TERTIARY EDUCATION SUB-COMMITTEE MEMBERS

This Draft Report was put together after a number of committee consultations. The contribution of each member made a major difference in the evolution of the report and therefore the draft represents a distillation of collective views.

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TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

INTRODUCTION

An Education strategy is fundamental to any developmental agenda in the knowledge era. Any strategy for national development at a quickened pace must take into account the reality that in today's competitive world of globalisation driven by technology and markets, the challenge is to build up export capacity to be able to capitalise on market access.

In Trinidad and Tobago, one can identify declining export capacity in agriculture and manufacturing. Growth in exports is primarily in the energy sector and export success is dominantly in the United States and CARICOM markets. This decline in exports has taken place in spite of preferences through the Caribbean Basin Initiative (CBI), CARIBCAN, LOME and COTONOU[1]. One might well argue, therefore, that the problem has really been one less about market access and more about productive capacity.

Within recent times, in spite of bilateral trade arrangements with Venezuela, Columbia, Dominican Republic, Costa Rica, Cuba, Mexico, Canada, there has been no significant export growth for Trinidad and Tobago to these countries. The question we might reasonably ask is what would make existing export enterprises more competitive so that they can export more in a greater number of markets? The answer is higher productivity, which could be facilitated by a better-trained workforce, better equipment and more sophisticated technology. According to the World Bank, about 60% of our workforce have had only 2-3 years of high school exposure or less, when what is needed is the equivalent of two years at tertiary level. The state of equipment, the level of technology in the work place and limited technological sophistication on the part of the workforce reinforce a general environment of under-productivity and underperformance. Currently, the demand for skills in the market place is growing significantly and outstripping supply.

What is required to make companies, which are only producing for the home or CARICOM markets competitive enough to expand beyond the region? The answer would be the same as above - a better

[1] See http://europa.eu.int/comm/development/body/cotonou/agreement_en.htm

trained, more sophisticated workforce and technological upgrade in plants and offices.

In addition, the level of knowledge-based sophistication that is required of the public sector and other sectors, whose support is so essential for development, also needs to be upgraded through education and training.

One may well ask what would encourage investment in areas outside of energy. A sophisticated production platform facilitated by well-educated workers with high absorptive capacity is again the answer. In this way, education of a large pool of people at the tertiary and technical level can become a resource, which attracts investment to diversify the economy. As a consequence, building competitive capacity nationally, expanding exports on a sustainable basis on the strength of this competitive capacity and attracting investment, which provides higher paying jobs for all, depends on an enlightened strategy for the development and expansion of the tertiary sector.

Moreover, an enlightened democracy thrives on a vibrant knowledge sector of which tertiary level institutions are an important part. Ideas, independent thought, discussion, debate and dissent strengthen democracy and create excitement in a free society.

The opportunities available to the individual are increased through tertiary education, choices expand, and the quality of life improves as do the quality of jobs and the level of income. All of these things are good for the individual, the economy and the society.

Higher levels of education for a greater number of individuals in a society therefore, can be a major stimulus to development, as individuals take more responsibility for their lives and future, build families, contribute to communities, build a strong society and make their presence felt in the economic and political system.

AN INTEGRATED APPROACH TO EDUCATION, KNOWLEDGE AND DEVELOPMENT

All successful economies are built on knowledge and higher education (especially in science and technology), a focused research capability, and systems to support innovation.

If there is to be sustainable development in Trinidad and Tobago, a tertiary education culture of lifelong learning and training must be created and must include all sectors of society. A framework is required to facilitate the creation of such a culture with full participation by the various stakeholders. Such an approach will permit the emergence of a sound, rationally constructed, internationally competitive system of tertiary education based on the needs of the society that will equip the population with the ability to obtain and use knowledge. Any system that is imposed, or strategy that is enforced in a high-handed manner, is likely to be ineffective.

Despite the considerable increase in the accessibility to tertiary education in the recent past, the growing demand by individuals seeking to upgrade their skills and the requirements of a booming economy mean that the tertiary education system must be rethought, overhauled, expanded and transformed further. A strategy must be developed that recognises education as the engine of development and thus the single most important national priority. Effective rationalisation of public institutions could ensure greater complementarity, better synergy and clearer choices. A more holistic view of the system, which capitalises on the existence of both public and private institutions, could significantly improve the potential of the tertiary level system. Simultaneously, a sound primary and secondary level education is critical if students are to enter tertiary level institutions (TLIs) with a solid foundation in science, mathematics, critical thinking and communication skills.

Moreover, the rationalization of national systems must take into account the traditional as well as potential role of the University of the West Indies, which although serving the region at large, can absorb about 6,000 of the most gifted students from Trinidad and Tobago

annually for first degrees in a range of disciplines.

The proposal being outlined here must be seen in the context of the substantial gaps between developing and developed countries in education, research, science and technology, and knowledge including technology for the knowledge economy - that will continue relentlessly to widen if the capacity to acquire knowledge is not increased or remains stagnant. Understandably the debate on tertiary education has focused thus far on an increased participation rate since the workforce and the population at large must be given the intellectual tools to enable them to compete effectively. But the crucial issue is how to design a relevant, sustainable and forward-looking system of knowledge and intellectual capital formation to provide the basis for real development.

THE CHANGING ENVIRONMENT

The rapid pace of change in the global economy has been characterised by a shift in the education landscape. The expansion of tertiary education enrolment worldwide, changes in the labour market, and the growing recognition of the value of tertiary education have had a major impact on the products and services offered by TLIs. The current challenge is how to prepare students for employment, how to satisfy companies with graduates that are work ready as well as provide the society who can think independently and make a contribution to economy, society and civilization.

The changing world of work is characterised by the increasing demand for skilled workers and the mobility of the population requiring international skill recognition. Traditional universities and colleges must adapt to meet these needs. Moreover, the emergence of new forms of tertiary education providers including corporate universities, virtual universities, web-based learning, 'click and brick' hybrids and franchises have an important impact on the educational system.

International trends in tertiary education indicate a move towards increasing institutional self-management and increased tuition fees as well as increasing focused government expenditure. As the role of the private sector providers becomes more significant in meeting the increased demand for tertiary education, policy formulation will have to take into account issues of concern to private TLIs. Given the proliferation of TLIs, public and private sector regulation through accreditation programmes and procedures is now crucial.

Moreover, critical issues about funding the expansion of desirable tertiary opportunities arise. How much of the financing of expansion will be done by the state, how much by the private sector? Will foreign providers participate in collaboration with local private players or will they have access on their own and under what terms and conditions?

Are we prepared to facilitate "off-shore" universities or are we more interested in internationalising our educational institutions at the tertiary level either as an

export strategy, a more holistic approach to educational delivery or as a strategy for facilitating the development of an educational cluster or a knowledge cluster or sector as a major economic thrust?

Have we begun to think such issues through not only in terms of financing options or development strategy but also in terms of the World Trade Organisation (WTO) rules related to the liberalisation of services and more particularly educational services?

There is general agreement that tertiary access should be expanded but no clear goal of what the result of that expansion should be. Since the student is being prepared for the world of work and life, there must be an assurance that, when he completes tertiary education, besides the skills of his area of specialisation and the Information and Communications Technology (ICT) skills which are taken for granted at this level, he is capable of sound analysis and should be a problem solver, team player and community builder.

His creativity, entrepreneurial and innovative skills and ethical values should be strengthened. Since he is likely to become a worker and possible supervisor and even manager of either his own business or someone else's, he must be given the knowledge base to facilitate lifelong learning and leadership skills.

His training and knowledge base must be designed to give him mobility, for the national, regional and international markets. In other words, he must be given the skills that will enable him to respond to the demands of a changing international economy.

The Ministry of Science, Technology and Tertiary Education (MoSTTE) has indicated that its goals for tertiary education and training include the following:

- The development of a coherent and seamless tertiary education system, comprising both public and private institutions.
- Adoption of an inclusive approach to education in order to widen access to high quality, affordable education.
- Achievement of 15% participation rate in tertiary education by 2005.

- Commitment to the design and implementation of funding and resource allocation mechanisms that promote greater equity to access, efficiency in operations and improved quality of programmes and service.
- Creation of sustainable funding mechanisms.
- Development of capability for effective coordination and management of the tertiary education sector and strengthening of leadership and managerial capacity to ensure sustainable growth, enhancement of tertiary education research capacity to facilitate data driven strategic planning, policy formulation and impact evaluation, as well as greater accountability.

While these goals are the basis for future development, they must be responsive to changing conditions and must not remain static. It is taken for granted that skills and competencies must therefore be aligned to market requirements, current and anticipated.[2] These in turn should be connected to anational planning framework and a regional framework that satisfies needs and demands on a national and regional basis and ultimately on a global basis. Skills deployment and competency alignment must take into account the existence of the knowledge economy and a development focus which links investment strategy, diversification strategy and human development strategy to each other and to specific development targets.

[2] Given that participation in a globalised economy is a fact of life, the teaching of foreign languages, including languages other than European languages, should be part of the curriculum of TLIs.

WHY EXPAND WHAT NEEDS TO BE MANAGED

Since TLIs are expected to produce entrepreneurs, creators and teachers, developmental links among them must be strengthened to sustain the system of tertiary education as a whole and to ensure that articulation arrangements become routine, synergies can be leveraged and complementarities enhanced. A proactive approach is therefore required to build not just TLIs but also a comprehensive tertiary education sector and system, functioning as clusters do, to share information, increase synergy and raise standards. For countries such as Trinidad and Tobago, this should be done with the CSME and FTAA in mind and developments in the WTO should be taken fully into account.

ICT must be a major component of the tertiary education system to facilitate the transformation of the classroom, the role of the teacher and of the students. In an information rich environment, the major consideration is not gathering information but learning where to find it, what to look for and how to apply and manage it. It is not how much to remember but how to think, how to learn, how to approach and adapt to solve problems through the application of knowledge. In other words, the main issue revolves around the need for the development of critical thinking skills.

While enriching education with ICT is vital, it is necessary to ask what the purpose of tertiary education is. If the goal is to develop human resources, to equip individuals with the skills and capability to function in a knowledge economy, to educate them so they can generate internal capacity to produce and invest and thus play a role in transforming the economy, the tertiary education system must be reconfigured to produce individuals with those abilities.

If it is the creation of a productive, entrepreneurial and creative society that can generate wealth-creating capacity on a sustainable basis, steps must be taken to determine the kind of education system that is needed to achieve it and the types of educators needed to deliver it.
The requisite core competencies, knowledge and skills needed to drive

curriculum reform must therefore be identified. In order to achieve these aims, a research agenda should be developed to monitor workplace competencies and skills to inform on going curriculum review and reform as well as the flow of information to TLIs to ensure responsiveness.

It is important that employers be sensitised to the importance of tertiary education, that they appreciate that a well-trained labour force makes companies more competitive in a world in which trade barriers have been challenged, in which information and knowledge are increasingly the tools required for success and in which profitability depends on intelligence and its rational application. But, crucially, they must also be aware of their own requirements so that they can work with the tertiary education sector to ensure that the latter understand those needs and indeed can even anticipate them so that the appropriate training is offered to meet their demands.

But the goal of education is not only to train economic beings. It is also the creation of a civilized, creative, innovative, intelligent citizenry with the ability and desire to participate actively and rationally in a democratic society based on equality, liberalism, tolerance and acceptance of diversity. In other words, it must inculcate a culture of critical thinking that enables individuals to approach issues facing society in novel, questioning and innovative ways. The deficit in democratic participation in Trinidad and Tobago is testament to the need for more widespread tertiary education of high quality to create a mature and sophisticated citizenry able to participate effectively in a globalised world[3]. And this is perhaps the greatest challenge facing the society. The challenge in the sector, as we have hinted before, is how to look after the needs of the student, meet the needs of the corporate sector, and still create the conditions for the distillation of a good Liberal Arts education.

This, however, is clearly not the only challenge, although that challenge is fundamental. There are real issues to come to terms with. Clearly research and scanning have to

[3] Given that curriculum reform will be designed to identify and transmit shared values, programmes to reduce prejudices of various sorts must be instituted that will require specific targeted training for teachers.

be built into the system to keep abreast of trends - local, regional and global. Institutions such as the Higher Education Council and the National Accreditation Council which are being established are positive developments, but much needs to be learnt, skills need to be developed, experience acquired, cultures nurtured as they evolve and protocols need to be developed across the region and the world.

To develop a different system for a different world, teachers need to be trained, retrained and reoriented; to ensure a desired outcome from the system different inputs to teaching are required, other more innovative approaches to learning and a whole new approach to managing the system has to evolve.

Given the demands and challenges of the international economy, we must address the ability of Trinidad and Tobago to respond to the demand for increased access to tertiary education. Whether national demand is sufficient to maintain a vibrant, innovative tertiary education system and therefore whether that system must be extended to meet demand in the rest of CARICOM and from the neighbouring mainland states if it is to remain viable in the medium and long term, is something that we need to consider as we prepare for expansion underestimated. There will initially be a shortage of trained personnel not only to teach but also to manage. In addition, a human resource strategy to support tertiary expansion needs to be developed. In other words, can the tertiary education sector align itself to the rest of the service sector by providing services successfully on a regional basis for instance? Do we need to take a conscious decision to prepare citizens for job opportunities in other countries? Do we need to focus beyond our own needs and look at our capacity to attract and support an international student sector? In order to strengthen their offerings and to benefit actively from best practice in tertiary education in other parts of the world, TLIs should establish links and partnerships with other TLIs in both developed and developing countries. Such links may facilitate not only movement of students but should also be part of a marketing strategy that will attract students interested in pursuing programmes in areas where Trinidad and Tobago possesses clearly defined advantages.

