HARARE INSTITUTE OF TECHNOLOGY

TRANSFORMATION
2003 - 2005

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The Innovation and Technopreneurial University   **www.hit.ac.zw**

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In February 2003, the Ministry of Higher and Tertiary Education setup a Transformation Committee to craft a roadmap for Harare Institute of Technology to become a degree awarding institution. The following is a compilation of the activities and operations of the committee which resulted in the formulation of the Transformation Plan.

FOREWORD

The transformation of Harare Institute of Technology (HIT) started in May 2003 when the Ministry of Higher and Tertiary Education appointed a Transformation Committee to spearhead the project. The mandate of the committee was to put in place structures and instruments that would create a roadmap for HIT to become a world class technology university. Three major sets of legal instruments were identified as key:

a) The HIT Act, Statutes and Ordinances;
b) The Labour Relations Act;
c) The HIT Disciplinary Code.

In this plan, the Committee envisaged a HIT that aspires to be Zimbabwe's most energetic and responsive Institute, offering unparalleled educational opportunities for those seeking highest quality undergraduate, graduate, and continuing personal or professional enrichment. HIT also aspires to be at the forefront of growing the nation's industrial base and natural resources beneficiation.

Strength and Strategies

Through this plan, the Harare Institute of Technology will provide a foundation for strategies that allow for the formation of a new model of technological education.

These include: -
- Support from the government, industry and the local community;
- Basic infrastructure;
- Basic equipment;
- A good student base;
- Trainable technical human resource base with basic skills;
- Institute's strategic location.

Challenges

In the short time the Committee has operated, the future of Harare Institute of Technology continues to be characterised by change and some uncertainty. This environment should be welcomed for it gives the Committee the freedom to shape the future of the Institute in a way that is both meaningful and appropriate. The challenge is how to position the Institute for the efficient discharge of this mandate. Whilst HIT enjoys multiple advantages, it is essential to identify and address challenges which include: -
- The need to develop HIT as a leader in technology based on multi-disciplinary research and learning. In doing so, it should take advantage of alliances with the growing technology companies and research institutions in the country and beyond;
- The need to meet the lifelong learning demand of non-traditional and off-campus students requires that HIT looks beyond the traditional means of delivering instruction. Not only does HIT need to extend its curriculum in partnership with other national and international universities and institutes, it must also learn how to build new configurations of learning through these technologies. HIT should develop into a laboratory for delivering a truly global learning experience;
- HIT is being developed into a diverse and complex institution that specialises in: Science, Engineering, Technology, Technopreneurship, Business and Management Sciences, as well as professional and collaborative programmes including technical pedagogy. At its heart, the academic strategy must reflect and further the values that make HIT both great and unique. The rich variety of academic enterprise at HIT will create a setting uniquely conducive to creative thought and insight, through the confluence of different perspectives and paradigms.
- Therefore, to facilitate the process and to underpin its credibility, HIT must position itself as a state of the art institution, at the frontline of availing new technologies responsive to national strategic areas and capable of developing and delivering programmes flexibly, effectively and efficiently on and off campus.

As the Institute moves forward, it is essential to have a shared vision of its future. The aim is to make HIT one of the premier higher education providers nationally and beyond. The support for innovation and for the development of the national industry through research and continuing education programmes will need to be strengthened. In seeking to address the

concerns and challenges arising from a changing environment, there are a number of imperatives for HIT:
- All our students from across all programmes will take mandatory technopreneurship courses so as to inculcate in them entrepreneurial competencies and attributes

As HIT progresses from undergraduate to Masters and Doctorate/Research Institute – Extension Status, a host of issues and challenges will present themselves. These include enhancement of the research infrastructure, increasing library resources, development of equitable lecturing workloads, generation of a graduate culture on the campus, and maintaining commitment to excellence in teaching and to undergraduate education.

HIT will: -
- Hire well qualified academics in their disciplines;
- Increase support for research, scholarship, and creative activity;
- Create awards for academic/faculty scholarship and development to promote excellence in areas beyond teaching;
- Expand collaborative research and exchange programmes for academic staff with other institutes and universities in the region and around the world;
- Establish student awards for academic excellence;
- Articulate the distinctiveness of HIT and its mission.

While HIT aspires to achieve national and international standards of excellence in its instructional, research and public service programmes and the quality of its staff, it has a particular obligation to use its human and other resources to respond to the needs of the Nation,- including those related to economic development and cultural enrichment of the citizenry.

Information technology (IT) serves as an enabling tool for every function of the Institute, including the delivery of instructions, the conduct of research, and the administration of records transactions. HIT will make a substantial investment in hardware, software and networking. The campus should be interconnected by high speed optic fibre and wireless networks.

HIT will commit itself to the vision of scholarly inquiry as one of the cornerstones of the Institute. To that end, the Institute will foster an environment in which research and creative activity flourish. The Institute will also facilitate scholarly contributions to learning discovery and service and stimulate research and creative productivity of scholars. Consequently, academic units must articulate a research plan that contains a vision of how they will contribute to excellence in research and creative activity.

Key to fulfilling HIT's vision and mission is the inculcation of a research driven learning culture and research informed teaching approach throughout the Institute at course, department, school and management levels. The intention is to ensure that graduates at all levels are provided with the capacity of continually enhancing their knowledge base through the application of research techniques. This can only be achieved where research impacts on all aspects of the learning experience within the Institute.

