields and institutions, there is a high level of employer dissatisfaction with the knowledge and skills of graduates.

The five-yearly institutional evaluations have provided important insights into institutional capacity and performance. The evaluations and the constructive responses of institutions to them constitute a sound basis on which to launch further reform, driven primarily by the institutions themselves.

Government actions to establish a national accreditation system of higher education institutions, reform curricula, raise the qualifications of higher education teachers, professionalise teaching and introduce performance-based pay together promise to underpin continuous improvement.

However, it is imperative that employers are engaged purposefully in the next phases of improving the responsiveness of higher education in the Dominican Republic.

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Chapter 5: Future Demand for Higher Education

This chapter explores future demand for higher education in the Dominican Republic which will be shaped by the interaction of several factors: (i) demographic growth in the relevant age cohorts; (ii) the scale and shape of labour market requirements and opportunities; (iii) changes in rates of educational participation among different cohorts; (iv) the attractiveness of postsecondary study relative to other options, such as direct entry to the labour market, including perceptions of private economic and social benefits relative to costs; and (v) social norms and pressures, including family circumstances and aspirations.

The following topics are discussed in greater detail: (i) scale and shape of labour market requirements and opportunities; (ii) demographically-driven demand for higher education; and (iii) increasing higher education participation rates in addition to population trends. Recommendations are provided on how to deal with increasing demand for higher education.

The future demand for higher education will be shaped by the interaction of several factors: *(i)* demographic growth in the relevant age cohorts; *(ii)* the scale and shape of labour market requirements and opportunities; *(iii)* changes in rates of educational participation among different cohorts; *(iv)* the attractiveness of postsecondary study relative to other options, such as direct entry to the labour market, including perceptions of private economic and social benefits relative to costs; and *(v)* social norms and pressures, including family circumstances and aspirations. This chapter explores the strength of these factors in the Dominican Republic.

The relative attractiveness of higher education

As indicated in Chapter 4, completion of higher education confers financial advantages to graduates in all labour markets, even while private rates of return to education have been declining in some markets. However, incomplete higher education does not confer demonstrable benefits, and a disproportionately large population has been unsuccessful in higher education in the Dominican Republic.

Arguably, many of them would have been better to have entered the workforce directly from secondary school, and access on-the-job training and informal training, through the National Institute for Technical and Professional Training (INFOTEP, *Instituto Nacional de Formación Técnico Profesional*) or other avenues. More pertinently, many of them would have been more likely to benefit from participation in shorter-cycle post-secondary courses of a more vocationally-oriented nature where they could develop competence in practical skills.

Social norms and pressures

However, rising levels of community aspirations for higher education reflect contemporary social valuing of a university degree. This view may be understood as an element of the legacy culture deriving from the insular economy and centralised governance of the pre-democratic era, when a degree was a passport to a government or corporate job which was relatively better paid and more secure than one in the agricultural, industrial and informal sectors.

Additionally, in many countries, short-term, technical courses tend to be seen as a type of second-class education for less achieving students, usually from poorer socio-economic backgrounds, who cannot gain admission to the better universities (OECD, 2008). Thus there can be social resistance to participation in vocational programmes and institutions, even though the practical skills formed through such participation may align better than a more theoretical education with labour market demand and job prospects. This view gives prominence to the "signalling" role of higher education qualifications – prior advantage and effort to persist – as distinct from the "human capital" role – adding productive capacity to the workforce.

If the Dominican Republic cannot raise the social status of vocational training it will find itself with the compounding dilemma of rising costs of wasteful participation in higher education of marginal utility to its workforce needs.

The scale and shape of labour market requirements and opportunities

In 2006, the World Bank reported that labour supply was not satisfying employer demand, and that training programmes were in short supply and were generally inaccessible to poor and low skilled youth. More than half of employers surveyed in 2005 had difficulty finding employees with the skills they were seeking, especially in the case of management skills, administrative skills, and language skills (World Bank, 2006).

The National Institute for Technical and Professional Training (INFOTEP) is a not-for-profit body that co-ordinates the provision of informal skills training for young adults through some 300 technical training centres across the Dominican Republic. Within the framework of the 2006-2007 Competitiveness Plan, the role of INFOTEP was envisaged to provide both initial and lifelong training designed to improve the productivity of enterprises (Mertens, 2008). By 2011, INFOTEP had expanded both its geographical coverage and the range of its labour market training courses. However, as INFOTEP functions outside the formal education and training system, informal learning is not acknowledged as prior learning or for credit transfer purposes in the formal system (OECD, 2008).

As indicated in Chapter 4, employers are concerned about the apparent mismatch of higher education graduate supply, in quantitative and qualitative terms, to the specific requirements of the Dominican economy. In their interactions with the review team, employer groups also raised concerns about a lack of a future vision or forward plan for the employment structure of the Dominican economy. That view itself is of some concern on several grounds.

First, the continuing culture of expectations for, if not of dependence on, a government planning model of economic development, especially by the employer bodies to whom the government itself looks to be entrepreneurial, suggests that there is much yet to be done in modernising mindsets.

Second, the government has set out reasonably clear policy directions and targets in its *National Development Strategy 2010-2030* (outlined in Chapter 2). The far-reaching strategy paths out a transformation of the Dominican economy. However, it seeks to do so, not by picking industry winners or planning to supply labour to specific future workforce requirements. Rather it aims to create the framework conditions for private investment, particularly through increased institutional competence and responsiveness, and improvements in the policy coherence and effectiveness of government. This is a prudent approach.

The best policy response to structural pressures that will assume unknown forms is the encouragement of a high quality broad-based innovation system as part of a highly flexible economy, well functioning labour markets with high quality labour endowments, and excellent and adaptive institutions. In today's dynamic and competitive global environment, there is inevitably a degree of opportunism involved in national policies that seek to support innovation by supplying a diversity of talent and know-how to attract and encourage investment and to increase the prospects of the investment being successful. There are competitive advantages in having capability available to develop opportunities as they arise, whether from inwards investment, the outsourcing decisions of foreign firms, new consumer and intermediate market formations, technological developments, or initiatives of local entrepreneurs.

According to the evolutionary economics school, successful processes are discovered and then imitated through competitive processes, and firms that do not adapt fail (Nelson & Winter, 1982). The nature and speed of competition is influenced by the innovation system. The evolutionary approach places an emphasis on experimentation, variety, competitive approaches and continual change. Variety is important because it increases the likelihood that useful, novel processes will be discovered, and reduces the risk that an economy selects a poor technology pathway. Science plays a role in the innovation system as an important source of knowledge and human capital that firms can draw upon in pursuing their innovations (and in which the interactions go both ways). Higher education and university research contribute to these economy-wide capacities. Importantly too, that sector itself needs to be adaptive.

Third, forecasting labour requirements is notoriously inaccurate, and the more so when economies are competitively exposed and going through rapid phases of structural adjustment. In areas of large public sector responsibility, such as in schooling and health, it is possible to project workforce needs according to the parameters that governments set for adequacy of provision of those services. In relation to schooling, there may be parameters such as student-teacher ratios which can be factored against projections of school enrolment numbers based on births and age-progression rates. Similarly in medical services, governments may set ratios of health and medical services per head of population, with an eye to public expenditures, and seek to ensure adequacy of professional supply without inflating public costs. However, even in these fields of education and health services, where several parameters can be set with some confidence, the international experience is that projections of capacity requirements rarely turn out to be accurate.

Additionally, problems can emerge in the fit of graduates to the labour market, both on immediate entry and at later stages of job change, if education and training are highly specialised or narrowly cast. In all countries there are differences in the expectations that businesses have about the desired attributes of graduates. Typically, the major differences are not so much between industry sectors as between larger and smaller firms, with the latter preferring job-ready graduates as they do not have as much capacity as the former to train personnel in-house to firm-specific needs.

The apparently increasing misfit of higher education graduate output to labour market needs in the Dominican Republic, alongside rising community expectations of higher education participation, presents a particular challenge. As indicated in Chapter 4, the Dominican Republic has multiple labour markets, each with varying needs. There are specific industry and regional variations, alongside differences between the informal and formal sectors, and between government enterprises, large private firms and SMEs in the formal sector. Thus, concurrently, skills shortages may be experienced alongside graduate over-supply and under-utilisation. Porosity across sectors depends on the balance of specialist and generic attributes of graduates, where transfers are not blocked by sector-specific and/or occupational entry barriers.

Given the costs involved, particularly for smaller economies on a developmental path, some segmentation of investment in human capital is required. In particular, it is necessary to consider the grounds for the division of responsibilities between individuals, firms and government at different levels of the nation's human capital formation. The relative funding responsibilities are considered in Chapter 7. Here the underlying patterns of demand for skills are considered.

Novel or "breakthrough" innovation, usually representing a small minority of national innovation, typically involves highly talented people discovering new products or processes. Attention is often given to formal scientific research and development (R&D) for breakthrough innovations. However, some highly successful businesses have achieved breakthrough results by methodically taking small, experimental steps in order to discover and develop new ideas. Rather than believing they have to start with a big idea or plan a whole project out in advance, trying to foresee the final outcome, they make a series of little bets about what might be a good direction, learning from lots of little failures and from small but highly significant wins that allow them to happen upon unexpected avenues and arrive at extraordinary outcomes (Sims, 2010). Additionally, both breakthrough and incremental innovations can be developed by less formal

on-the-job modifications of practice, through exchange and combination of professional experience, and interactions with customers, suppliers and competitors.

It is necessary to have advanced human capital available locally to generate innovations, whether through new ideas and discoveries or adaptation of existing technology, or at least to be networked with people outside the country whose knowledge and skills can be harnessed as required to develop opportunities in the Dominican Republic. Given the increasingly knowledge-intensive nature of the economic base globally, the nation has no option but to invest in advanced human capital formation through graduate education and post-doctorate research. It makes sense to continue do so predominantly by sending Dominicans to good quality schools abroad while gradually and strategically building up domestic capacity in areas of internationally-benchmarked research strength. This matter is considered in Chapter 8.

The particular priority for the Dominican Republic of increasing SMEs in the formal economy involves serving the needs of employers for a well-trained and able-to-learn workforce enabling enterprises to take advantage of new technologies and adapt to changing market conditions. In the competitive global environment, SMEs increasingly seek to export directly, compete with imports, or integrate into global supply chains as subcontractors or service providers. Therefore they must raise quality standards, improve on-time delivery, and make innovations in products and processes. Most importantly, they must value their employees and invest directly in the development of their skills:

> As Latin America becomes increasingly integrated into the global economy, the region's small and medium-sized enterprises (SMEs) face major competitive challenges in identifying, attracting and mobilising human capital. Traditionally, these companies, particularly those that are locally owned, have lacked large, professionally trained and specialised human resources departments and extensive internal training systems. Instead, they have relied heavily on low-cost, high turnover labour. To be competitive, Latin American SMEs will need to transform themselves and meet the human capital challenge head on. Firms can do so in several ways: change internal policy, seek innovative collaborations with public sector support institutions and business associations, or partner with supplier development programmes of large multinational firms. SMEs can then begin to treat human capital as a central competitive asset by rethinking and broadening traditional skill classifications into more flexibly defined sets of worker capacities known as "competencies" (Economist Intelligence Unit, 2008).

On the evidence presented to the review team it seems that most SMEs in the Dominican Republic seek a closer match of skill supply with the operational needs of their businesses. International experience shows that countries that have succeeded in linking skills to productivity and employment growth, have targeted skills development policy towards three main objectives: *(i)* matching supply to current demand for skills; *(ii)* helping workers and enterprises adjust to change; and *(iii)* building and sustaining competencies for future labour market needs (ILO, 2010). The first objective is about the relevance and quality of training. Matching the provision of skills with labour market demand requires labour market information systems to generate, analyse and disseminate reliable sectoral and occupational information, and institutions that connect employers and training providers (ILO, 2010).

In the public sector, and often in collaboration with business associations and international organisations, key reforms that hold promise are threefold:

- "Demand-driven" training closely tied to a firm's needs.
- Modern skill certification systems based on broad competencies.
- Improved labour market "intermediation" services that connect jobseekers with firms seeking to fill particular needs (Economist Intelligence Unit, 2008).

In the informal sector, small enterprises and the self-employed, including those in rural areas and in the informal economy, may be assisted to lift their competencies through improvements in incentives and information:

> Vocational guidance and employment services may often be improved to match people with training opportunities and to get trained people into jobs. Specific and targeted policies are required to assist small enterprises invest in the skills required. Ways to recognise skills acquired through informal training and on-job experience may help workers secure better jobs. Upgrading the technical quality of informal apprenticeships, paying attention to how this kind of training can open opportunities for girls in non-traditional occupations, and improving working conditions and good health and safety practices can help young people not only acquire skills but ease their way into the formal economy. (ILO, 2010)

Building capacity for effective and credentialed training, particularly in secondary school and post-secondary vocational education and training, is a major priority in the Dominican Republic. It is imperative to lift the skills

base of the workforce for realising the nation's economic development goals, and especially for expanding the formal sector and raising its productivity. Indeed, at this stage of the country's development, it must be a higher priority than enlarging higher education.

Demographically-driven demand for higher education

In 2006, the population of the Dominican Republic was projected to increase by 29% to 2025, from 9 million in 2005 to 11.6 million, and to grow to 14.2 million by 2050 (Population Reference Bureau, 2006). The rate of population growth has slowed from 2.3% per year in the early 1990s and is estimated to average 1.4% per year over the next 20 years.

The Dominican Republic has had a net migration loss of 3 persons per 1 000 population over the past decade. Generally throughout the Caribbean, persons with tertiary education are more likely to migrate, and in many cases substantially so, than those without secondary education; with the notable exception of the Dominican Republic (Nurse & Jones, 2009).

The population aged 15-29 is projected to increase on average by 0.6% per year over the next decade (see Table 5.1).

Table 5.1 **Projected population of university age, 2015 and 2020**

Age	Projected population of university age (thousands)		
	2010	2015	2020
15-19	979	975	1009
20-24	903	943	940
25-29	820	865	906

Source: National Statistics Office (*Oficina Nacional de Estadística*), Dominican Republic, available at www.one.gob.do/index.php?module=articles&func=view&catid=76

Assuming the population aged 18 to 24 years grows at the same rate on average as the 15-29 years population (0.6% per annum) over the next 10 years to 2021, an additional 95 100 students would need to be accommodated in order for the current higher education participation rate to be maintained. That would require expansion of higher education enrolments by some 9 500 per year.

Higher education participation rate increases on top of population trends

As indicated in Table 5.2, if the participation rate were to be raised above the Caribbean average, to around 35% of the age cohort (the base level marking a shift from ”elite” to “mass” higher education) then enrolments would need to expand by 115 000 or 30% over the next 10 years, at an average of 11 500 or 3% per year up to 2019. It is not an unreasonable aspiration for the Dominican Republic to have at least made the initial transition from “elite” to “mass” within a decade in order to have the capacity to be internationally competitive in human capital formation in the future – so long as the increased volume of enrolments translates into an increased output of graduates and quality is not diminished in the expansion.