A related part of this programme may entail the development of a scheme, funded by the national government and the private sector initially and possibly by regional development agencies, to develop a Caribbean equivalent of the Erasmus programme[4] which promotes the mobility of teaching staff and students among academic institutions in the European Union and that has made a significant contribution to the cause of European integration. Trinidad and Tobago may wish to consider initiating such a programme to support integration at the CSME, ACS or FTAA level as part of a general strategy to develop a buoyant higher education sector at home.

[4]For information on the Erasmus programme, see website at http://europa.eu.int/comm/education/programmes/socrates/erasmus/what_en.html

DEFINITION OF TERTIARY EDUCATION

The draft Policy Paper proposes that Tertiary Education be defined thus:

"All education/training programmes for which the matriculation requirement is the successful completion of secondary education or the successful attainment of secondary level terminal competencies that are nationally recognised as equivalent to secondary level education. In Trinidad and Tobago, programmes that fall at Level III of the TTNQV Qualifications framework are considered to be at tertiary level".

While this definition covers most TLIs and polytechnic-type institutions, it does not take into account the role of a University vis-à-vis other TLIs. In particular, the definition does not recognise the crucial role of graduate studies and research that characterises a University and which are the currency of the international academic community. It is therefore important that a distinction be made between tertiary education institutions and higher education institutions such as the University of the West Indies. For convenience, all programmes leading to an undergraduate degree or lesser qualification such as Certificate or Diploma at the University may be designated as tertiary in nature. Accordingly, the following definition of tertiary education is recommended:

- Tertiary education is the teaching and learning process that occurs following completion of secondary education and provides academic credits and competencies that lead to certificates, diplomas and degrees from universities, university colleges, polytechnics, community colleges and similar institutions. It may also include technical and vocational education at Level III or higher in the TTNQV qualifications framework.

It is recommended further that the term Higher Education, as defined by UNESCO[5], be used in relation to education that involves institutions engaged

[5] The ISCED (International Standard Classification of Education) definition of tertiary education includes specialized education and university/college education.

in graduate studies and research, such as the University of the West Indies:

- Higher education includes "all types of studies, training or training for research at the post-secondary level, provided by universities or other educational establishments that are approved as institutions of higher education by competent State authorities"[6].

A distinction of this kind may well facilitate a more sophisticated approach to the funding of the knowledge sector in its many dimensions.

Ministry of Science, Technology & Tertiary Education's Approach to Development of the Sector

The tertiary sector in Trinidad and Tobago has been described as "unstructured, uncoordinated and lacking an operational framework that can facilitate horizontal and vertical articulation[7]". There is much anecdotal evidence that employers, professional associations, students and members of the public are gravely concerned about the quality and soundness of tertiary education and training offered by public and private TLIs.

As part of an attempt to try and remedy these shortcomings, the Ministry of Science, Technology and Tertiary Education produced a Strategy for Tertiary Education and Training that sees a National Policy on Tertiary Education as ensuring the following:

- The overarching goals of the tertiary sector to inform the development of institutional goals, systems and programmes at all public and private learning organizations.
- Tertiary education and training to be responsive to labour market signals, relevant to the needs of employers and meet the demands of the country's social and economic development programme.
- The implementation of quality assurance mechanisms to guarantee the effectiveness of the system and to ensure quality-learning outcomes.

[6] UNESCO, "World Declaration on Higher Education / The Twenty – First Century: Vision and Action", adopted by the World Conference on Higher Education, October 1998. See website at http://unesco.org/education/educprog/wche/declaration_eng.htm

[7] "Report on the Education Task Force Post Secondary" Sub – Committee, October 1998.

The strategy includes the following objectives:

- An internationally competitive labour force;
- Equitable, effective education systems;
- Relevant and responsive tertiary education and training systems;
- Responsible citizens empowered to participate individually and collectively in improving the quality of life;
- Education that promotes social harmony amidst cultural, social, economic and biological diversity; and
- Education that promotes attitudes, values and behaviour to secure a sustainable future.

The recognition that a comprehensive approach to tertiary education must be the cornerstone of any vision, strategy and plan for the tertiary education system is crucial. And this committee has no quarrel with the approach as outlined by the Ministry. This approach must be flexible to enable tertiary education programmes to respond to changes in demand and to take advantage of emerging opportunities. A piecemeal approach will not only fail but will retard any attempt at progress and development. What then should this comprehensive approach involve?

For any sound analysis and in order to plan successfully for a knowledge-based society, valid data is crucial. Such data on the numbers getting access to tertiary education is not comprehensive. Moreover, despite the substantial amount of money spent in both the public and private sectors, little is known of the cumulative impact of the existing system of tertiary education. No serious attempt can be made to propose a strategy unless comprehensive, valid data is collected, analysed and made available.

While data on the numbers of people accessing tertiary education for the public TLIs and the major private ones is available, there are many other institutions providing technical, technological, professional and tertiary education for which those details are unavailable. The participation rate in tertiary/professional education may therefore be considerably higher than the suggested figure of between 7-8% of the national population, which is generally believed engaged in tertiary education[8].

In this context, we should bear in mind that CARICOM has set a very modest target for participation of 15% by 2005 but that most of its members are unlikely to reach that target. In countries such as the United States, Canada, the United Kingdom, Finland, Singapore, the rate is between 40 and 60%. (See Table 1: Tertiary participation rates in selected countries).

[8] See Appendix 2 for a list of private institutions providing training classified under the heading of tertiary education.

Table 1: Tertiary participation rates in selected countries (%)

	Country	2003 (%)	2004 (%)
Developed	USA	73	73
	Singapore	44	46
	Ireland	48	48
	Finland	83	85
Emerging	Costa Rica	16	16
	Trinidad & Tobago	6	7
Developing	Dominican Republic	23	23
	Jamaica	16	16

Source: UNESCO & World Economic Forum, "The Global Competitiveness Reports, 2003 – 2004 & 2004 – 2005".

Progressive countries in the region such as Costa Rica have long crossed the 10% mark. Chile and Bolivia have exceeded 30%. The principal issue that must be addressed, however, is not simply that of numbers and percentages but responsiveness to a different kind of world and preparation for the international knowledge economy and society.

The following data must form the basis of any planning process:

- The pool of high school graduates which can reasonably be expected to access Tertiary Education;
- The numbers of students who apply to, and who graduate from TLIs;
- The number of students who are eligible for tertiary education and the type of education that they require (university, technical or vocational);
- The number of places currently available in both the public and private sectors;
- The number of additional places that are planned for the short and medium term; and
- Alignment between demand and programme structure/curricula.

It should be borne in mind that the Central Statistical Office (CSO) has projected a decline in the medium term in the numbers of students between 20 and 24 who are the core of the cohort eligible for tertiary education[9]. While the numbers are expected to rise from 120,100 in 2000 to 136,558 in 2005, they show a decline thereafter to 119,461 in 2010 and 103,200 in 2015. For the age group 15-19, the numbers are expected to decline from 139,393 in 2000 to 122,181 in 2005 and is crucial to take into account this type of demographic 102,258 in 2010 before rising slightly to 108,028 in 2015. It information in planning for education and labour market needs and a host of other areas of public life.

[9] Data on the numbers of individuals eligible to attend TLIs but who opt to attend foreign TLIs would be useful for planning purposes. Data on the number of eligible individuals outside the 15 – 24 age group is also required for planning on a national basis.

Approximately 19,000 CXC students and 6,000 Advanced Level students complete secondary school every year. At the CXC level in 1998, 47% of the candidates who wrote five or more subjects passed them[10]. This figure increased to 55% in 2002, indicating some improvement. And there is every reason to believe that improvements will come with each passing year.

The failure rate, that is, students not passing any subjects, declined from 23% in 1998 to 9.8% in 2002. While some CXC graduates proceed to Advanced Level, the rest seek employment or re-enter the education system through technical/vocational training or other pre-tertiary options that do not require CXC qualifications[11]. However, there is no valid, comprehensive data about individuals in other age groups who want to gain access to tertiary education. There is anecdotal evidence of an increasing number of high school graduates in the 20-24 age cohort who have attained only the minimum level of qualification at the CXC or Advanced Levels and who are interested in entering tertiary education programmes.

The challenge is to provide mechanisms that facilitate entry for individuals with different levels of qualifications into the various levels of the tertiary education system. This will require additional places at both the sixth form level and in the TLIs, which in turn, demands capacity building and institutional strengthening.

To ensure that students obtain the skills and qualifications to progress upwards in the tertiary education system, an institutional framework is required to meet the needs of various sub-groups of the Secondary School graduate cohort who have not obtained full certificates at CXC or Advanced Level[12]. It must also facilitate an immediate increase in the number of students who pass five or

[10] The number of students from Trinidad and Tobago who took the CXC examinations totaled 21,969 compared to 17,551 in 2002. However, 5,404 passed five or more subjects in 1998 compared to 6,901 in 2002. The relevant numbers for the rest of the region are not available.

[11] Some CARICOM countries regard Advanced Levels as part of the tertiary education system. Some local TLIs, such as TTIT, do not require Advanced Level passes for entry: CXC/Ordinary Level passes are sufficient.

[12] The Minister of Science, Technology and Tertiary Education has announced a transitional study programme to help those with fewer than five (5) CXC passes to enter a remedial programme that will enable them to obtain the requirements for entering the post secondary education system.

more subjects in the CXC examinations[13].

Specifically, it must cater for the following[14]:

- Advance Level students who do not meet university requirements for the most competitive programmes such as Engineering, Medical Sciences, Law and Management Studies and who need access to programmes that will prepare them for other careers linked to investment strategy, diversification objectives and national planning targets;
- Students with 1 pass at Advanced Level that does not allow access to University and who therefore require a four-year programme at the TLI level, as well as students who possess full CXC certificates, can be absorbed at TLIs other than UWI; and
- CXC students with fewer than 5 passes who require remedial training or some transitional programme.

In order to address the barriers to entry caused by poor CXC results as well as to increase the avenues for entry into TLIs that require certain levels of CXC or Advanced Level passes, TLIs and similar institutions be required to provide Remediation or Transition programmes for prospective students in Mathematics, Science and English in the short to medium term[15].

Colleges such as COSTAATT that provide Associate Degrees or Diplomas and Pre-University institutions that provide a three-year pre-university programme (as are the norm in Singapore, for instance) will enable those who do not meet basic matriculation requirements necessary to gain access to pre-college level courses to obtain the required qualifications for full-time university level programmes. Such institutions will give students a second chance to prepare for entry to university and other TLIs[16].

Institutions such as the UTT and TTIT that are designed to train students for specific

[13] It is important that career guidance programmes, run by trained advisers, be provided in High Schools and TLIs so that students are aware of the various available career options.

[14] Students who wish to enter tertiary education but who are outside the 15 – 24 age group must also be catered to.

[15] These programmes should be available also via the distance mode.

[16] It should be borne in mind that TLIs have varying entry requirements and that not all require CXCs or Advanced Level passes. The recommendation has been made to ensure that students who do not pass such examinations have the opportunity to strengthen their skills in essential areas.

career paths can also provide remedial as well as specialised training to those in range from fewer than five CXC passes to Advanced Level results which do not meet university matriculation requirements to enter technically-oriented careers. Private TLIs that cater to Information Technology and Business Studies can also fill this niche. UTT and TTIT should also offer bridging programmes, which facilitate the transition of students with a non-science, non-technical background into technical and technologically oriented programmes.

Increased demand for continuing education to meet the needs of individuals who have obtained fewer than five passes at CXC, who are already in the workforce, who want to upgrade their skills and who therefore, constitute an additional pool of students for TLIs can be met by the UWI School of Continuing Studies, COSTAATT, TTIT, MIC and private TLIs. While this must take place with some sense of urgency, the longer-term strategy must be to strengthen the secondary school system.

The medium term solution lies with the Secondary School system and remedies for its shortcomings, especially teaching and learning strategies, must be put in place urgently. A fresh, radical approach is required, based on the understanding that students have to participate in a knowledge-based, information-driven, globalised society in which the ability to use knowledge and communicate effectively is a pre-requisite for success.

The proposal to reform the Secondary School system has been included in the Draft National Policy on the Development of Tertiary Education and Training and must be implemented as a priority. Since close to 50% of students sitting the CXC examinations fail Mathematics and English, teaching in those subjects must be strengthened as the foundation of comprehension and absorptive capacity necessary for further education.

Furthermore, since many mature students with employment and other experiences are likely to form the bulk of new entrants in the tertiary education sector, a system must be put in place to assess prior learning experiences and workplace learning and to ensure that the seamless system is strengthened. In this

connection, incentives for the private sector that would facilitate the provision of credits for workplace learning are likely to have a positive impact[17].

An important means of facilitating access is to ensure that the individual is financially capable. In addition to adequate financial support, social support systems that complement or negate the lack thereof must be encompassed in this framework to encourage participation in the tertiary level education system.

Just as there may be remedial requirements for certain students entering the system, one needs to assume that other supportive mechanisms and infrastructure facilitating a generally supportive learning environment will be necessary for a significant number of students. Over the long-tem the primary and secondary systems need to be strengthened so students have a stronger overall base when they enter at the tertiary level. Currently 94% of the student cohorts complete their primary education.

Only about 70% complete secondary education. We should be capturing 100% at both levels taking them to a minimum desirable level of competence. While we are moving to consolidate at those levels, however, as we expand tertiary access, we must remember that the objective is not only access but retention and beyond retention throughput and beyond throughput value creation or wealth generation. Education at this level therefore, must move beyond technical skills alone.