The integration of research into the teaching process ensures that research is considered a natural part of the learning experience. The Institute's research strategy will achieve, enable and support the following initiatives The Technology Centre and Technopark, will be a focal point for our private industry research and technology interactions, with the objective of fostering mutually beneficial commercial and research interactions and transfers of technology between HIT and the private sector that result in expanded capabilities for all parties. HIT will endeavour to advance the scale and depth of research, built on its research strength to fuel through the Technopark the development of high technology companies, which in turn, enhance the competitiveness of Zimbabwe's economy and expand the intellectual capacity to the nation.
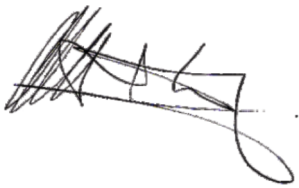
HIT will have a Science Park Project whose main objective will be to bring together ideas and people with knowledge and financial strength. The idea is to maximise development by minimising the time between invention to marketable product stage with high economic return. The other motivation is the rejuvenation and growth of the industrial sector through the incubation and promotion of start-ups and business development in defined technology areas whilst promoting applicational research and development.

Through Inquiry and Discovery, we will recognize that the contributions of each one of us are both essential and inseparable: no group can excel without the support of the other, and each must have adequate resources for the enterprise as a whole to succeed.

A well-defined concept of technopreneurship and Technopreneur needs to be established before enforcing strategies towards the creation of a technopreneurship culture in Zimbabwe. Technopreneurship is not a product, but a process of synthesis in engineering the future of a person, an organisation, a nation and the world. It requires institutes/universities and in-site professional development programmes and training to produce strategic thinking technopreneurs who will have the skills to succeed in a rapidly changing global environment. HIT will be at the centre of hi-tech enterprise development and start-ups through its technopreneurship and Technology centre interventions. Social responsibility and sustainability will be imbued through HIT's technopreneurial spirit across all schools and within the Science Park.

Given the demands brought about by the proposed transformation, Harare Institute of Technology will have to link all aspects of planning together by balancing the physical development of the campus with the strategic initiatives. A long range Master Plan, which provides the framework for the facilities that support excellence in education, research and innovation and service, and the guidance of a strong capital programme will be developed.

We must ensure each element of the academic enterprise – teaching, research and service continues to maintain the HIT standard of excellence. This requires us to recruit and retain the best people from the full talent pool, and to provide the resources they need to excel. We need to build a trust-based corporate culture focused on commitment, contribution, and continuity among our employees, customers, and partners. This culture must be a source of qualitative pride. We must grow from the inside out. Although a university by definition is heterogeneous, it is most effective when its members share a common framework – an institutional vision and sense of mission for what is to be accomplished and who is to be served. HIT will promote the creation of an environment and operational structure and practices, which facilitate and enhance dynamic and participatory management while fostering a culture of creativity, innovation, adaptability and autonomy.

Eng Quinton Chamunorwa Kanhukamwe

TASKFORCE CHAIRMAN

1.0 BACKGROUND INFORMATION

1.1 Introduction

Harare Institute of Technology (HIT) was established in 1988 as the National Vocational Training and Development Centre (NVTDC). Its goal was to systematically impart skills and knowledge required in preparing adults to become creative skilled workers who can sustain the national economy, by providing maintenance and production services. Since then, the institution has been operating like any other Technical college in the country. It has been producing artisans capable of operating and maintaining machinery in industry with no research or generation of new technology related knowledge.

The institution has been offering courses up to National Certificate (NC) Level in: -
- Automotive Engineering
- Electrical Engineering and
- Mechanical Engineering

The Institute is being transformed to an Institute of Technology which will be involved in technological research and produce technically biased graduands at Bachelors, Masters and Doctoral levels in line with the Hon. Minister Dr S.T. Mombeshora's announcement on 20 February 2003.

However, in preparation for the transformation, the institution was advised not to enrol new students in the year 2002. Therefore, the institution will gradually phase out the NC programmes as it transforms into an Institute of Technology.

1.2 Rationale for Decision to Transform HIT

With the establishment and expansion of other technical colleges in the country, and their transformation into Polytechnics, the Ministry of Higher and Tertiary Education decided to transform the operation of Harare Institute of Technology to a proper Institute of Technology as its name implies. The role played by Harare Institute of Technology in augmenting the training of manpower is appreciated and it has fulfilled this role satisfactorily. Other institutions offering the same training programmes can carry on this function and still meet the manpower requirements of the country.

The transformation of the institute will promote research and development as well as transfer and commercialisation of technology whilst facilitating the dissemination of these outputs to the public and industry for adoption. Scientific and technological capacity will be enhanced so as to assist industry to improve its operational and productive efficiency as well as exporting capabilities. Strategic partnerships and collaboration with relevant local, regional and international organizations will be strengthened.

The new mandates for Harare Institute of Technology must be to facilitate and conduct research, design and technology development and its transfer for all the sectors of the economy, collaboration with universities and research institutes and the production of high technical level manpower and lecturers for Polytechnics. For all this to take place and have a great multiplier effect, the teaching and training at HIT will have a mandatory pedagogical component for those who would be recruited to lecture in Polytechnics. On the other end Harare Institute of Technology will transform scientific knowledge into tangible products leading to new inventions and improve products for the benefit of society.

In order to achieve the transformation of HIT, the Permanent Secretary for Higher and Tertiary Education, Dr W.T. Mbizvo set up a Task Force whose overall task was to come up with a functional plan for the transformation of HIT so that it can fulfil the above stated mandates in line with the Minister's February 20, 2003 pronouncements. This document is a report by the taskforce emanating from its deliberations and consultations with various stakeholders on the way forward for HIT.