Table 5.2 **Estimated population aged 18-24 years, and enrolment expansion scenarios, 2009-2021**

Year	Population aged 18-24 years	Enrolments at 2009 participation rate of 29.1%	Enrolments with participation rates rising to 35% by 2019	Assumed participation rates
2009	1 277 827	372 433	372 433	29.1
2010	1 285 494	374 079	380 506	29.6
2011	1 293 207	376 323	390 548	30.2
2012	1 300 966	378 581	399 396	30.7
2013	1 308 772	380 853	408 337	31.2
2014	1 316 625	383 138	418 687	31.8
2015	1 324 524	385 436	427 821	32.3
2016	1 332 472	387 749	438 383	32.9
2017	1 340 466	390 076	447 716	33.4
2018	1 348 509	392 416	457 145	33.9
2019	1 356 600	394 771	468 027	34.5
2020	1 364 740	397 139	474 930	34.8
2021	1 372 928	399 522	480 525	35.0

Sources: Estimates made by the review team; MESCyT, Statistics Departament (2010) for base 2009 data; and Population Reference Bureau (2006) for population projections.

These figures are indicative only. Variations in the participation rates of different age cohorts beyond the indicative parameters would change the forward estimates. For instance, increased demand for higher education will flow from the higher levels of secondary school throughput as a consequence of the government's reforms. Nevertheless, the indicative planning range of average annual growth of between 9 500 to 11 500 (2.5-3.0%) enrolments does not suggest that there will be major medium-term pressures on supply capacity, although there will need to be greater diversification of supply, as discussed in Chapter 6, and a more balanced sharing of costs, as discussed in Chapter 7.

However, the *Ten-Year Plan for Higher Education 2008-2018* (SEESCyT, 2008) sets three specific targets of relevance; the first is to increase enrolments by 2018 to 50% of the population aged 18-24; the second is to double the number of graduates to 73 900 by 2018; and the third is to reduce overall attrition by 20%.

Table 5.3 shows estimates of the enrolment growth involved in raising the higher education participation rate to 50% by 2018. An additional 301 822 enrolments would need to be accommodated at an average rate of growth of 33 536 per year. That annual growth rate is 3.5 times higher than would be necessary to maintain the current participation rate of 29.1% and 2.9 times higher than would be required to lift the participation rate to 35%.

Table 5.3 **Estimated increases in enrolments required to meet the 50% attainment target for the population aged 18-24 years of the Ten-Year Plan 2008-2018**

Year	Population aged 18-24 years	Enrolments at 2009 participation rate of 29.1%	Enrolments with participation rates rising to 50% by 2018	Assumed participation rates
2009	1 277 827	372 433	372 433	29.1
2010	1 285 494	374 079	403 645	31.4
2011	1 293 207	376 323	435 811	33.7
2012	1 300 966	378 581	469 649	36.1
2013	1 308 772	380 853	515 656	39.4
2014	1 316 625	383 138	549 033	41.7
2015	1 324 524	385 436	582 791	44.0
2016	1 332 472	387 749	616 935	46.3
2017	1 340 466	390 076	652 807	48.7
2018	1 348 509	392 416	674 255	50.0

Sources: Estimates made by the review team; MESCyT, Statistics Departament (2010) for base 2009 data; and Population Reference Bureau (2006) for population projections.

As indicated in Chapter 3, the apparent graduation rate is estimated to be 50% of the commencing cohort on average across the Dominican Republic, with a much lower rate for Autonomous University of Santo Domingo (UASD). Thus producing a greater number of graduates under current practices would require a much higher annual intake of commencing students. For instance, to graduate 500 students after four years would mean starting 1 000 in the first year. Dropout is not equal each year over a four year course of a Bachelor's degree. On the basis of advice given by representatives of different HEIs, the review team estimates that on average 60% of dropout occurs in the first year. Hence, of the starting cohort of 1 000 only 700 would progress to second year. Assuming attrition at the same rate over years two and three, but at a higher rate in the final year when degree attainment eligibility is validated, there would be 650 students surviving to the third year and 600 surviving to fourth year, with 500 completing the degree. Thus indicative year-on-year attrition rates can be derived as follows: year 1: 0.3; year 2: 0.071; year 3: 0.077; year 4: 0.167.

Achieving the Ten-Year Plan's target of doubling current graduate output would involve producing an additional 36 950 graduates per year by 2018. At current rates of attrition that would require increasing in 2015 annual commencing enrolments by 73 500 on top of the then current enrolments (projected at 582 791 for a system expanding to cover 50% of the age cohort 18-24). As a consequence, the system would be further enlarged by 12.6% with enrolments in 2015 totalling 656 291. That would be to bring forward an enrolment volume that would over-stretch the nation's capacity to absorb without further eroding quality.

A 20% reduction in attrition would mean that for a commencing cohort of 1 000 students there would be 600 who graduate after four years (compared with 500 under the current rate of attrition). Assuming that the reduced attrition applied entirely to first year, when interventions to raise retention can be most effectively targeted, and that the survival rate in subsequent years reflects improved learning standards, then 800 would survive to second year, 725 to third year and 650 to fourth year, with 600 completing a degree. Thus revised year-on-year attrition rates may be derived as follows: year 1: 0.20; year 2: 0.0938; year 3: 0.103; year 4: 0.077.

Table 5.4 indicates that even to double graduate output while achieving a 20% reduction in attrition, without any targets for raising participation rates, would involve a 34% expansion of the system, from 372 433 in 2009 to 500 175, at average annual growth of 14 194.

Table 5.4 **Estimated annual student enrolments by year of study at steady (2009) participation rates for the 18-24 Dominican population by 2021, with a 20% reduction in current rates of attrition by 2018, and the resulting graduate output per year**

Calendar year	Commencing student intake academic year 1	First year attrition rate (%)	Academic year 2	Academic year 3	Academic year 4	Graduates
2009	148 973	30.0	104 281	74 487	44 692	34 412
2010	149 631	28.8	106 537	78 900	53 423	50 635
2011	150 529	27.7	108 832	83 300	63 154	52 607
2012	151 432	26.6	111 151	100 996	70 019	58 325
2013	152 341	25.5	113 494	103 148	76 886	64 046
2014	153 255	24.4	115 860	105 322	95 206	79 307
2015	154 .177	23.3	118 254	107 518	97 212	80 978
2016	155 100	22.2	120 668	109 740	99 239	82 666
2017	156 076	21.1	123 144	111 980	101 290	84 375
2018	156 966	20.0	125 573	114 278	103 358	86 097

Source: Estimates made by the review team based on the following assumptions: For 2009 enrolments of 372 433 have been apportioned on the following basis: year 1 = 40%; year 2 = 28%; year 3 = 20%; year 4 = 12%. For subsequent years the enrolment growth resulting from population increase has been applied to the commencing cohort only, with the student numbers for other years of study derived from the year-on-year attrition rates.

The 20% reduction has been applied on a *pro rata* basis annually only to the commencing cohort (academic year 1). Thus first year attrition is reduced from 30% of the intake in 2009 to 28.8% in 2010, 27.7% in 2011 through to 20% in 2018. The attrition rates for the other years are: year 2: 0.071; year 3: 0.077; tear 4: 0.167. These rates are applied to the pipeline of enrolments in subsequent academic years.

Table 5.5 indicates that the combination of a 20% reduction in attrition with a rise in the participation rate to 35%, both phased in over a decade, would result in graduate output rising above 100 000 per year. On this basis, the graduation rate in 2018 would represent 59% of the commencing cohort in 2015.

This appears to be a positive pay-off option, combining expansion of opportunity, reduction of wastage, quality improvement and growth in graduate output at possibly manageable throughput costs. In the medium-term social and economic environment of the Dominican Republic it has particular attraction. Nevertheless, it involves enlarging the system by 52% or 21 470 students per year. It would necessarily involve admitting a larger proportion of the school leaving cohort, many of whom are inadequately prepared to succeed in higher education.

Table 5.5 **Estimated annual student enrolments by year of study required to meet an increased participation rate of 35% for the 18-24 Dominican population by 2021, with a 20% reduction in current rates of attrition by 2018, and the resulting graduate output per year**

Calendar year	Commencing student intake academic year 1	First year attrition rate (%)	Academic year 2	Academic year 3	Academic year 3	Graduates
2009	148 973	30.0	104 281	74 487	44 692	34 412
2010	152 204	28.8	108 369	93 540	54 860	50 635
2011	156 219	27.7	112 946	94 449	67 028	61 867
2012	159 758	26.6	117 262	97 207	79 196	73 098
2013	163 335	25.5	121 685	105 184	87 195	80 480
2014	167 479	24.4	126 614	109 151	94 350	87 085
2015	171 128	23.3	131 255	113 572	97 908	90 370
2016	175 353	22.2	136 425	117 736	101 874	94 029
2017	179 086	21.1	141 299	122 373	195 609	97 477
2018	182 858	20.0	146 286	126 745	109 769	101 316

Source: Estimates made by the review team based on the following assumptions: For 2009 enrolments of 372 433 have been apportioned on the following basis: year 1 = 40%; year 2 = 28%; year 3 = 20%; year 4 = 12%. For subsequent years the enrolment growth resulting from population increase and rising participation has been applied to the commencing cohort only, with the student numbers for other years of study derived from the year-on-year attrition rates.

The 20% reduction has been applied on a *pro rata* basis annually only to the commencing cohort (academic year 1). Thus first year attrition is reduced from 30% of the intake in 2009 to 28.8% in 2010, 27.7% in 2011 through to 20% in 2018. The attrition rates for the other years are: year 2: 9.38%; year 3: 10.3%; year 4: 7.7%. These rates are applied to the pipeline of enrolments in subsequent academic years.

In the view of the review team, the clear priority should be to reduce attrition and let graduate output rise as a consequence. To enable reduced rates of attrition to be achieved, increases in participation should be deferred or at least constrained until better prepared cohorts flow through the schooling system, qualitative improvements and structural reforms are introduced in higher education, and higher expectations of higher education standards are embedded. A realistic upper limit of participation increase over the next fifteen years is around 35% of the age cohort. The 50% participation target for 2018 is unrealistic given the low preparedness of learners, insufficient structural capacity and flexibility, and the need to improve the cost-effectiveness of the current system.

The fundamental policy questions to be addressed in this context are: what would be the appropriate sharing of costs between general taxpayers and private beneficiaries; what should be the balance between public and private providers; and what would be the most cost-effective mix of provider types in the future provision of higher education services. These matters are discussed in the following chapters on supply diversification and sustainable financing.

Summary

The changing Dominican labour market requires higher levels of skills formation across the workforce. Having available a small cadre of highly skilled people is important for the development of leading-edge innovations. However, the main requirement is for qualified technical and professional personnel to underpin expansion and productivity improvement in the formal sector, particularly in small and medium-sized enterprises.

Building capacity for effective and credentialed training, particularly in secondary school and post-secondary vocational education and training, is a major priority in the Dominican Republic. Indeed, at this stage in the country's development, it must be a higher priority than enlarging traditional higher education.

However, such a strategy will require the social status of vocational education and training to be raised in Dominican Republic. Otherwise the community will find itself with the compounding dilemma of rising costs of wasteful participation in higher education of marginal utility to its workforce needs.

Demographically-driven student demand alone would add around 9 500 enrolments per year on average to the higher education system over the next decade. Raising the participation rate to 35% would add 11 500 enrolments per year. Raising the participation rate to 50% of the 18-24 age cohort by 2018, as proposed in the *Ten-Year Plan for Higher Education 2008-2018* would expand the system by 33 536 per year. Doubling graduate output as well by 2018, another goal of the Ten-Year Plan, would add 36 950 enrolments per year. Reducing attrition by 20% progressively over the decade, at the current rate of participation, would increase graduate output from 34 412 in 2009 to 86 097.

In the view of the review team, the clear priority should be to reduce attrition and let graduate output rise as a consequence. To enable reduced rates of attrition to be achieved, increases in participation should be deferred or at least constrained until better prepared cohorts flow through the schooling system, qualitative improvements and structural reforms are

introduced in higher education, and higher expectations of higher education standards are embedded. A realistic upper limit of participation increase over the next fifteen years is around 35% of the age cohort. The 50% participation target for 2018 is unrealistic given the low preparedness of learners, insufficient structural capacity and flexibility, and the need to improve the cost-effectiveness of the current system.

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Chapter 6: The Structure of Higher Education Provision

This chapter discusses the structure of higher education provision, arguing that the Dominican Republic needs a much more diversified structure of higher education to meet the varying needs and circumstances of learners cost-effectively and to produce the range of graduates with the mix of skills required by the changing economy. It provides arguments why there is a need for diversity of provision, notably by means of improved learning cost-effectiveness, increased responsiveness to labour market dynamics, widened student choice and strengthened system sustainability. The chapter concludes with the internationalisation strategy of the Dominican Republic, arguing that a more comprehensive internationalisation strategy is needed. It provides a set of policy recommendations on how to achieve a more comprehensive strategy and to support diversification in higher education.

As noted in the OECD's 2008 report, tertiary education in the Dominican Republic is homogeneous in terms of the formal qualification it provides, and highly concentrated in a few fields, all with a limited technical and professional content:

> Most students are in four-year, professional degree courses, with few in short-term, technological or general education programmes. Post-graduate education is also limited, with a small number of professional Master's programmes. No doctoral degrees are provided in the country, except, in some cases, in partnership with foreign institutions, and there is little in terms of academic research. (OECD, 2008)

The Dominican Republic needs a much more diverse, quality-assured and joined-up higher education system.

The need for diversity of provision

The main policy reasons for diversifying the system are to improve learning cost-effectiveness, to increase responsiveness to labour market dynamics, to widen student choice, and to strengthen system sustainability.

Improving learning cost-effectiveness

High wastage in higher education – extensive dropout and repetition, and low and slow rates of completion – reflects a structure of supply that is not catering adequately to the varying needs and circumstances of the learner population.

The high wastage rates impose a significant cost on the public purse and on the individuals who experience failure. The OECD's 2008 report observed that: "the extremely low completion rates at UASD and in most private institutions are a clear indication that many students would benefit from short-term courses that would provide them with a useful qualification in two years, instead of trying – and failing – to get their four-year degrees."

However, the imperative for greater diversity in the structure of provision arises from an even deeper problem. As noted in Chapter 4, there is concern among employers that too many higher education graduates lack the knowledge and skills needed for productive employment. The review team was advised that employers are making increasing use of ability and psychometric tests in selecting applicants for jobs, largely because they do not trust the qualifications awarded by Dominican universities. This lack of confidence in the quality of Dominican graduates is profoundly problematic. It suggests that parts of the system are dysfunctional.

This problem of ineffectiveness in Dominican higher education, whereby students are passed without being able to demonstrate competence, replicates the practice in primary and secondary schooling. The Dominican government is attempting to address the problems in the schooling system. To overcome the systemic passing-on of under-prepared graduates of higher education, it will be necessary to define explicitly the learning outcomes expected for different levels of educational qualification. It will also be necessary to establish institutions that specialise in learning remediation and provide pathways for learners to move to work and further learning, with criterion-referenced recognition of their learning competencies.

Increasing responsiveness to labour market dynamics

As noted in Chapter 4, the Dominican economy needs a broad range of skills to support innovation and productivity improvement. The global competitiveness of firms is highly dependent on talent fit to meet changing market opportunities. The limited range of courses available through the traditional university model of higher education provision, and the lack of innovation in the ways and means of teaching and learning, restricts the competitiveness of firms.

Widening student choice

Growth in participation involves greater variety in the backgrounds, motivations, goals, and readiness levels of learners. It also involves more variation in the personal circumstances of learners – *e.g.* the time they have available to study and the times and places at which they can study, as well as their financial means to pay.

Thus enlargement of higher education participation increases the diversity of demand for services in terms of curriculum content and orientation, study modes, places and times for learning, and trade-offs between convenience, quality and price.