[17] Programmes such as "Investors in People" in the United Kingdom provide credits for workplace learning. See website at www.iipuk.co.uk/IIP/Iritemet/InvestorsinPeople/Default.htm

Increased demand for technical/vocational education can be met by the expansion and upgrading of the existing technical and vocational institutions concomitant with improved standards in training and output that will enable them to do the following:

- Promote and provide pre-employment technical education and training to secondary graduates;
- Upgrade the technical and academic skills of the existing workforce through continuing education and training;
- Promote industry-based training and education in technical skills;
- Promote and develop certification and standards for technical skills; and
- Engage in articulation arrangements with the TLIs to provide a feeder to the professional/ technical/management levels.

Articulation of technical and vocational programmes with those of other tertiary level institutions to facilitate further education and development of technical/vocational students is critical. A system of generally accepted standards must be created as part of a framework that allows for an integration strategy. The National Training Agency has outlined a national qualifications framework, similar to that in the Draft Policy on Tertiary Education, and has already begun to implement this National Vocational Qualification (TTNVQ) system which is a competency-based qualification and which is grounded on National Occupational Standards (NOS) agreed to by industry experts. It has 5 levels, similar to the tertiary education system:

- Level 1: Pre – Craft
- Level 2: Craft
- Level 3: Technician
- Level 4: Professional
- Level 5: Chartered and Advanced Professional

This system is clearly defined and easy to follow and should be adopted.

The establishment of a seamless system, entailing the movement of individuals in the education system horizontally and vertically, will facilitate articulation which enables successful students from one TLI to enter programmes in another, higher level TLI with advanced standing. This is important, as it does not apply to all students currently. In these cases, it should be possible to leave one system with a recognised and marketable qualification even if the route involves more than one institution or type of institution.

A system built around the following key principles could facilitate this process:

Complementary programmes	Training provided by one institution that reinforces what is taught at others for instance, the Engineering, Science and Technology programmes at UWI and UTT with effective arrangements for articulation.
Supplementary programmes	Programmes that provide opportunities for training not traditionally offered by any institution: these will essentially be new programmes in which any delivery institution can develop a niche. These should be linked to current needs not being fulfilled or emerging or anticipated needs not yet catered for.
Feeder programmes	Programmes at a junior level, such as Associate degrees or technical certificates and diplomas that allow graduates to proceed to the next step in upgrading qualifications for example, ECIAF to UWI; TTHTI and UWI, UWI undergraduates to IOB Diplomas and Master's degree programmes, COSTAATT to UWI or UTT and so on.

The introduction of a comprehensive national and regional system of articulation and accreditation is a matter of national and regional concern, given the explosion in the availability of private sector tertiary education, the free movement of professionals within CARICOM under the CSME, the liberalisation of trade in services, the entry of offshore TLIs as well as the franchising of degrees and diplomas by those TLIs, the alliances between local private TLIs and foreign universities, and the implications of the General Agreement on Trade in Services (GATS) for tertiary education in the region.

The establishment of national accreditation bodies thus forms an integral part of the regional accreditation system to facilitate the integration of the tertiary education sector nationally and regionally and also for giving individuals easy transfer to the international education system. At the same time a coherent regional system of Accreditation will give the region some measure of control over tertiary education penetration strategies from abroad.

At the same time, given the nature of the existing system of tertiary education and the need to balance a centralised system with institutional autonomy and flexibility, any attempt to establish inflexible criteria and guidelines at the national level would be fraught with difficulty. Since individual institutions have access to information about individual students, they are best placed to determine the details of programme articulation and student transfers.

Consequently, that responsibility must reside with them within a framework of broad guidelines facilitating flexibility and choice. So while a framework is desirable, institutions should operationalise articulation issues and facilitate transfer from one entity to another. An important step has been taken with the establishment of the Accreditation Council of Trinidad and Tobago, which will include public and private TLIs in its purview and will be responsible for professional accreditation. It must therefore, be implemented immediately and be staffed with appropriately qualified

personnel. Its objectives will include the following:

- Assure the quality of programmes offered by local TLIs as well as overseas qualifications;
- Develop and implement national standards for public and private tertiary education and training;
- Use labour market information to ensure that tertiary education is related to the needs of the economy and that public funding is put to the best use;
- Ensure that tertiary level programmes are well designed and delivered;
- Strengthen linkages throughout the educational system and
- Facilitate the vertical and horizontal movement of students and life long learning.

While there are articulated relationships between UWI and some public TLIs, the private TLIs are not party to similar arrangements. Some private TLIs, which have concluded partnerships with overseas institutions, have an interest in the accreditation of degrees and certificates granted by those partners. Given the growing numbers of such partnerships, this issue will have to be addressed urgently by the Council.

The proposed CARICOM Regional Accreditation Agency has the following objectives:

- Establishment of a seamless, efficient, internationally recognized system of post-secondary and tertiary education in the CARICOM countries;
- Promotion and facilitation of the movement of adequate numbers of people with high-level skills among CARICOM countries;
- Securing and maintaining international recognition and negotiating and concluding international agreements with third party entities for mutual recognition.

This Agency must be established as soon as possible to facilitate the establishment of a seamless, regional, efficient, internationally recognized system of post-secondary and tertiary education. It will facilitate the movement of adequate numbers of people from national TLIs to UWI and reinforce the links between UWI and regional TLIs as well as facilitate easy movement across institutions in the region. It will further, help to rationalise the presence of public and private TLIs, take a position

on foreign investment in the TLI sector and enhance the management of a coherent regional system.

Any system of national and regional articulation must take into account the existing articulation agreements between UWI and regional TLIs. Clear guidelines for the conclusion of such arrangements have been set out and the Tertiary Level Institutions Unit at UWI, Cave Hill oversees the establishment of new articulation arrangements in the region and manages their implementation. It is important for the Accreditation Council of Trinidad and Tobago as well as the CARICOM Regional Accreditation Agency to collaborate with this Unit to ensure that a sound system of articulation is put in place nationally and regionally.

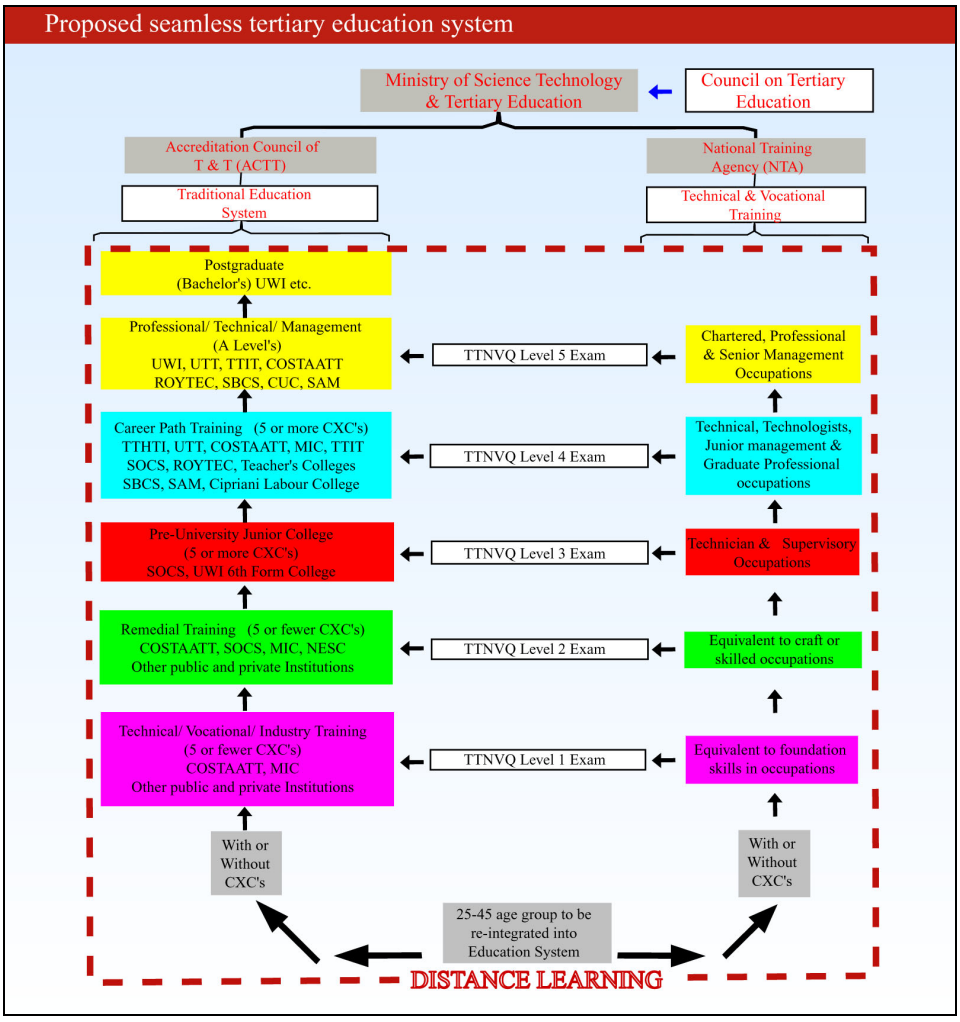
In other words, to the extent that we have made some headway regionally in developing a coherent system that serves the student and facilitates articulation among institutions thereby strengthening the integration of the tertiary system, we should not seek to reinvent the wheel in every country as we establish National Accreditation systems. We should adopt a strategy of drawing on regional strengths to bolster national systems even as we draw on strong national initiatives to strengthen our regional system.

Taking into account what has already been proposed by or developed by the Ministry of Science, Technology and Tertiary Education as well as what this Committee feels is a reasonable way to proceed, diagram 1 is proposed to illustrate how a seamless tertiary education system will work in Trinidad and Tobago.

The process envisages three groups of students. The first is the direct flow from secondary school; the second represents the 16-25 age group either employed or unemployed who need to be reintegrated into the system and upgraded so that they can have a more productive future; and the third is the 25-45 age group either employed or unemployed who need to be upgraded as employees or who need to be facilitated to enter the tertiary system and managed to succeed. Education for all groups should not only be available face to face in institutions but also by distance and preferably a combination of elements integrating e-

learning, video conferencing and face-to-face education. The system, as designed, allows for vertical movement along one stream, and/or horizontal movement across streams at designated levels of achievement. It also takes into account various degrees of success at high school level; underachievement and dropping out from high school; as well as deficiencies in the existing workforce as we meet the challenge of competitiveness and casualties of the secondary system over time that have found it impossible to integrate in the economic system and are either unemployed or underemployed.

UWI, St. Augustine
Proposed Seamless Tertiary Education System



POSSIBLE THREAT: BRAIN DRAIN

One issue that must be faced is the phenomenon of the "brain drain". It is suggested that increasing investment in education may not result in faster and sustained economic growth and development if large numbers of highly educated people emigrate. Efforts to reduce specific skills shortages through improved tertiary and vocational opportunities may be futile unless measures are taken to offset existing incentives for highly educated people to emigrate.

The lure of better pay and working conditions is frequently irresistible. Professionals, particularly teachers, doctors and nurses, frequently complain of a lack of recognition and professional respect. The impact of "labour flight" on the economy of supplier countries, particularly of people who are highly educated, can indeed include a decline in economic productivity. At the same time, remittances can generate economic dependency and perverse incentives such as encouraging the state to withhold certain basic services because people can afford to pay for them from remittances.

It is important to remember that very often the state has invested substantially in tertiary education and that the migration of graduates means that investment cannot be recouped. In the case of highly qualified scientists, emigration means the loss of individuals who are difficult to replace and the subsequent tardy development of local research. The exodus of medical personnel, such as doctors, nurses, psychologists, and paramedics, and of teachers often leads to a shortage of professionals in key sectors. However, in many developing countries more professionals are trained than the labour market can absorb. Part of the problem with respect to the migration of qualified people from supplier countries springs from the policies of receiving countries that encourage the immigration of educated people with better salaries and job conditions[18].

The granting of fellowships for advanced studies also facilitates migration. Once scholars have finished their studies, some fail to return to their home countries. While these are undoubtedly issues of concern nationally, they

[18] IMF statistics indicate that 46% of migrants from Trinidad and Tobago to the United States possess tertiary education.

must be balanced by the right of the individual to determine his own destiny and the right of access to public financial support for tertiary support that is funded partly by income taxes paid by individuals. In the case of GATE, recipients of this incentive from the state are required to work in Trinidad and Tobago for at least three years, but it is not clear how this particular requirement of GATE is going to be monitored.

The issue of whether "training for export" is embraced or whether the demand and environment is created so that we retain our best by fostering synergies among science, technology, investment and entrepreneurial activities within the private and public sectors must be addressed. In this context, the role of TLIs is crucial. They must build stronger links with the business community, particularly in growth sectors, such as IT, hi-tech manufacturing, healthcare and the media and creative industries, to ensure that the best graduates have access to challenging career opportunities, professional development and opportunities to pursue research and development.

At the same time, tertiary strategy needs to dovetail with the macro strategy of government for development and the sectoral strategies that support this macro strategy. What are our health strategies and their implications for doctors, nurses, pharmacists, and dentists? What is our strategy in food and agriculture and the implications for various types of agriculturists, veterinarians etc? Have the needs of our national ICT strategy for e-government, e-commerce etc. been quantified? This is critical since it will enhance management of the tertiary sector. What business growth do we anticipate in what sectors and how many managers are needed over what period?

Open learning, involving minimum constraint on access, pace and method of study, and distance learning, using technology to bridge the gap between learner and instructor over time and space and facilitating various modalities for teaching or learning, have been dynamic forms of education for more than two decades.

