



RESEARCH & INNOVATION  
SMALL GRANT PROJECT 2013/14

## SUMMARY OF RESEARCH FINDINGS



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*The HRDC Research & Innovation  
 Small Grant Project 2013/14  
 initiative was meant to promote  
 scholarly research on issues of  
 national importance, and leading  
 to publication of the individual  
 studies as a compendium.*



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We seek to  
enhance the  
capacity of  
researchers  
and to increase  
their numbers.”

## FOREWORD

**The situation analysis of Botswana's research output has revealed that the current research output is small (even taking into account the size of the research system), but output in international journals has been steadily growing in recent years. Research output is also predominantly produced by one institution (the University of Botswana annually produces on average about 70% of total country output).**

Given the imperative to establish a knowledge society, it is essential that research production and output is increased and the institutional base be broadened to ensure long-term sustainability and growth. Adequate research capacity is vital to the future success of the envisaged knowledge-based economy in Botswana, but strategies to help build it are complicated by the diversity of the field and the differing patterns of recruitment and retention across disciplines. There is need for a more strategic approach to research capacity building activities, with more flexibility in creating training opportunities to meet the different needs and challenges with regard to research, development and innovation in Botswana.

The HRDC seeks to enhance the capacity of researchers, significantly increase the number of researchers that are producing high quality and high impact research, particularly in the use of innovative research methods. The HRDC recognizes the need to provide opportunities for capacity building at what might be considered a less advanced level, in order to facilitate development and progression towards more advanced levels.

The approach also recognizes the value of building the research capacity of individuals as well as specific groups of researchers. It is in this regard that in order to enhance research capacity among tertiary institutions in Botswana, the HRDC, then known as Botswana Tertiary Education Council (TEC) announced the 2013/14 Small Research and Innovation Grant Programme through a call for proposals in July 2013.

**Dr Patrick Molutsi**

**Acting Chief Executive officer**

# ABOUT HRDC

The Government of Botswana through the approval of the Human Resource Development Council Act No 17 of 2013 established the Human Resource Development Council (HRDC) that became operational on the 8th November 2013, effectively replacing the Tertiary Education Council (T.E.C).

The objectives and functions of the Council are the following;

## Objectives

- Provide for policy advice on all matters of national human resource development;
- Co-ordinate and promote the implementation of the national human resource development strategy;
- Prepare the national human resource development plans; and
- Plan and advise on tertiary education financing and workplace learning.

## Functions

- Advise the Minister on all policy issues relevant to the implementation of the National Human Resource Development Strategy as developed by the Government from time to time;
- Formulate the National Human Resource Development Plan;
- Provide advice on the management, planning and financing with specific reference to:
  - i. Internship
  - ii. Apprenticeship
  - iii. Workplace Learning
  - iv. Reimbursing employers who have incurred training costs for apprentices and trainees;
- Manage Funds established under Part VII of the Act;
- Promote Workplace Learning;
- Establish and manage a National Labour Market Information System and National Education and Skills Development data base;



- Promote the establishment, co-ordination and approval of institutional plans for public and private tertiary education institutions and post implementation monitoring and evaluation with specific reference to:
  - i. Human resource development;
  - ii. Research and innovation, and
  - iii. Institutional capacity building;
- Co-ordinate, promote and support tertiary education-industry link research and innovation activities;
- Formulate human resource development plans for key sectors of the economy through linkages with employers in the public and private sectors;
- Develop strategies for student attachments and academically prescribed internships and promote methods of skills development; and
- Act as a supervisory agency and co-ordinate the implementation of the National Human Resource Development Strategy and ensure a link between the different levels of education, training and skills development.

# SUMMARY OF FINDINGS

HRDC Research & Innovation Small Grant Project 2013/14

## Preamble

In order to enhance research capacity among tertiary institutions in Botswana, the Human Resource Development Council (HRDC) then known as Botswana Tertiary Education Council (TEC) announced the 2013/14 Small Research and Innovation Grant Programme through a call for proposals in July 2013.

The expected outcomes of the Small Research and Innovation Grant Programme were to increase nation-wide, multidisciplinary and multi-institutional research collaborations between tertiary education institutions (including private and public universities and colleges and other tertiary education sector stakeholders); produce cutting-edge research findings that are relevant to the needs of the tertiary education sector and Botswana's economic and social development; and increase Botswana's regional and international visibility and reputation in research.