As the student body expands and the mix of students diversifies further, the need for a more differentiated higher education system will intensify. Students will be more deliberate drivers of the next stage of developments in the supply of higher education. Already many are customising their learning by shopping around and taking from offerings around the world through YouTube and other media.

Strengthening system sustainability

Diversity provides the basis of sustainability by increasing the adaptability of the system. A diverse system can offer specialisations focused on quality delivery to specific market segments. As needs for higher education services change, a diverse system has the necessary flexibility to respond rapidly without widespread costs. Conversely, declines in parts of the system can be offset by growth in other parts without diminishing the capacity of the whole.

A diverse system permits individual institutions to be mission focussed. It also enables gains to be made in the productivity of teaching and learning, and reduces administrative overhead costs.

It is important that diverse systems are constructed of pipelines and pathways between different institutions so that students have choices to fit their varying circumstances and can progress without being locked into a single destiny and locked out of pursuing diverse options, and that they can learn continuously without repetition.

Options for diversifying provision

In conceiving of the future shape of higher education supply, which is rapidly globalising, it is necessary to consider drivers beyond national borders and the current local circumstances of the Dominican Republic.

The second decade of the twenty-first century will likely see a transformation in the delivery of higher education worldwide. With only a few exceptions, the conventional models of public sector supply of tertiary education face serious funding deficits. Meanwhile there is surging global learner demand associated with the expanding youth populations and the increasing number of middle class families in developing countries. Concurrently, sophisticated yet mass technologies, embracing rapid, ubiquitous and powerful communications capacities, enable quality education to be designed, delivered and consumed relatively cheaply in many parts of the world. Simultaneously, there is intensifying competition globally for intellectual talent.

If public sector institutions cannot rise to the new challenges and opportunities, private entities surely will. Indeed, they are already on the rise around the world, and are inevitably an integral part of the solution to the problem of meeting the rising demand for higher education cost-effectively. They offer competitive products and services, often having innovative features, being closer to professional practice and the working environment, responsive to the varying needs and circumstances of their learner customers, and providing quality student support. Significant private investment in higher education may well be the defining characteristic over the next decade and beyond as investors seek out opportunities for growth and efficiency improvement, including through buy-ups and carve-outs of established education and training operations and their integration with enterprise units and groups in other industries.

In this context a range of higher education provider types may be identified, including:

- Comprehensive universities offering a broad range of courses at undergraduate and graduate levels, with research across many of those fields.
- Specialised universities offering a narrow range of courses for particular professions.
- Large higher education providers serving mass markets for work-relevant learning. These may be "polytechnics" typically offering 4-year degrees or "community colleges" typically offering two-year associate degrees or other qualifications which can articulate with credit transfer to four-year programmes elsewhere.
- Specialist distance education providers offering courses on-line and/or with a mix of direct and virtual teaching.

- Small elite institutions which provide a campus-intensive experience, including residential community life, for a mix of local and foreign students.
- Spin-outs of communications and media corporations offering professionally supported open-source learning, with specialised assessment and credentialing services.
- Large transnational corporations, with perhaps a few major globalised universities, offering total service packages.
- Self-selecting networks of universities operating on a cross-national basis through student and staff exchange and research collaboration.
- Combinations of the above, including public-private partnerships of various types.

The National Development Strategy (NDS) of the Dominican Republic focuses on developing two forms of future higher education provision: *(i)* community colleges to facilitate the entry of young people and women into the labour market; and *(ii)* distance and virtual education in higher education institutions as a way to expand access to the entire population.

The policy rationale for the development of community colleges is that they can offer work-relevant and work-based learning, cater more purposefully for students who prefer practical work or are not fully prepared for four-year programmes, and produce job-ready graduates that fit labour market requirements.

As seen in Table 3.5 (Chapter 3), only a small number of regional areas of the Dominican Republic do not have either a higher education institution or a subsidiary campus. Distances in the Dominican Republic are not great and the OECD team considers that, where needed, regional development should be encouraged by the provision of additional flexible two year colleges. The benefits of new technology can also be harnessed in this instance with the support of video links and electronic teaching and learning materials.

The model for this type of college has already been developed and a campus is under construction. The team considers that an important benefit of the new two year colleges will be to improve access by providing pathways for students who wish to continue their studies in a university or other tertiary education institution and who have reached a sufficiently good standard in their first post secondary course. In the view of the review team, the Dominican authorities should consider extending the community college model to other regions. Employers will need to be engaged in the design of programmes to suit regional labour market requirements.

The development of a community college sector, some institutions within which may evolve to polytechnics, represents a major structural reform of the higher education system in the Dominican Republic. It will need to be managed well. In particular, given a cultural disposition to value university graduates, the benefits of shorter-cycle programmes of work-relevant learning will need to be communicated to employers, parents and prospective students. It will be essential that employers play an active role in the formation of the community colleges, including committing to employ graduates. Some early demonstration models may need specific forms of support, such as job placement brokerage services.

With regard to UASD, the OECD 2008 report suggested that it should plan to become "a federation of independent or semi-independent regional units, similar to other large public universities such as the University of California in the United States or the university of the State of São Paulo in Brazil" (OECD, 2008). However, it did not propose replicating the Santo Domingo campus in all regional locations. Rather it envisaged some being vocational two-year colleges, with others offering specialisations of local interest not available in Santo Domingo. Reform of UASD is considered specifically in Chapter 9.

Internationalisation strategy

Increasingly the internationalisation of higher education has multiple dimensions and purposes. First, the more connected world gives rise to the need to educate people not only for life, work and further learning in their home contexts but also in global context as citizens of the world. From a student learning perspective, the internationalisation of education is chiefly a means of widening mental horizons through curriculum enrichment, experiencing and appreciating diversity, mastering foreign languages, acquiring greater cultural understanding, and establishing international friendships and networks. Second, access to global knowledge production and know-how is essential for the competitiveness of nations. From a knowledge access perspective, it is imperative for a country's advancement that its leading thinkers are actively involved in collaborative international research, participate in international researcher gatherings, undertake joint work on common problems, contribute to internationally co-authored papers, and share research facilities.

Internationalisation can also be understood as a means of strengthening the capacity of a nation's higher education system. The sheer scale and pace of global advancements, and the intensifying competition for talent, means that Dominican higher education institutions cannot become internationally

competitive by themselves. The very effort to attempt to build up local capacity as a precondition for openness to international competition is likely to be futile as the most dynamic players on the world stage are not waiting for others to catch up. Openness to global dynamics rather than sheltering from them is the only sustainable course. The key policy challenge is to chart a risk-managed way through the changing future by taking a multi-pronged and phased approach.

Effective international engagement in higher education and research necessarily requires two-way openness. For instance, in the case of international student mobility, it is necessary to foster much greater flow outwards and inwards, such as through student exchanges and twinning programmes. Likewise, academic and professional staff mobility needs to flow in and out. The review team was advised of national and institutional policies and programmes for sending students abroad to gain qualifications. In addition, the government has programmes in place to provide incentives, including scholarships, for Dominican students to study abroad. Some government assistance is also available for teachers and other professionals to undertake short courses in other countries, including in curriculum redesign with Korean and US institutions. The institutional arrangements, in several cases, are well developed, such as for double degree programmes. The review team was also advised of well-considered initiatives through the formation of alliances to develop graduate education programmes leading to Master and doctoral degrees. All the aforementioned initiatives are in the right direction, but the magnitude of the effort should be increased and it should involve more specifically decisions in connection with the institutions and their long term development priorities.

The review team gained the impression that there is a much less-developed approach to opening up the Dominican Republic to foreign students, higher education providers and research institutions. For instance, several academics and employers interviewed by the review team expressed the view that foreign students should be undertaking hospitality studies in the Dominican Republic rather than Dominican students going abroad to study hospitality. In fact, the number of international students in the Dominican Republic is almost insignificant representing less than 2% of the total enrolment in higher education. As it has been observed in other countries, attracting international students is highly positive but it does not happen by default, since it requires implementing or reviewing specific policies, adapting academic programmes, conducting strategic international promotion efforts, and establishing at institutional level mechanisms aimed at fully integrating international students. In the case of exposure to foreign providers, whether public or private, while concerns were expressed that this may damage Dominican institutions, little consideration appeared to have

been given to the benefits that foreign providers could contribute to raising the innovative capacity and productivity of the Dominican higher education system.

In the review team's view, a more comprehensive internationalisation strategy needs to be developed for Dominican higher education. It should comprise: a statement of national policy objectives and principles; embedding internationalisation competencies in statements of expected graduate attributes in the national qualifications framework; mutual recognition of academic credits and degree equivalences; encouraging second and third language learning; fostering the adoption of an international dimension in the curriculum of academic programmes of institutions; professionally promoting the Dominican Republic as a study destination for students of other countries; attracting more international students and scholars; fostering the development of strategic inter-institutional alliances at the international level and the participation of Dominican higher education institutions in relevant international consortia and collaborative networks; ensuring that international students in the Dominican Republic are covered by national quality assurance and consumer protection arrangements; encouraging the formation of alliances between Dominican universities and counterpart institutions in LAC countries and more broadly; and augmenting and improving national capacity through the presence of foreign providers of higher education and research. Opportunities arise for the Dominican Republic to consider some involvement of transnational providers of higher education employing modern communications systems and teaching and learning technologies. Particular benefits could be gained from the participation of specialised providers of pathway programmes. Their presence could add to competition, spur institutional innovation, and widen choice for learners. The government could exercise its capacity to properly allow the entrance of those providers by making sure that their offerings are of equivalent or superior quality to the ones being currently offered by local institutions.

At the same time, a strong public sector role in higher education is essential for sustaining balance, equity and excellence in higher education and research, especially in areas where market incentives for provision are weak. The public higher education sector in the Dominican Republic needs to develop a more dynamic and differentiated set of roles. Consideration could be given to reorganising the provision of public higher education through regional precincts, including secondary school campuses, technician institutes or community colleges, and university campuses with close community connections, including arrangements for work-based learning and translational research. Additionally, there is an imperative to transform

UASD into a leading centre of knowledge production and dissemination. A precondition of transformation is governance reform, which is discussed in Chapter 9.

For greater diversification initiatives to be successful four related frameworks need to be put in place. The first is a national qualifications framework which describes the learning outcomes expected for each level of qualification, and relates Dominican qualifications to the European ECTS and other international benchmarks. The second is a national system of institutional accreditation which can provide a basis for quality assurance, community confidence and consumer protection, linked to the national qualifications framework. The third is a framework for learning pathways, credit transfer and recognition of prior learning, also linked to the national qualifications framework. The fourth is a system of needs-based financial aid to reduce barriers to participation of low income students.

Summary

The Dominican Republic needs a much more diversified structure of higher education to meet the varying needs and circumstances of learners cost-effectively and to produce the range of graduates with the mix of skills required by the changing economy.

The development of two-year community colleges focusing on work-relevant and work-based learning is an important development for the Dominican Republic. However, the initiative will need to be professionally and patiently marketed to the community, and employers will need to directly engage with and commit to the development.

Opportunities arise for the Dominican Republic to consider some involvement of transnational providers of higher education employing modern communications systems and teaching and learning technologies. Particular benefits could be gained from the participation of specialised providers of pathway programmes.

The policy framework supporting diversification will need to include a system for national accreditation of higher education providers, a national qualifications framework, a framework for credit transfer and recognition of prior learning, and means-based financial aid for poor students.

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Chapter 7: Sustainable Financing

This chapter discusses funding of higher education in the Dominican Republic and analyses four issues: (i) resource mobilisation: is the Dominican Republic investing sufficiently in higher education? (ii) resource allocation: are public resources being distributed methodically, and in a way that encourages innovation and rewards performance? (iii) resource utilisation: are available resources used efficiently and effectively? (iv) equity: are public funds distributed among various population groups in the Dominican Republic in a fair and equitable way? The chapter concludes with a number of recommendations for improvement, including on: achieving structural reforms through diversification of the systems through increased private provision and increased private share of costs in public higher education; arrangements for extending scholarships and loans to a wider range of students in public and private higher education institutions; and increasing the capital available to FUNDAPEC in order to increase loan capacity.

Achievement of the government's development goals will depend in large measure on the deployment of resources. An assessment of resource adequacy and deployment effectiveness necessarily addresses the following four sets of questions:

- Resource mobilisation: is the Dominican Republic investing sufficiently in higher education?
- Resource allocation: are public resources being distributed methodically, and in a way that encourages innovation and rewards performance?
- Resource utilisation: are available resources used efficiently and effectively?
- Equity: are public funds distributed among various population groups in the Dominican Republic in a fair and equitable way?

This chapter addresses these questions in respect of higher education. Chapter 8 deals with funding for science, technology and innovation.

Resource mobilisation

The 2008 OECD report (OECD, 2008*a*) found that the Dominican Republic was providing very limited resources to education both in absolute terms in relation to the country's budget and national product, and the proportion of this resource going to tertiary education is also relatively small. Dominican spending on higher education was estimated to be around 0.3% of GDP compared with other countries of the region which spend around 1% to 2% of GDP.

Public funding

Overall, the government provides about one third of the resources spent on tertiary education in the country.

The 2008 OECD report noted that government spending on higher education in 2002 totalled USD 48 million, of which 88% was allocated to the UASD. As shown in Table 7.1, the government has progressively increased its spending in absolute terms and as a proportion of GDP. Between 2002 and 2010, spending rose by USD 133 million, or 277%, at an average rate of growth of 35% per annum. With fiscal consolidation over 2010-11, the rate of growth in spending slowed.

Table 7.1 **Government expenditure on higher education, science and technology, and as a proportion of gross domestic product 2002-2011**

Year	Total general expenditure MESCyT (USD millions)	GDP (USD millions)	Higher education spending as % of GDP
2002	48.0	26 570	0.18
2003	53.2	21 268	0.25
2004	58.4	22 039	0.26
2005	63.8	34 004	0.19
2006	83.3	35 952	0.23
2007	127.7	41 314	0.31
2008	136.8	45 805	0.29
2009	165.6	46 788	0.35
2010	181.0	51 577	0.35
2011	187.7	54 900	0.34

Source: MESCyT for Expenditure figures; World Bank (July 2011) for GDP in current US dollars.

As can be seen from Tables 7.2 and 7.3, expenditure was also spread more broadly across the higher education sector, with the share of spending allocated to the UASD declining from 88% to 66% over the period 2002-2010.

Table 7.2 **General expenditure budget of the Ministry for Higher Education, Science and Technology, 2005 and 2010** (USD)

Programme/Activity	2005	2010
Central Activities	**1 569 606**	**8 334 842**
Management and co-ordination	1 076 842	8 334 842
Financial and administrative management	492 763	0
Higher Education Services	**2 315 233**	**1 993 078**
Management and co-ordination	1 375 958	1 949 248
Admissions, registry and academic controls	592 428	41 091
Student affairs	148 700	0
Administration of fellowships	179 474	0
Regulation, supervision and assessment	0	2 739
Training	18 672	0
Support for Science and Technology	**1 835 731**	**1 440 503**
Management and co-ordination	760 779	1 440 503
Support for science and technology	452 126	0
Technology transfer and interchange	170 396	0
International co-operation	57 952	0
National information system	394 478	0
Sub Total	**5 720 570**	**11 768 424**
Administration of special contributions	7 290 984	47 241 645
Administration of transfers	50 828 976	121 992 959
Sub Total	**58 119 960**	**169 234 603**
Grand Total	**63 840 530**	**181 003 027**

Source: MESCyT.