They constitute an effective and equitable means of providing learning for people in all situations and of all ages and have a crucial role in ensuring access to tertiary education through flexible, affordable and quality-controlled means. Moreover institutional strengthening innovations in curriculum and an enterprising spirit at the leadership level of institutions could create positive conditions through direct, online export of education.

A National Distance Learning System was once established as a network of community-based distance learning centers offering non-formal and vocational education programmes to specific communities. It was designed to increase participation for groups without adequate access to opportunity with such technologies now largely irrelevant. An urgent upgrading and formal integration into the tertiary system is necessary if distance education is to have meaningful impact.

The UWI Distance Education Centre intends to cater to an additional 5,000 students in the region by 2007. Private TLIs also provide distance education programmes. At the same time, while the establishment of open universities in more than thirty countries indicates that these modes of learning and teaching are effective, questions are now being raised about their ability to adjust to new demands and to rapidly changing technology. COSTAATT is also being established with a major thrust in distance education.

It is therefore, critically important that Trinidad and Tobago be cognizant of new developments taking place in ODL if it is to be used effectively and to have the desired impact. The emphasis in North America is increasingly on E-leaming and many universities have an on-line e-leaming presence. Greater flexibility in the learning process is required to allow the student

to access it in his own time and to determine how long hewill take to complete the required programme. Moreover, much research is being carried out on reusable learning objects, which allow electronic content of specific aspects of courses to be included in other programmes. Issues relating to the impact of technology on learning are critical and the results of research in this field are being incorporated in course design.

To a large degree also the Open Learning Agency of Trinidad & Tobago (OLATT) is passé. New developments have overtaken these initiatives and some rethinking and realignment is needed especially in the context of developments at regional and hemispheric levels.

While a national distance education system is being created, the creation of a regional distance education capability, which combines the strengths of all regional Universities and University Colleges and of which the national system must be a part, is crucial to support national tertiary education systems. Discussions to this end are taking place through UNICA, the regional network of Caribbean Universities. These developments are crucial because various international institutions are working currently at various levels and with different governments to promote agendas, which may not always be compatible.

A common agenda and plan, which are technically sound and sustainable over the long term and acceptable to all the countries and key institutions that are in a position to contribute, are therefore required. A distance education framework and system that are complementary and supportive and which give easy access at low cost with reasonable choice must be introduced simultaneously with the strengthening of institutional capacity.
In this context, the establishment of the Caribbean Knowledge and Learning Network (CKLN) that is due to come into effect in the third quarter of 2004 will enhance and increase on-line distance delivery capacity among its members and will facilitate the introduction of appropriate technology. Moreover, CKLN could serve a most important purpose as a catalyst in enabling TLIs to act as a consortium in negotiating effectively with

suppliers. This initiative is fully supported by CARICOM and its regional governments and emphasizes institutional strengthening and upgrade to take best advantage of technologies in a collaborative environment.

It is important for Trinidad and Tobago and the Caribbean to bear in mind that tertiary education is increasingly being regarded as a service or a commodity that can be exported and the more developed countries clearly have the advantage in this regard. A situation cannot be allowed to develop that permits the Internet to constrain the development of national and regional capacity and that allows deliverers from the industrialised countries to undermine national and regional educational institutions. Nor must a situation be allowed to develop in which the opportunity to develop national and regional capability in ODL is affected adversely because this capability is already at an advanced stage of development elsewhere.

At this point the Government may well want to play a role as facilitator, creating the climate for a competitive telecommunication environment, capitalizing on regional arrangements that are also of significant value nationally (such as CKLN) and leaving the actual choice of mode of delivery to institutions and market forces. One the other hand, the Government may wish to offer incentives to institutions that increase their reach and impact nationally through distance mode in order to support the distance education thrust.

MANAGEMENT SYSTEM

A well-conceived framework is a pre-requisite for any successful system of education. The links between the primary, secondary and tertiary systems and the clear progression from one level to another must be formalized and enshrined in public policy and legislation.

The management system for TLIs must be made effective since it is responsible for a crucially important sector that is undergoing radical changes and since it is important to fill the gaps in the provision of tertiary education. An organizational structure that provides clear leadership and facilitates effective collaboration between the private sector, tertiary level education providers and government, that defines the role of the various participants and that makes it clear where the responsibility for implementation lies, that considers private and public sector needs for the medium and long term, that recommends solutions for meeting such needs and that has the authority to implement its decisions is required. This calls for active participation of all parties with an interest in the tertiary education system.

While the Policy Paper has concentrated on the development of a national system and has therefore, proposed a system of governance that is national in scope, it is equally important to take into account the uniqueness of each TLI and its special needs. Each TLI must have the flexibility to determine its matriculation requirements based on national, regional and international benchmarks.

Since education is a public responsibility, the role of government is particularly important in the management of the tertiary education system and as such must be clarified. Although the Ministry of Science, Technology and Tertiary Education has overall responsibility, its manpower and policy strengths must be enhanced to take the system forward.

There is no entity responsible specifically for Research and Development

and Innovation linked to the tertiary education system. NIHERST provides policy advice and promotes the popularisation of science among young people. The Ministry of Education has a crucial role since it is responsible for the secondary system but there is no formal mechanism to facilitate its input.

In this situation, an integrated organizational structure is required to ensure that the role of the Ministry of Science, Technology and Tertiary Education and the Ministry of Education are clarified and that facilitates a formal system of collaboration to ensure a comprehensive approach to tertiary education.

The strategic planning and policy-making capability of both Ministries must be strengthened so that they can effectively meet national requirements. At the same time, a mechanism must be provided to ensure that the tertiary education policy is synchronized with other strategic areas of public policy. Moreover, since other Ministries including Health, Social Development, Labour and Public Administration offer programmes that lead to professional certification, they must be linked to any management system.

Given the long and successful tradition of autonomy in tertiary education and the existence of a vibrant, responsive tertiary education sector, a mechanism must be put in place to devolve powers for the delivery of tertiary education. TLIs must therefore, play a leading role in the management of the system as creators and disseminators of the knowledge and skills that they produce.

In these circumstances, the Council for Tertiary Education proposed by the Ministry's provides an opportunity for a rational approach to the formulation and implementation of tertiary education policy[19]. The Council must be independent if it is to be

[19] "Draft Policy Paper", p. 38. It would provide advice to the Minister in the following areas: quality promotion and quality assurance; research; the structure and planning of the tertiary education system; a mechanism for the allocation of public funds; student financial aid and governance issues relating to TLIs.

effective and if it is to be perceived as being objective. Its composition should reflect the constituency it is designed to serve as well as representatives of the private and public sectors, thereby facilitating the linking of policy advice to market information. It must provide the opportunity for all stakeholders to have an input in guiding the tertiary education sector, thereby strengthening its decisions.

In addition to the responsibilities proposed by the Ministry, the Council should be responsible for recommending standards and outputs to be achieved at each point or year of the system. In particular, its functions should be as follows:

- Determine policy framework in consultation with TLIs for the development of a coherent tertiary sector strategy and the achievement of national goals.
- Determine the principles on which funding should be allocated to state funded tertiary level institutions.
- Establish a database to facilitate sound decision-making on issues in the tertiary sector.
- Establish a research team to support policy recommendations.
- Monitor and evaluate the performance of tertiary level institutions, agencies and systems to ensure transparency of public institutions and the co-ordination and development of national tertiary education on the basis of clearly defined criteria for evaluation[20].

In other words, the Council will ensure that the tools required for ensuring the success of the sector are put in place. It will provide a mechanism that will facilitate the process from formulation to successful implementation of tertiary education policy. As such, it assumes considerable significance.

Provision must be made within the tertiary education policy framework for the funding of a training programme in tertiary education administration as a pre-requisite for sustainable development and growth of the sector.

[20] For easy management, TLIs can be concentrated into "clusters", depending on their offerings and areas of expertise. What has to be addressed in this instance is the relation between the Council and the Ministry with respect to policy formulation.

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INSTITUTIONAL NEEDS

Proportionate resources must be budgeted and provided for all phases of the educational sector to facilitate rational allocation of personnel and resources across the educational spectrum. Direct government funding for public TLIs is provided through Recurrent Expenditure and the Public Sector Investment Programme[21]. However, a rational, comprehensive system for financing, based on medium and long-term needs, is required to facilitate the creation of a forward-looking, responsive tertiary education sector. Since it is intended that TLIs should increase their student intake, an assessment of the expected capital outlay and operational costs is required and the results must inform decisions regarding the allocation of public funds.

Set criteria including levels of enrolment of full-time students, numbers of graduates and innovative responses to demand, among others, should also be used in determining the allocation of funds[22]. At the same time, given the importance of tertiary education to competitiveness and national development, the level of direct state funding for the tertiary education sector must be increased as a matter of urgency.

The following issues must be addressed when determining funding requirements for the tertiary education sector:

- What is the anticipated cost of expansion over the short, medium and long terms?

[21] In 1995, the National Training Foundation was established with foreign industrial companies to promote human resource development with the emphasis on technical, vocational and craft training including the National Skills Development Programme. It currently funds the courses at TTIT. There is no indication what will happen to this programme when TTIT becomes part of the UTT.

[22] Whatever funding mechanism is to be implemented, it must be transparent to ensure equitable treatment. Diseconomies of scale and the fragmented nature of the tertiary education sector must be taken into account when determining the allocation of funds. It must be borne in mind that such fragmentation limits choice and flexibility for students, which in turn will have an impact on the effectiveness of the fund utilization.

- What mechanisms are required to increase support from all potential benefactors?
- How can the public sector, the private sector and other sectors be made more responsive to the needs of the sector?
- How can the sector respond more quickly to the training needs of the private and public sectors and how can it be made export-oriented?
- How best can feedback/evaluation mechanisms be employed; feedback obtained and incorporated?

Any consideration of the funding mechanism for tertiary education must take into account the fact that UWI, as a regional institution with both regional and national responsibilities, is a special case. Since it is funded by a system established under the Technical Advisory Committee, Faculty/Campus/University Centre considerations that form part of the funding package, the funding decisions for one Campus cannot be divorced from funding for the entire university system.

STUDENT SUPPORT

There are two public loan schemes:

- The **Student Revolving Loan Scheme** provides soft loans, covering tuition and some living expenses, within a set income level, for students at public TLIs. However, the commercial banks administer the scheme and apply criteria similar to their ordinary loans. The high interest rates, strict repayment periods and guarantor requirements restrict access to student applicants who cannot meet these conditions.
- Under the Student Guarantee Loan Fund Scheme, students are required to pay 10% of their tuition fee and can access loans from the commercial banks. The government maintains a fund to underwrite 50% of the value of these loans. However, the Fund only provides for tuition fees: living expenses, books and

other study materials are not covered.

- Support is also provided through the Government Assistance for Tuition Expenses (GATE) programme which has replaced and expanded the provisions of the Dollar for Dollar programme for students in all courses offered in public TLIs[23]. GATE provides up to 50% of the tuition fees. It also provides up to 100% of fees to students who are unable to pay their 50% of the fees: those students will be assisted on a needs basis. Like the Student Guarantee Loan Fund, living expenses are excluded from the programme.

National Scholarships based on the results of the Advanced Level examinations as well as scholarships for students at the Caribbean Union College (CUC) are also provided from public funds. However, scholarships awarded to all eligible applicants are based principally on merit/academic performance, which limits access to students who may just be under the threshold and more financially dependent.

Despite the existence of these schemes, there are students who are still unable to raise the funds needed for expenses, other than tuition fees, that are associated with tertiary education and mechanisms must be put in place to address these shortcomings.

TLI SUPPORT FOR STUDENTS

Since public support is not available to meet the needs of students for expenses other than tuition and since it is possible that there may be candidates who are unable to access tertiary education as a result or who face considerable financial difficulty, it is desirable for TLIs to increase the level of support for deserving students, both incoming and current, so that financial need does not deter prospective students[24]. Such support may

[23] The Dollar for Dollar Tertiary Education Plan matched fifty percent of the tuition fees paid by undergraduate nationals for programmes at public TLIs at the UWI that were at least the equivalent of an Associate degree. It was also available for some Postgraduate programmes at the UWI. Under GATE, students at recognized private TLIs are eligible to access grants of 50% of their tuition fees to a maximum of $5,000. Recognized private TLIs are those that have registered as "Tertiary Level Institutions Education and Training Providers" with the Ministry of Science, Technology and Tertiary Education.

[24] TLIs should create or strengthen programmes that will build up student support funds. Some of the measures raised in the section entitled, "Increasing the level of stakeholder support" will help create the climate for successful revenue generation.

include the following, among others:

- Full grants to cover the cost of accommodation, books, travel and related expenses;
- Partial grants to cover some of the costs listed above; and
- Emergency grants to provide for unforeseen developments.

The system of financial support provided by TLIs in other jurisdictions, including the United States of America, may be a useful guide in helping to determine the types of support that TLIs may provide for their students.

Since those who can afford it are required to pay at least 50% of the cost of tuition, and since those who need additional support should have access to it, a transparent, equitable system must be put in place to determine the criteria for accessing public financial support. This must be corroborated by a comprehensive evaluation of the student's ability to pay.

The establishment of suitable criteria is particularly important given the decision to use a means test in the GATE programme. A means test may be defined as an investigation into the financial well being of an individual to determine his ability to pay. While many student financial assistance packages employ a variety of formulae to assess ability to pay, none are perfect for ranking ability to pay for tertiary education. Most formulae are not without controversy, which lead to subjective judgments, as well as trade offs on a variety of issues such as equity as opposed to efficiency, and among what seems fair and the incentives and the disincentives that fairness engender.