## Research Themes

Applicants were invited to submit research proposals pertaining to the themes listed below and identified by HRDC as particularly relevant to support development/growth in Botswana. 16 research proposals were selected for funding under the following themes:

1. Graduate Employability
2. The Structure of Families in Botswana
3. Employment Creation Opportunities for the Youth
4. Self-Employment
5. Youth and HIV/AIDS Values
6. Household Income – Sources, Strategies, Survival

This institution-wide initiative was meant to promote scholarly research on issues of national importance, and leading to publication of the individual studies as a compendium. A total of 30 proposals was submitted to HRDC for consideration. Out of this number, 16 were found pertinent to the country's needs.

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*Knowledge production is different across scientific disciplines*

# A CONCEPTUAL FRAMEWORK

The Research and Innovation Process

In order to guide our formulation of the R&I Strategy a conceptual framework was introduced that models the main dimensions of the R&I Process. The conceptual framework which is presented below is essentially an input – process – output – impact model of the scientific research enterprise.

The framework, together with the findings of our situation analysis in the three previous chapters, forms the basis for formulating high-level goals and strategies for the sector.

The first tenet of the model is that the process of knowledge production requires a number of necessary enabling or input factors: appropriate levels of human resources (scientists, academics and scholars), adequate levels of research funding as well as essential research infrastructure: well-equipped laboratories, state of the art scientific equipment, adequate ICT, well-resourced libraries and appropriate electronic resources such as electronic journals and databases.



The second tenet of the model is that knowledge production processes are field or discipline-specific. Simply put: knowledge production in the humanities is significantly different from that in the physical sciences or engineering or health sciences. These differences in epistemology and methodology also impact on what is considered the appropriate “configuration” of input factors. Knowledge production is different across scientific disciplines and is manifested in differences in organisational forms of knowledge production. Examples are the differences between team research, laboratory-based research, field research and the single scholar model of research in the humanities.

Field differences also manifest themselves in different forms of research collaboration (including authorship practices) as well as forms of research output and publication (the different values attributed to publication in journals versus monographs and conference proceedings).

The third tenet of the model speaks to different forms of research outputs: new knowledge: codified knowledge is knowledge that is documented in writing (scientific papers, chapters and books) and embedded knowledge (in the form of graduate students and post-doctoral fellows) as well as new knowledge applications: new product and process technologies, systems and strategies, designs and artefacts and so on. Further articulation of each of these sub-categories will lead to differences in output formats, dissemination media and distribution channels.

The fourth tenet of the model speaks to the level of outcomes and impact as these are reflected for different “audiences” or “markets”. Scientific knowledge is produced for different purposes and different audiences and is therefore also taken



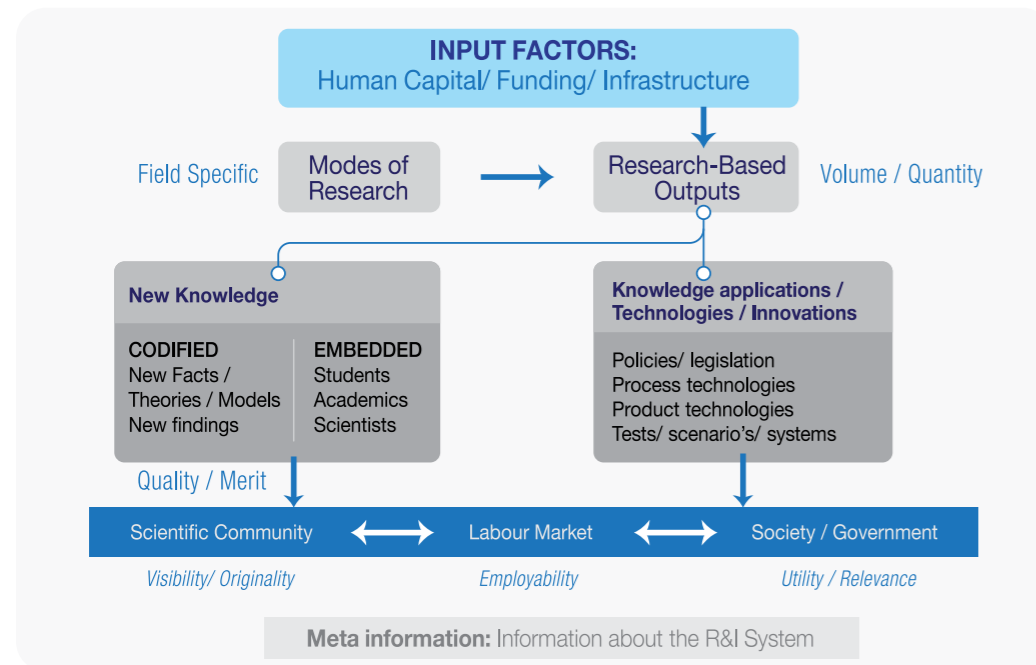
Grantees in a capacity building workshop

