INTERIM SECTOR SKILLS IN DEMAND
DECEMBER 2016
Background and Introduction

Human Resource Development Council (HRDC) has been set up to provide policy advice, coordinate and promote the development and implementation of the National Human Resource Development Strategy. As such one of the key roles of the Council is to develop National and Sector based Human Resource Development (HRD) Plans in order to align labour supply (production) to labour market demand (employment). The process of developing Sectoral Human Resource Development Plans, which is critical in guiding the production of skills and competencies required for the strategic direction of the sectors has commenced.

Work on the development of sector-based and National HRD Plans has commenced though at a slow pace, mainly due to lack of expertise in the area of human resource development planning. This challenge has necessitated the need to come up with the interim priority indicative occupations in high demand in order to guide training institutions and funders for the 2017 training intakes.

As it is the case in most African countries and beyond, unemployment has become a serious challenge for Botswana. Of even more concern is the fact that there continues to be outcry of shortage of requisite skills for the different sectors of the economy, which is a symptom of mismatch between available occupations and produced qualifications.

The main objective of the interim indicative skills in demand is to among other things:

• Support the planning of Tertiary Education Institutions and ensure that there is alignment between the supply and demand.

• To start creating an education system that is responsive to the skills needs of the industry and the economy.

• To guide potential trainees and prospective education sponsors on priority skills for the economy
Methodology

The production of the priority list was guided by some of the available draft Sector HRD Plans, reviewing strategic/policy documents such as Sectoral strategies/reports, draft National Development Plan 11, National Export Strategy and the aspirations of Vision 2036. Prioritisation was informed by the existing statistics/data from different sources such as Statistics Botswana (Import-Export statistics, work permit statistics), Job Vacancy Database which tracks and monitors frequently advertised occupations, DPSM/MLHA/MYSC data bases on graduates who are actively seeking employment, as well as end user perception from engaging with the industries.

Due to challenges surrounding information none availability, the quality of available information and the fact that a comprehensive sectoral assessment to develop Sector and National HRD plans is still work in progress, the priority skills will be reviewed and revised on annual basis. However, the frequency will be reduced once the HRD plans have been finalized and are available for full implementation.

There are a number of national factors affecting MMEWR Sector’s operating landscape which calls for skills responsiveness. These include:

• The economic diversification and mineral beneficiation drives
• The transition to a knowledge-based economy which compels affected organisations within the sector to have in place requisite skills that will drive such change.
• Technological advancements within the industry.
• Strengthening of strategic and regulatory roles.
• Compliance to International Standards and Global competitiveness
<table>
<thead>
<tr>
<th>Professional Level (Degree)</th>
<th>Technical Level (Diploma)</th>
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<tbody>
<tr>
<td>Engineering</td>
<td>Occupational Health &amp; Safety</td>
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<td>Occupational Hygiene</td>
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<td>Heavy Plant Mechanics</td>
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<td>Instrument Technician</td>
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<td>Solar System Technician</td>
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<td>Water Chemistry</td>
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<td>Electronics</td>
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<td><strong>Geo-Science</strong> (Basic Degree)</td>
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<td>Geotechnical</td>
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<td>Geophysics/Seismology</td>
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<td>Geochemistry</td>
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<td>Post Basic/Specialisation</td>
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<tr>
<td>Geo-informatics</td>
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<td>Geological Mapping</td>
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<td>Ground Water Modelling</td>
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<td>Operational Hydrological Forecasting</td>
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<td>National Water Accounts</td>
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<tr>
<td><strong>Economics</strong> (Post Basic/Specialisation)</td>
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<tr>
<td>Mineral</td>
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<tr>
<td>Energy</td>
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<tr>
<td><strong>Integrated Energy Planning</strong> (Post Basic/Specialisation)</td>
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<td>Pricing and Tariff Setting</td>
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<td>Energy Modelling</td>
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<td>National Energy Accounts</td>
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<td>Energy Management</td>
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**Artisan Level (Certificate)**

- Millwright
- Heavy Machine/Plant Operator
- Fitter/Tuners
- Gauging Assistants
- System Application Programme (SAP) Specialist
- Welding/Fabrication
- Borehole Mechanics
- Refrigeration & Air Conditioning
- Industrial Electronics
## Health Sector Skills