The total budget for 2010 was of the order of USD 181 million, including some USD 50 million for special contributions (a discrepancy of USD 2.9 million appears in the unallocated "not applied" provision) and USD 118.6 million for the UASD. In 2011, the total budget of the Ministry was increased to USD 187.7 million.

Table 7.3 **Budget transfers of the Ministry of Higher Education, Science and Technology, 2010** (USD)

Programme/Activity	2010
Sub Total - Special contributions	**50 182 821**
Not applied	35 954 858
State Secretary for Education	0
Instituto Técnico Superior Oscus San Valero	68 963
Council for Co-operation in Education, Science and Technology	184 904
UASD Regional Centre of Hato Mayor (CURHAMA)	491 233
Las Americas Institute of Technology (*Instituto de Tecnología de las Américas*)	4 221 110
Loyola Polytechnic Institute of San Cristóbal (*Instituto Politécnico Loyola, San Cristóbal*)	2 495 134
Science and Technology Research Support	2 297 301
Technological Institute of Cibao Oriental (*Instituto Tecnológico del Cibao Oriental*)	701 761
Management Board, UASD Santiago	279 412
NGOs in the area of education	3 488 145
Sub Total – UASD and IIBI	**121 992 959**
Autonomous University of Santo Domingo (UASD)	118 600 913
Institute of Innovation for Biotechnology and Industry (IIBI)	3 392 046
Grand Total	**172 175 780**

Source: MESCyT.

The *Ten-Year Plan for Higher Education 2008-2018* (SEESCyT, 2008) envisages 2.2% of GDP being allocated to higher education, science and technology (including MESCyT), presumably by 2018. This goal is linked with the development of strategies "to generate additional income and diversify resources from public, private and external sources" (see Chapter 2). Given fiscal conditions, such a large leap in outlays is very unlikely over the medium-term. In any event, there would need to be proper justification of any higher spending level or proportion, and indicators of performance improvement in resource allocation and utilisation would need to be set and monitored.

Private funding

Around two thirds of national spending on higher education derives from student payment of tuition fees, predominantly in private institutions.

Private institutions are relatively expensive with fees in PUCMM averaging USD 2 800, in INTEC USD 3 000 and in the Universidad Iberoamericana (UNIBE), the most expensive, USD 5 000. The situation in PUCMM is different from other private institutions; 68% of its income is from student fees and all students, even those able to pay full fees, are subsidised in some measure because of the religious character of the institution. There are discounts for education studies and nursing.

Cost sharing

At UASD, around 44% of university enrolment is virtually tuition-free. UASD charges a nominal fee for students from public secondary schools amounting to approximately USD 5 per semester for most courses. Students from private secondary schools pay somewhat more, the highest fee being about USD 78 per semester for full time undergraduate tuition and USD 100 per semester for postgraduate level tuition. Agronomy, physics, philosophy and nursing are free as these degrees are considered to have high public spillover benefits to society and the economy.

The government is prudently seeking to achieve improvements in the functioning of UASD ahead of any consideration of changes to funding arrangements. This matter is discussed in Chapter 9.

Resource allocation

The 2008 OECD report noted the absence of clear criteria for the allocation of public resources, "except the demand coming from the universities and the ability or willingness of the government to respond to it" (OECD, 2008). Similarly the report noted that "the limited amount of public money that goes to private institutions is not based on any well-defined subsidy policy, but on historical, *ad hoc* considerations taken sometime in the past" (OECD, 2008*a*).

Towards a more consistent allocation system

The *Ten-Year Plan for Higher Education 2008-2018* envisages between 1.5% and 3% of the allocate budget being allocated to a modernisation programme to improve physical facilities and access to modern teaching and learning technologies. Otherwise there appears to be no explicit agenda of revising the historical costs-plus model of resource allocation. Nor is there any declared intention to remove or reduce anomalies in the allocation of funds to different private institutions.

Resource utilisation

The review team was advised of some indications of "efficiency" in Dominican higher education, notably large classes, flexible operating times, and high rates of utilisation of physical infrastructure. However, because of high wastage and low quality, the apparent "efficiency" ought not to be equated with "productivity". The OECD 2008 report estimated that the cost per student at UASD was merely USD 204 per year, but that the cost per graduating student was USD 3 479.

As noted in the OECD 2008 report, educational expansion has been accompanied by lack of teaching materials and well-maintained facilities, as salaries and operational expenses have absorbed the bulk of the education budget. Most of the resources go to pay academic and administrative personnel, with more resources going to administration (44.1%) than to the academic staff proper (41.6%), with little left for current, non-personnel expenditures (OECD, 2008*a*).

The *Ten-Year Plan for Higher Education 2008-2018* sets out a number of initiatives designed to improve performance and accountability for the cost-effective use of public resources in Dominican higher education. Chief among these is the proposal to introduce performance-based pay for higher education teachers.

Equity

The World Bank has pointed to a systemic problem giving rise to structural inequity in a country's education system:

> The expansion of private higher education in the absence of cost-recovery in the public sector and loan or grant programmes for the poor can produce double inequity. The most privileged students move from the best (often private) secondary schools into free public universities (*e.g.* Brazil's federal universities), while the poor end up paying for lesser quality education offered by private tertiary institutions. Unless cost-sharing is introduced in public universities, diversity and equity objectives cannot be effectively served by the increase of private institutions. (World Bank, 1994)

In the Dominican Republic there are clear instances of inequities where students from more advantaged backgrounds and private secondary schooling can enrol in tuition-free courses leading to highly-remunerated professional practice, such as in Medicine. At the same time, students from

disadvantaged backgrounds from public secondary schools who enter the public university may be further disadvantaged by the poor quality of the education they receive, and fail to gain private benefits as graduates.

In order to improve quality and equity as higher education enrolments increase, the Dominican Republic may find it necessary to increase the private (student and family) contribution to the costs of tertiary education in public universities. Currently, students at UASD are required to pay a nominal fee for the courses they attend. An alternative would be gradually to increase this fee for the students who can pay, while students who cannot afford it would receive a long-term loan to cover their costs.

Scholarships and other forms of student support

The Dominican Republic has a range of government sponsored scholarships and student support schemes whose aim is to facilitate the participation of all students who have intellectual ability without any reference to their ability to pay tuition fees.

MESCyT National Scholarships are offered for undergraduate and postgraduate studies and there is also a special category for students attending Las Americas Institute of Technology (ITLA, *Instituto Tecnológico de Las Américas*). Beneficiaries must come from households which are below the official poverty threshold. Preferred areas of study are in science and technology (S&T) subjects, information and communication technology (ICT), biotechnology, business and commerce and management, telecommunications, electronics, tourism, health and environment.

Between 2005 and 2009, MESCyT invested a total of DOP 315.5 million (approximately USD 8.5 million) in 9 198 scholarships for higher technical level, undergraduate and graduate students, 57% of whom were women. Scholarships were awarded for study in both public and private HEIs, 86% of them at undergraduate level with the remaining 14% at post graduate level. MESCyT also provides a transport subsidy for university students nationwide.

However, student support measures are not confined to the public sector and many HEIs provide needs based scholarships or other benefits.

The mission of PUCMM is to ensure that all talented students who have gained admission, regardless of their socio-economic level, are enabled to complete their studies with the assistance of a number of student support programmes. One third of the entire enrolment in PUCMM comes from less

wealthy backgrounds. Some 45% of students in the Santiago campus and 11% in the Santo Domingo campus of PUCMM have some sort of financial aid. The University has an active awareness campaign in both public and private schools to highlight the availability of scholarships and subsidised loans and has developed various instruments to encourage participation, *i.e.* tax deductions for employers who pay fees (up to 10%) and for individuals who are paying for themselves (rather than getting support from their families).

Besides an academic requirement of at least 80 points in the *bachillerato* and of at least 2.5 in the admission exams (more for the *Crédito a la Excelencia*) to qualify for student aid, in PUCMM it is necessary to prove that one's parents cannot afford to pay full fees and to have a parent or guardian to be guarantor for the loan. A positive aspect of these measures is that students who borrow money do so at interest rates which, although still comparatively high by international standards, are below the market rate: 12% for regular student loans and 10% for the *Crédito a la Excelencia*. The payment period is twice the duration of their course or twice the time the loan was in effect not to exceed ten years. There is a grace period of six months to pay back these loans in monthly instalments. During this period, no principal or interest need be paid on the subsidised loans, but there is interest on unsubsidised loans.

In addition to its open access policy and in keeping with its mission, UASD offers a limited number of employment schemes within the university whereby the student works for 4 hours a day in return for a payment and the exemption from other charges; however these opportunities are currently limited to about 500 students. Subsidised food is also available in UASD cafeterias.

Student loans through FUNDAPEC

The experience of the current system of student loans, administered by FUNDAPEC (see Box 7.1) could be used to create a much wider loan programme for studies both in public and in private universities, as well as abroad. The revenue generated from such an increase in fees would not be enough to pay for the universities' current expenditures and investment needs, but there would be two main advantages in their introduction. First, it would generate additional support for the universities, which could be used for different purposes, including the provision of additional support for students coming from poor families who may need to stop working in order to study. Second, it could reduce the number of students who enter the university without really intending to make a minimum investment to complete their education and get their degree.

Box 7.1 **FUNDAPEC**

FUNDAPEC (APEC Foundation for Educational Credit, Inc.; *Fundación APEC [Acción Pro Educación y Cultura] de Crédito Educativo, Inc*.) is a private, not for profit, organisation established in 1967 to provide student loans for all levels of higher education or technical level studies both within the Dominican Republic or abroad, at institutions that are accredited by the relevant authorities. Loans can cover the total or partial cost of tuition, maintenance, books and transportation.

FUNDAPEC advances about 2 000 loans per annum and, to date, has financed about 97 000 students and administered loans for 55 HEIs or other organisations. It receives support from the government and also from the IDB and USAID.

The usual pattern of lending appears to be that a student borrows to finance four years of study and takes a further four years to repay while working. The average loan is approximately DOP 250 000 (approximately USD 6 500) and there is only about 4% delinquency. Interest rates are 20% although the team was informed that lower income students may be charged 12% interest.

The Board reckon that they are addressing only about 1.2% of the potential demand for student loans in the Dominican Republic. They would like to make their loans more accessible and to expand further but without more capital they cannot expand and cannot decrease their interest rates.

www.fundapec.edu.do/

Despite the fact that a variety of scholarships and student support schemes are available and that there is a not-for-profit student loan organisation, the reach of these instruments is limited due to the costs of provision for the government and the restrictions on credit which cause the interest rates charged by FUNDAPEC to be excessively high. PUCMM appears to have the most equitable arrangements in keeping with its religious ethos and mission.

These measures, while undoubtedly welcome, are reaching a relatively small proportion of the total student population. Needs-based scholarships provided by the government serve relatively few students. In their discussions with the OECD team, FUNDAPEC indicated that they are only serving 1.2% of potential demand for their loans. Additionally, because of their high interest rates, these loans may not be affordable for the many students most in need financial aid. The PUCMM student support packages appear to be the most generous although they too may not always reach the students most in need of aid because some low income students may not have parents or guardians who can guarantee the loans.

The *Ten-Year Plan for Higher Education 2008-2018* (*Plan Decenal de Educación Superior 2008-2018*) aims to increase the number of recipients of national scholarship programmes to 50 000, of which 10% would be assigned to teaching and research staff in higher education institutions (see Chapter 2). Given the very limited financing available for all levels of education in the Dominican Republic, this will be a difficult target to achieve.

The review team suggests that, in addition to finding ways of increasing the budget available for equity purposes within the higher education allocation so that the national scholarship programme can be ramped up, the government may also want to explore the feasibility of increasing the capital available to FUNDAPEC with the goal of providing more loans at lower interest rates. Another option would be to explore the possibility of setting up an income contingent student loan system whereby loans would be repaid out of future graduate earnings also with lower interest rates than those that are currently being charged. A large literature exists on the international experience with student lending to date and the relevant authorities are referred to the OECD report *Reviews of Tertiary Education: Tertiary Education for the Knowledge Society* for a synthesis of different countries' experience with student support schemes (OECD, 2008*b*).

Summary

Over the past decade, the Dominican government has been progressively increasing its funding for higher education in absolute terms and as a proportion of GDP. Nevertheless, current spending at around 0.3% of GDP remains very low by international comparisons. However, the goal set out in the *Ten-Year Plan for Higher Education 2008-2018* of raising spending to 2.2% of GDP by 2018 is highly ambitious. Demonstrable improvements in performance should be a precondition of increased spending.

No progress appears to have been made towards a more consistent and principle-based allocation of resources to institutions. Resource utilisation remains inefficient, principally because of low levels of teaching and learning productivity as manifested in high rates of student wastage. The government's intention to increase incentives for performance improvement in university teaching will be an important reform, albeit a challenging one.

To improve quality and equity within affordable limits, especially as the higher education system expands, it will be necessary not only to achieve structural reforms through diversification of the system, including through increased private provision, but also to increase the private share of costs in

public higher education. In this context, the Dominican government will need to consider arrangements for extending scholarships and loans to a wider range of students in public and private higher education institutions. Consideration could be given to increasing the capital available to FUNDAPEC in order to increase loan availability.

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Chapter 8: Scientific Research, Technology and Innovation

This chapter describes the legal framework of the National System of Higher Education, Science and Technology and discusses the Strategic Plan for Science, Technology and Innovation. The chapter also analyses the current stage of science, technology and innovation in the Dominican Republic, including its science production, human resources, applied research activities, and industrial innovation. It discusses policy instruments available, notably financial support for science and technology and support for students who want to study abroad. The review team argues in favour of strengthening the links between universities and industries and consolidating the national system of innovation and entrepreneurship. The chapter concludes with an assessment of requirements by discussing progress and remaining challenges since the 2008 OECD review of education in the Dominican Republic.

Legal framework

The Dominican Republic has lent little public support in the past for investments in leading-edge science, technology and graduate education. In recent years, there are signs of increasing government and enterprise interest in building and incentivising innovative capacity across the range of the Dominican's economic sectors.

Legislation passed in 2001 (Law 139-1) established a National System of Higher Education, Science and Technology. This system included the universities; the Dominican Institute of Technology (INDOTEC, *Instituto Dominicano de Tecnología*, currently the Institute for Innovation in Biotechnology and Industry [IIBI, *Instituto de Innovación en Biotecnología e Industria*]; the Dominican Institute of Agriculture, Livestock and Forestry Research (IDIAF, *Instituto Dominicano de Investigaciones Agropecuarias y Forestales*); the Academy of Sciences of the Dominican Republic; the National Institute for the Training and Preparation of Teachers (INAFOCAM,

Instituto Nacional de Formación y Capacitación del Magisterio) (Article 26) and "all institutions providing links between institutions of higher education, science and technology with the broader society" (Article 27).

Article 31 established that all institutions pertaining to the National System of Higher Education, Science and Technology are to be non-profit, with the Dominican government becoming the main supporter and promoter of their activities, through several mechanisms, in addition to direct subsidies: competitive student scholarships and fellowships to assure equity of access to higher education; the development of joint research and educational activities between higher education institutes and the producers of goods and services; the support for research deemed relevant to national priorities; and technology creation, adoption and transfers (Article 32). Otherwise, higher education and research institutions should be independent, with academic, administrative and institutional autonomy.