1.3 The Environment for which we are Planning

Harare Institute of Technology is a major player in the national economic and social development. As an educational Institution, and in its teaching role, HIT has provided vocational education and training that have raised the national's skills and qualifications profile, responding to the skills needs of local employers in a flexible manner. Consequently, over the years close and meaningful ties with industry across its range of programmes have been developed.

HIT is being transformed in order that it can produce manpower with the requisite skills and competences capable of adding value to our local resources as well as creating wealth through the development and commercialisation of technology amongst other expectations. Consequently HIT will be expected to lead in:

- development of technological capabilities and self-reliance in strategic and critical areas, thereby beneficiating our natural resources and maximising on their use.
- The promotion of development and application of export competitive, intermediate and appropriate technologies that are efficient.
- Technology transfer and harnessing of this technology so as to promote development and the addressing of socio-economic challenges.
- Promotion of efficient utilisation of energy resources and its access particularly renewable sources of energy.
- Promotion of information technology in order to assist the nation move towards a knowledge economy.

HIT is now challenged to recognise emerging strategic imperatives and to respond to relevant national and economic demands by: -

- Becoming a more proactive agent for economic development through the provision of employment opportunities generated by research programmes, other industry linkages and the commercialisation of research outputs;
- Adopting a proactive approach to enhancing the skills of the labour force by forging more direct links with industry and professional bodies;
- Emphasising on lifelong learning through the provision of a range of learning opportunities that will attract school leavers, mature students and the employed;
- Ensuring the institute keeps pace with developments in information and communication technologies and other areas of national strategic importance;
- Developing diversified funding streams to help support its own future growth and maximising resources through efficiency gains;
- Capacity building for polytechnics through production of lecturers.

2.0 HIT'S VISION AND MISSION

2.1 Our vision is bold: *"To be the leading institution for the development, incubation, transfer and commercialisation of technology and manpower development for greater national industrialisation".*

2.2 Our mission is clear: *"To provide the nation with a scientific and Technological, knowledge and skills base, innovation and high level technical manpower with a view to shaping a prosperous and sustainable future of Zimbabwe.*

2.3 Our Core Values

HIT will seek to ensure that it operates as a supportive welcoming institution internally for staff and students and its external face with the community and industry. HIT will exhibit the following values;- leadership, professionalism, honesty, integrity, expert knowledge, technopreneurship, innovativeness, commitment, patriotism, competitiveness, responsiveness and unhu/ubuntu.

2.4 Strategic Advantages and Strengths

Harare Institute of Technology strengths provide a foundation for the strategies that will allow us to build a new model of technological education.

These include:
- Support from the government, industry and the local community
- Basic infrastructure
- Basic equipment
- A good student base
- Trainable technical human resource base with basic skills.
- Institute's strategic location.

2.5 Challenges

Whilst HIT will enjoy multiple advantages, it is essential to identify and address our challenges which include:
- HIT will need to develop itself as a leader in technology based multidisciplinary research and learning. In doing so it should take advantage of alliances with the growing technology companies and research institutions in the country and beyond.
- The need to meet the lifelong learning demand of non-traditional and off-campus students requires that HIT look beyond the traditional means of delivering instruction. Not only does HIT need to extend its curriculum through distance learning in partnership with other national and international universities and institutes, it also must learn how to build new configurations of learning through these technologies. HIT should develop into a laboratory for delivering a truly global learning experience
- Huge skills deficiency and limited industrial exposure of staff.
- Under qualified staff for new programmes.
- Inadequate library resources and information systems.
- Conditions of service will need to be competitive
- Inadequate modern and inappropriate equipment for new programmes.
- Inadequate funding for college
- Inadequate recreational facilities.
- Very poor transport services.
- Information technology services almost lacking.

2.6 Opportunities
- The development of mutually beneficial linkages with Research Institutions like SIRDC and Higher Education Institutions, e.g. Universities and Polytechnic colleges.
- Development of Industry institute partnerships in research, product development, and improvement etc.
- Development of campus companies (Business incubators).

- Provision of consultancy services to industry.
- Increased government and donor funding.
- Production of lecturers for Higher Education Institutions.
- Production of high-level technical manpower.
- Technology development and its commercialisation.

2.7 Threats

- Inadequate funding for transformation and equipmentation.
- Staff relocation.
- Scarcity of expertise/lecturers for the various degree programmes and units.
- Uncompetitive remuneration

3.0 CRITICAL AREAS OF TECHNOLOGY THAT CAN BE ADDRESSED THROUGH A UPGRADED HIT

3.1 Areas of National Importance

The following areas are considered as critical in the industrialisation and development of the nation:
- Energy Technology
- Cellular Telecommunications technology
- Manufacturing and Industrial engineering
- Agricultural and irrigation engineering
- Land Utilisation and Agrarian Technology
- Process Engineering
- Water and Sanitation Engineering
- Information and Communication Technology
- Civil and Construction Engineering
- Wood technology
- Plastics and Rubber Technology
- Clothing and Textile Technology
- Biotechnology and Pharmaceutical
- Electronics and Computer Engineering
- Medical Engineering
- Design Engineering
- Chemical Engineering and Food Processing
- Environmental Engineering
- Business – Technopreneurship/E-Business/E-Commerce.