It is therefore, important that the means test that is used must be conducted equitably and will identify easily those who require genuine support[25]. It should be designed to show which individuals are able to pay the remaining fifty percent (50%) of their tuition fees and those who cannot[26].

One way to anticipate some of these problems and to propose remedies is to undertake sampling work. A sample questionnaire has been prepared for use in Trinidad and Tobago. The examples of several countries, most notably Australia and the United Kingdom, that have introduced comprehensive, equitable systems of student support based on a means test, are elaborated in Appendix III: Student Financing Arrangements in Selected Countries.

[25] A means test has been developed and has been used as a pilot during the recent registration at TTIT. An advertisement has been placed for an investigating officer to confirm claims that have been made.

[26] It has been decided that students who receive 100% of the tuition fees will be required to work in Trinidad & Tobago upon graduation.

TLIs obtain a large part of their funding from fees, partnerships with the private sector in some cases, fund-raising activities and gifts. However, there are no doubts that direct state funding will remain the most important source of funding for the tertiary education sector. Since the experience of other countries shows that neither corporate nor individual support for tertiary education will surpass the level of public support, direct state funding must be increased.

At the same time, it is important for the sustainability of an expanded tertiary education sector to foster a culture of philanthropy among the general public that recognizes the importance of providing support for the long term, institutional building and strengthening and the creation of a culture of lifelong education. The experience of other jurisdictions, especially in North America where corporate and individual support for education is highly developed, must be taken into account.

The tax regime must be reviewed therefore, with a view to ensuring that existing incentives for corporations to support charities are extended to individuals. Evidence from North American and Europe reveals that wealthy individuals are generally more generous in providing charitable support, including education, than corporations. The creation of a tax regime favourable to individual giving, together with a development programme created by TLIs, should help create a culture of individual philanthropy.

The following recommendations for financing the expansion of tertiary education are no means comprehensive but provide guidelines that should be incorporated in policies designed to encourage a culture of philanthropy.

- Existing fiscal incentives for tertiary education and technical/vocational training should be increased and made as attractive as possible.
- Currently, gifts from the private sector are eligible for tax benefits only when made to TLIs registered as charities. Incentives for corporations to support charitable giving should be extended to individuals and should be increased.
- To increase the amount of revenue coming from the

- private sector, tax rebates should be provided for contributions in cash or kind, including real estate, stocks and shares and intellectual property among others, made to TLIs registered with the proposed Council for Tertiary Education.
- Tax benefits should be provided to organisations that invest in training and development of their staff[27].
- Fiscal incentives to individuals for tertiary education should be delivered from the arrangements linked to the interest paid on mortgages of $18,000.
- Registered Education Savings Plans that facilitate individual savings for higher education through tax credits to the contributor should be introduced.

[27] The proposed "National Skills Bill" which includes such a concession should be implemented as soon as possible.

There can be no innovation without research. While the results of research carried out elsewhere may be applicable to Trinidad and Tobago, local research is essential to address issues and problems that are peculiar to this country and region. There is a link between research and effective teaching as well as a link between ongoing research, evaluation and improvement of the teaching and learning environment and of the education system generally.

The integration of teaching and research thus serves to improve the quality of teaching effectiveness and student learning. Raising the quality of laboratories will be especially effective when coupled with measures to reduce introductory class size. Moreover, university research and development is a significant factor in the development of an innovative culture and the development of entrepreneurial skills, complemented by a vibrant venture capital climate[28].

But many shortcomings in research and development remain to be rectified. Compared to developed countries, Trinidad and Tobago lags behind in education, research, science and technology, institutional capacity and knowledge. Investment in science and technology by the public and private sectors, at 0.13% of GDP, is low compared to developed countries and there is a marked shortage of skilled workers in the field of science and technology[29]. This negligible investment in research and development must be increased if the challenges of the industrial sector and other growth sectors are to be met[30]. Moreover, in 1998, fewer than 20% of students in the CXC examinations took science subjects while only 7% took technology subjects. The better schools ignore technical and vocational subjects. Consequently, Trinidad and Tobago has a marked shortage of skilled workers in Science and Technology related fields that constrain its ability to produce high technology goods for export.

High tech exports as a proportion of manufactured exports remain low at 2%. More worrying, a sustainable long-term diversification

[28] These are issues that have been addressed by the Sub – committee on Science, Technology & Innovation.
[29] Most industrialized countries invest at least three percent (3%) and some as high as ten percent (10%) of GDP.

[30] The lack of clarity in the way the TLI sector is organized makes it difficult to determine the impact of what investment is made in R&D.

strategy that will strengthen sources other than the energy sector has not been developed yet.

If Trinidad and Tobago is to attract regional and international investors and entrepreneurs, its research capabilities must become more sophisticated[1]. A National Research Policy is required to encourage and support important and relevant work undertaken to improve competitiveness. It must be guided by global demands as well as the demands of meeting higher education requirements to ensure complementarities between relevance, sustainability and integrity and may suggest, but not dictate, areas of focus.

This policy should provide for the award of grants on a competitive basis to research organisations of national and regional significance or to those with a track record of innovation and excellence in Research and Development[2]. The objectives of the Grants Programme should be as follows:

- Provide infrastructure funding on a fair and equitable basis for all TLIs to engage in research and development.
- Align this funding with national and regional priorities.
- Ensure that research organisations receiving funds comply with accountability and accounting requirements.
- Promote the dissemination and application of research results.
- Encourage new research and capacity building to support the output of research.

Investing in graduate research and strengthening the graduate and research capabilities of TLIs to encourage knowledge-based innovation in industry and informed policy making at governmental level are vital since this is one of the three pillars of entrepreneurial development[3]. This will not only create new knowledge, the dissemination of which is crucial for encouraging invention and innovation, but will also ensure that the next generation of problem-

[1] The role of the Ministry of Science, Technology and Tertiary Education in fostering research and in acting as a champion for R&D and Innovation as well as a champion for the tertiary education system is crucial.

[2] Details of this scheme including the criteria for those with a record of innovation and excellence in R&D will have to be worked out.

[3] The others are the availability of entrepreneurial skills and capital.

solvers and researchers is trained.

In this context, it is urgent that CARICOM governments increase funding for tertiary education, especially for UWI since it is the strongest regional educational establishment and plays the leading role in resolving many issues for the private and public sectors. Collaborative research between UWI and TLIs should be actively encouraged to address national and regional problems.

NIHERST has proposed a number of initiatives that will go a long way to help create a workforce capable of undertaking Research and Development and Innovation. These include programmes to encourage scientific and technological consciousness as well as career guidance in primary and secondary schools.

TLIs must emphasize basic and applied sciences, engineering and science-based high technology in combination with business and social studies. While the government has indicated that all secondary students should be exposed to a broad and balanced programme of science, technology, innovation and entrepreneurship, it is imperative that secondary school teachers be trained in these areas and the Secondary Education Modernisation Programme (SEMP) must be tailored accordingly.

If research and innovation are to be encouraged, the national and regional research infrastructure must be improved. Existing facilities at UWI, CARIRI and other public institutions are in urgent need of upgrading.

While the considerable local expertise that exists can probably meet only some of the current needs of the private and public sectors, laboratories and other facilities must be improved to enable researchers and inventors to create and disseminate new and improved knowledge, methods and processes. In addition, a public-private partnership that funds research applicable to the needs of society is required.

In order to gain access to the global knowledge base, Trinidad and Tobago must build networks and develop collaborative opportunities. Post-graduate and post-doctoral training funds must

be created to enable individuals to participate in global centres of excellence in advanced science, high technology, entrepreneurship and innovation.

Since countries with the strongest performance in research and development themselves can adapt and assimilate foreign innovations most quickly and effectively, the ability of scientists and technologists must be improved to allow them to tap into the global knowledge base. A strong and coherent innovation system is valuable not only in its own right but also to facilitate entry and successful participation in the global innovation system. Simultaneously, the protection of intellectual property rights must be addressed as research activities are developed and expanded.

CONCLUSION

Since the development of human capital is crucial in fostering economic growth, stimulating innovation and creating a civilized society, it is urgent that a research, knowledge generation, transfer and innovation system is constructed in Trinidad and Tobago.

The crucial issue is how this system can be financed and therefore, whether the existing macroeconomic state of affairs in the national economy can sustain a higher level of expenditure on tertiary education.

A number of factors combine to show that Trinidad and Tobago is undergoing a hydrocarbon boom. The trend movement in the production of oil is expected to increase during the next few years. The very substantial finds of oil and gas by energy multinationals have prompted a renewed interest in the search for oil and gas offshore. The position of Trinidad and Tobago as a major player in the production of downstream natural gas products has also been reinforced by a number of recent plant commissioning and announcements[34].

[34] Atlantic LNG train II started its production in August 2002 and Train III is currently on stream. This makes Trinidad & Tobago the fifth largest exporter of liquefied natural gas (LNG) in the world, all from an industry that contributed nothing to the national coffers a decade ago. The commissioning of Train IV of LNG represents a 50% surge in its productive capabilities. Discussions are underway for the construction of a Train V and VI of LNG to facilitate expanding world demand. In 2002, the Caribbean Nitrogen Company Limited (CNC) commissioned a 1,850 tonnes per annum plant. Its owners, CL Financial, also announced in 2002 its intention to build the world's largest ammonia plant (Nitro 2000) as well as plans for a new methanol plant, M 5000, the world's largest methanol plant. bpTT and Methanex, the world's largest trader of methanol, started construction of Atlas Methanol in 2002. These planned increases in ammonia and methanol will strengthen this country's position as an exporter of methanol and ammonia.

	2003	2004	2005	2006
Oil (bpd)	129,100	129,900	173,330	202,970
Gas (mmcf)	2,397	2,871	3,352	3,923
Of which LNG	1,200	1,520	2,834	2,320

Oil production is expected to increase from its current level of 130,600 bpd to 202,970 in 2006. In the same period the production of gas is expected to increase from 2,397 mmcf to 3,923. These substantial expected increases would have very favourable implications for oil sector exports, revenues and GDP growth.

Oil prices in the medium term period, 2003-2012, are projected to remain moderately stable (in constant prices, see Table: Oil and Gas Production Forecasts, 2003 to 2006), clearly implying that the expected increase in the volume of oil to be produced will translate to an increase in oil revenues and hence an increase in public revenues.

Table3: Forecast Oil Prices, 2003 – 2012

Year	World Oil Price (2001 US$ Per Barrel)
2003	25.83
2004	24.05
2005	23.27
2006	23.43
2007	23.57
2008	23.71
2009	23.85
2010	23.99
2011	24.14
2012	24.28

Source: www.eia.doe.gov/

CONCLUSION

In summary and taking into consideration the strong economic growth performance of the economy, it is evident, other influences remaining constant, that the government can commit more resources to financing tertiary education. Only if these issues are addressed rationally and objectively can the goals enunciated in the Vision 2020 Programme become a reality.

SYSTEMATIC

A comprehensive, flexible approach must be adopted to form the cornerstone of the vision, strategy and plan for the tertiary education system. It will enable tertiary education programmes to respond to changes in demand and to take advantage of emerging opportunities.

Comprehensive, valid data must be continuously collected, analysed and used as the basis for tertiary education policy formulation. A structured system for remedial training must be put in place to facilitate those who do not meet the matriculation requirements of universities and other TLIs.

An organizational structure that provides clear leadership and facilitates effective collaboration that considers private and public sector needs for the medium and long term and that has the authority to implement its decision is required.

MARKET

Skills and competencies must be aligned to market requirements and trends, both current and anticipated. These must be connected to a national planning framework and a regional framework.

ACCREDITATION AND QUALITY ASSURANCE

- A National Accreditation system should be linked to a regional and an international accreditation system.
- The CARICOM Regional Accreditation Agency should be established to facilitate the establishment of a seamless, internationally recognized system of post-secondary and tertiary education. It should collaborate with the TLI Unit of the UWI to put in place a sound system of articulation, both nationally and regionally.

COLLABORATION

- A public-private partnership, that is responsive to the market, should be established that would fund research applicable to the needs of society.
- Networks must be built and collaborative

opportunities developed. Post-graduate and post-doctoral training funds must be allocated to enable individuals to participate in global centres of excellence in the areas of advanced science, high technology, entrepreneurship and innovation.

- TLIs must build stronger links with business to ensure that the best graduates access challenging career opportunities as well as the opportunity to pursue research and development.
- A collaborative tertiary sector with complementary and supplementary elements should be facilitated.
- Acknowledgement of the role of the UWI as regional research institution will allow for greater focus and output.

STRATEGIES

- An Investment Strategy supportive of diversification toward knowledge industries and linked to tertiary output should be instituted.
- A marketing strategy to attract investment in which the educated human resource pool and tertiary strategy are marketed as a vital natural resource should be developed and deployed.

FUNDING / FINANCING

- A study of the funding requirements for an expanded, comprehensive tertiary education system for the medium term should be undertaken immediately.
- The tax regime must be reviewed to ensure that existing incentives for corporations to support charitable giving are extended to individuals and to help create a culture of individual philanthropy.
- Consideration of the funding mechanism for tertiary education must take into account the fact that the UWI, as a regional institution, with both regional and national responsibilities, is a special case.

EXPANSION AREAS

An expansion to tertiary access at a rate of 2% per year until 2010 and thereafter, 3% per annum

until 2019 is recommended. The following areas should

- Technology - e.g. ICT; and
- Business - e.g. Innovation, Entrepreneurship and Finance.