### Medical Specialisation

- **Family Medicine / Family Physician**
  - Integrated medical care
- **Cardiology**
  - Cardiovascular Surgery
  - Interventional Cardiology
  - Non Interventional Cardiology
  - Paediatric Cardiology
- **Anaesthesiology**
  - Cardiac Anaesthesia
  - Paediatric Anaesthesia
  - General Anaesthesia
- **Orthopaedics**
  - General Orthopaedics
  - Arthroplasty
  - Spine surgery
- **Oncology**
  - Paediatric Oncology
  - Radiation Oncology
  - Medical Oncology
- **Emergency medicine**
- **Neurology**
- **Dermatology**
- **Surgery**
  - Hepatobiliary
  - Trauma
  - Vascular
  - Cardiothoracic
  - Minimally invasive surgery
  - Surgical Oncology
  - Paediatric Surgery
  - Plastic Surgery
- **Neurosurgery**
  - Spine
- **Psychiatry**
  - Community Based
  - Forensic
  - General Paediatric
- **Ophthalmology**
  - Surgical Retinal
  - Medical Retinal
  - Oculoplastic
- **ENT**
- **Palliative care specialist**
- **Urology**
- **Haematology**
- **Radiology**
- **Geriatrics**
  - Public Health
  - Epidemiology
  - Biostatistics
  - Healthcare management
  - Health policy
  - Health economics
- **Occupational Medicine**
Health Sector Skills

Medical Specialisation
- Transplant medicine
  ✓ Surgical
  ✓ Medical
  ✓ Surgery
- Researchers
  ✓ Clinical
  ✓ Translational
- Epidemiology
- Paediatricians & Specialist Paediatricians
  ✓ Neonatology
  ✓ Paediatric Cardiology
  ✓ Paediatric Endocrinology
  ✓ Paediatric Nephrology
  ✓ Paediatric critical care
  ✓ Paediatric
- Infectious Disease
- Internal medicine
  ✓ Endocrinology
  ✓ Nephrology
  ✓ Gastroenterology
  ✓ Rheumatology
- Obstetrics Gynaecology
  ✓ Maternal, Foetal medicine, Fertility specialist, Gynaecology

Nursing Specialisation
- Nurse Anaesthetists
- Family Nursing Practitioner
  ✓ Integrated care
- Theatre Nursing
- Midwifery
- Mental Health Nursing
- Community Health Nursing
- Critical Care Nursing
- Paediatric Nursing
- Diabetic Nursing
- Cardiac Nursing
- Oncology Nursing
- Dialysis Nursing
- Neonatal Nursing
- Case Management Nursing
- Ophthalmic Nursing
- Psychiatric Nurse
- Palliative care
- Public Health

Pharmacists/Pharmaceutical Technicians
- Pharmaceutical Specialists
- Industrial pharmacist
- Regulator pharmacist

Medical Laboratory Scientists /Technologists & Technicians
- Haematology
- Chemistry
- Histotechnology
- Cytology
# Health Sector Skills

<table>
<thead>
<tr>
<th>Radiographers</th>
<th>Radiotherapist</th>
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<tbody>
<tr>
<td>• Ultrasonography</td>
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<td>• MRI</td>
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<td>• CT</td>
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<thead>
<tr>
<th>Dentists &amp; Dental Therapists</th>
<th>Psychologists</th>
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<tr>
<td>• Maxillofacial Surgery</td>
<td>Healthcare Assistants</td>
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<td>• Orthodontists</td>
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<tr>
<td>• Community Dentists</td>
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<tr>
<td>• Plaster Technicians</td>
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<thead>
<tr>
<th>Occupational Therapists</th>
<th>Perfusionist</th>
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<tr>
<td>Physiotherapists</td>
<td>Medical Physicists</td>
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<tr>
<td>Paramedical Practitioners</td>
<td>Orthotics</td>
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<tr>
<td>• EMTs</td>
<td>Biomedical Engineers/Technicians</td>
</tr>
</tbody>
</table>

| Dieticians                  | Audiology      |
|------------------------------|                |
| Speech & Language Therapists | Health Education (HE) & HE Assistants |

Source: Arts and Crafts Demand and Supply Survey Report, DoT (2014)
Agriculture Sector Skills

- Animal scientists and Breeders (production and nutrition)
- Veterinarians/Pathologists
- Range ecologists
- Plant pathologists
- Irrigation specialists
- Horticulture production specialists
- Entomologists
- Farm machinery operators
- Farm managers and workers
- Agronomists and Breeders
- Soil scientists
- Beekeepers
- Beekeeping processors
- Dairy scientists/technologists
- Agriculture Climatologists
- Feed specialists
- Ostrich breeders
- Artificial Inseminators
- Agriculture Finance/Economists
- Agriculture engineers
ICT Sector Skills