However, these areas cannot all be tackled or addressed at the same time. Therefore, given the necessary resources the transformed HIT will focus on priority areas first as well as establishing centres of excellence in these and other areas. The Various degree programmes that will be introduced for didactical purposes will be linked to appropriate centres of excellence and to SIRDC for Research as well as project supervision.

3.2 Key Priority Areas.

Harare Institute of Technology will focus on the following areas:
Energy Technology
- Renewable
- Fuels
- Electrical

Industrial Technology and Engineering
- Industrial Engineering
- Agricultural Equipment Design and Manufacture
- Mechanical Materials Engineering
- Manufacturing Engineering
- Automotive Engineering
- Construction Engineering
- Building
- Architecture
- Quantity Surveying

Electronics, Information and Communication Engineering and Technology
- Cellular Technology
- Software and hardware technology
- Internet technology
- Computer Science

Process Engineering
- Plastics & Rubber

- Chemical/Pharmaceutical development programmes
- Textile Technology
- Mineral Processing
- Food processing.
- Biotechnology/Pharmaceutical

Business
- E-Business
- Technopreneurship development programmes
- Supply chain management
- Export development programmes
- Business advising and consultancy services
- Conducting research on entrepreneurship development and studies.
- Acturial Sciences

3.3 Strengthening Engineering Education

One of the major priorities of Harare Institute of Technology will be the development of adequate human resource capacity with an optimum mix of capabilities to generate and apply research based on the needs of society, and to cultivate and nurture a culture of research in all sections of the society.

In a fast moving, rapidly developing technological world with employers continually demanding greater improvement, enterprise and innovation, staying ahead in one's chosen profession can be a fulltime job. The need to inculcate these essentials in our engineering education cannot be over emphasised. The Harare Institute of Technology will seek assistance in this regard for a professorial UNESCO chair in Technology to assist HIT in the development of sound facilities and systems including teaching, research and innovative activities so as to strengthen engineering and Technology Education. One of the major tasks for the chair will be the development of a Masters in Technology Programme.

4.0 ACADEMIC PORTFOLIO

4.1 Programmes to be offered

The programmes to be offered at HIT will be geared towards the production of an industrial technologist equipped with greater depth and proficiency in his/her area of study, in industrial research and design skills as well as technopreneurial skills and competencies in industrial management. Pedagogical skills will be imparted to those being developed for lecturing and training posts in Higher Education Institutions and Industry.

B.Tech, M.Tech, D.Tech and Research programmes shall be derived from key priority areas.

These programmes will emanate from critical skills shortage and strategic areas that the nation needs to develop in order that we can speedily contribute towards the beneficiation of the country's natural resources, as well as technology development and its commercialisation and accelerated industrialisation of the nation.

4.2 Levels of Programmes to be Offered

- Pre and Post graduate diploma and certificate.
- B.Tech
- M.Tech
- D.Tech
- Research degrees

The institution will facilitate entry into the programmes from clients with various technical academic and professional qualifications. National certificates, National Diplomas, Higher National Diplomas and 'A' level passes or their equivalents will be accepted as entry qualifications at approved levels. Short courses for continuous professional development as well as resharpening of skills and exposure to latest technology trends will be offered through the various departments. Courses on land preparation and administration, mechanization, processing, storage, transportation, irrigation and environmental management to mention but a few will be offered according to needs and demands in support of the agrarian reform.

5.0 RESEARCH, DEVELOPMENT AND INNOVATION

5.1 Research Strategy

Key to fulfilling HIT's vision and mission, is the inculcation of a research driven learning culture and research informed teaching approach throughout the institute at course, department, school and management levels. The intention is to ensure that graduates at all levels are provided with the capability of continual enhancement of their knowledge base through the application of research techniques. This can only be achieved where research impacts on all aspects of the learning experience within the institute. The integration of research into the teaching process ensures that research is considered a natural part of the learning experience.

The institute's research strategy will achieve, enable and support initiatives to:
- Establish and monitor the performance of internationally recognised Research, Development and Innovation Centres, which reflect the strategic research goals of the institute.
- Develop high impact applied and strategic research.
- Enable basic, fundamental research, which is of an international reputation.
- Develop practice based and inter-disciplinary research.
- Create near-market satellite organisations that will enable technology transfer from research outcomes and facilitate HIT to develop diversified funding streams through commercialisation of research outcomes.
- Facilitate the identification of appropriate partners for collaborative and co-operative research on a national and international basis.
- Ensure research knowledge is published and disseminated and promote its influence on national policy.
- Support organisation of conferences of record.
- Ensure all academic courses incorporate research driven teaching and research literacies.

A research council will be established composed of active researchers from within the institute. It shall be tasked with the formulation and ongoing review of the institute's strategic research policy, identification of appropriate research areas of activity, identification of impediments to progress, and the drawing together of the research portfolio within the institute to provide for leadership.

5.2 Intelligent Development of Effective Information and Educational Technology

HIT should become a national leader in the use of educational technology. Our campus should be highly interconnected by high speed wired and wireless networks. All students and staff should have access to computing systems. HIT should therefore, be highly computer equipped and train staff to deliver web-based and other learning programmes to students internally and externally in industry and beyond. Electronic technologies in the delivery of course materials should therefore, find widespread use on campus.

In the same way that these technologies are influencing the way our academics teach and our students learn, they are dramatically affecting the way that research is conducted. A rich and robust technology infrastructure has become an essential element of research for many disciplines and must be present if Harare Institute of Technology is to live up to the nation's expectations and attract the best academics and researchers.

