

HRDC

HUMAN RESOURCE DEVELOPMENT COUNCIL

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INTERIM SECTOR SKILLS IN DEMAND

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INTERIM SECTOR SKILLS IN DEMAND

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

INTERIM SECTOR SKILLS IN DEMAND

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

MMEWR Sector Skills

Professional Level (Degree)	Technical Level (Diploma)
Engineering	Occupational Health & Safety
- Control and Instrumentation	Occupational Hygiene
- Civil	Heavy Plant Mechanics
- Water	Instrument Technician
- Mechatronics	Solar System Technician
Water Chemistry	
Electronics	
Geo-Science (Basic Degree)	Artisan Level (Certificate)
- Geotechnical	Millwright
- Geophysics/Seismology	Heavy Machine/Plant Operator
- Geochemistry	Fitter/Tuners
<u>Post Basic/Specialisation</u>	Gauging Assistants
- Geo-informatics	System Application Programme (SAP) Specialist
- Geological Mapping	Welding/Fabrication
- Ground Water Modelling	Borehole Mechanics
- Operational Hydrological Forecasting	Refrigeration & Air Conditioning
- National Water Accounts	Industrial Electronics
Economics (Post Basic/Specialisation)	
- Mineral	
- Energy	
Integrated Energy Planning (Post Basic/Specialisation)	
- Pricing and Tariff Setting	
- Energy Modelling	
- National Energy Accounts	
- Energy Management	

Source:
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2014

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

Pharmacists/Pharmaceutical Technicians

- Pharmaceutical Specialists
- Industrial pharmacist
- Regulator pharmacist

Medical Laboratory Scientists /Technologists & Technicians

- Haematology
- Chemistry
- Histotechnology
- Cytology

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

Health Sector Skills

Radiographers

- Ultrasonography
- MRI
- CT

Dentists & Dental Therapists

- Maxillofacial Surgery
- Orthodontists
- Community Dentists
- Plaster Technicians

Occupational Therapists

Physiotherapists

Paramedical Practitioners

- EMTs

Dieticians

Speech & Language Therapists

Radiotherapist

Psychologists

Healthcare Assistants

- Phlebotomists
- ECG Technology
- Theatre Technology
- Lay Counsellors
- Plaster Technicians

Perfusionist

Medical Physicists

Orthotics

Biomedical Engineers/Technicians

Audiologists

Health Education (HE) & HE Assistants

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



Information and Communications Technology Sales Professionals

- Marketing,
- Selling,
- Account management,
- Sales support,
- Client service management,
- IT technology awareness

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

ICT Sector Skills

Software Developers & Programmers

- **Java, PHP, Robotics, NET**
- ✓ Programming
- ✓ Systems analysis
- ✓ Systems architecture
- ✓ Quality Control Analysis
- ✓ Mobile application development

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

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

IT Service Management

- **ITIL**
- Service Strategy
- Design, Management
- Operation
- Service Level Contracts
- Procurement Management

ICT Security Manager

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



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 C 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 | • Borehole Maintenance |
| • Horticulture | • Water Conservation |
| • Animal Husbandry | • Robotics |
| • Crop Production | • Computer Programming |
| • Agricultural Science | • Software Design |
| • Graphics Design | • Graphics Design |

Creative Industries Sector Skills



- **Light Engineer**
- **Choreographer**
- **Sound Engineer**
- **Videographer**
- **Film makers**
- **Machinist**

Researcher

- Creative Industries

Script & Play writer

- Movies
- Plays
- Drama

Researcher

- Creative Industries

Intellectual Property Rights Specialist

- Technology transfer
- Patents
- Copyright
- Trademarks
- Licensing

Arts Manager

- Visual Arts
- Performing Arts
- Fashion
- Events management

Creative Director

- Visual Arts
- Performing Arts
- Fashion

Designer

- Graphics
- Web
- Interior
- Textile
- Jewellery

Visual Artist

- Sculptor
- Painter
- Print making
- Ceramics
- Textile printing & dyeing

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

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

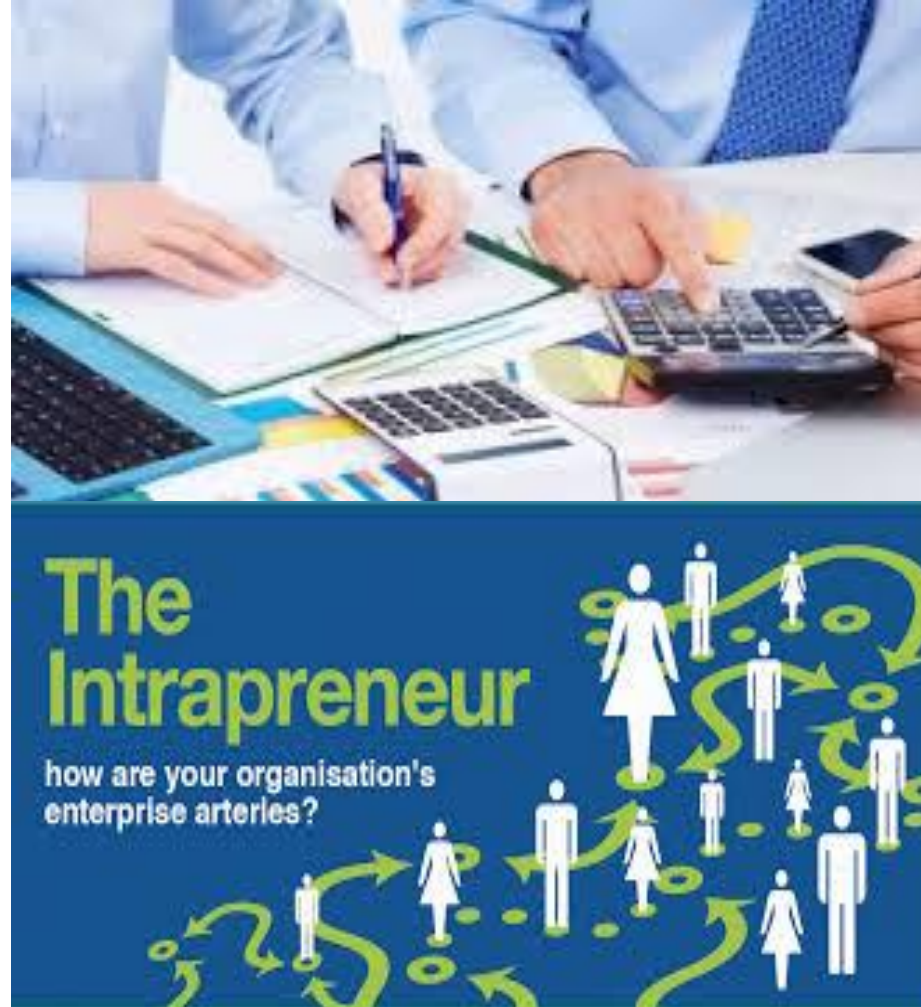
Asset/Fund /Portfolio Managers

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

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



Construction Sector Skills



- Plumber
- Stonemason
- Coded welder
- Rigger

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



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

Mathematician, Statistician and Econometrician

Intellectual Property Rights Specialist

- Technology transfer
- Patents
- Copyright
- Trademarks
- Licensing

Entrepreneurial skills

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

Soft Skills - All Sectors

Work Ethics

Leadership

Customer care

Supervision

General Recommendations

Key Area	Recommendation
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

Key Area	Recommendation
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.
Monitoring & 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.

General Recommendations

Key Area	Recommendation
Quality Assurance	• 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. • 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. • 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. • Setup a body to regulate prices for all programmes • Standardise ICT qualifications