POLICY

- A rational, comprehensive system for financing, based on medium and long-term needs, is required to facilitate the creation of a forward-looking tertiary education sector. However, proportionate resources must be budgeted and provided for all phases of the educational sector.
- The Tertiary Education Council must provide a mechanism that will facilitate the process from the formulation to the successful implementation of tertiary education policy.
- TLIs must emphasize basic and applied sciences, engineering and science-based high technology in combination with business and social studies.
- A National Research Policy must be put in place to encourage and support research
- Science - including pure and applied science; undertaken to improve competitiveness. It should award grants on a competitive basis to research organisations of national and region-wide significance or with a track record of a culture of innovation and excellence in Research and Development.
- The national and regional research infrastructure must be improved. Laboratories and other facilities must be upgraded to enable researchers and inventors to create, disseminate and commercialise new and improved knowledge, methods and processes.

APPENDICES

APPENDIX I

PUBLIC TERTIARY LEVEL INSTITUTIONS

The University of the West Indies and its constituent parts in Trinidad and Tobago:

- St. Augustine Campus (Day and Evening);
- Distance Education Centre;
- School of Continuing Studies;
- Institute of Business; and
- Hugh Wooding Law School University of Trinidad and Tobago.

COSTAATT:

- ECIAF;
- John Donaldson Technical Institute;
- Joint Services Staff College;
- Metal Industries Company;
- Government Vocational Centre; and
- San Fernando Technical Institute.

The NIHERST Colleges:

- College of Nursing;
- College of Health Sciences;
- Information Technology;
- Business Management Division;
- School of Languages; and
- General Education Division

Cipriani College of Labour and Co-operatives

Trinidad and Tobago Hospitality and Tourism Institute

Corinth Teachers' College

Valsayn Teachers' College

APPENDIX II

PRIVATE INSTITUTIONS PROVIDING TECHNICAL, TECHNOLOGICAL, PROFESSIONAL AND TERTIARY EDUCATION

- 4 Sight Technologies and Consulting Academy ofAutomechanics Academy of Business Arts and Computing Academy of Law Add Tec Limited
- Affordable Computer and Electronics Training
- Ambi's Career Institute American Computers and Electronics Limited
- Automation Technology College BorderCom International British School of Computing and Commerce
- Career Institute of Technology and Information
- Caribbean Fisheries Training and Development Institute Caribbean Institute for Research and Professional Education Limited Caribbean Institute of Languages and International Business
- Caribbean Management Consulting and Training Centre
- Caribbean Nazarene Theological College Caribbean Union College CECP Limited Computing Consultancy and Planning
- Central Technology Centre Limited Chess Limited
- College of Business and Technology Combined Accountancy Tutors Limited Complete Technology Solutions Computer Science Institute Computer Technologies and Services Limited
- Computer Training and Services Limited Computer Training Clinic Deltasoft Computer Training Service DeskTop Publishing Institute
- Easton Training Centre
- EFL Tuition Centre
- Excel Edu Centre
- Future World Computer Centre
- Herman Marcano and Associates Limited
- ICS Learning Systems
- Institute of Banking and Finance
- Institute of Business Technology
- Institute of Internal Auditors
- Institute of Law and Academic Studies

APPENDIX II

- Institute of Tertiary Tutors
- Institute of Training and Development
- Itec T & T Limited
- J-Puters Technological Institute Limited
- K. Beckles and Associates Law Tutors
- Key Computer Solutions Limited
- Lenore's Business School
- Logical Computer Services Limited
- M & M Tax Consultancy
- Management Information Systems
- Marcelle's School of Electronics
- Micro Corporate Training
- Microsoft Caribbean Limited
- Modem Business School
- Network Computer Learning Centre
- Optik Learning
- Personalized Computer Services Limited
- Professional Computer Training Centre
- Professional Institute of Marketing and
- Business Studies Limited
- Prototype Services
- Ramdass School of Computing
- International Limited
- ROYTEC
- Sage Software Inc.
- Sangre Grande Business College
- Sarah's Educational Academy
- School of Accounting and Management
- School of Business and Computer Science
- School of International Travel and Languages
- St. Andrews Theological College
- St. Kevin's College and Computer Tuition
- St. Patrick's College of Applied Arts and Technology
- Students Accounting Centre
- Teachtect Systems
- The Caribbean Institute of Technology
- The College of Business and Technology
- The Computer Learning Centre
- The Institute of Printing
- The Professional School of Accountancy Limited
- The School of International Colleges
- Admission Test
- The West Indies School of Theology
- Tobago Community College
- Total Information Systems Limited
- Townshend Institute of Information
- Technology
- Trainx
- Trinidad and Tobago Insurance Institute
- Trinzuela Technical and Vocational
- College
- Ultimate Computer Services
- Wizz Computers

APPENDIX III

STUDENT FINANCING ARRANGEMENTS IN SELECTED COUNTRIES

United Kingdom

This model is characterized by the absence of up-front fees with a deferral of paying fees until graduation and employment after University. Fees become payable through the tax system at a percentage rate of income above a defined threshold.

The following additional support is available:

- Discretionary grants and loans, for hardship cases.
- Fee waivers and loans for those studying part-time as well as mature students with children.
- Hardship loans and Funds: a one stop discretionary fund administered through the tertiary level institutions where all payments are in the form of non-repayable grants.

Australia

Youth Allowance can be accessed by full-time active students aged 16-24. It is subject to a means test including the student's parental income and assets. "Austudy Payment" is a programme that provides financial help for students aged 25 years and older who are studying full-time. Eligibility depends on the student's own income and assets.

The Student Financial Supplement scheme gives students the option of borrowing money (a Financial Supplement Loan) to increase their income while they are enrolled. Payment is based on parental income and assets below a certain threshold.

Under the Higher Education Contribution Scheme, students can either pay their tuition fees 'up-front' and receive a 25% discount or repay their debt through an income contingent liability scheme after graduation. Repayment starts only when annual earnings exceed a certain threshold. The rate of repayment is increased when the level of income rises.

Singapore

Tuition Fee Loan Scheme - This scheme, which is available to all students for studies at a university or polytechnic, is administered

by the Ministry of Education (MOE), which provides loans up to 80% of tuition fees.

Study Loans

Alternatively, students may opt to apply for a study loan, usually payable upon graduation or completion of the programme, at favourable interest rates. Some educational institutions offer additional loans for miscellaneous expenses, such as computer loans.

APPENDIX IV

CXC RESULTS FOR TRINIDAD AND TOBAGO - 1997-2003[35]

Caribbean Examination Council

Examination Results for Trinidad & Tobago

Students writing no basic and at least one general, school entries only.

	1997	1998	1999	2000	2001	2002	2003
Total numbers writing	21,188	21,969	21,760	22,499	17,466	17,551	30,305
Numbers writing 5 or more subjects	11,031	11,555	12,002	12,414	12,707	12,456	13,607
Numbers passing less than 5 subjects	10,374	11,421	11,846	11,928	9,073	8,923	18,462
Numbers passing 5 to 9 subjects grades 1 – 3	10,374	11,421	11,846	11,928	9,073	8,923	18,462
Numbers not passing any subject	4,240	5,404	5,916	6,540	6,520	6,901	4,595
Percentage with full certification i.e. students passing 5 or more from those writing 5 or more	38.4%	46.8%	49.3%	52.3%	51.3%	55.4%	33.8%
Failure rate (%)	31.0%	23.4%	18.4%	17.9%	10.7%	9.8%	21.2%

[35] These results are only for students who sat the examinations from Secondary Schools.

APPENDIX V

CAMBRIDGE ADVANCED LEVEL RESULTS FOR THE CARIBBEAN, 2002 – 2003

Country	Total Number Of Students Writing The Exam	Number Of Students Passing 1 Or More A Level Subjects – Grades A To E	Number Of Students Passing 2 Or More A Level Subjects – Grades A To E	Number Of Students Passing 3 Or More A Level Subjects – Grades A To E
Antigua	0	0	0	0
Barbados	62	52	9	0
Belize	0	0	0	0
Dominica	134	107	66	21
Grenada	461	289	178	91
Jamaica	3,928	2,312	1,125	486
St. Kitts	100	55	14	6
St. Lucia	429	384	243	165
Montserrat	2	2	0	0
St. Vincent	25	18	10	8
Trinidad & Tobago	6,553	5,414	3,514	2,425
Turks & Caicos Islands	479	308	169	78
British Virgin Islands	0	0	0	0
TOTAL	**12,173**	**8,941**	**5,328**	**3,280**

Source: Cambridge University

APPENDIX VI

SELECT PLANNING ISSUES

Policies	Objectives	Constraints	Strategies	Time Frames
A seamless tertiary education and training system	Definition of tertiary education	Lack of agreement among stakeholders	Enlarge definition to include Higher Education	Immediate
	Establish a management structure and a system to facilitate R&D	MSTTE has no relevant manpower or expertise. The function of NIHERST has changed to providing policy advice and popularizing Science among young people	Establish the Council for Tertiary Education. Responsibilities to include recommending standards and outputs. Board to include stakeholders and private sector	Immediate
	Sustainable growth and development of tertiary education sector	No funding provided currently for a training programme in tertiary education administration that will facilitate this growth and development.	Identify funding and make arrangements for training professional tertiary education administrators	One year

APPENDIX VI

Policies	Objectives	Constraints	Strategies	Time Frames
Establish an inclusive system to ensure equity and access	To develop and use national human resources effectively	Lack of empirical evidence and sound research to determine the degree to which access depends on social status	Develop policies based on sound research that recognize that access must be dealt with at every level of the education system.	
			Focus on schools with low achievement rates including those in rural areas and poor urban areas.	Medium term
			Ministry of Education to introduce a School Improvement Programme for each school with targets and deadlines.	One year
			Devise mechanisms to encourage the private sector to partner with schools in areas “at risk”.	Medium term

APPENDIX VI

Policies	Objectives	Constraints	Strategies	Time Frames
Relevance of curricula in line with national goals and priorities	Implement policies and funding strategies to steer students to careers identified as priorities	Lack of mechanisms to ensure a co-ordinated approach to decision making.	Develop a research agenda to monitor workplace competencies and skills to facilitate on-going curricular review and reform as well as the flow of information to TLIs to ensure responsiveness.	Medium term
	Emphasize Science, Technology, English & Mathematics	Lack of basic skills needed for the workforce and tertiary education	TLIs and other institutions to provide remediation or transition programmes, face to face and in distance mode	One year
	Create a system of lifelong learning across all social sectors	Poor CXC and A Level results in Mathematics, Science & English	Implement SEMP	Medium term

APPENDIX VI

Policies	Objectives	Constraints	Strategies	Time Frames
			Establish a private / public partnership to fund research and upgrade infrastructure.	One year
	Improve national research to encourage research and innovation.	No existing mechanisms available to facilitate this goal	Establish a Research & Innovation Fund that will fund original and applied research	Eighteen months
Creation of sustainable funding mechanisms	Maximise the inputs of public, corporate and individual sources of funding Foster a culture of philanthropy among all sectors of the population.	No comprehensive, long – term plan for financing tertiary education Lack of incentives for individual donors to fund tertiary education	Undertake sound research to determine the medium and long term funding needs of the tertiary sector as a whole, the needs of the individual institution including those like UWI that are in a unique financing category	

APPENDIX VI

Policies	Objectives	Constraints	Strategies	Time Frames
		No clear priorities for which funding is required	Make a commitment of increased, sustainable, long term of public support for tertiary education.	Immediate
Effective Management Systems	Develop capability to manage the tertiary sector and individual institutions	MSTTE does not have sufficient relevant expertise or manpower	Create an organizational structure that facilitates collaboration among Ministries, Agencies, individual TLIs and the public sector.	Immediate
	Improve research capacity and strategic planning capacity of the sector to manage effectively	Individual TLIs do not always promote staff on the basis of managerial capability. Seniority is generally the determining factor in promotions.	Introduce a training programme in tertiary education administration	One year

APPENDIX VI

Policies	Objectives	Constraints	Strategies	Time Frames
	Create legal mechanisms for overseeing the tertiary education system	Synergies between agencies such as NIHERST, NTA within the tertiary education sector is unclear	Create independent Council for Tertiary Education reflecting its constituency and including public and private sector members. Among other things, it would recommend standards and outputs.	Six months
	Collaboration between MSTTE and Ministry of Education	No mechanism for ensuring synergy and effective collaboration	Create formal system of collaboration between MSTTE, the Ministry of Education and other Ministries on policy matters.	Medium term
	Establish Accreditation Council		Undertake wide-ranging consultations with stakeholders.	Immediate

FRAMEWORK FOR ACTION

Vision

To develop the nation's human resources to create a civilized, creative, innovative, intelligent citizenry that can participate actively and rationally in a democratic society based on equality, liberalism and acceptance of diversity.

Summary

A tertiary education culture of lifelong learning and training must be created and must include all sectors of the society. To meet the increasing demand for skilled workers and to address the issue of international skill recognition, tertiary education must be overhauled, expanded and transformed and a strategy must be developed that recognises education as the engine of development.

GOAL 1: To build the capacity of the nation's human resources.

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
1.1 Inculcate a culture of critical thinking that enables individuals to approach issues in novel, questioning and innovative ways.	Curriculum Reform at all educational levels.	1.1.1. Strengthen the capacity of students to promote problem solving throughout the education lifecycle. 1.1.2. Revise curriculum at all educational levels to incorporate more practical approaches to learning. 1.1.3. Paradigm shift from the old mode of education to new modes of learning, balancing theory with practice.	P1	Ministry of Education, PTAs, AMCHAM, Chambers of Industry and Commerce, TTMA, Rotary Clubs, Business Associations, and NGOs.	Education Culture and Attitudes

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
1.2 Develop and use human resources effectively and efficiently to ensure equity and access.	Research Skills incorporated into the education system curriculum.	1.2.1 Develop policies based on sound research that recognise that access must be dealt with at every educational level.	P1	Ministry of Education, denominational boards, PTAs.	(Poverty Action Plan: Objective 1.1.2 to 1.3- opportunities/ mechanisms for all those who are trainable.)
		1.3.2 Establish a private-public partnership fund- to fund research and upgrade infrastructure.	P1	Ministry of Science, Corporate community, TLIs.	Infrastructure, Private sector, Governance, Institutional Structure.