An Information and Technology Services Centre will need to be established to operate academic and administrative computing systems, web servers, student information systems, supporting of the campus data network, web page development, PC repair amongst other functions.

5.3 Science Park Project

The main objective of this initiative is to bring together ideas and people with knowledge and financial strength. The idea is to maximise development by minimising the time between invention to marketable product stage with high economic return. The other motivation is the rejuvenation and growth of the industrial sector through the incubation and promotion of start-ups and business development in defined technology areas whilst promoting applicational research and development.

The activities of the Science Park will entail the assisting of academics and students to be project oriented, creativity driven, understand all the stages of invention, including idea generation and development, proto-type development and proof-of-concept, the patent process and commercialisation.

This project will therefore, encourage the following:
- Promotion of innovation activities.
- Development of key industrial technologies through collaboration, consultancy and partnerships.
- Generation of exports in international trade services and products.
- Technology transfer and international cooperation in R & D.
- Creation of campus companies.

5.4 Facilities Improvement and Expansion

Given the demands brought about by the transformation of HIT, Harare Institute of Technology will have to link all aspects of planning together by balancing the physical development of the campus with the strategic initiatives. A long range Master Plan, which provides the framework for the facilities that support excellence in education, research and innovation and service, and the guidance of a strong capital programme will be developed. As we improve and expand the existing facilities, we need to:
- Develop the campus in a way that supports the larger aspirations of the institute by encouraging the development of a sustainable campus community, creating distinctive architecture and open spaces, and setting standards for others to emulate. Build facilities using environmentally responsible design and practices.
- Enhance the educational environment through the transformation of the library and other appropriate facilities into inter-active learning centres employing the latest technologies.
- Create state-of-the-art research facilities that are a "bridge" between industry and the academic environment, incorporating opportunities for industry participation and collaboration between the activities of basic and applied research.
- Use strategic collaborations to expand opportunities for acquisition of facilities and equipment.
- Equip the library with theft proof security systems, procure more books and add networked computers for online access to international journals, etc.

5.3 Technology Education Centre

The Technology Education Centre will offer programmes to all those interested in teaching and researching at Higher Education Institutions. The programmes offered by this centre will impart pedagogical skills. It is intended by this centre to produce lecturers for Polytechnics and Universities.
Postgraduate certificates, Diplomas and eventually Masters degrees will be offered through this centre. The certificate will comprise of two modules namely: -
- Learning and teaching in higher education
- Designing curricula and assessment strategies

The Diploma will offer four modules namely: -
- Problem-based learning
- Online learning
- Key skills and career management
- Research methods in higher education

The Masters degree programme will allow students to carry out an educational research project which will combine academic rigour with personal and professional relevance.

Participants will experience three different models of learning in order to be comfortable implementing and adapting these models in their own teaching. The certificate uses "Experiential Learning", the Diploma uses "Problem-based Learning" and the Masters uses "Research-based Learning".

5.4 Technopreneurship Developmemt Centre

The Technopreneurship Development Centre (TDC) is one of Harare Institute of Technology`s Strategic Business driven by the philosophy that technopreneurs can be created and developed with appropriate business technopreneurial skills, attitudes and motivation.

Through its courses, the TDC will inculcate technopreneurial values amongst HIT students in order to develop knowledgeable and technological entrepreneurs. It also enhances the capabilities of new and existing entrepreneurs through techno-preneurial development programmes

Center Structure

The centre will comprise of academic and administrative units. The academic unit will offer technopreneurship development courses to the corporate world and government ministries, Parastatals and NGO's. It will offer entrepreneurship studies at undergraduate and postgraduate level.

Technopreneueship Programme

TDC offers compulsory technopreneurship courses to all first year and second year undergraduate students. It also offers the following postgraduate programmes:
- MSc in Strategy and Innovation
- M.Tech in Technology Management
- B.Tech in Technopreneurship Development
- Postgraduate Diploma in Technopreneurship Development
- Postgraduate Diploma in Project Management
- Customised Training Program

The B.Tech degree and the Postgraduate Diploma programmes offer a comprehensive overview of the major elements of high technology entrepre-neurial activity, including evolution and planning of new business, intellectual property protection, financing, product planning and development, team building, product development, marketing and operational management issues, alternative models for revenue and growth.

The Postgraduate Diploma in Project Manage-ment offers a practical hands on approach to pro-ject management in solving project related prob-lems by ensuring the efficient and effective utili-sation of resources.

The TDC regularly conducts short-term develop-ment programmes or some specific management of technology topics for the public. In addition, the Centre also conducts customised programmes for organisations tailored to their specific training needs. Past programmes organised and conducted by the centre include:
- New Venture Creation
- Leadership
- Team Building
- Product Planning and Development
- Intellectual Property Management
- Dimensions of Business Growth
- Project Management
- Foreign Market Entry Strategy
- Management of Change

6.0 FACULTIES/SCHOOLS AND CENTRES ENVISAGED FOR 2004

The following faculties/Centres will be opened:

Faculty/School	Year
Engineering	2004
Science	2004
Built Environment	2005
Business	2005

Centres/Units	
Technopreneurship Development Centre	2004
Science Park	2004
Technology Education Centre	2004
Information Technology Services Centre	2004

The Institute's student population is expected to increase as follows:

YEAR	NUMBER	
	Undergraduate	Graduate
2004	225	50
2005	725	150
2006	1 250	300

Staff Requirements

YEAR	NUMBER	
	Academic staff	Non academic staff
2004	81	65
2005	99	77

7.0 PHASED IMPLEMENTATION OF HIT TRANSFORMATION – WORK PLAN

Phase I (Up to end of 2003)
- Hold workshop on the formulation of Transformation strategy.
- Develop Transformation and functional plan
- Interim and recurrent budget for 2004 and PSIP Bids drawn up- June 30
- Assessment of available facilities and equipment.
- Development of fundraising project proposal for research, teaching and business incubation services.
- Draft HIT Bill developed and presented to the Permanent Secretary- Oct 31
- Refurbishment of administration and classroom blocks begins
- Workshop on program structure and regulations for B.Tech & M.Tech
- Initiation of affiliation discussion with NUST – November 30
- Procurement of library books
- Evaluation (December 2003)

Phase 2 (Up to end of 2004)
- Recruitment of core staff continued
- Procurement of equipment, furniture, library books and consumables.
- Establishment of Information Technology Services center
- Refurbishment of current buildings continued
- Development of Master Plan for Institute
- Recruitment of postgraduate students (March/April)- Industrial & manufacturing eng., Electronics eng , Computer & Energy Technology.
- Recruitment of undergraduate students (August/September)
- More land for expansion acquired
- Establishment of Teaching & learning center
- Phasing out one NC program group
- Establishment of initial Science Park structure
- Staff requirements reviewed
- Put together comprehensive budget for 2005
- Evaluation

Phase 3 (2005)
- Phase out the last NC programmes
- Introduction of more Technology degree programmes & MTech in Financial Engineering
- Establishment of informatics center
- Recruitment of undergraduate and postgraduate students continued
- Construction of new facilities begin
- Staff requirements reviewed
- Equipment requirements reviewed
- Evaluation

8.0 CONCLUSION

Harare Institute of Technology is entering a new era, one that shows great promise. More than ever in its history, HIT is poised to build learning and research communities that will be settings for national innovation. The detailed consultations that have contributed to this report provide substantial evidence of this success. It has taken into consideration the concept paper on the Technical and Vocational Education and Training (TVET) system by the Association of Principals of Polytechnic and Technical Colleges.

The assistance and support UNESCO is rendering towards HIT transformation will go a long way in accelerating this process. Just as our planning reminds us of those who have built HIT, it embraces the responsibility we have to future generations to bring about a vibrant institute that will participate and contribute in shaping the future of technological education and technological innovation and enterprise in the nation.

9.0 APPENDIX

FUNCTIONAL PLAN

OBJECTIVE 1: TO ESTABLISH A LEGAL FRAMEWORK FOR AWARDING DEGREES

RESULT: Legal Framework Established (Charter Granted)

ACTIVITY	RESPONSIBLE	TIMEFRAME	RESOURCES	PERFORMANCE INDICATOR	TARGET LEVEL
1. Identify Existing Charters	Director HIT	By 25 May 2003	Literature on Charters in NCHE Office and Universities	Copies of Charters in Director's Office	At least 2 from State Universities and 2 from Pvt Universities
2. Analyse The Charters	Taskforce	By 15 June 2003	Photocopying Facilities	Charters Analysed	All Charters (4) Analysed
3. Develop Draft Charter for HIT	Taskforce	By 15 June 2003	T & S Computer Stationery	Draft Charter Produced	One soft copy and one hardcopy agreed and produced
4. Present Draft Charter to Secretary	Director	By 30 June 2003	-	Draft Charter Handed to Secretary	Draft Charter Accepted by Secretary
5. Approval by Parliament and Gazetting	Secretary Minister	31October 2003	-	Charter Gazetted	Charter passed by Parliament and Gazetted

OBJECTIVE 2: TO TRANSFORM HARARE INSTITUTE OF TECHNOLOGY FROM A TECHNICAL COLLEGE TO A DEGREE AWARDING INSTITUTE

RESULT: Harare Institute of Technology Transformed

ACTIVITY	RESPONSIBLE	TIMEFRAME	RESOURCES	PERFORMANCE INDICATOR	TARGET LEVEL
1. Phase out technical college programmes	Head Office	By May 2005	Budget	No Diploma Certificate programmes by 2005	All HEXCO programmes phased out
2. Establish administration structure for the new Institute	Director Ministry NUST	By 30 September 2003	Planning budget	Organogram structure in place	All critical posts agreed on
3. Allocate financial resources	Ministry	31 May 2003	Interim Budget	Funds allocated	All requested funds available

NB: HIT should be affiliated to NUST and operate within NUST Charter during the transitional period.

OBJECTIVE 4: TO PROVIDE TECHNICAL MANPOWER TO INDUSTRY AND COMMERCE

RESULT: Technical Manpower Provided

ACTIVITY	RESPONSIBLE	TIMEFRAME	RESOURCES	PERFORMANCE INDICATOR	TARGET LEVEL
1. Determine training needs	Harare Institute of Technology Director	By 30 June 2003 then ongoing	Finance IT equipment Research(s) Transport Stationery	Staff audit report Prioritised training needs identified in report	All Polytechnics
2. Design training programmes for technical lecturers	Harare Institute of Technology Director	By 31 August 2003	Curriculum designers in addition to above	Syllabi	Minimum of two disciplines
3. Mobilise resources	Harare Institute of Technology Director	By 1 June 2003 to 30 November 2003 then ongoing	Finance Transport Stationery	Budget allocation Staff in post Necessary equipmentprocured andinstalled	80% secured by 30 November 2003
4. Conduct training	Harare Institute of Technology Director	From 1 January 2004 onwards	Staff Finance Equipment Consumables Facilities Transport Accommodation	Enrolled trainee graduates Research reports	25 trainees per class in four disciplines by August 2004 pass rate of 80% min
5. Monitor and evaluate programmes	Harare Institute of Technology Director	End of each semester	As above	Enrolled trainee graduates Research reports New innovations	At end of each semester

