

## 6. MALAWI

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### MALAWI

#### Political Facts

- Malawi gained independence in 1964
- Its first multi-party elections was held in 1994

#### Economic Facts

- Malawi is ranked as one of the least developed countries in the world
- Agriculture represents 38.6% of the GDP, accounts for over 80% of the labour force, and represents about 80% of all exports
- Estimated Growth in GDP in 2004 was 4.6%

#### Demographic Facts

- Estimated population is 12 884 million (2005).
- The HIV/AIDS prevalence rate was 14.1% in 2005
- Life expectancy in 2004 was estimated at 41 years

#### Education Facts

- Adult literacy rate (population above 15) is 16.1%

#### ICT Facts

- In 2004, there were 8 telephone lines per 1000 people and 4 internet users per 1000 people in 2005

### Introduction

Malawi's first S&T policy was formulated and adopted in 1991. However, the 1991 policy did not explicitly integrate S&T issues into national development planning. This weakness necessitated the government reviewing the policy and to adopting a new S&T policy in 2002. The revised policy contains clear-cut S&T development objectives and strategies for all priority sectors of the Malawi economy (Gausi & Kalanda, 2005:3) The policy also articulates the government's commitment to increase funding for S&T as well as to strengthen the institutional and legal framework for S&T (NRCM, 2002). The Malawian president has repeatedly emphasised that S&T development is vital to the country's overall development (SciDevNet, 2005b).

A *Ministry of Industry, Science and Technology (MIST)* was created shortly after the May 2004 general elections. However, MIST has since been dissolved, with the Industry Department now residing in the newly created Ministry of Industry, Trade and Private Sector Development. Control of the Department of Science and Technology has been moved to the Office of the President and Cabinet, meaning that the department directly reports to the president (SciDevNet, 2006b).

In May 2007, it was announced that the Malawian president has merged Education, and Science and Technology under a single ministry of which he will personally take charge. (Chirwa, 2005:3; SciDevNet 2007e; [www.malawi.gov.mw/OPC/Home%20%200PC.htm](http://www.malawi.gov.mw/OPC/Home%20%200PC.htm))

## Areas of specialization in R&D

### Local Research institutions

A comprehensive list of research institutions are provided in Table 47 below. The following types of institutions are included below:

- S&T Supporting Agencies
- R&D Performing Institutions : Higher Education
- R&D Performing Institutions : Government based research Institutions
- R&D Performing Institutions : Statutory research Institutes
- R&D Performing Institutions : Private research Institutes
- R&D Performing Institutions : International research Institutes

**Table 47: List of R&D and S&T institutions**

Name of Institution	Activities/ Purpose
<b>S&amp;T Supporting Agencies</b>	
National Research Council of Malawi	The National Research Council of Malawi (NRCM) is the coordinating body for R&D and S&T in the country. It was established in 1974 and operates within the purview of the Office of the President and Cabinet. The main purpose of the NRCM is to serve as an advisory organ of the government on all matters relating to scientific research and technological development. The Council also finances R&D to a limited extent, and has a number of subject specialist committees with representation from all relevant stakeholders
National Health Sciences Research Unit	In 1988, the then Ministry of Health and Population established the National Health Sciences Research Unit (commonly referred to as the research unit). This unit was given the mandate to promote and coordinate health research in Malawi.
National Economic Council	The National Economic Council (NEC) was created in 1998 and is one of the central planning agencies responsible for national economic planning and management. The Council's main mandate is to provide professional advice and technical support to the government and the public on economic and social policy development and management, in order to achieve faster and sustainable economic and development
Malawi Bureau of Standards	The Malawi Bureau of Standards (MBS) was established approximately 30 years ago. The Bureau is a statutory institution under the Ministry of Industry, Trade and Private Sector Development. It is responsible for standards development, quality assurance, testing, and metrology
<b>R&amp;D Performing Institutions : Higher Education</b>	
University of Malawi	The University of Malawi is a strong national research entity. About 10% of the University's overall budget for its development strategy is devoted to capacity building in research and consultancy, ensuring research quality, and improving dissemination and utilisation of research findings (UNIMA, no date: 39). The university further allows its staff to spend 25% of their time on research and 75% on teaching.

Mzuzu University	<p>Mzuzu University, in the northern region, was established in 1997 as Malawi's second public university. The university has four faculties (education, environmental sciences, health sciences, and information and communication sciences), as well as the following centres:</p> <ul style="list-style-type: none"> <li>• Centre for Open and Distance Learning</li> <li>• Centre for Continuing Education</li> <li>• The Test and Training Centre for Renewable Energy Technologies (TCRET)</li> <li>• Centre for Security Studies</li> <li>• Centre for Environmental Education, Training and Research</li> </ul>
R&D Performing Institutions : Government based research Institutions	
Central Veterinary Laboratory	Ministry where located: Agriculture and Food Security
Central Water Laboratory	Ministry where located: Irrigation and Water Development
Community Health Sciences Unit	Ministry where located: Health
Department of Agricultural Research Services (DARS)	Ministry where located: Agriculture and Food Security. DARS is the largest of the government-based research institutes and Malawi's principal research agency. DARS conducts applied agricultural commodity research and provides technical and advisory services to stakeholders in the areas of crop production, livestock production, seed production and plant protection
Fisheries Research Unit	Ministry where located: Mines, Energy and Natural Resources
Forestry Research Institute of Malawi (FRIM)	Ministry where located: Mines, Energy and Natural Resources. The institute's research is organised around four technical strategy areas: (1) indigenous woodland management; (2) trees on farms; (3) plantations; and seed and tree improvement ( <a href="http://www.frim.org.mw">www.frim.org.mw</a> ). FRIM is responsible for research in all aspects in forestry that include nursery establishment and management, silvicultural systems, indigenous forest management, social forestry, tree improvement, seed supply and variability, wood utilisation and marketing, and plant protection
Geological Survey Department	Ministry where located: Mines, Energy and Natural Resources
Health Sciences Research Unit (HSRU)	Ministry where located: Health
Meteorological Department	Ministry where located: Transport and Public Works
National Aquaculture Centre	Ministry where located: Mines, Energy and Natural Resources
Wildlife Research Unit in the Department of Parks and Wildlife	Ministry where located: Mines, Energy and Natural Resources
R&D Performing Institutions : Statutory research Institutes	
Malawi Industrial Research and Technology Development Centre (MIRTDC)	MIRTDC was set up as a trust with a mandate to conduct industrial research and develop technologies for sustainable utilisation of natural resources by industry. Its programmes include, among others, the development of agricultural implements and machinery for cottage and light industries