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
1.4 Retention of all skilled persons .		1.4.1 Fostering synergies among science, technology, investment and entrepreneurial activities within the private and public sectors. 1.4.2 Build stronger links with the business community, especially growth sectors (IT, education, high-tech manufacturing, healthcare, media and creative industries) to ensure skilled persons have access to challenging career opportunities and professional development and opportunities to pursue R&D. (See Population Action Plan: Goal 2)	P0 P1	Ministry of Science, Chambers of Commerce, Professional Associations, TTMA	I&E, Population (to decrease the negative impact of migration.)

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
1.5 To reduce the emigration of skilled labour (especially those in the education and health professions) by 20% at the end of 2006.	Culture of life-long learning.		P0-P1	Ministry of Science	Ministry of Education, Culture, Law Administration, Regional Development, Poverty.
	Emergence of a sound, rationally constructed, internationally competitive system of tertiary education, based on societal needs.	1.5.2 Foster a culture of philanthropy among all sectors of the population to encourage continuous learning.	P0-P1	Ministry of Education, Ministry of Science.	Youth & Sports, Industry & Enterprise, Agriculture, Culture, Population, Gender, All sectors.

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
Create a system of life-long learning across all social sectors.	Increasing number of 'older' citizens engaging in the education system.	1.5.3 Implement incentives to promote easy access to education by individuals (or continuation of GATE initiative).	P0	Ministry of Science	Macroeconomy, Adult Education Institutions.
1.6 To improve national research and innovation.	Council for Tertiary Education.	1.6.1 Establish an independent Council for Tertiary Education to recommend and oversee standards and outputs. (*The Council should include stakeholders from both the public and private sectors.*) - Determine a policy framework in consultation with TLIs for the development of a coherent tertiary sector strategy and achievement of national goals.	P0	Ministry of Science & Technology	TLIS, Private sector, Ministry of Education, Governance, Macroeconomy.

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		- Determine principles on which funding should be allocated to State funded, tertiary level institutions. - Establish a database to facilitate sound decision-making on issues in the tertiary sector. Monitor and evaluate the performance of tertiary level institutions, agencies and systems to ensure transparency of public institutions and the co-ordination and development of national tertiary education on the basis of clearly defined criteria for evaluation.			

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
	Research and Innovation Fund by 2005	1.6.2 Establish a Research and Innovation Fund for original and applied research.	Continu-ous	Ministry of Science	Macroeconomy
		1.6.3 Promote a heightened awareness of the need to patent research and innovation.	P0	Ministry of Legal Affairs, Ministry of Education, Copyright Association, Intellectual Property Office	(Placed in Law Administration Sub-Committee Report (SCR), ***Action Plan: Goal 5.4.2)***
	Increased levels of patented and copyrighted goods and services.	1.6.4 Enforce copyright laws and other laws that relate to R&D.	P0	Ministry of Legal Affairs, Ministry of Education, Copyright Association, Intellectual Property Office.	

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
1.7 Narrow the knowledge gap.	Universal secondary education.	1.7.1 Accelerate process to universal secondary education and to improve the quality of teaching and learning.	P0	TLIs, Ministry of Education, Ministry of Science.	Primary & Secondary Education, Youth and Sports, Sustainable communities, Industry & Enterprise.
		1.7.2 Set up an Association to determine what data is required to support educational reform – Use research to enhance the generation of data and decision making to support educational reform.	P0	SEMP Ministry of Education's Statistical Department.	Central Statistical Office
		1.7.3 Work with the Ministry of Planning, Population Unit to evaluate the methodology used	P1	Ministry of Education Statistical Unit, Central Statistical Unit.	Population SCR (Action Plan: Goal 1, Action 1.1.2 pg 1

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		by the CSO in arriving at data on education, including [1]private secondary and tertiary level institutions (See Population Action Plan: Goal 1, Action 1.1.2 pg 1).			
		1.7.4 Streamline tertiary level education to meet market needs and increase participation.	P1	Ministry of Tertiary Education	
		1.7.5 Re-conceptualise the school as a central site of learning in the community.	P1	Ministry of Education Ministry of Planning	

[1] Essential Pre-Condition: Legislation to give Population Unit rights to data from private educational facilities.

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
1.8 Emphasise Science, Technology, English and Mathematics.	Increased pass rates in Science, Technology, English and Mathematics at the CXC and Advanced Levels.	1.8.1 TLIs and other institutions provide remediation and transition programmes, face to face and in distance mode.	P0	Ministry of Education	TLIs, COSTAAT, Pre-university institutions, UTT, TTIT, NIHERST, Roytec, UWI, 6th Form Institutions.

GOAL 2: To expand Tertiary education.

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
2.1 Every student should come out of university: ▪ With skills in his special area. ▪ Capable of creativity, entrepreneurial and innovative skills as well as ethical values. ▪ Prepared for lifelong learning. ▪ Possessing leadership skills.	Increase enrolment in tertiary institutions. Improved access and quality of knowledge centres.	2.1.1 Undertake curriculum reform to streamline the education system.	P1	Ministry of Education, Science and Technology, COSTATT, TTIT, UWI, UWI School of Continuing Studies and 6th Form Institutions, Ministry of Education	Pre-Primary, Primary and Secondary Education Sub-Committee Report, Science & Technology Sub-Committee Report, Industry and Entrepreneurship Sub-Committee Report.

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
	Institutionalisation of Junior Achievers Programme for all Business Studies students.	2.1.2 Introduce holistic education (business ethics, application of theory and practical projects for commercialisation).	P1	Ministry of Education, Curriculum Unit. Secondary schools.	
	Number of Teachers being trained. Health and Family Life Education (HFLE) being taught in schools.	2.1.3 Make health and family life education a part of the curriculum of all educational institutions (See Population Action Plan: Goal 3, Action 3.3.1).	P1	Ministry of Education, Primary and Secondary schools.	See also: Population Sub-Committee Report, Action Plan: Goal 3, Action 3.3.1
		2.1.4 Revise the HFLE curriculum to incorporate HIV/AIDS issues (See HIV Action Plan: Action 1.2.3, 1.2.10, 1.2.11)	P0-P1	Curriculum Unit, Ministry of Health. CARICOM.	HIV Sub-Committee Report, Action Plan: Action 1.2.3, 1.2.10, 1.2.11, 2.1.10, 2.1.13 and Goal 5.3

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		2.1.5 Introduce a system for the continuous training of health professionals in ARV management. (See HIV Action Plan: Action 2.1.10.)	P1-P3	Ministry of Health Ministry of Tertiary Education	Financial Services Sub-Committee Report, Action Plan: Action 1.2.2;
		2.1.6 Integrate HIV/AIDS and OI clinical management in curriculum of all nurses, doctors, pharmacists, nutritionists, and social workers. (See HIV Action Plan: Action 2.1.13.)	P1-P2	All medical training institutions. Ministry of Tertiary Education.	
	Number of personnel trained both locally and internationally	2.1.7 To ensure the development of professional competencies in all national security and public safety agencies.	P1-P2	Tertiary Education, UWI- Sociology, Criminology Management, etc.	National Security Sub-Committee Report, Action Plan: Action 1.2.1.

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		2.1.8 The establishment of degree programmes (B.Sc., M.Sc., Ph.D.) at the University of the West Indies and other accredited institutions specifically tailored to the national security and public safety agencies. (Extracted from National Security Action Plan: Action 1.2.1.)	P2		
		2.1.9 Enhance knowledge centres such as the public library, community centres, and museums into 'user-friendly' information depositories.	P0		Professional associations. Regional Development.

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		2.1.10 Equip knowledge centres with Internet access, and facilities to have group discussions/ dialogues. *(See also Agriculture, Goal 10, Action 10.1.3)*	Po-P1		Regional Development SCR *See also Agriculture SCR, Goal 10, Action10.1.3*
		2.1.11 Tertiary Education sector to align itself to the rest of the service sector by providing services successfully on a regional basis by: ▪ Taking a conscious decision to prepare citizens for job opportunities in other countries	P0-P1	Community Centre groups, Libraries	Ministry of Labour Regional Development Objective 2.1, 2.2

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		▪ Focusing beyond local needs and looking at our capacity to attract and support an international / regional student sector. 2.1.12 TLIs should establish links and partnerships with other TLIs in both developed and developing countries.	P0-P2	NACC, Ministry of Health/ Regional Health Authority, UWI- Faculty of Medical Science, NIHERST	Ministry of Trade, Tourism, International Relations, (See also Industry and Entrepreneurship Action Plan: 1.2.4; 1.2.8)

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		2.1.13 Facilitate not only movement of students, but use marketing strategy to attract students in pursuing tertiary education programmes in areas where T&T possesses clearly defined advantages.	P2	Ministry of Science. Ministry of Education. Private Sector.	
2.2 Increase the number of individuals accessing tertiary education.	Increase enrolment in tertiary institutions.	2.2.1 Expand current tertiary education facilities and technology (Distance Learning).	P0, P1, P2, P3	Ministry of Science, COSTATT, TTIT, UWI, UWI School of Continuing Studies and 6th Form College, Adult Learning Institutions, Private Sector, Corporate Sector.	Public Utilities (Telecommunication) Infrastructure, Macroeconomy.

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		2.2.2 Conduct Assessment of expected capital outlay and operational costs. 2.2.3 Set criteria (including level of enrolment of full time students, number of graduates and innovative responses to demand). 2.2.4 Increase level of direct State funding for the tertiary education sector.			

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		2.2.5 One of our educational institutions should provide training for paralegals on a short-term basis (e.g. 2-3 month courses), legal research, legislative drafting and new areas of law, such as information technology law and economic development law. (See Law Administration Action Plan 1.1.9 and 7.1.8)		UWI, Cave Hill – bring programme to T&T.	Law Administration Action Plan 1.1.9 and 7.1.8. Law Administration Action Plan 4.1.6.

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		2.2.6 To establish a technical training unit to train new and existing staff members in legal and technical issues. (Training to be provided in legal studies as well as Alternative Dispute Resolution, degree in Corporate Law and Diploma in Land Administration. (See Law Administration Action Plan 4.1.6)		UWI, NIHERST	Law Administration Action Plan 3.1.6 and 7.1.8

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		2.2.7 Training in foreign languages. (See Law Administration Action Plan 3.1.6 and 7.1.8)			Tourism Action Plan 2.2.3
	Number of scholarships.	2.2.8 Ensure that across all education levels, tourism is integrated in the curriculum.- Introduce scholarships in this industry. (See Tourism Action Plan 2.2.3)	P1		
		2.2.9 Improve Information and Communications Technology (ICT) to facilitate the transformation of the classroom,	P1-P2		Public Administration

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		the role of the teacher and the role of the student.			
		2.2.10 Increase the role of private industries- sponsorships of students, funding tertiary institute projects (building funds/ sponsorship).	P0		
		2.2.11 Expand number of places at both 6th Form level and TLIs.	P1		
		2.2.12 A rational and comprehensive system for financing, based on medium and long term needs, to facilitate the creation of a forward looking, responsive, tertiary education sector.	P1		

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		2.2.13 Expand, diversify and network tertiary education institutions to regional and international institutions to expand tertiary education access in specialised science and technology, related to productive expansion of the local economy.		Adopt the proposed UNESCO/ COMSEC (1997) Network of Tertiary Institutions in Developing Small States (not yet implemented).	
		2.2.14 Promote exchanges and partnerships among faculty and students regionally and internationally.	P1	inistry of Science, Regional Education - CARICOM	
		2.2.15 Develop a Caribbean equivalent of the Erasmus programme to promote mobility	P0-P1	Council for tertiary education, Ministry of Science, Ministry of	School boards, COSTAAT, MIC, TTIT, UTT, Private

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		of teaching staff and students among academic institutions to support integration at CSME, ACS, or FTAA levels, as part of a general strategy to develop a buoyant higher education sector.		Trade	TLIs
		2.2.16 Develop an institutional framework to meet needs of various sub-groups of the secondary school graduate cohort who have not attained full certificates at CXC or advanced levels: ▪ 'A' level students who do not meet university requirements for the most competitive programmes such	P0-P1	Ministry of Education	Ministry of Science, pre-university- Roytec, 6th Form, TTIT, UTT, MIC, NIHERST

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		as engineering, Medicine, Science, Law and Management and who need access to programmes that would prepare them for other careers linked to investment strategy, diversification objectives and national planning targets. ▪ Students with one pass at advanced level are not allowed access to university and require a 4-year programme at the TLI level. ▪ CXC students with fewer than 5 passes who require remedial training or transitional programmes.			