Telecommunications Engineers
- Network,
- Design,
- Planning,
- Installation,
- Support,
- IP network,
- Satellite,
- Radio,
- Core networks,
- Spectrum monitoring
- Analysis

Web and Multimedia Developers
- Adobe
  - Programming
  - Systems analysis
  - Animation
  - Data visualisation
  - Content authoring
  - All Occupations/All Sectors
  - ICDL
  - Basic Computer Skills

Database Designers and Administrators
- SQL, Oracle
  - Database design
  - Database administration
  - Programming
  - Integration
  - Performance tuning
  - Information management
  - Big data mining

Systems Analysts
- Business analysis
- Process mapping
- Requirements definition
- Programming
- Social perceptiveness
- Innovation, research
- Business process improvement

Information and Communications Technology Sales Professionals
- Marketing,
- Selling,
- Account management,
- Sales support,
- Client service management,
- IT technology awareness

Legend
- Existing Fibre Network
- Ongoing Fibre Network
- Planned Fibre Network
ICT Sector Skills

Software Developers & Programmers
- Java, PHP, Robotics, NET
- Programming
- Systems analysis
- Systems architecture
- Quality Control Analysis
- Mobile application development

Computer Network Professionals
- CISCO, COMPTIA, Microsoft
- Network design
- Network installation, security
- Network domain administration

Data Centre Manager
- BICSI, Dell, HP, SUN, IBM, EMC
- Design
- Installation
- Facilities management
- Server infrastructure monitoring
- Disaster recovery planning

ICT Security Manager
- CISA, CISM, CISSP
- Cyber security
- Intrusion prevention
- Systems audit
- ICT risk management
- Network security
- Governance
- Business continuity

Systems Administrators
- Microsoft, Linux, Unix, Oracle
- Installation
- Configuration
- Hardware and software support
- Performance tuning
- Information security

Radio and Television Broadcasters
- Content management
- Multimedia
- Online publishing
- Broadcasting

IT Service Management
- ITIL
- Service Strategy
- Design, Management
- Operation
- Service Level Contracts
- Procurement Management
Transport and Logistics Sector Skills

Bulk Vehicle Operators
- Extra heavy Class (EC)
- Operator trainers

Operations /Logistics Managers
- Warehousing managers

Safety Health Environment (Quality) Mechanics
- Heavy Plant mechanic
- Hydraulics Mechanic
- Diesel Mechanic
- Auto Mechanic

Aircraft Engineers
- Technicians
  - Aircraft
  - HND Auto

Pilots
- Flight operators

Clearing & freight forwarding agents

Transport Brokers
- Mobile machine/plant operators
  - Specialized equipment

Aviation Quality Assurance

Aviation Safety Auditors

Locomotive Fitting and Electrical Maintenance

Train Operators

Track Master
Education and Training Sector Skills

**Educationist**
- Early Childhood Development Teachers (ECCD)
- ECCD Lecturers/Researchers
- ECCD Teacher aides
- Empowering pedagogy

**Special needs teachers/Lecturers**
- Occupational Therapists
- Educational Psychologists
- Guidance and Counselling
- Low Vision Therapist
- Speech and Language Therapists
- Remedial Therapist
- Physiotherapists
- Audiologists
- Social Worker
- Clinical Counsellor
- Visual, Hearing Impairment

**Multiple pathways teachers**
- Hospitality and Tourism
- Horticulture
- Animal Husbandry
- Crop Production
- Agricultural Science
- Graphics Design
- Borehole Maintenance
- Water Conservation
- Robotics
- Computer Programming
- Software Design
- Graphics Design
Creative Industries Sector Skills

- Light Engineer
- Choreographer
- Sound Engineer
- Videographer
- Film makers
- Machinist
- Researcher
- Script & Play writer
  - Movies
  - Plays
  - Drama
- Visual Arts
- Performing Arts
- Fashion
- Events management
- Visual Arts
- Performing Arts
- Fashion
- Graphics
- Web
- Interior
- Textile
- Jewellery
- Sculptor
- Painter
- Print making
- Ceramics
- Textile printing & dyeing
- Technology transfer
- Patents
- Copyright
- Trademarks
- Licensing
- Intellectual Property Rights Specialist