OBJECTIVE 3: TO PROVIDE TECHNICAL LECTURERS FOR INSTITUTIONS OF HIGHER LEARNING

RESULT: Technical Lecturers Provided

ACTIVITY	RESPONSIBLE	TIMEFRAME	RESOURCES	PERFORMANCE INDICATOR	TARGET LEVEL
1. Determine training needs	Harare Institute of Technology Director	By 30 June 2003 then ongoing	Finance IT equipment Research(s) Transport Stationery	Staff audit report Prioritised training needs identified in report	All Polytechnics
2. Design training programmes for technical lecturers	Harare Institute of Technology Director	By 31 August 2003	Curriculum designers in addition to above	Syllabi	Minimum of two disciplines
3. Mobilise resources	Harare Institute of Technology Director	By 1 June 2003 to 30 November 2003 then ongoing	Finance Transport Stationery	Budget allocation Staff in post Necessary equipmentprocured andinstalled	80% secured by 30 November 2003
4. Conduct training	Harare Institute of Technology Director	From 1 January 2004 onwards	Staff Finance Equipment Consumables Facilities	Enrolled trainee graduates	25 trainees per class and minimum of 70% pass rate
5. Monitor and evaluate programmes	Harare Institute of Technology Director	End of each semester	Finance Staff Transport IT equipment	Evaluation reports	Before each semester

OBJECTIVE 5: TO ESTABLISH BUSINESS INCUBATORS/TECHNOPARK

RESULTS: Business Incubators/Technopark Established

ACTIVITY	RESPONSIBLE	TIMEFRAME	RESOURCES	PERFORMANCE INDICATOR	TARGET LEVEL
1. Conduct Market survey	Harare Institute of Technology Director	Up to end of November 2003	Finance Accommodation Transport IT equipment Researchers Stationery	Survey reports	Three industrial areas in Harare covered by November 2003
2. Identify business opportunities appropriate to community	Harare Institute of Technology Director	By end of November 2003	As above	Prioritised business opportunities	Two disciplines in incubator
3. Mobilise resources	Harare Institute of Technology Director	By November 2003 and ongoing	As above and recruit incubator experts	Budget allocation Equipment in place Staff appointed	80% resources procured by 31 November 2003
4. Offer incubator services	Harare Institute of Technology Director	From 1 January 2004 onwards	Incubator experts Finance Accommodation Equipment Stationery Raw materials Accommodation	Incubator products	Two disciplines by November 2004
5. Monitor and evaluate	Harare Institute of Technology Director	By June 2004 and onwards	Researchers Finance Transport IT equipment	Reports	Every six months

OBJECTIVE 6: TO DEVELOP CURRICULA THAT PROMOTES PROBLEM-SOLVING INNOVATION AND INVENTION, USING LOCAL RESOURCES

RESULT: Relevant Curricula Developed

ACTIVITY	RESPONSIBLE	TIMEFRAME	RESOURCES	PERFORMANCE INDICATOR	TARGET LEVEL
1. Recruit relevant personnel & apply for UNESCO Chair of Technology	Director and Institute Board	By 31 December 2003	Stationery Funds Panel	Relevant personnel in place	All critical posts filled
2. Identify and collect materials	Director and Institute Board	By 31 January 2004	Stationery Internet Computers	Relevant materials in place	All relevant materials collected
3. Produce curricula for various programmmes	Director and academic staff	By 28 February 2004	Stationery Reprographic equipment Lecturers	Various relevant curricula in place	Curricula for targeted course in place
4. Procure capital equipment	Director and Staff	On going	Funds	Some equipment in place	Critical equipment
5. Procure consumables	Director and staff	On going	Funds Lecturers Admin staff Equipment Consumables	Resources effectively & efficiently deployed	All resources within budget deployed

OBJECTIVE 7: TO ESTABLISH MUTUALLY BENEFICIAL JOINT VENTURES AND LINKAGES WITH INDUSTRY AND COMMERCE

RESULT: Joint Ventures and Linkages with Commerce and Industry Established

ACTIVITY	RESPONSIBLE	TIMEFRAME	RESOURCES	PERFORMANCE INDICATOR	TARGET LEVEL
1. Establish PR office	Director	By 30 November 2003	Office equipment & furniture	Public relations office & personnel in place	1 Public relations officer appointed with computer, Internet connectivity
2. Identify key stakeholders	Director and PR officer	Ongoing	Stationery	Some key stakeholders identified	At least 1 major stakeholder for running discipline identified by 30 April 2004
3. Establish advisory councils	Director and departments chairpersons	Ongoing	Funds Lecturers	Councils for runningdepartments established	All running departments with councils
4. Carry out industry needs analysis	Departmental chairs	Ongoing	Funds Transport Stationery	Needs analysis report available	At least a brochure per department by March 2004
5. Develop joint ventures	Director	On going	Funds Personnel	Science park established	At least 1 company operational by June 2004

OBJECTIVE 8: TO CARRY OUT APPLIED RESEARCH & DEVELOPMENT AND CONSULTANCY SERVICES

RESULT: Research Board, Research & Development Unit and Consultancy Unit in Place