up and utilised differently. Three “categories” of knowledge users are distinguished: the scientific community (who needs new and original science and scholarship), the labour market (who needs highly skilled and employable workers), civil society and government (who need an informed citizenry, useful and relevant knowledge and technological innovations and solutions)

Finally, certain “criteria” (even “values”) that are associated with each stage in the process have been identified: the model dictates that there is a required magnitude or volume of research outputs (quantity) and of sufficiently high quality or merit. As far as the scientific community is concerned, it values knowledge outputs that are public (“high visibility”) and original (“novelty”). The labour market values graduates that are highly and appropriately skilled and immediately employable. The rest of society (from civil society to the economy to government) values knowledge applications or technological innovations that are beneficial and relevant to the country’s needs and national goals and which will contribute to the economic growth and improved quality of life of its citizenry.

“  
*Scientific knowledge is  
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Figure 1: A Conceptual Framework — The Research and Innovation Process



This conceptual model is used to first identify the areas of weakness in the current research and innovation landscape, and second, to identify which high-level goals and strategies need to be formulated to address these. The framework is used as a heuristic framework to direct to the “main domains” of such goal definition, i.e. WHAT must be achieved. However, the model only gives broad direction as to the HOW in the achievement of these goals, i.e. the strategies that must be identified and implemented for the successful attainment of these goals.



## THEME ONE

### Graduate Employability

#### 1. BOTHO University

##### — Perceptions of Stakeholders on the effect of the Botho University Graduate Internship Programme

**Dr Morgen Chawawa, Dino Rajah:** Botho University  
**Dr David Mandiyamike:** University of Botswana

- > The Government of Botswana remained the largest trainer of interns.
- > The majority of applications for internship were self-activated. This leaves too much leeway for students to find any organisation, whether related to their area of study or not and consequently presents a chance for irrelevant work assignments being given to the students.
- > Tutor visits evident as well as supervision within the workplace with sporadic isolated cases of poor Tutor visits and Student – Employer interactions.
- > The adequacy of the duration of the internship in terms of providing a meaningful work related experience- this is viewed as inadequate by students with same sentiments being shared by employers.



- > It was recommended by employers that students be exposed to organisations whose domain expertise and business concept was in Information Technology or in their study area.
- > An analysis of student experiences during their period of internship was generally considered to be good.
- > Include more practical components in the curriculum so that students develop functional skill before they are deployed to a real work environment.

2. **Universal College of Law**  
— Evaluating Technical Colleges' Curricula and their enhancement of graduate employability

**Prof. B. Moswela** – University of Botswana  
**U. Chiparo** - Universal College of Law

- The relationship between the colleges and the industry was identified as critical in promoting relevant skills acquisition by college graduates.
- Presently there is no cooperation and coordination between the colleges and the industry.
- key issue identified as an impediment to effective skills acquisition by graduates are; insufficient resources that force tutors to restrict their teaching methods to group demonstration and lecture methods which are not effective enough to enable the transfer of skills to students.
- Not all colleges support students during attachment, and do not adequately supervise their interns.



- Employers are satisfied that graduates are trainable and that with time they will get experience and develop needed skills.
- The involvement of key stakeholders such as the industry in college curricula should not be ignored since issues of currency and relevance are critical in graduate employability.