To implement these policies, the 2001 legislation created a National State Secretary of Higher Education, Science and Technology, as well as a National Council of Higher Education, Science and Technology, a high level body responsible for establishing the national policies for the sector. In 2009, the Secretary was elevated to Ministerial status. One of the offices of the Ministry is an Under Secretary for Science and Technology and a corresponding National Office. This office, in turn, includes the departments of Science Dissemination; Quality Assessment Standards and Norms; Certification and Accreditation, and Technology Transfer.

In 2007 the President of the Republic issued Decree 109-7 establishing a National System for Innovation and Technological Development (SNIDT, *Sistema Nacional de Innovación y Desarrollo Tecnológico*), aimed at "articulating in a functional way the network of institutions (academic, public, private and international) and public policies, to foster innovation and applied technological development". While the focus of the 2001 legislation was on higher education, the focus of the 2007 decree is on the economy.

The 2007 Decree also created a new Council for Innovation and Technological Development (CIDT, *Consejo de Innovación y Desarrollo Tecnológico*) to set policies for the sector. The Council is presided over by the Minister of Higher Education, Science and Technology. The Executive Secretary is the head of the Centre for Export and Investments (CEI-RD, *Centro de Exportación e Inversión de la República Dominicana*) and is also a member of the Innovation and Technological Council, which includes representatives of several public and private institutions. For the public sector membership comprises: the National Council of Competitiveness

(CNC, *Consejo Nacional de Competitividad*), the Cybernetic Park of Santo Domingo, the Dominican Institute for Telecommunications (INDOTEL, *Instituto Dominicano de las Telecomunicaciones*), the Institute of Innovation for Biotechnology and Industry (IIBI, *Instituto de Innovación en. Biotecnología e Industria*), the Industrial Property National Office (ONAPI, *Oficina Nacional de la Propiedad Industrial de República Dominicana*), the National Institute for Technical and Professional Training (INFOTEP, *Instituto Nacional de Formación Técnico Profesional*) and the Dominican Institute of Agriculture, Livestock and Forestry Research (IDIAF, *Instituto Dominicano de Investigaciones Agropecuarias y Forestales*). For the private sector membership comprises the National Council of Private Companies (CONEP, *Consejo Nacional de la Empresa Privada*), the Association of Industries of the Dominican Republic, Inc. (AIRD, *Asociación de Industrias de la República Dominicana, Inc.*), the Dominican Association of Free Zones, Inc. (ADOZONA, *Asociación Dominicana de Zonas Francas, Inc.*), the Promotion and Support Programme for Micro, Small and Medium-Sized Enterprises (PROMIPYME, *Programa de Promoción y Apoio a la Micro, Pequeña y Mediana Empresa*). For the academic sector membership comprises the Autonomous University of Santo Domingo (UASD) and the Dominican Association of University Rectors (ADRU, *Asociación Dominicana de Rectores de Universidades*).

Decree 109-7 also announced the strengthening of the National Fund for Innovation and Scientific and Technological Development (FONDOCYT), to support applied research and innovation projects, and the creation of a new fund, the Financing Fund for Innovation and Technological Development (FFIDT), to support research and innovation activities in the private sector, partnerships between public and private institutions, technological transfer and the dissemination of knowledge and best practices.

The Strategic Plan for Science, Technology and Innovation

Together with the 2007 Decree, the government also issued, after extended consultation, an ambitious strategic plan for science, technology and innovation, for the period 2008-2018. The expectation, as expressed in the plan, is that the country should move from the current situation of volatile economic growth and low institutional predictability to an economic model based on the generation of knowledge, technological transfer and innovation in the more strategic sectors of the economy, and increasing the country's international competitiveness and the qualifications of its labour force. This shift would require a well conceived institutional framework, to provide economic incentives for the development technology-based ventures; an educated and competent population, able to create, share and

make use of knowledge; an efficient innovation system, able to link the universities with public and private institutions; and the development of technologies of information and communication as tools for the communication, dissemination, transference and social appropriation of knowledge. The plan has four main programmes – to strengthen the financial and institutional resources for science and technology; to develop a research programme for science, innovation and technological development; to increase the qualifications of the country's human resources; and to educate the public and get society involved in issues of science and technology (translated from *Consejo para la Innovación y el Desarrollo Tecnológico*, (SEESCyT, 2008). The main targets of the plan are shown in Table 8.1.

Table 8.1 **Main impact indicators and 2018 targets of the Strategic Plan for Science, Technology and Innovation**

Internal investment in Research and Development as percentage of GDP	0.5%
Investments in Research and Development the business sector as part of the total	33%
Investments financed by the business sector as part of the total	25%
Minimum expected impact of investments in Innovation as part of the GDP	1%
Percentage of innovative companies among knowledge intensive companies for the three last years of the plan	50%
Labour force in S&T activities as percentage of the economically active population (EAP)	1%
Minimum number of patents by 100 thousand inhabitants since 2014 (ONAPI)	10
Percentage of researchers working in the business sector	25%
Number of PhDs graduates per year	300
Total investments of risk capital for incubators and ventures as percentage of GDP	0.0004%
Percentage of scientific production in the country compared to Central America and the Caribbean region	25%
Scientific production with some kind of international co-operation	50%
Yearly growth of student enrolment in tertiary S&T careers compared to 2006	20%
Yearly growth of post-secondary technologists compared to 2006	25%

Source: *Strategic Plan for Science, Technology and Innovation 2008-2018*, p. 145.

The plan includes a set of quantitative targets, one of them being that the Dominican Republic will be investing 0.5% of its GDP on Science and Technology by 2018. The total amount for resources to be invested in the ten-year period is US 1 450 million, growing from 113 million in 2009 to 180 million in 2018. Initially, half of this would come from the government,

with the expectation that 40% would come from fiscal incentives to investments in the productive sector, and about 10% from international co-operation. At the end of the planning period, direct government investment would be reduced to 40%.

Even if this target of 0.5% is met by 2018, this is would still be less than the current average of 0.6% for the Latin American region as a whole, and much less than the OECD average of 2.3%, according to the UNESCO Institute of Statistics for 2007. Since the budget classification in the Dominican Republic does not include a Science and Technology function, there is no data available to ascertain how much of the plan has been actually fulfilled since its inception. Table 8.2 shows a significant increase in 2010, but still very far from the plan's target.

Table 8.2 **Expenditures of MESCyT on science and technology, 2006-2010** (USD)

	2006	2007	2008	2009	2010
Support to the development of S&T	2 049 230.35	1 172 069.79	1 524 055.38	1 405 537.44	1 440 502.94
Transfers to IIBI	2 841 764.71	2 034 284.38	2 807 571.15	3 232 794.76	3 392 046.21
Support transfers for the development of S&T					2 297 301.15
Total	4 890 995.06	3 206 354.18	4 331 626.53	4 638 332.21	7 129 850.29

Notes: S&T = Science and Technology; IIBI = Institute of Innovation for Biotechnology and Industry; USD 1 = DOP 34.

Source: Extracted from expenditure data provided by the Ministry of Economics, Planning and Development (MEPyD).

No Latin American country today has a knowledge-based, highly competitive economy, and there is no reason to believe that this will change dramatically over the next decade. The best scenario is the emergence of innovation clusters in some agricultural, industrial activities and services, and a gradual increase in the quality of higher education, with a small number of selected universities engaged in high quality research. This does not mean that the Dominican Republic, like other developing countries, should not make a concerted effort to participate as fully as possible in the new knowledge society, stimulating research and innovation whenever possible and improving its pool of highly educated manpower. Thanks to the commitment to scientific and technological development expressed in the legislation and the plan, there are several initiatives already being implemented, which will be examined in the following sections.

It is not the purpose of this report to make an assessment or a follow up of the plan as a whole, which is based on several premises about how the country and the world's economy will grow and transform over the next ten years, the availability of public and private resources for investment, and the shifting of priorities and changes of leadership which are typical of any democratic society. Even if the plan is not fully implemented, or is implemented in different ways, it has great value as an effort of stocktaking and an exercise on the current conditions and policy options to make the country move ahead.

The current stage of science, technology and innovation in the Dominican Republic

The 2007 legislation is based on the concept of "National Innovation System", developed by economists working on the issues of technological development, to refer to the combination of different institutions that, acting independently and in interaction, fill in the whole cycle of knowledge appropriation, production and applications. A modern, capable national innovation system includes research universities, public and private research institutes, private companies adopting and developing new products and processes, regulation agencies such as patent offices and metrological institutes, stable and predictable public sources of financing for research and development, strong infrastructure for data processing and communications, and legislation enabling and stimulating the interchange of persons, knowledge and resources among these different institutions in the public and the private sectors. In most countries, higher education, science, technology and industrial innovation develop separately, each following its own path and historical traditions, and one of the main challenges in establishing modern National Innovation Systems is to make these different sectors interact and stimulate each other, without the burden of excessive bureaucratic oversight. For the Dominican Republic, the main difficulty is that all these components of a National Innovation System are very incipient, the main challenge being how to make them grow and become established.

Science production

One of the most used indicators of S&T performance is the number of scientific publications in a country, the number of times they are cited by other authors, and the "H Index", an algorithm that combines the number of publications and its impact, to assess the overall relevance of the science being produced. One source for international comparisons is the SCImago Journal & Country Rank, which works with publications data from Scopus

(CSImago, 2010). Table 8.3 places the Dominican Republic among other Latin American countries in scientific publications. With a less than 500 publications between 1996 and 2009, the country is at the bottom of the region, just above Honduras and Haiti, and in the 148th position in the world. For 2009 alone, the country falls to the 153rd place, with 45 citable documents. A recent survey of innovation capabilities at the Dominican Republic, carried out by the Ministry of Education, Science and Technology, confirmed that the number of scientific articles published in the country every year is less than 50 (MESCyT, 2010).

Table 8.3 **Country rankings of scientific publications, 1996-2009**

World Rank	Country	Documents	Citable documents	Citations	Citations per document	H Index
15	Brazil	280 232	273 053	1 970 704	8.91	239
28	Mexico	110 452	108 132	837 644	8.85	182
35	Argentina	83 435	81 397	738 893	9.74	175
43	Chile	43 560	42 586	420 488	11.9	155
53	Venezuela	19 836	19 416	136 072	7.58	104
55	Colombia	17 472	18 182	121 785	9.34	97
57	Cuba	6 402	17 016	78 123	4.94	75
73	Uruguay	6 402	6 234	68 598	12.68	85
78	Peru	5 342	5 138	54 036	12.94	81
86	Costa Rica	4 485	4 380	52 926	13.13	82
95	Ecuador	2 886	2 788	26 802	11.57	64
98	Jamaica	2 578	2 438	19 264	8.63	47
100	Trinidad & Tobago	2 467	2 336	14 790	7.18	47
104	Panama	2 299	2 208	45 697	26.03	87
110	Bolivia	1 824	1 787	18 421	11.92	49
125	Guatemala	1 003	955	9 612	10.93	40
140	El Salvador	645	631	4 369	7.88	32
142	Nicaragua	626	609	5 681	11.34	35
145	Paraguay	561	548	5 322	11.23	35
148	Dominican Rep.	471	453	4 490	11.39	34
150	Honduras	451	442	4 454	10.69	32
162	Haiti	249	225	3 635	18.85	30

Source: SCImago (2010).

A search at the Web of Science, of the Institute for Scientific Information, identified 440 articles with authors with Dominican addresses between the years 2000 and 2011 (Box 8.1). Of these, 252 articles were published with authors from the United States, 50 from Chile, 46 from Brazil, and 46 from England. Most articles were on health, and the main contributing Dominican institutions were Profamilia, a private institution in the area of sexual and reproductive clinical services; the *Universidad Nacional Pedro Henríquez Ureña*, a private university; the *Universidad Tecnológica de Santiago*; the *Pontificia Universidad Católica Madre y Maestra* (PUCMM, Pontifical Catholic University Madre y Maestra); and the *Universidad Autónoma de Santo Domingo* (UASD, Autonomous University of Santo Domingo).

Human resources

The limited number of publications reflects the fact that there are very few places in the Dominican Republic for organised and regular research work.

There is no data on UNESCO's Institute for Scientific Information or other international sources about the number of researchers in the Dominican Republic. The Innovation survey of 2010 identified about 9 000 teachers in higher education institutions in the country, and another 7 500 in administrative, non teaching posts. Some 18% of those teaching had full time contracts. Among those with full-time contracts, 153 had doctoral degrees, 65 were doctoral candidates, and 537 had Master's degrees (*Encuesta de Innovación*, 2010, table 52, p. 106). In total, 297 reported to be involved in some kind of research.

The lack of research and doctorate holders is related to the fact that no higher education in the Dominican Republic provides doctoral degrees. To get a doctor's degree it is necessary to go abroad, either with private resources or with a fellowship. Recently, some Dominican universities have established partnerships with foreign universities to provide joint doctoral degrees. Most of these universities are from Spain, thus avoiding the language barrier (there are agreements with *Universidad de Alcalá*, *Universidad del País Vasco*, *Universidad Politécnica de Valencia*, *Escuela de Organización Industrial*, *Universidad Pompeu Fabra*, *Universidad Complutense de Madrid*, and others). Some of the agreements are made through the universities, others with the incentive and participation of the Ministry of Higher Education, Science and Technology.

Box 8.1 **International scientific publications of Dominican authors, 2000-2011**[1]

Subjects	# of articles	Collaborating countries	# of articles
Public, Environmental and Occupational Health	47	United States	252
		Chile	50
Obstetrics and Gynaecology	39	Brazil	46
Infectious Diseases	36	England	41
Plant Sciences	25	Mexico	36
Medicine, General and Internal	24	Argentina	34
Immunology	23	Venezuela	32
Paediatrics	18	Colombia	28
Genetics and Heredity	15	Peru	28
Clinical Neurology	14	Canada	27
Haematology	14	Costa Rica	27
Psychiatry	14	Spain	24
Agronomy	13	People's Republic of China	21
Endocrinology and Metabolism	11	France	20
Microbiology	11		
Oncology	10		
Surgery	10		

Dominican institutions	# of articles
Profamilia	31
Universidad Nacional Pedro Henríquez Ureña (National University Pedro Henríquez Ureña)	24
Pontificia Universidad Católica Madre y Maestra (Pontifical Catholic University Madre y Maestra)	24
Universidad Tecnológica de Santiago (Santiago University of Technology)	15
*IDIAF - Instituto Dominicano de Investigaciones Agropecuarias y Forestales (*Dominican Institute of Agriculture, Livestock and Forestry Research)	13
Universidad Autónoma de Santo Domingo (Autonomous University of Santo Domingo)	12
Hospital Infantil Dr. Robert Reid Cabral (Children's Hospital Dr. Robert Reid Cabral)	7
Instituto Nacional de la Salud (National Institute of Health)	7
Jardín Botánico Nacional (National Botanical Garden)	7

Note (1): Total: 440 publications.

Source: Web of Knowledge, Institute for Scientific Information, Thomson Reuters.

The Strategic Plan for Science, Technology and Innovation predicts that the number of PhDs will increase by 300 every year, reaching 3 000 by 2018. The only way to reach this target would be through a massive programme of fellowships to study abroad, which would depend, in turn, of finding qualified candidates, having them admitted in good universities, and providing them with suitable teaching and research posts when they return. A four-year doctoral programme in the United States costs about USD 200 thousand or more, which would imply an investment of around USD 600 million. The cost would certainly be less in other countries such as France, Spain or Brazil; but, without strict quality control, there is always the risk of sending less qualified students to less demanding graduate programmes, who may return with the formal degree, but without the knowledge and competencies needed to introduce the changes the country needs.