ACTIVITY	RESPONSIBLE	TIMEFRAME	RESOURCES	PERFORMANCE INDICATOR	TARGET LEVEL
1. Set up a Research Board	Director	By 31 May 2004	Personnel Funds Equipment	Research Board in place	All running programs represented in Research Board
2. Set up R & D units	Director and Research Board Director	By 30 September 2004	Personnel Funds Equipment Consumables	R & D Units in operation	At least 2 critical projects running
3. Set up Consultancy Unit	Establish advisory councils	By 30 April 2005	Personnel Funds Equipment	ConsultancyUnitin operation	At least 2 critical projects running
4. Set up Internet connectivity throughout the Institute	Director	By 31 May 2004	Funds Computers	Computers and internet in all departments	Internet access by all at Harare Institute of Technology

OBJECTIVE 9: TO PROVIDE LEADERSHIP IN PRODUCING INSTRUCTIONAL MATERIALS

RESULT: Instructional Materials Produced

ACTIVITY	RESPONSIBLE	TIMEFRAME	RESOURCES	PERFORMANCE INDICATOR	TARGET LEVEL
1. Write programmme manuals, teaching and research material	Lecturers	Ongoing	Funds Stationery	Manuals, periodicals and teaching materials in use	50% of material for running programs in place by 31 July 2004
2. Order Journals, books periodicals, provide internet facilities	Director	End of 2003	Funds	Books in use and functional library	Adequate books per every discipline for running programs (at least 50%)
3. Provide computing services	Director	End of 2003	Funds Computers	Computer laboratory inuse	Adequate numbers of computers which are networked to WWW (at least 50%)
4. Acquire consumables and stationery	Director	Ongoing	Funds Stationery	Equipped labs in place/use	Appropriate consumables and stationery per every operational section (75%)
5. Acquire consumables and stationery	Director	On going	Funds	Equipped labs in place/use	High-tech teaching and demonstration equipment sources at least 50% of actual needs
6. Acquire project components and materials	Director	Ongoing	Funds	Availability of materials for projects	Appropriate project components and materials acquired (at least 50%)
7. Establish Publishing House	Director	End of 2006	Funds Stationery	Instruction material in use	At least 50% of materials published by the House

OBJECTIVE 10: TO SPEARHEAD THE USE OF NEW AND EXISTING KNOWLEDGE AS WELL AS LOCAL RESOURCES IN THE MANUFACTURE OF PRODUCTS FOR LOCAL CONSUMPTION, IMPORT SUBSTITUTION AND EXPORT

RESULT: Products Manufactured and Services Offered

ACTIVITY	RESPONSIBLE	TIMEFRAME	RESOURCES	PERFORMANCE INDICATOR	TARGET LEVEL
1. Formulate project proposal based on identified critical areas	Lecturers R & D Institute Inventors Other stakeholders	Ongoing	Expert knowledge and rewards	Developed project proposals	At least one project proposal per discipline by 31 April 2004
2. Design and produce prototypes	As above	Ongoing	Funds and expertise	Prototype produced	At least prototype per discipline produced by 30 June 2004
3. Test and modify	R & D Institutes	Ongoing	Test equipment Expertise Funds	Developed products	At least one product produced per discipline by 30 October 2004
4. Commercialise prototype	Director	Ongoing	Expert knowledge	Product on market	Appropriate consumables and stationery per every operational section (75%)

OBJECTIVE 11: TO OFFER CONTINUOUS PROFESSIONAL DEVELOPMENT COURSES

RESULT: Continuous Professional Development Courses Running

ACTIVITY	RESPONSIBLE	TIMEFRAME	RESOURCES	PERFORMANCE INDICATOR	TARGET LEVEL
1. Assess training needs	Director	End of 2003 and ongoing	Funds	Training needs identified	High-tech training need assessed. At least one course per programme
2. Commission course developers	Director	Ongoing	Funds	Course developed	At least one continuous professional development course to be written before Jan 2004
3. Secure resources	Director	End of 2003 and ongoing	Funds	Resourcesavailable	Requisite resources made available in every department
4. Advertise and run courses/programs	Director	Early 2004 and ongoing	Funds Equipment Lecturers	Students enrolled Courses running	At least 1 continuous professional development course to be run per discipline every three month
5. Evaluate and improve courses if need be	Director	2004 and ongoing	Funds Personnel Stationery	Evaluate report	An evaluation of every course on offer

OBJECTIVE 12: TO PRODUCE A SCHEDULE OF RESOURCE MOBILISATION AND ALLOCATION AT HARARE INSTITUTE OF TECHNOLOGY

RESULT: Resource Mobilised and Allocated

ACTIVITY	RESPONSIBLE	TIMEFRAME	RESOURCES	PERFORMANCE INDICATOR	TARGET LEVEL
1. Identify activities	Director	Mid June 2003	Manpower Stationery Funds	Report of activities (according to priority) and needs	All critical needs identified
2. Identify resources required	Director	3rd week on June 2003	Manpower Stationery Funds	Reports detailing resources required	All resources required identified
3. Produce budget	Director	End of June 2003	Manpower Stationery	Budget document	Appropriate budget drawn up covering priority areas
4. Identify source of funding	Director and Ministry	End of June 2003	Manpower	List of possible funders	At least source of possible funds identified for running activities
5. Negotiate for funds	Director and Ministry	End of July 31 2003	Manpower	Funds secured	All necessary funds in place
6. Administer and monitor expenditure	Director	Ongoing	Manpower Stationery	Quarterly audit Report	Positive audit report