3. **Limkokwing University College**  
— Investigating the skills that employers want for graduates to be employable: Case-study of Limkokwing University

**Thembi Mpelega, Thato Sebeso**  
– Limkokwing University of Creative Technology

- Employer participation, and industry – universities linkages should be strengthened.
- Facilitated internship that ensures that interns are rightly placed where their skills are needed.
- Curriculum should emphasise real-life work experience
- There is need for internationalization of the curriculum



4. **Institute of Development Management**  
— An Evaluation of Graduate Employability:  
A case for Institute of Development Management

**Edith Chimusoro, Israel Mogobe,  
Matthias Chida, Jonnie Batlhophi,  
Seeti Mpoeleng, Joyce B. Kgampi**  
- Institute of Development Management

- The success trajectory towards a knowledge-based economy partly hinges on a critical mass of graduates endowed with employability skills.
- Perceptions against relevance of training; match/mismatch; mobility of graduates, their satisfaction during and after training and the satisfaction of employer were used to establish the extent of curricula integration with employability skills sets.
- Both employers and graduates strongly agree that IDM offers training relevant to their needs and graduates perform much better after training at IDM.
- Whereas graduate external mobility is insignificant, internal mobility is high, in fact

graduates are promoted immediately after the IDM award.

- Employers also tend to pitch their expectations of graduate employability based on socialization and yet abdicate their own roles to partake in the discourse.
- IDM's employer networks, which could enhance employability, were found to be weak together with some aspects of infrastructure.
- The study concluded that a gap exist albeit the Career edge short coming of systems approach to employability and lack of an absolute measure of employability.
- Tripartite (institutions, employers, and graduates) networks outside the regular curricula development agenda (which is often shunned by the latter for its curricula jargon) could foster role clarification and collaboration in the employability agenda.



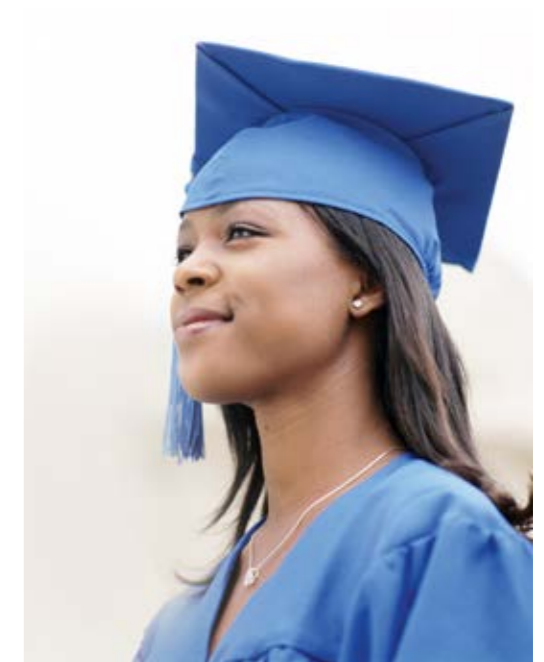
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*Female graduates from technical institutions have a high level of employability skills*



5. **Ba Isago University College**  
— Evaluation of employability of female graduates in technical career fields in the Ngamiland Region of Botswana

**Bushe Bernard, Rumarayi Tadu**  
- Ba Isago University College

- The relative importance of employability skills required by employers were assessed
- The level of employability skills of female graduates from technical institutions in Ngamiland Region were assessed and whether that help to predict their labour outcomes.
- The study revealed that soft skills were the skills that employers considered very important.
- It also revealed that female graduates from technical institutions have a high level of employability skills.
- The level of employability skills possessed by female graduates from technical institutions does not explain or predict their labour outcomes.
- Policy makers should guard against gender discrimination.



6. **BOCODOL**

— Enhancing graduate employability from an employer's perspective:  
A case of Botswana Public Service

**Changu Batisani and Mable K. Bothasitse**  
— BOCODOL

- > The study shows that employers are generally satisfied with graduate qualifications but prefer degree holders over certificate and diploma graduates.
- > Employers indicated that they prefer graduates from institutions of high international ranking and/or from foreign institutions because these graduates poses generic skill that are needed on the job.
- > From the findings internationalization of higher education, development of generic skills, subject knowledge and quality training are contributing factors to graduate employability in the context of Botswana public service.