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		2.2.17 Incorporate individuals who have less than 5 CXC passes into TLIs, who are already in the work force and who want to upgrade their skills and who therefore constitute an additional pool of students for TLIs: ▪ Introduce systems to assess prior experiences and work place learning.	P1-P2	Ministry of Eduction, TLIs, UWI school of continuing studies, Evening University, COSTAAT, TTIT, MIC, Private TLIs	Culture and Attitudes
		2.2.18 Continue/ deepen the secondary school system: ▪ Teaching and learning strategies based on student need to participate in knowledge based, information driven,	P0-P2	Ministry of Education	

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
2.3 To provide high quality, affordable, educational opportunities in a wide range of fields related to the (energy) sector, up to tertiary level.		globalised strategy in which the ability to use knowledge and communicate effectively is a perquisite for success. ▪ National policy on development of Secondary and Tertiary Education and Training. *(See Energy Action Plan: Goal 3, Objective 1, 2 & 3)*		*(See Energy Action Plan: Goal 3, Objective. 1, 2 & 3)*	

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
2.4 Increase demand for technical/ vocational education. (Overlap: Labour- Action 2.1.1, 2.2.3)		2.4.1 Expand and upgrade existing technical and vocational institutes.	P0 – P1	Ministry of Science, Ministry of Education, NTA, TTNVQ	Macroeconomy/ Finance
		2.4.2 Promote and provide pre-employment and training for secondary school graduates.	P1	Ministry of Education Ministry of Science	Private TLIs, Pre-TLI institutions.
		2.4.3 Upgrade the technological and academic skills of the existing workforce through continuous education and training.	P1-P2	Ministry of Education Ministry of Science Private TLIs, Pre TLI institutions, NTA, TTNVQ	
		2.4.4 Promote industry based training and education in	P1-P2	Ministry of Science	Skills Development

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		technical skills. 2.4.5 Promote and develop certification and standards for technical skills 2.4.6 Engage in articulation arrangements with TLIs to provide feeders to professional/ technical and management levels and facilitate further education and development of technical/vocational students. ▪ System of generally accepted standards must be created as part of a framework to facilitate an integration strategy.	P1 P1	Ministry of Education Ministry of Education, NTA, NSDP, TTVQ	Skills development

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		(See also Agriculture SCR Goal 9, Action 9.1.1)			
2.5 Make greater use of IT (particularly at TLIs) for information sharing and increasing dissemination of knowledge in a cost effective manner.	Expansion of distance education at UWIDITE and among ALL TLIs.	2.5.1 Adopt IT for distance education	P1	TLIs, Council for tertiary education	Public Utilities (ICT)
		2.5.2 Expand UWIDITE to serve all UWI member countries to reach sectors of the population who may not have access to post-secondary education opportunities.	P0 – P1	Ministry of Science UWI	Caribbean Knowledge Network

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		2.5.3 Have a simultaneous drive to introduce IT at the basic education system to provide quality interaction regionally (community to community) and even from island to island. *(See also Agriculture SCR: Goal 10, Action 10.1.3)*	Continuous PO-P1: within local schools. P1: community to community. P1-P2: from island to island.	Ministry of Education	Regional Development
		2.5.4 Open learning, involving minimum constraints on access, pace and method of study and	P0-P2		

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		distance learning, using technology to bridge the gap between learner and instructor over time and space and facilitating various modalities for teaching and learning.			
		Upgrade and formally integrate National Distance Learning System[2] into tertiary system to promote the impact of full distance education.	P0-P2		
		2.5.5 Create regional distance education capability.	P0-P2	UWI, regional universities, Univ.	

[2] Network for community-based distance learning centres offering non-formal and education programmes to specific communities.

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
				Colleges, Network of Caribbean University (UNICA), Caribbean Knowledge and Learning Network (CKLN) – 3rd quarter 2004.	
2.6 Access to Loans/ Funding schemes by students.	UWI Distance Education Center: increase enrolment by 5,000 students in the region by 2007.	2.6.1 Continuation of Revolving Loan Scheme, Student Guarantee Loan Fund Scheme, GATE, New Scholarships (pg. 25-26)	P0-P2	Ministry of Science	Macroeconomy Financial Institutions
		2.6.2 Introduce mechanisms to increase the level of support for deserving students so that financial needs other than tuition	P0-P2		

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		are covered: ▪ Full grants to cover accommodation, books, travel. ▪ Partial grants to cover some of the above. ▪ Emergency grants for unforeseen developments.			
		2.6.3 Introduce a transparent, equitable system to determine criteria for assessing public, financial support (corroborated by comprehensive evaluation of student's ability to pay): ▪ Means Test, as designed by TTIT.	P0-P1	Ministry of Science, Council for Tertiary Education	Macroeconomy Private sector
		2.6.4 Review tax regime to	P0-P1	Ministry of Science,	

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		ensure that existing incentives for corporations to support charitable giving are extended to individuals and embassies (N. America and Europe): ▪ Existing fiscal incentives for tertiary education and technical /vocational training should be increased and made as attractive as possible. ▪ Gifts from private sector are eligible for tax benefit. Incentives for corporations to support charitable giving should be extended to individuals and should be increased. ▪ Increase amount of revenue coming from private sector.		Macroeconomy	

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		Rebates should be provided for contributions in cash or kind, including real estate, stocks and shares and intellectual property, among others, made to TLIs registered with the proposed Council for Tertiary Education. ▪ Tax benefits should be provided to organisations that invest in training and development of their staff (National Skills Bill). ▪ Fiscal incentives to individuals for tertiary education should be delivered from the arrangements linked to the tax allowance in relation to interest on mortgages of			

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		$18,000. ▪ Registered Education Savings Plan that facilitates individual savings for higher education through tax credits to the contributor should be introduced.			

GOAL 3: To achieve skills deployment and competency alignment.

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
3.1 Linking investment strategy, diversification strategy and human development strategy.		3.2.1 Establishment of an institution/commission to oversee the entire streamlining of education needs/training	P0	Office of PM, Ministry of Planning, Education, Science & Technology and Tertiary Education	Ministry of Science, Technology and Tertiary Education, Skills Development SCR,

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		needs by sector, in accordance to the vision for T&T.			Macroeconomy SCR, across all sectors.
3.2 Relevance of Curricula in line with national goals and priorities.		3.2.2 Implement policies and funding strategies to steer students to careers identified as priorities.	P0	Ministry of Science, Ministry of Education	Ministry of Planning, MLSME, Business Associations, Chambers of Commerce, etc.
		3.2.3 Develop research agenda to monitor workplace competencies and skills to facilitate ongoing curricular review and reform as well as the flow of information to TLIs to ensure responsiveness.	P1		
		3.2.4 Expand opportunities for education, training and re-	P1 – P2	Tertiary Education (policy framework).	***See I&E Action Plan: Action 1.4.1***

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		training, as well as skills development consistent with the needs of industry. ***(See I&E Action Plan: Action 1.4.1)***		Skills Training.	
		3.2.5 Provide incentives for employers and existing businesses to carry out continuous training of all employees for enhancement of skills to meet new needs. ***(See I&E Action Plan: Action 1.4.2)***	P1	Tertiary Education (policy framework); Skills Training	***See I&E Action Plan: Action 1.4.2***
3.3 Strengthening of developmental links among TLIs to achieve articulate				TLIs. Council for Tertiary Education, Ministry of Science,	

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
and wholesome tertiary education.				Technology and Tertiary Education.	

GOAL 4: To create a seamless tertiary education and training system.

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
4.1 To enlarge the definition of tertiary education to include higher learning. (Anything above 1st degree. - Emphasis on academic, technical, vocational, etc.)	New definition of tertiary education.	4.1.1. Work with the heads of all tertiary institutes to develop the definition of what constitutes tertiary education (Council of Tertiary Education).	P0	Ministry of Science & Technology and Tertiary Education, UTT, UWI, COSTATT, ITT, ROYTEC, Cipriani College, TTHTI, Teachers' Colleges, Technical Institutes, MIC, Academies	Education (primary, secondary, etc.), Culture & Attitudes

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
4.2 Facilitate articulation which enables successful students from one TLI to enter programmes in another, higher level TLI with advanced standing.		4.2.1 Establish a seamless system, entailing movement of individuals in the education system horizontally and vertically: ▪ Complementary programmes. ▪ Supplementary programmes. ▪ Feeders programs (pg 15-16).	P0	Ministries. Of Science, TLIs	
4.3 To promote sustainable growth and development of	Revised funding approach for tertiary	4.3.1 Identify funding: undertake sound research to determine	P0	Ministry of Education (Teacher Professional	

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
the tertiary education sector.	institutions.	medium and long-term needs of the tertiary sector as a whole, and the needs of individual institutions including those like UWI that are in a unique financing category.		Development Unit) and Finance; UWI and other tertiary institutions	
	Trained tertiary education Administrators.	4.3.2 Make arrangements for training professional tertiary education Administrators.	P0 - P1		
		4.3.3 Expand and upgrade educators (instructors, lecturers, teachers, lab assistants, etc.) education and training. Emphasise job re-training to meet changing demands of the market place (labour market).	P0, P1, P2, P3		

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		Continuous upgrade of the educators of the nation is critical to competitiveness.			
4.4 To facilitate on going curricular review and reform as well as the information flow to TLIs.	Curricula review/ reform.	4.4.1 Develop a research agenda to monitor workplace competencies and skills.	Po-P1	Council for tertiary education	
	Career guidance programmes.	4.4.2 Implement policies and funding strategies to steer students to careers identified as priorities.	P1		
4.5 To develop quality standards for programmes offered by local TLIs, as well as overseas	Accreditation Council of Trinidad & Tobago.	4.5.1 Establish Accreditation Council to meet global quality (CARICOM Regional Accreditation Agency).	P0, P1, P2	Ministry of Science, Ministry of Education, TLIs, CARICOM Regional Accreditation Agency	IR

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
qualifications.		▪ Establishment of seamless, efficient, internationally recognised system of post secondary and tertiary education in CARICOM countries. ▪ Promotion and facilitation of movement of adequate numbers of people with high-level skills among CARICOM countries. ▪ Securing and maintaining international recognition, and negotiating and concluding international agreements with third part entities for mutual recognition.			

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		4.5.2 Introduction of a comprehensive national and regional system of articulation and accreditation at a national and regional level.			

GOAL 5: To create an effective management system for tertiary institutions.

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
5.1 To develop the capability to manage the tertiary sector and individual institutions (move towards increasing institutional self management).	Organisational structure.	5.1.1 Create an organisational structure that facilitates collaboration among Ministry, agencies, individual TLIs and the public sector.	P0	Ministries, agencies, individual TLIs and Public Sector.	
5.2 To improve research capacity and strategic planning capacity of sectors to manage effectively.	Training programme.	5.2.1 Introduce training programmes on tertiary education administration.	P1	Ministry of Science, TLIs,	

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
5.3 Create legal mechanisms for overseeing the tertiary education system.	Legal mechanisms- creation of independent council.	5.3.1 Create an independent council for tertiary education reflecting its constituency and including public and private sector members (standards and outputs).	P1-P2	Collaboration between Ministry of Science & Ministry of Education	Governance

GOAL 6: To consolidate indigenous knowledge, contribute to global knowledge and to establish competitive niches in the international arena.

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
6.1 To develop a national repository capacity for indigenous knowledge spanning culture, folklore, local flora and fauna, environment, etc.		6.1.1 Strengthen the National Information System and designate select institutions as national repositories for specific disciplines and knowledge areas. 6.1.2 Encourage analysis, systematisation and publication of indigenous knowledge and its incorporation into the learning systems of the country.		Ministry of Science, Universities and Science institutions Ministry of Science, Universities, science and research institutions	Central Library Information centres. NALIS

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
6.2 Create knowledge products that have global currency which open niche intellectual and/or market opportunities.		6.2.1 Encourage the university network and tertiary institutions to develop modular courses that can be intellectually franchised in areas such as design (including Caribbean architecture and costume design), Carnival arts, calypso music, steel pan music, steel pan production, natural and integrated medicine.		Ministry of Science, Universities, science institutions	
		6.2.2 Provide funding for universities and scientific institutions to undertake research for product development in areas such as indigenous medicine,		Ministry of Science	Universities, science institutions, local private sector. (See link to STI with regard to

Objectives	Measures/ Indicators	Actions	Time	Owner	Linkages
		bio-genetics, local cosmetics, etc. 6.2.3 Support, in strategic alliance with third parties, genetic re-engineering and product development for indigenous varieties of tropical fruits, flowers, endangered (and edible) fauna/ wild meat and the patenting of these products to secure the national patrimony/ hegemony.		Ministry of Science, Universities, science institutions	funding options.) Agriculture, Environment

Critical Success Factors

- Government must define clear, unambiguous policies on tertiary education and the Ministry of Tertiary Education must play a strong policy and co-ordination role in the initial stages.

- The establishment of an effective and relatively autonomous Council for Tertiary Education which would take implementation responsibility for the tertiary education framework and allow the higher education institutions to evolve within a competitive but collaborative environment.

- Close articulation of the objectives of higher education institutions with national development and sectoral advancement goals, placing strong emphasis on HRD in areas of competitive advantage for Trinidad & Tobago.

- Attention to the provision of a strong infrastructure (with strong IT nervous system) for the network of tertiary institutions.

- Early attention to building capacity for tertiary management, instructional capability (with distance learning/ teaching skills), and applied research competencies as a necessary pre-condition to the creation of capable tertiary institutions.

- Access to different modalities of financing for accessing tertiary education opportunity, ensuring that no citizen is left out.

Essential Pre-Conditions

- A well conceived framework for the education system:
  - The primary and secondary system needs to be strengthened so that students have an overall stronger base when they enter the tertiary level;
  - Reform of the secondary school system;
  - Strengthen Math and English teaching within the primary to secondary school systems; and

- Links between the primary, secondary and tertiary systems and the clear progression from one level to another must be formalised and enshrined in public policy and legislation.
- The need to review performance and capacity of individual, existing, higher-education institutions to ensure that the necessary institutional reforms and institutional strengthening measures are taken at that level so that the network is able to function effectively and seamlessly.