- Performing Arts
  - Drama
  - Dance
  - Acting
  - Opera
- Producers
  - Radio
  - Television
  - Performing Arts
- Architect
  - Historical building & surveying
  - Computer aided designing & manufacturing
  - Modelling
- Journalists
  - Investigative
  - Science
  - Historian
  - Indigenous knowledge
- Marketing and Public Relations

Source: Arts and Crafts Demand and Supply Survey Report, DoT (2014)
Tourism Sector Skills

Chefs/ Executive Chef
- Grills
- Fish preparation
- Cold kitchen
- Desserts
- Sous
- Cultural cuisine
- Korsha/ Halaal

Food & Beverage staff
- Bar tender
- Waiters
- Events coordinator

Finance & Accounting Officer
- Revenue Manager
- Financial Accountant
- Accounting Technician

Pilot
- Fixed wing
- Helicopter

Front Office Staff
- Guest relations
- Receptionist

Purchasing & Supplies Officer

Housekeepers

Tour Guide
- Bird watching
- Horse Back
- Culture & Heritage
- Mokoro Polling
- Walks
- Night Drive guides

Trainers
- Guides
- Flight Training Manager

Travel Agent

Landscaping & gardening
- Golf course Management
Tourism Sector Skills

Gaming
• Counsellors
• Slots Manager
• Gaming Promotions Management

Food & Beverage Manager
• Cost and Margins expertise

Environmental Officer
• Eco tourism

Security & Surveillance
• Tourist policing

Sales & Marketing
• Product Management
• Ecotourism
• Sports & adventure
• Agro-tourism
• Cultural tourism

Managers
• Camp Manager
• Restaurant Manager
• Lodge Manager

Beauty Therapist
• Hair dressing
• Spa treatments

Risk Management
• Legislation
• Licensing
• Micro & Macro risk
• Operational & Compliance risk
• Financial understanding

Grading Officers
• Knowledge of standards
Research and Innovation Sector Skills

- Science and Technology Researcher
- Research & Development Manager
- Research Technicians
- Grant & Contract Specialist
- Incubation Specialist
- Commercialisation Specialist
- Research and Innovation Fund Manager

- Non communicable and infection diseases
- Indigenous Knowledge
- Food Security
- Beneficiation
- Water Conservation and Security
- Climate Change
- Energy Security
- Green Economy
- E-government
- Cyber security
- Open data
- Big data
- Electronic systems
- Software engineering
Manufacturing Sector Skills

Professionals Level (Degree)

Material Science
  - Nano Technology

Textile Technology Engineering
  - Industrial
  - Chemical
  - Manufacturing

Industrial Technology

Production Design

Leather Works

Food Science & Technology

Product Appraiser and Quality Assurance
  - Professional Auditing
  - Quality Controller (Compliance & Regulation)

Investment appraisal & Financial analysis

Technical Level (Diploma)

Production Machine/Plant/Engine Operators

Instrumentation Technician
  - Chemical
  - Mechanical
  - Electrical

Manufacturing Technician
  - Furniture design & manufacturing
  - Jewellery design & manufacturing
  - Powder coating
  - Computer Numerical Control Operators
  - 3-D Printing

Tool and Die Technician

Lecturers
  - Engineering-electrical, mechanical,
  - Specialised Welding & Fabrication
  - Furniture design & manufacturing
  - Jewellery design & manufacturing
Manufacturing Sector Skills

Artisan Level (Certificate)

Textile & Clothing
- Sewing machine Operator
- Sewing machine mechanics
- Embroidery
- Fabric Layer/Cutter/Tailor
- Upholstery

Foundry
- Pattern maker
- Mold maker
- Furnace maker

Welding/Fabrication
- Coded
- Tig
- Mig
- Resistance Welding
- Thermit Welding
- Solid State Welding

Leather works
Finance and Business Sector Skills

Accountants
- chartered Accountants
- Cost /Management/Financial/Forensic
- Internal Auditors
- External Auditors

Financial /Investments Analysts
Research Analysts – Finance

Financial Planners

Asset/Fund /Portfolio Managers
Pension Fund Administrators
- Actuaries
- Fund consultants
- Valuers

Risk Managers
- Stocks & bonds
- Risk Assessment(Insurance)
- Banking
- Business continuity

Insurance
- Claims management
- Underwriters
- Reinsurance
- Loss assessors

Bankers
- Compliance
- Financial Services
- Relationship Management
- Business Intelligence