“Employers indicated that they prefer graduates from institutions of high international ranking



7. **University of Botswana**

— Graduate employability in Botswana: Challenges & Prospects

**Dr Langtone Maunganidze and Dr Gabriel Faimau**  
— University of Botswana  
**Mr Roy Tapera** – Boitekanelo College

- > One of the main findings of the study was that patterns of employability and unemployability in Botswana varied by graduate educational background.
- > Boitekanelo graduates were likely to be more gainfully employed than most UB graduates particularly those in Social Sciences and Humanities.
- > One of the explanations for current pattern of unemployment is the issue of post-college destination preferences, internship was the least preferred destination.
- > Graduates were more assertive, independent and less loyal and more expensive and these were attributes most employers were not comfortable with.



- > There is no evidence yet if the skills and attributes demanded by market were embedded in the curriculum.
- > There is absence of work-related learning or practical experience oriented degree programs and the popularity of conventional full time models particularly at the University of Botswana.

## THEME ONE: Graduate Employability (Continued)

- > There is a lack of correspondence between the qualification level the job requires and the qualification level the employee has acquired through higher education (vertical mismatch).
- > Persistent skills-gap or 'skills mismatch' was attributed to the lack of communication between colleges and industry which results in university programs not matching industry needs or demands.
- > One of the reasons for the increased graduate unemployment was the limited industrial growth and the lack of urgency in the economic diversification drive.
- > The study concludes that prospects of employability could be increased through collaboration among government, industry and university in the development and review of higher education curricula.



“Prospects of employability could be increased through collaboration among government, industry and universities”



## THEME TWO

### The Structure of Families in Botswana

#### 1. Ba Isago University College — Effect of family structure and family stability on the academic achievement of children: A case of Botswana

**Dr. Shikha Trivedi, Mrs. Ifeoma Eze, Mrs. Catherine Mibenge** – BA ISAGO University College

- > The results of the study show that there is no significant relationship between the family structure, family stability and academic performance of children.
- > There are other factors that affect the child's performance like financial status of the family, parent's educational background and parental involvement in education of the child, etc.
- > However, parents should realize the importance of family stability and family structure to build a holistic child.
- > Children reared in certain family structures will, on average, receive more psychological support or more social, cultural, and economic resources.



- > Parents, educators and policy makers should consider ways of strengthening family ties for the betterment of children's academic performance.
- > Young people need to be sensitized on the rights of children and also the responsibilities of parents towards their children.

## THEME THREE

### Employment Creation Opportunities for the Youth

#### 1. **ABM University College** — The effect of skills mismatch on youth employment opportunities

**Joseph B. Mukasa** – ABM University College  
**Naiko King** – Limkokwing University

- > The findings reveal that graduate youth in both urban and semi-urban areas of Botswana generally lack basic employability skills which limit their employment chances.
- > There is also significant skills mismatch between employer requirements and the skills graduates display in the workplace.
- > Industry-university partnerships critical
- > Improved labour market information dissemination
- > Vocationalization of the curriculum
- > Improve quality of internship and apprenticeship
- > Promote workplace learning and training.



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Youth in both urban  
and semi-urban  
areas of Botswana  
generally lack basic  
employability skills



## THEME FOUR

### Self-Employment

#### 1. **Botho University** — Study of Impact of Citizen Entrepreneurial Development Agency (CEDA) funded entrepreneurs compared to self-funded entrepreneurs in Botswana's hospitality industry

**Dr Morgen Chawawa, Dino Rajah** – Botho University  
**Dr David Mandiyamike** – University of Botswana

- > Both entrepreneurs, those funded by CEDA and self-funded largely depend on good management practices for the success of their business.
- > The study rated entrepreneur perceptions on the importance of management practices in their business.
- > The study established that both types of entrepreneurs are equally concerned about human resources and financial management.
- > Self-funded businesses were more concerned with about marketing their businesses than CEDA funded businesses.
- > CEDA funded businesses were more interested in government contracts and tenders.

- > Due to its exploratory nature, the study is only pointing at salient areas for future research.