Applied research activities

Outside the universities, there are only two institutions in the country developing regular research activities: the Dominican Institute of Agriculture, Livestock and Forestry Research (IDIAF), and the Institute for Innovation in Technology and Industry (IIBI).

IDIAF works mostly with questions of food security and the improvement of agricultural products. It is based in Santo Domingo, but has branches and experimental stations scattered throughout the country. Of its technical staff of 136 persons, 7% have doctoral degrees and 38% MA degrees. It has a portfolio of about 40 ongoing research and technology transfer projects and works closely with the private sector. It has also co-operation agreements and partnerships with institutions in Spain (NGO CESAL, Co-operation for Development [ONG CESAL, Cooperación al Desarrollo]), Germany (German Company for Technical Co-operation (GTZ) Ltd. [*Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH*]) and the United Nations Food and Agricultural Organization (FAO). Its budget for 2010 was DOP 317 million, or USD 9.3 million, of which 78% came from the government, and the remaining from its own activities. The budget for 2011 is smaller: DOP 259 million, or USD 7.6 million, with 82% coming from the national budget.

IIBI provides laboratory services and essays in microbiology, energy, mineralogy, chromatography, fuels and biomedicine, among others; and in areas of energy, environment and the development of products. It has research projects in the areas of industrial, vegetal, pharmaceutical

and medical biotechnology. The total budget predicted for 2011 is DOP 128 million, or USD 3.7 million, with 91% coming from the national budget.

In 2009, IIBI was awarded four projects from the National Fund for Innovation and Scientific and Technological Development (FONDOCYT), on the genetic improvement of pineapple, the genetic mutations associated with breast cancer, the sequencing of the Dengue virus, and on the potential use of a local plant, *nopal* (*Opuntia Ficus-Indica, Opuntia streptacantha Lemaire*), in the cosmetic industry. It is not clear now the two projects on genetic mutations are related to IIBI's core business.

Industrial innovation

In 2010, the Ministry of Higher Education, Science and Technology implemented a national survey of innovation covering the private sector, universities and research institutes that provided a very detailed picture of the situation. Regarding companies, the survey found that Dominican companies develop a wide range of innovations both in the improvement of their products and of their processes. Most of these innovations, however, consist in bringing in procedures and innovations that may be new for companies, but not for the market. Only 2% of the companies in the survey claimed to have produced innovations that are globally new. About 5% of the companies do some kind of regular research and development activity, investing 0.14% of their revenues and 0.3% of their personnel in these activities. In short, most innovation activities identified by the survey are minor, and the main limitations for increased innovation according to the business sector are their cost, the long time lag between investments and return, and the lack of qualified human resources.

Policy instruments

Financial support for science and technology

The main financial instrument for the strategic plan is the National Fund for Innovation and Scientific and Technological Development, FONDOCYT, which has increased its resources from about USD 480 thousand in 2005 to USD 6 million in 2009. FONDOCYT supports projects from one to four years, with up to 1 million dollars a year, in the areas of basic science, technology, environment, natural resources, biotechnology and energy. The projects can be from universities, research centres or private companies in partnership with public universities or research centres.

Table 8.4 **Evolution of FONDOCYT 2005 – 2009**

	2005	2006	2007	2008	2009
Total investment (in USD)	480 160.05	566 666.67	696 969.70	5 232 558.14	5 933 147.63
Number of projects	14	16	13	41	34
Investments per project	34 297.15	35 416.67	53 613.05	127 623.37	174 504.34

Nota: Valores de 2009, ajustados por variaciones del tipo de cambio.
Fuente: MESCyT.

In 2009, 34 projects out of 130 were approved by FONDOCYT. The total amount was DOP 221 million, equivalent to USD 6.5 million, with USD 2.5 million for the first year. The largest beneficiary was the Autonomous University of Santo Domingo, with ten projects and DOP 57 million, or USD 1.6 million, followed by INTEC (five projects). The projects covered the fields of biotechnology (seven), health and biomedicine (eight) software (three) and environment and natural resources (four). Eleven projects were classified as "basic science", but most of them dealt with issues of environment, and one of them, from INTEC, with nanosciences. Most of the projects were from two to three years, and received on average about USD 71 000 per year to cover all kinds of expenses, including salaries, equipment, travel, materials and other expenses. The total amount spent by FONDOCYT in a given fiscal year should include actual payments for ongoing projects from current and previous years, and this figure is not available. The amount of USD 71 000 per year for two or three years is a significant figure for a small research team, but not for a more ambitious project in technology. Thirty or forty projects is also very few for a country committed to an ambitious *Ten-Year Plan for Science, Technology and Innovation*. Interviews with S&T authorities confirmed that the main limitation for FONDOCYT was not the lack of resources, but the absence of good quality projects to be approved. In many cases, officers from the Ministry had to help the candidates to prepare their applications, given the absence of previous experience.

No project included co-operation with a private industry, and there were no projects on the social sciences and agriculture (the one from IDIAF was in biotechnology). There are, however, two other sources for competitive grants in the Dominican Republic, one for agriculture research, through the National Council for Agriculture, Livestock and Forestry Research (CONIAF, *Consejo Nacional de Investigaciones Agropecuarias y Forestales*), administered by the Ministry of Agriculture, and the Research

Fund for Economic and Social Research (FIES, *Fondo para el Fomento de la Investigación Económica y Social*), administered by the Ministry of Economy, Planning and Development (MEPyD).

FIES started in 2007, and through four calls for proposals, had approved 42 projects out of more than 200 applications by 2008. Each call specified two or more subjects covering areas such as tax reform, education, migration, international trade, governance, sustainability and others. The total amount budgeted for the 42 calls was DOP 80 million, or USD 1.3 million. The grants are relatively small: from up to USD 11 000 for individual researchers working alone to USD 30 000 for integrated and long term projects with field work. There is also some money for MA and doctoral dissertations and publications.

The National Council for Agriculture and Forestry Research supported 28 projects in 2008, in partnership with IDIAF. The total amount invested was DOP 87 million, or USD 2.5 million, of which 35% came from IDIAF's budget and 9% from external beneficiaries. No information is available for 2009 and 2010.

According to the Strategic Plan, about 50% of the resources invested in science and technology for the next ten years should come as fiscal incentives. There is no information on the amount of incentives that is being provided for innovation, but, in general, the amount of fiscal incentives given by the Dominican government to different sectors is very high, corresponding in the budget estimation for 2011 to 5.17% of the National Product, compared to the fact that the total amount of taxes collected by the government is around 14%, one of the lowest in the world (Ministry of Finance, 2010). There is a strong effort by the economic authorities to reduce the widespread practice of tax exemption, which is likely to create a problem for the implementation of that part of the S&T plan.

Human resources: support for study abroad

In 2009, the Ministry of Higher Education, Science and Technology, in partnership with international organisations, provided 773 fellowships a year for graduate education abroad, less than in 2008, with 1 390 fellowships, but still considerably more than in previous years. Of the 773 in 2009, 540 went to Spanish universities, and 102 for universities in the United States; and 54 of those went to the Nova Southwestern University in Florida. There is no detailed information on the fields of specialisation of these students, nor on the level of their studies – doctoral programmes, masters or specialisation courses. There are, however, some indications. A larger number of students went to business institutions (*Escola de Negocios*, 72; *Centro de Estudios Financieros*, 910, others to medical residence programmes (83), others to

the *Escuela de Hoteleria y Turismo*, 21 (data from the Ministry of Higher Education, Science and Technology site). It is not clear whether these students have links with national institutions, nor on their intention to return.

At the same time, for 2010, the Institute for International Education in the United States reported that 1 400 students from the Dominican Republic were in American Universities, 372 were in graduate programmes of some kind. These were all persons with a student visa, and do not include immigrants or their offspring. However, there are more than one million Dominicans or of Dominican descent living in the United States, and, according to one report:

> The Dominican second-generation in the United States has educational indicators that suggest a remarkable acquisition of human capital over the last 20 years. This differs from the overall situation of US-born Hispanics/Latinos, whose educational indicators are substantially worse than those for Dominicans. In 2000, close to 60% of all Dominicans born in the United States, 25 years of age or older, had received some college education, with 21.9% completing a college education. By contrast, among US-born Mexicans, only 13.3% had completed college. (Hernandez & Rivera-Batizx, 2003)

The American diaspora, through remittances, is already and important source of revenue for the Dominican Republic, and, as the education, research and productive institutions in the country improve, they can also attract talent educated abroad back to the country. On the other hand, if they do not, there is a real risk that students going abroad with public money may not return.

Strengthening the links between universities and industries and consolidating the national system of innovation and entrepreneurship

The Dominican government is stimulating the development of a series of clusters in the industrial and agricultural sectors, with the expectation that they could become the focus of the country's economic growth and increasing competitiveness (UNCTAD, forthcoming). One of them is the ClustersSoft, bringing together 30 companies, 6 universities and 7 public institutions. Other larger clusters are those of cacao producers, linking four cacao exporting companies and 35 000 producers, and that of plastics, with 30 companies. There are 20 clusters in the agricultural sector. Support to the clusters is given by the National Council of Competitiveness through a Competitiveness Fund (FONDEC, *Fondo de Competitividad*) with resources from an agreement with the Inter American Development Bank that amounted to USD 13.5 million for the period 2003-2010.

There are examples of co-operation between universities, research centres and industries in several areas, particularly through IDIAF, but the general assessment is that this co-operation is still very timid, which is confirmed by small number companies engaged in more advanced innovation projects in the country. Appropriately, this issue is emphasised in the *Ten-Year Plan for Higher Education 2008-2018*.

Assessment of requirements

Since 2008, when the OECD published its broad review of education, the situation of science, technology, innovation and graduate education in the country has changed little, except for the elevation of the Secretariat for Higher Education, Science and Technology to a Ministry, the Strategic Plan, the new legislation and the expansion of FONDOCYT.

One concern of the 2008 report was the risk of grade inflation, which can happen the country moves fast to increase the formal qualifications of its academic staff. There are several measures that can be implemented to reduce this risk. One of them is to create a system of accreditation and follow up of graduate programmes, which should be separate from the broader institutional evaluation the Ministry is already implemented. Given the small number of graduate programmes, such accreditation system would be relatively easy to implement. It should be based on peer review, with the participation of reviewers from abroad, and, at a minimum, to identify those graduate programmes that are the best and those that are unacceptable. This system could also be used to assess the international partnerships that are being implemented for doctoral studies. At a minimum, it is necessary to make sure that the foreign universities are well reputed, and to link the international fellowship programmes to these assessments – as a rule, no support or fellowships should be given to programmes which are not considered valuable and of good quality.

A clear strategy should also be devised to establish advanced research and graduate programmes or research centres in institutions what are able to engage in such course. For this, it is necessary to identify these places and institutions, and to provide them with long-term and substantial resources for installations, equipment, hiring high quality experts, and supporting the students in their work. These institutions could be either universities or research institutes, which can eventually provide graduate degrees and practical, hands-on training for their students, in partnership with established universities. Again, this policy should be implemented under strict procedures of peer review with international participation and co-operation. If this policy is well implemented, these programmes and centres could become models and references for other institutions to emulate. The

Excellence Initiative in Germany offers an instructive model for building up forward-oriented research capabilities, and on a collaborative basis with industry, through a tiered set of transparent, competitive and internationally peer-reviewed processes.[1]

The existence of several councils and funds in the area of science and technology in recent years deserves special consideration. Nominally, all these activities are being brought under the umbrella of the Ministry of Higher Education, Science and Technology, but, in practice, agricultural research, industrial technology, medical research, and research and the social sciences and the humanities, each have their own culture, and it would be better not to force their integration in a tight administrative framework. As the country develops its capabilities in different fronts, the Ministry should evolve into a broader role of policy setting and oversight, without implementing specific programmes.

Most of the observations and recommendations of the 2008 review remain valid, and can be reiterated here by way of conclusion:

- There are two related but different issues when it comes to research – the broad issues of the needs for research, development and innovation in a country, and university research, that is, research done within universities and in association with post-graduate degree programmes. In most countries, research in the broader sense – R&D&I – are the responsibility of specific agencies, which have to deal not only with the provision of support to specific research groups, but also with issues such as intellectual property, research incentives to industries, and implement research in specific fields, such as energy, environment protection, urban planning, and economic development. University research, on the other hand, tends to be managed by the higher education authorities, and one of the central issues they have to deal with is to make sure that research is properly supported, of good quality, and has a significant impact in the education of high-level personnel. It is clear that the two activities overlap, and different countries have different traditions of developing research within universities, linked with their graduate programmes, or independently in other kinds of research settings.
- Given the country's small size and limited budget, it cannot expect to develop research which is competitive with what is being done in large economies, with the strong participation of the private sector. It can, however, develop competencies in fields where local research is irreplaceable – in some areas of agriculture, environment protection, or geological surveys – and work in close co-operation

with international partners. It should also create an environment that could attract international organisations and companies to develop some of their research and innovation in the country. For this, the existence of good universities, with well-trained and educated staff, is essential.

It is only natural that, if the country is able to develop research in some specific fields (whether through local investments or different types of partnership), the universities should be involved. University research, however, should not be tied too closely to broader economic and strategic considerations, but should be based, first, on quality considerations, and secondly on the existence of clear links between research and graduate education. The best way to build the post-graduate programmes the university needs is not by establishing the programmes first, and expecting them to produce research later. The best way is to start with research, add advanced students as research assistants, and gradually evolve into fully-fledged post-graduate research programmes. It is important, to support university research, that resources should not be provided through the university administration but directly to the researchers or research groups. It is in the nature of the research activity that some research groups are much better than others, and need therefore more resources. Universities, however, tend to distribute their resources according to egalitarian rules, and may be too slow and bureaucratic in their decisions.

Summary

Since 2007 the Dominican Republic has adopted a wider view of the national innovation system than that it had in 2001, and its *Strategic Plan for Science, Technology and Innovation 2008-2018* sets its aspirations in this wider context.

To date, little progress has been made towards meeting the ambitious goals of the Plan, some of which are overly ambitious. However, the associated stock take of Dominican capacity and performance in science and technology provides a useful set of references by which to monitor improvements over time.

Scientific publications output is at a very low level but there are signs of growth in internationally co-authored papers in health fields.

A very low proportion of the academic workforce is qualified to PhD level. The government has been expanding the provision of fellowships for graduate education abroad, 1 to 2 years for Master's and 3 to 4 years for doctoral study. Little is known about the employment of graduates on completion of their studies.

Outside the universities only two institutions conduct ongoing research.

The government has increased funding through FONDOCYT for scientific projects but uptake is low for want of good quality proposals. There have been no proposals for project funding involving private firms.

The great majority of those that are innovating are making incremental process and product improvements through adoption and adaption of technology.

The government is providing incentives for clusters of universities and firms in the agricultural and industrial sectors. Some promising examples of co-operation are beginning to develop, particularly in the agricultural sector.

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Chapter 9: System Steering and Institutional Governance

This chapter describes governance of higher education institutions in the Dominican Republic, encompassing structures, relationship and processes through which, at both national and institutional levels, policies for higher education are developed, implemented and reviewed. It provides a description of system level steering in the Dominican Republic and institutional level governance and other institutional governance models. Governance of the Autonomous University of Santo Domingo (UASD) and recent reforms are discussed separately. This chapter also looks into the role of the ministry in higher education governance.