Property managers
- Valuers & Loss Assesors
- Registered Property agents

Entrepreneurship
- Intrapreneurship
- Innovators
- Business Incubators

Digital Marketing Managers

Source: Arts and Crafts Demand and Supply Survey Report, DoT (2014)
Public Sector Skills

Lawyers

- Civil Litigators
  - Labour Law
- Prosecutors
- Legislative Drafters
  - Interpretation of International laws
  - Customization of law

Town Planners

- Physical
- Traffic

Procurement & Supply

- Public Private Partnership (PPP)
- Contract management

Fire services

- Medical emergency rescue
- Fire safety

Source: Arts and Crafts Demand and Supply Survey Report, DoT (2014)
Construction Sector Skills

- Special coater
- Bricklayer/ Plasterer
- Shutter/ form worker
- Steel fixer
- Carpenter
- Grass roof thatcher

- Plumber
- Stonemason
- Coded welder
- Rigger
Cross Cutting Skills - All Sectors

**Project Management**
- Prince2, PMI
- Project Management
- Change management
- Enterprise and business architecture development
- Estimating and Tendering

**Compliance and Regulation**

**Occupational health and safety**
- first aid

**Risk Management**
- Actuary

**Contract Management**

**Intellectual Property Rights Specialist**
- Technology transfer
- Patents
- Copyright
- Trademarks
- Licensing

**Entrepreneurial skills**
- Production and Product development Processes
- Distribution Channels
- Financial Management
- E-competence

**Mathematician, Statistician and Econometrician**
Soft Skills - All Sectors

- Work Ethics
- Leadership
- Customer care
- Supervision

Source: Arts and Crafts Demand and Supply Survey Report, DoT (2014)
## General Recommendations

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<thead>
<tr>
<th>Key Area</th>
<th>Recommendation</th>
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| **Curriculum and Programme Development** | Existing curriculum should be reviewed in order to ensure standardisation across institutions and alignment to the needs of the industries in terms of content and delivery mode.  
- Audit skills development & training curriculum for basic education, technical colleges and related training institutions  
- Infuse soft skills such as entrepreneurship, work ethics, research and risk management into the curriculum of various programmes.  
**Infuse industry certification into tertiary curriculum** |
| **Teaching and Learning** | • Lectures and Teachers should possess the relevant and adequate qualifications and industry experience to ensure continued technical accuracy and quality product.  
  ✓ Lecturers should be mandated to conduct industry research as part of their job description  
• Institutions should rationalise and specialize in areas of training rather than attempting training in all areas. This will ensure optimal use of the available resources (Human, Financial & Material Resources) and improve on the quality of training  
• Institutions that produce graduates that are easily absorbed by industries should be given priority when allocating sponsorships  
• **HRDC to part-fund expensive training. Fast track funding model** - Have institutions running these training and pay directly to institutions – prescribe fees for programmes  
• Sectoral and National Localisation Plans should be developed and closely monitored by HDRC (Sector Committees) |
# General Recommendations

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<thead>
<tr>
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| Apprenticeship | • Apprenticeship should be mandated in relevant programmes to improve the quality and work readiness of graduates. It is also important to balance the theoretical and practical components training where applicable.  
• Develop database of peak seasons for agricultural operations and align student attachment schedules  
• The developed Internship Model for MMEWR sector should be tested and adapted across sectors where relevant. Funding for this intervention should be explored through the Training Levy.  
• Advocate for some rewards to companies that give graduates practical exposure  
• **Lobby Government to attach local companies in expert companies.**  
• Professionals such as Doctors and Nurses should be assigned training and research responsibilities through their job descriptions. |
<p>| Monitoring &amp; Evaluation | • Conduct tracer studies for graduates in order to performance of graduates at workplace and give feedback curriculum review/development, as well as improve teaching and learning methodologies. |</p>
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<tr>
<td>Quality Assurance</td>
<td>• The establishment of the National Construction Board should be fast tracked to ensure that activities and operations in the construction sector are regulated. The Board should work with BQA to ensure that for example professional training standards are set that are globally comparable and competitive.</td>
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<td>• Accreditation process should be clearly defined, and where relevant all training institutions, delivery institutions and professionals (including Assessors) should be accredited. Training Institutions should have fully functional technical skills laboratories/workshops.</td>
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<td>• Where applicable, professionals trained outside the region should undergo induction/orientation training provided by the relevant regulatory body as a quality assurance measure. The induction should include language and cultural appreciation.</td>
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<td>• Setup a body to regulate prices for all programmes</td>
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<td>• <strong>Standardise ICT qualifications</strong></td>
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