# THEME FIVE

## Youth and HIV/AIDS Values

### 1. University of Botswana — The HIV and AIDS interventions and the perceived behavioral control among college students in Gaborone

**Dr Gabriel Faimau and Dr Langtone Maunganidze**  
— University of Botswana

**Roy Tapera, Lynne C.K. Mosomane and Samuel Apau**  
— Boitekanelo College

- Generally students had fairly good background knowledge on HIV/AIDS infection facts.
- A significant number of students still had misconceptions regarding the HIV infection and transmission.
- A major strategy for developing culturally specific interventions requires indigenous grass-roots mobilizations and advocacy.
- The study also found that a good number of students were still exposed to risky sexual behaviour including the inability to negotiate when it comes to the pressure of having sex or not using a condom.
- A more qualitative and exploratory study might be useful to understand the reasons associated with the inability to deal with these pressures.
- Majority of students feel uncomfortable to talk about HIV/AIDS or to discuss issues related to sex and sexuality with their parents.
- Policy framework should provide adequate space for unconstrained deliberation among diverse actors with different knowledge system for HIV/AIDS.
- Religion can be a venue for public education related to positive preventive attitudes and control over sexual behaviour.
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“Religion can be an avenue for public education”

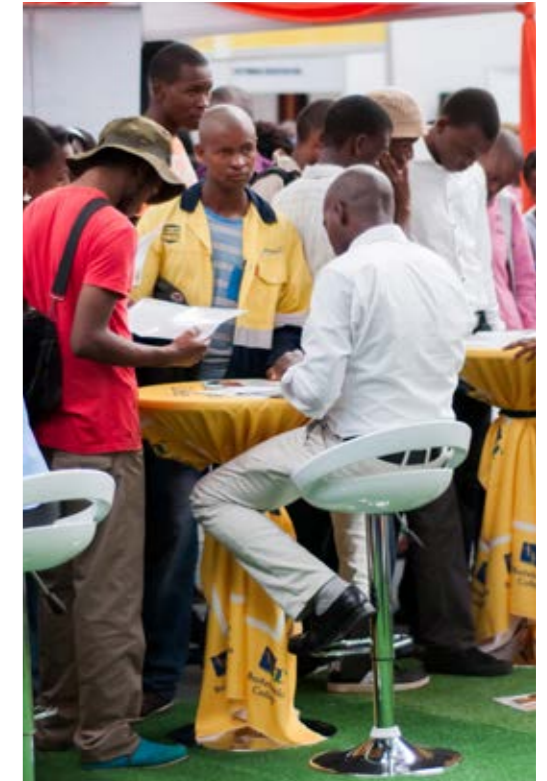


## THEME FIVE: Youth and Hiv/Aids Values (Continued)

### 2. Boitekanelo College — Knowledge attitudes and perceptions on HIV/Aids among youth in high school in Gaborone and environs

**Samuel G. Apau, Roy Tapera, MPH, Lynne C.K. Mosomane and Samuel Apau** – Boitekanelo College  
and **Dr Gabriel Faimau** – University of Botswana

- Sexual debut is an important risk behaviour influencing risk perception among youth in Botswana.
- HIV/AIDS education programmes maybe having an impact on social behaviour of young learners.
- Attitudinal and behavioural change programmes are the most effective in preventing the high prevalence of HIV/AIDS.
- High prevalence of substance intake among youth can influence ones social behaviour in order to indulge in sexual acts.
- Strategies should be developed to address the impact of social behaviour on the spread of HIV/AIDS in Botswana.



# THEME SIX

## Household Income –Sources, Strategies, Survival

### 1. University of Agriculture and Animal Resources (BCA)

- The potential role of indigenous plants in controlling internal worms of small stock for increased productivity and household income

**Madibela, O. R. , Ramabu, S. S., Tibe, O.  
Ratshipo, I., Moshakga, M.**

– University of Agriculture and Animal Resources

- > Small stock productivity is undermined by challenges of internal parasites, the mainstay of their control is centred on the use of chemical drugs which are expensive.
- > The study demonstrates the anthelmintic potential of traditional plants.
- > There is a growing interest on sustainable use of traditional plants as nematode parasite control.
- > Botswana should promote research on sustainable use of traditional plants so much so that the country is endowed with rich plant diversity.
- > The research will open opportunities for low cost and sustainable nematode parasite control, readily adaptable by rural communities and thus improving income generation.



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*Botswana  
should promote  
research on  
sustainable use  
of traditional  
plants*



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