Introduction

Governance of higher education encompasses the structures, relationship and processes through which, at both national and institutional levels, policies for higher education are developed, implemented and reviewed. At national level, the government should be responsible for articulating the vision for higher education, for setting goals and for ensuring that, within an agreed regulatory framework, HEIs are enabled to fulfil their mission effectively and to the required levels of quality. Conversely, HEIs should be accountable to government and to society for their educational outcomes according to the individual missions of each institution. Easily accessed information on institutional performance and student outcomes is also an important feature of a well-functioning higher education system. Having good governance arrangements and processes in place are vital determinants of the effectiveness of the higher education system and of its capacity to contribute to national development (OECD, 2008*a*).

System level steering in the Dominican Republic

Higher Education in the Dominican Republic is governed by the framework Law 139-01 (SEESCyT, 2001), enacted in 2001 which sets out the broad objectives for the sector, namely to provide relevant, accessible

higher education of good quality capable of stimulating innovation and fostering competitiveness. The Law stresses the importance of academic freedom together with the contribution that higher education makes to individual, scientific, technological, cultural and artistic development (Law Article 7). It states that higher education should be adequately financed and should be articulated with the labour market. The Law is intended to be accompanied by specific decrees from time to time as they become necessary.

The National Council for Higher Education, Science and Technology (CONESCyT, *Consejo Nacional de Educación Superior, Ciencia y Tecnologia*) is the highest governing authority in the Dominican Republic and works through two sub committees: *(i)* Higher Education; and *(ii)* Science and Technology. The executive governing organ is the *Ministry of Higher Education, Science and Technology* (MESCyT, formerly SEESCyT, State Secretariat of Higher Education, Science and Technology) with three key departments: *(i)* Higher Education; *(ii)* Science and Technology; and *(iii)* Administration. MESCyT is responsible for the development of higher education, science and technology in the Dominican Republic and, with CONESCyT, provides leadership for these sectors (Law Article 35). The Minister of Higher Education, Science and Technology is directly responsible to Cabinet for policy development and for co-ordination between and among HEIs as well as for the provision of statistics and information on the higher education system.

CONESCyT regulates the creation and operation of all technical and specialist institutes and universities (Law Article 26) including policy development for higher education and science and technology in accordance with national economic social and cultural needs. In its remit are:

a. priority setting and criteria for the utilisation of funds assigned to higher education;

b. access and equity policies;

c. regulations and procedures for establishing, suspending and closing Higher Education Institutes (HEIs) in accordance with the Law;

d. degree programmes and courses;

e. credit regulations and award granting;

f. evaluation procedures;

g. higher education research.

CONESCyT is chaired by the Minister of Higher Education, Science and Technology with the participation of the Ministers of Education and Culture. It has more than 20 members, one third of whom are renewed each year. In addition to HEI managerial, student, and non-academic members (including from the technical and higher studies institutes), there is representation from the National Council of Private Companies (CONEP), from the scientific community and from the Cabinet (Law Article 40).

The 2001 legislation also created the National Council of Higher Education, Science and Technology, a high level body responsible for establishing the national policies for the sector whose work is discussed in Chapter 8 of this report.

The Assembly of Rectors and Directors of HEIs, a consultative body between the CONESCyT and the Ministry, is convoked once a year by the Minister with the participation of at least one third of its members.

Institutional level governance

The *Ten-Year Plan for Higher Education 2008-2018* (SEESCyT, 2008) specifically recognises the principles of academic freedom, university autonomy, and the value of decentralised management and financing at institutional level. Its vision is that the system will provide incentives for all public and private HEIs to fulfil their mission and development strategy. The establishment and closure of HEIs in the Dominican Republic depends on a decision of the Minister of Higher Education, Science and Technology submitted to CONESCyT for ratification (Law Article 46).

Once established, most HEIs enjoy considerable academic, institutional and administrative autonomy. UASD is governed by its own detailed Statute which is discussed in detail below. All other HEIs may:

a. set academic structures and courses of study;

b. define their governing bodies;

c. formulate their mission and appoint their management in accordance with their statutes;

d. administer their property, equipment and resources;

e. offer programmes at upper technical, graduate and postgraduate levels;

f. formulate and develop study plans and community outreach programmes;

g. award academic degrees;

h. offer pedagogical training;

i. hire teaching and non teaching staff;

j. decide admission policies;

k. develop projects to advance knowledge; and

l. develop relations with international partners. (Law Article 33).

However, any change in the services, programmes or degree levels originally approved by CONESCyT must be resubmitted for further approval by CONESCyT. Accountability and quality should be assured through institutional evaluations which are required to take place every five years. In all cases, full institutional autonomy will be granted within 15 years of institutional establishment or following two consecutive evaluations by MESCyT (Law: Chapter VII).

Governance of the Autonomous University of Santo Domingo (UASD)

The Autonomous University of Santo Domingo (UASD, *Universidad Autónoma de Santo Domingo*) was founded in 1538 and is classified as part of the social patrimony of the Republic. With the largest student enrolment in the Dominican Republic, in 2009 the UASD had a population of 166 296 students, 44% of the total national student enrolment for that year (Statistics Handbook, page 85), 44.65% of UASD students were enrolled at its headquarters in Santo Domingo and the rest in thirteen Regional University Centres. These regional campuses are large universities in their own right; for example, in 2009, the Regional University Centre of Santiago (CURSA, *Centro Universitario Regional de Santiago*) had a student population of 13 800 while the Regional University Centre of the Northeast in San Francisco de Macorís (CURNE, *Centro Universitario Regional del Nordeste*) had an enrolment of 15 176 students. In 2009, UASD employed 2 635 academic staff and 2 233 non-academic staff.

The UASD is governed by a principle of autonomy which entails "the maintenance of the university charter and a complete independence in administrative, educational, political, religious and economic terms." (University Statute, Article 11 [UASD, 2009]). UASD exercises total control over its buildings lands and all other property. In 2011, UASD received approximately 65% of the higher education budget of the state.

UASD is governed through a complicated structure comprising a large number of Councils, Assemblies and Committees headed by the *Claustro Mayor* and *Claustro Menor* (literally, the Major and Minor *Claustros* or

Cloisters, the *Claustro* being the highest governing authority which assisted the Rector to interpret royal decrees in Spanish territories of the New World) (Llinas, 1991).

The *Claustro Mayor*, as the highest authority in the University, develops the vision and strategy for the institution, elects the Rector and Vice Rectors and also some of the staff in the regional campuses and agrees amendments to university statutes. It is composed of all academic staff in active service and of 2% of non-academic staff and one third of students who must be non-repeaters and have finished four semesters with a Grade Point Average of 80 points or more. A quorum is 60% of the total membership of the *Claustro*.

The *Claustro Menor* has a very large membership, (greater than 300 and less than 500) made up of two thirds academic staff and one third students. Again a quorum is 60%. This body reviews and approves the policies of the newly elected University authorities as well as the official annual statement and by laws. It usually meets at the start of each academic semester and also in the case of any extraordinary event. The *Claustro Menor* may propose to the *Claustro Mayor* the creation or abolition of Vice Rectorates or Faculties for the development of the university. It may also nominate individuals for honorary degrees.

All decision-making in the University is carried out by collegial decision with no input from external stakeholders. The academic work of the University is performed through the University Council (*Consejo Universitario*) which, with the Rector in the Chair, is composed of academics with a representation of one third of students. It meets twice a month during the academic year and focuses on the business of the University, *i.e.* enrolments, admissions; registration and examination fees; conferring of degrees, student and non academic staff disciplinary procedures; academic appointments and a long list of administrative tasks. This principle of co-governance, *i.e.* the presence of a proportion of academics to students of 2:1, occurs on all other Faculty Councils and Academic Assembly throughout the main Campus (*Sede*) of the University in Santo Domingo and throughout all the Regional University Centres. It is important to note that there is no representation of external stakeholders on any of the organs of governance mentioned above.

The Rector and four Vice Rectors are elected by the *Claustro Mayor* for a three year, non-renewable period by all academic staff together with a percentage of students and administrative staff (5% and 1% respectively). The team was informed that the electoral campaign for the Rector, conducted according to detailed rules set out in Article 29 of the University Statute and by secret ballot, is very high profile and can last for as much as

one year with the involvement of the main political parties in the Dominican Republic. Because so much time is taken up with the election of Rector, there are only one or two years of normal institutional business before the whole process beings all over again. Thus the possibility of successfully implementing a reform agenda is rather remote.

Although the University, by its Statute, is a highly autonomous institution, in fact the complexity of the decision-making process which reflects the interests of academic and non-academic staff as well as students, greatly limits the power of the Rector who is required to execute the decisions of the *Claustros Mayor* and *Menor* and the University Council. (*Consejo Universitario*). Moreover, there is no real budgetary autonomy either since most of the budget for the UASD comes through the MESCyT to pay for salaries and current expenses, while investments in the institution are often carried out at the volition of authorities outside the institution. Once internal decisions are taken, the deans execute the decisions of the Faculty Assemblies and Councils. Many staff in UASD have part-time contracts but those who are employed full time have government contracts which are relatively inflexible. The team was unable to discover any elements of staff performance reviews in the University Statute.

The UASD is, geographically, a highly centralised institution with decision making residing at the Central Campus (Sede) in Santo Domingo. Even though, as we have seen, some of the Regional University Centres have enrolments larger than many prestigious international universities, responsibility for institutional budgets, admission policies and academic affairs is vested in the centre while even the most mundane of management decisions are also implemented from the top thus limiting the flexibility and responsiveness of the subordinate campuses.

Other institutional governance models

The remaining 45 HEI and institutes, whether partially owned by the government and/or the church, or totally private, are, within the accountability and quality assurance parameters discussed above, free to organise their own governance and management arrangements.

Depending on the type of institution, several different arrangements have evolved. Some examples are:

- ITLA (Las Americas Institute of Technology, *Instituto Tecnológico de Las Américas*), a public institution which is 70% funded by the government has a relatively small governing authority made up of ten members from the public and private sectors including

representation from the Business Association and from the Association of Duty Free Zones. The Chair of the Board, which meets every two months, is the Rector of the Pontifical Catholic University Madre y Maestra (PUCMM, *Pontificia Universidad Católica Madre y Maestra*). Appointments to the Board are of a public service nature and do not carry any financial reward.

- Private HEIs have varying systems of internal governance depending on the objectives and ethos of their founders. For instance, the PUCMM was established by the Roman Catholic Church and is overseen by the Bishops' Conference of the Dominican Republic which delegates the governing authority to the *Junta de Directores* for all but exceptional circumstances. This Council is composed of senior Church authorities (three bishops) as well as 15 other members representing national stakeholders. The Academic Council (*Junta Universitaria*) is Chaired by the Rector of PUCMM.

- The Santo Domingo Institute of Technology (INTEC, *Instituto Tecnológico de Santo Domingo*) is a private foundation whose Board of Regents is broadly similar to the US governance model. Fifteen Board members, seven of whom must be graduates and with a strong representation of employers and business, are selected by a Committee with the Rector having the final decision. No Board member can serve for more than three years. All Board members serve without fees. The Rector can be elected for three, three year terms and is selected by an Initial Search Committee which recommends five candidates to the Academic Council. Three names go to Board for interview. The Academic Council, chaired by the Rector is responsible for academic policy and reports to the Board.

- The team was informed that some other private HEIs have Boards similar to ITEC but that most other small private HEIs are governed through groupings of directors who are more closely related to founders.

In summary, once established, private HEIs in the Dominican Republic are empowered to take important strategic and management decision relating to their approved mission and function and have the flexibility to respond to the needs of their students and of the labour market. In the case of UASD and its Regional University Centres, the situation is much more complex. The development of the institution is hampered by its out-of-date Statute which enshrines its self-perpetuating status, by the principle of open access which obliges it to take on ever-growing numbers of students many of whom are unprepared for academic studies, and by the fact that many

elements of its staffing and financing policies are over-centralised and inwardly focused. The governance system is no longer fit for purpose in a twenty-first century university.

Role of the Ministry

The team considers that, working with CONESCyT, MESCyT has been successful in articulating a strategic vision for the higher education sector in the Dominican Republic. Overall, MESCyT performs an appropriate leadership and steering function for the governance of the system and this leadership together with the growing capacity for the policy analysis is highly appreciated among the HEIs and other stakeholders. The Ministry has also undertaken to work with the Strategic Planning units in each of the HEIs in the country in order to build coherence in the system.

Because funding for HEIs passes directly to the institutions (which, as already noticed, effectively is to UASD since other HEIs obtain most of their revenue from fees), MESCyT exercises no direct control over the higher education system in the Dominican Republic with the exception of two key instruments: *(i)* the granting of authorisation for the establishment of new institutions; and *(ii)* the evaluation process, which can and does lead to the closure of unsatisfactory institutions.

International experience suggests that policy development and implementation are likely to be more effective if there is a good basis of information and should, wherever possible, be evidence-based and associated with an information strategy (OECD, 2008*a*). The input of the Ministry into the development of the *National Development Plan* and the publication of the *Ten-Year Plan for Higher Education* and the *Statistical Handbook* are evidence of the influence of MESCyT on system development to date. However, in the Ten-Year Plan, MESCyT recognises that there is a need for better planning and research capacity to improve monitoring and evaluation and the promotion of research at national level. The team agrees with this judgement and considers that not only is more and better information needed but also different datasets are needed by policy-makers, by institutions and by individuals.

Policy makers require information on how the system is performing and how resources are being utilised. In the case of the UASD, that need is very great because the University consumes such a large proportion of the total resources allocated for higher education and currently it is not possible to make accurate judgements about the effectiveness and relevance of its outcomes. In general, comparable data on student retention, progression and

graduation rates are not available on a national basis. Moreover, as far as the review team could ascertain, there are no graduate or employers' surveys to enable judgements about the relevance of programmes to the labour market.

In order to make good career choices, students and their families require different kinds of information about which HEIs and which programmes are suitable for their needs. Information about HEIs can often be obtained on their websites but a more objective source of information is required to allow prospective students to judge the quality of the programmes and facilities available as well as possible job opportunities that they could expect following graduation. MESCyT has made an excellent start in collecting data; the Statistical Handbook and wealth of information in the institutional evaluations will provide a basis for the further development of evidence. The proposed development of the Ministry's website and associated technology platform will make dissemination of this information accessible to all stakeholders. The review team was advised that from January 2012, MESCyT publishes on its website "Academic Offerings of Higher Education Institutions in the Dominican Republic" with the intention to serve as a guide for students and other individuals interested in pursuing higher education studies. It provides information about the academic programmes offered at each higher education institution in the country.

Reform of the UASD

It seems clear that UASD should plan to become a federation of independent or semi-independent regional units, similar to other large public universities such as the University of California in the United States or the University of the State of São Paulo in Brazil. It is clear that, in this decentralisation, not all regional locations should become a small copy of the Santo Domingo campus. Some of them may limit themselves to vocational two-year colleges, while others could provide specialisation of local interest not provided in Santo Domingo, while still others may provide other versions of the standard careers that exist in the capital. The transition from the current, centralised structure into a decentralised one cannot be done at once, since it needs detailed planning and an effort to upgrade the local facilities and to identify the local vocations and human resources. This, however, could be perceived as a process of giving more importance and weight to the regions, and could generate new sources of support from local communities.

The OECD Review of 2008 (OECD, 2008*b*) recommended that, because of its highly centralised governance system, large enrolments and low graduation rates, UASD should be reformed and suggested a possible model of a federated system of Colleges similar to the University of California or

of the State of São Paulo in Brazil. In that report, it was also recommended that more autonomy should be given to the Regional University Centres thereby improving their efficiency and responsiveness. These recommendations were echoed in the Attali & Associés Report (Attali & Associés, 2010).

The 2004-2008 Evaluation of the UASD (UASD, 2010*a*) completed in September, 2010, together with the External Evaluation (UASD, 2010*b*) completed in April 2010, provided a detailed analysis of the strengths and weaknesses of this venerable university with its proud tradition of academic freedom coupled to a highly developed social and community outreach mission. The evaluation assessed not just the main campus in Santo Domingo (the Sede) but also two large campuses, the Regional University Centre of Santiago (CURSA, Centro Universitario Regional de Santiago) and the Regional University Centre of the Northeast in San Francisco de Macorís (CURNE, Centro Universitario Regional del Nordeste en San Francisco de Macorís). Both Evaluation reviews propose detailed recommendations to improve the admissions system, the student experience, academic quality and the labour market responsiveness of courses in the UASD while noting that current funding is insufficient to fulfil the mission of UASD. These issues are discussed elsewhere in this report. Both Evaluation Reports also conclude that without a complete review and redesign of the system of governance and management, the UASD cannot continue to fulfil its vision and mission and will be unable to play its part in the further development of higher education in the Dominican Republic or to assume any role in an international context. Both reviews conclude by stressing the need for a fundamental review of institutional governance and for more streamlined internal processes and regulations and state that administrative and financial autonomy are absolutely essential for the Regional University Centres (*Informe Final*). At the highest level of governance, the establishment of a Consultative Council with representation of outside stakeholders, including employers, is recommended by the External Review. It is the view of the evaluation panels that, if there were enough political will to undertake the reform, the appropriate modifications to the University Statute could be made without affecting the democratic ethos of the UASD.

During meetings in the UASD, the OECD team was informed that, although the University is not in full agreement with 2004-2008 Evaluation, nonetheless, there is a recognition that the current situation of the university is non-sustainable. The recently elected Rector informed the team that it was intended to seek agreement at the *Claustro Menor* meeting of April 2011 on a decentralisation policy whereby a new organisational structure would allow some decision making to be devolved with the eventual possibility of installing a Rector at each of the Regional University Centres.

The OECD team was also informed that MESCyT staff agree with the recommendations of the evaluation reports as well as with those of the earlier OECD Review. The team also understood that many MESCyT staff are alumni of the UASD and thus have a good understanding of the social and political realities of undertaking a reform programme in the institution and are actively working with the Rector and Deans of Schools to develop an implementable reform strategy.

Summary

Higher education institutions in the Dominican Republic enjoy considerable academic, institutional and administrative autonomy.

The different institutions have evolved different modes of internal governance.

The private institutions generally have greater strategic and operational flexibility than UASD which has a complex tradition collegial decision making amid over-centralised administrative arrangements.

The Ministry of Higher Education has data sets to conduct analysis for assessing needs and capacities and monitoring trends and performance. Its capacity is increasing as it builds up a statistical data base and implements the programme of institutional evaluations.

Several reviews have underlined the necessity for UASD to improve admissions, curriculum, teaching and student learning. Improvement in these and other areas will not be possible without governance reform and structural change.

Note

1. See www.excellence-initiative.com/.

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Chapter 10: Conclusions and Recommendations

This chapter provides a short conclusion and presents a list of 15 recommendations which have been made in the different chapters of the review.

In the time available, the review team was able to gain only a limited view of the challenges being faced by the Dominican community in respect of higher education and the progress being made in addressing them. The team had the benefit of access to previous reports, recent planning documents and a range of national statistics, as well as insights offered in meetings with various individuals and organisational representatives. Nevertheless, as the team's observations rely on partial information and indeed on perceptions formed at a particular point in time, they are necessarily tentative.

On the one hand, there are internal change processes underway which may affect the reliability of the team's observations over time. The Dominican government is acting purposefully and making much progress in implementing an ambitious reform agenda. Some of the issues and tensions observed by the review team, and reported in the foregoing chapters, may be resolved by the processes of continuing policy implementation and systematic evaluation of such policies and other plans such as the *Ten-Year Plan for Higher Education 2008-2018*.

On the other hand, there are external factors affecting economic fundamentals. Rapid change has been underway since 2008 and throughout 2011 in the operating environment affecting many nations including the Dominican Republic and giving rise to widespread lack of confidence in the key financial institutions and investment instruments – including equities, bonds, currencies and related securities – that have long underpinned world economic growth. The contingent nature of the team's conclusions is underscored by the turbulence of the times.

As noted in Chapter 2, the Dominican economy is highly dependent on external economic conditions. The contemporary demise of the US and European economies, not least Spain, which have been major sources of Dominican income – whether as consumer markets for product exports, or as sources of tourists or as senders of remittances – threatens a serious erosion of the fiscal and household capacities of a country which already is highly indebted.

In the view of the review team, these shifting circumstances create an imperative for clarity of policy purposes and tight prioritisation of resource investments.

The underpinning priority for the Dominican Republic is the transformation of the economy, involving a progressive shift from informal to formal sector activities and employment, and necessitating higher levels of skills formation across the workforce. The basic source of improved skills formation is improved quality of primary and secondary schooling.

At this stage, quantitative expansion of higher education should not crowd out the investment required for improvement in the quality of schooling and, consequently, the quality of higher education. Additional investment in higher education would be counter-productive without fundamental improvement in the cost-effectiveness of the system.

High wastage in higher education – extensive dropout and repetition, and low and slow rates of completion – reflects a structure of supply and culture of provision that is neither well serving the economic needs of the country nor catering adequately to learners' needs.

Wastage rates may be reduced through the provision of learning opportunities that are responsive to the varying needs and circumstances of students. It is necessary to increase the provision of short-cycle programmes that cater for school leavers and adults who have not reached sufficient levels of academic readiness to be successful in longer-cycle degree programmes. It will be important to provide multiple pathways, and guidance and support services for learners to be able to progress as seamlessly as possible from one level of learning to another.

Based on all the aforementioned assessments, the review team makes the following recommendations:

Recommendation 1

Improve access by providing pathways and additional qualifications for students who wish to continue their studies in a higher education institution and who have reached a sufficiently good standard in their first post secondary course. This can be assisted by a focus on counselling services at

school level and by developing linkages which will facilitate progression between second and third levels and among the National Institute for Technical and Professional Training (INFOTEP, *Instituto Nacional de Formación Técnico Profesional*), the proposed new community colleges and other higher education institutions with recognised pathways to higher degree granting institutions where appropriate.

Teachers have the most significant effect on learning. Improving teacher quality and teaching effectiveness leads to improvements in student learning. Higher education institutions have a direct role to play in preparing teachers and providing professional development programmes for them.

Recommendation 2

Continue to improve teacher education as a major means of improving learning effectiveness in schools and readiness for higher education:

a. Prioritise the development of a national strategy to improve the quality of teacher education and in service training in HEIs.

b. Invest in the redesign and upgrading of teacher education in the HEIs, especially in the UASD which educates a high proportion of teachers.

c. Develop selection criteria for the teaching profession based not only on the standard admission procedures but on aptitude tests and on interviews.

d. Create incentives for talented individuals to enter the profession.

e. The review team strongly recommends that implementation of the list of recommendations on Teacher Education in the OECD 2008 Review be prioritised.

Given resourcing limits, the immediate priority must be to lower the high attrition from higher education and to increase graduation rates.

Recommendation 3

Give high priority to reducing from higher education attrition by 20% by 2018. Increasing higher education progression and completion will lead to higher levels of graduate output, thereby better meeting labour market requirements and reducing wastage.

Retention rates in higher education may be increased by providing specific forms of support for students in their first year of post-school studies. For the UASD there is a particular need to introduce student

selection methods which involve identification of learning readiness and aptitude so that students can be assigned to programmes where they can benefit most.

Recommendation 4

Improve retention through the following measures:

a. The collection of better data to analyse the factors that contribute to repetition and dropouts.

b. The expansion of improved counselling services during the first year of third level studies.

c. The development of a more nuanced admission policy in UASD. Here the challenge will be to find the right mix of aptitude tests, remedial teaching and course offerings so that the social mission of the University will not be compromised.

However, higher rates of graduate output alone will not be sufficient. As noted in Chapter 4, there is concern among employers that too many higher education graduates lack the knowledge and skills needed for productive employment. The review team was advised of the limited trust among employers regarding the qualifications awarded by Dominican universities. Underlying lack of confidence in the quality of Dominican higher education and the competence of graduates is indicative of a system that is not performing optimally. To restore confidence, employers must be brought into the processes of higher education curriculum renewal and assessment review.

Recommendation 5

Involve employer bodies in the programme of higher education curriculum renewal. More relevant and up-to-date curricula will raise the utilisation of graduates and general productivity in the Dominican labour market.

As the problems of higher education reflect and exacerbate problems more broadly throughout the education system and the labour market they will need integrated and comprehensive solutions. The Dominican Republic will need to advance concurrently on several fronts: fixing the schooling system; reforming the higher education policy framework; reducing wastage in higher education; diversifying the provision of postsecondary education

and training; and investing strategically in advanced human capital and research capacity. This imperative for realistic coherent action will require a joined-up approach on the part of government authorities and their willingness to work jointly with employers and education and training providers.

Recommendation 6

Establish a high-level national body that brings together the interests of the economy, labour and higher education portfolios of government with public and private sector employers, and higher education institutions.

To improve quality and equity within affordable limits, especially as the higher education system expands, it will be necessary to achieve structural reforms through diversification of the system. Greater diversity in the provision of higher education will also produce a more diverse range of graduates to fit the changing requirements of Dominican labour markets.

Recommendation 7

Diversify the structure of higher education provision. Two major structural additions need to be considered:

a. The development of two-year community colleges focusing on work-relevant and work-based learning is an important development for the Dominican Republic. This initiative will need to be professionally and patiently marketed to the community, and employers will need to directly engage with and commit to the development across a range of regions.

b. The presence of quality transnational providers of higher education employing modern communications systems, teaching technologies and learning methods attuned to work-based and work-ready learning. Particular benefits could be gained from the participation of innovative providers of pathway programmes.

For greater diversification initiatives to be successful a new national policy architecture will need to be erected. This architecture should clarify the learning objectives of different qualifications and the relationships between qualifications, provide a basis for quality assurance and consumer protection, and build community confidence in the Dominican higher education system.

Recommendation 8

Strengthen the national policy architecture for a more diverse and responsive higher education system:

a. Develop a national system for the accreditation of all higher education institutions.

b. Develop a national accreditation system for graduate education, involving international assessors.

c. Construct a national qualifications framework which describes the learning outcomes expected for each level of qualification offered in the Dominican education system.

d. Develop a set of comparative indicators on the capacity, offerings and performance of all higher education institutions as a guide for informing student choice.

A more diverse system of higher education will involve a wider student mix, including greater variety of student backgrounds and financial means. A targeted programme of student assistance will be required to ensure that able students are not impeded by financial barriers.

Recommendation 9

Improve the availability of financial support for students in need:

a. Increase the number of national scholarships.

b. Increase the capital available to FUNDAPEC with the goal of providing more loans at lower interest rates.

c. Explore the possibility of setting up an income contingent student loan system whereby loans would be repaid out of future graduate earnings, with lower interest rates than those currently being charged.

While the changing Dominican labour market requires higher levels of skills formation across the workforce, it is becoming increasingly necessary for the country to have available a cadre of highly skilled workers to provide the know-how for leading-edge innovations. Concentrated investment in advanced human capital formation, in those areas that have the best capacity to grow stronger, will be necessary for the Dominican economy to seize opportunities for new advances.

Recommendation 10

Establish advanced research and graduate programmes or research centres in institutions with demonstrable capacity to participate at a high internationally-benchmarked standard:

a. Establish a transparent competitive process for identifying the best placed institutions to grow their strengths in research, using international evaluators.

b. Provide initial block funding at a substantial level for a five-year period against robust performance improvement indicators.

Research capacity development in the Dominican Republic should be built up over time according to the principles of selectivity and concentration.

Recommendation 11

In supporting university research, allocate resources directly to researchers or research groups through competitive peer-reviewed processes.

For the foreseeable future the Dominican Republic will need to continue drawing upon the capabilities for advanced human capital formation in other countries. But it will need to do so at a faster pace in order to enable gradual growth in research institutions and a researcher workforce in key economic sectors.

Recommendation 12

The government should build upon its successful International Scholarships System and increase the availability of study abroad scholarships for Dominican students to undertake Master and doctoral degrees at leading universities around the world.

For effective system steering, policy makers require information about capacity and performance and the use of resources to achieve results. Students and their families also require reliable and comparable information about study programmes suitable for their needs.

Recommendation 13

The Ministry of Education, Science and Technology (MESCyT, *Ministerio de Educación Superior, Ciencia y Tecnología*) should continue to develop its strategy and strengthen its capacity for collecting and analysing data on the higher education system in the Dominican Republic. Specifically, MESCyT should:

a. Further specify what information (*e.g. student* enrolments, progression and graduation rates, and faculty profiles.) is to be collected for each higher education institution.

b. Provide better information on the Ministry website for students and their families to make informed study choices.

c. Encourage higher education institutions to improve their accountability by publishing more transparent and verifiable information about the quality of their courses, their faculty and the labour market outcomes of their graduates.

Recommendation 14

A well-functioning UASD is important to the future of the Dominican Republic. But its potential to play a dynamic role is hindered by its out-of-date Statute, its slack admissions arrangements, its academic insularity and its cumbersome administration. Evaluation reviews have underlined the necessity for UASD to improve admissions, curriculum, teaching and student learning, and to consider governance and structural reform.

Working closely with MESCyT, the UASD should agree a series of short and medium term measures adopted from the recommendations of the Evaluation teams, together with an implementation timetable.

Recommendation 15

Priority should be given to the modification of the University Statute to enable the development of a new governance structure in UASD which will, in turn, create the conditions for reform in other areas such as improved admission systems and management in the Regional University Centres. Specific measures to be agreed for a new Statute should be:

a. The immediate extension of the period of tenure of Rector from three to five years to ensure that a reform process can be initiated.

b. The creation of new and more accountable Governing Bodies at Central and Regional level with external representation.

c. The reform of the election process so that the next appointment of Rector will be made with the participation of external stakeholders.

d. The establishment of a task force to improve the effectiveness and responsiveness of the internal governance and management of UASD.

e. The devolution of responsibility for admissions, budgetary, and academic functions to Regional University Centres.

f. Finally, as a medium to longer term measure, the design of a process for creating a new network of autonomous universities based in the existing Regional University Centres.

Action on these recommendations, taken together, should complement and make more effective the impressive reform agenda that the Dominican government has initiated.

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Reviews of National Policies for Education

Higher Education in the Dominican Republic

The Dominican Republic has one of the strongest economies among the middle income countries of the world, and the Government has set itself ambitious goals for its social and economic development. The development capacity of the country, however, depends on its human capital – an area with considerable gaps due to major shortcomings in the education sector at all levels.

Three years after the 2008 OECD review of education policies in the Dominican Republic, the OECD was asked to assess the condition of higher education in the Dominican Republic and to identify future policy options to help meet the nation's needs.

This OECD report provides an analysis of the higher education sector within the economic, social and political context of the Dominican Republic. It looks into access, quality and relevance, the effectiveness and governance of the system, its financing as well as its research and innovation capacity. The report concludes with pragmatic recommendations for policy action.

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