National Herbarium and Botanic Gardens of Malawi (NHBG)	NHBG's roots date back to 1891 when the first botanic garden was established in the city of Zomba and to 1930 when the first herbarium was established in the same city. The research activities of NHBG include taxonomic research, ethnobotanical surveys and vegetation surveys ( <a href="http://www.sdn.org.mw/enviro/herb">www.sdn.org.mw/enviro/herb</a> ). NHBG is affiliated to the Ministry of Mines, Energy and Natural Resources.
R&D Performing Institutions : Private research Institutes	
Agricultural Research and Extension Trust (ARET)	ARET is a non-profit organisation which was established in 1995 through a merger of the Tobacco Research Institute of Malawi (TRIM) and the Estate Extension Service Trust (EEST). ARET is funded and controlled by the Tobacco Association of Malawi (TAMA). Research is demand-driven, aimed at developing improved technologies, such as varieties and production techniques that increase the production of high quality tobacco
Tea Research Foundation of Central Africa (TRF)	The TRF is located in Malawi but conducts tea research for Malawi, Zimbabwe, South Africa and Zambia. The TRF is a non-profit organisation, mainly funded by the Tea Associations of Malawi and Zimbabwe (Beintema, Mwenda & Mtukuso, 2004:2). Apart from tea research it includes coffee and other plantation tree crops in its portfolio. It was established in 1966 (Rooseboom & Pardey, 1993:4).
Illovo Sugar (Malawi) Ltd	Illovo Sugar (Malawi) Ltd is part of the Illovo Sugar Group, a leading, global sugar producer and significant manufacturer of downstream products, with agricultural, manufacturing and other interests extending over six southern African countries.
R&D Performing Institutions : International research Institutes	
WorldFish Centre	The WorldFish Centre is an autonomous non-profit international scientific organisation, with its headquarters in Penang, Malaysia. The WorldFish Centre's office in Malawi services the Southern African Development Community (SADC). It undertakes research in partnership with the Malawi Department of Fisheries, the University of Malawi and the Zambian Department of Fisheries. The focus is on fisheries research within the broad context of watershed management (WorldFish, no date).
International Centre for Research in Agroforestry (ICRAF)	The International Centre for Research in Agroforestry (ICRAF) has a programme in Malawi, which is based at the Makoka Agricultural Research Station. ICRAF-Malawi has particular strength and expertise in soil fertility improvement technologies, fruit tree domestication, sustainable tree seed systems, fodder for livestock production, strengthening grassroots capacity, empowerment through training and scaling up of the proven technologies.
International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)	ICRISAT is a non-profit, non-political organisation that undertakes innovative agricultural research and capacity building for sustainable development with a wide array of partners across the globe. Its research unit in Malawi is based at the Chitedze Research Station of DARS, in Lilongwe ( <a href="http://www.icrisat.org">www.icrisat.org</a> ).
The International Institute of Tropical Agriculture (IITA)	This network has more than 100 international scientists based in various IITA stations across Africa. This network of scientists is dedicated to the development of technologies that reduce producer and consumer risk, increase local production, and generate wealth

Table 48 below lists the names of centres and units within the University of Malawi

**Table 48: Centres and units at the University of Malawi**

Constituent colleges	Centres and Units
Bunda College of Agriculture	Agriculture Policy Research Unit (APRU) within the Centre for Agricultural Research and Development (CARD)
Chancellor College	Centre for Educational Research and Training (CERT) Centre for Language Studies (CLS) Centre for Social Research (CSR) Demographic Unit Natural Resources and Environment Centre Molecular Biology and Ecology Research Unit (MBERU) * Renewable Energy Unit
College of Medicine	Bioethics Research Unit Centre for Reproductive Health
Kamuzu College of Nursing	Nursing, Midwifery and Health Sciences Research Centre (NUMHREC)
Polytechnic	Centre for Continuing Education Management Centre Polytechnic Commercial Technical Services Malawi Transportation Technology Transfer Centre (T <sup>2</sup> C) Centre for Water, Sanitation, Health, and Appropriate Technology Development (WASHTED)

Compiled from the websites of the constituent colleges ([www.bunda.unima.mw](http://www.bunda.unima.mw); [www.chanco.unima.mw](http://www.chanco.unima.mw); [www.medcol.mw](http://www.medcol.mw); [www.kcn.unima.mw](http://www.kcn.unima.mw); [www.poly.ac.mw](http://www.poly.ac.mw)).

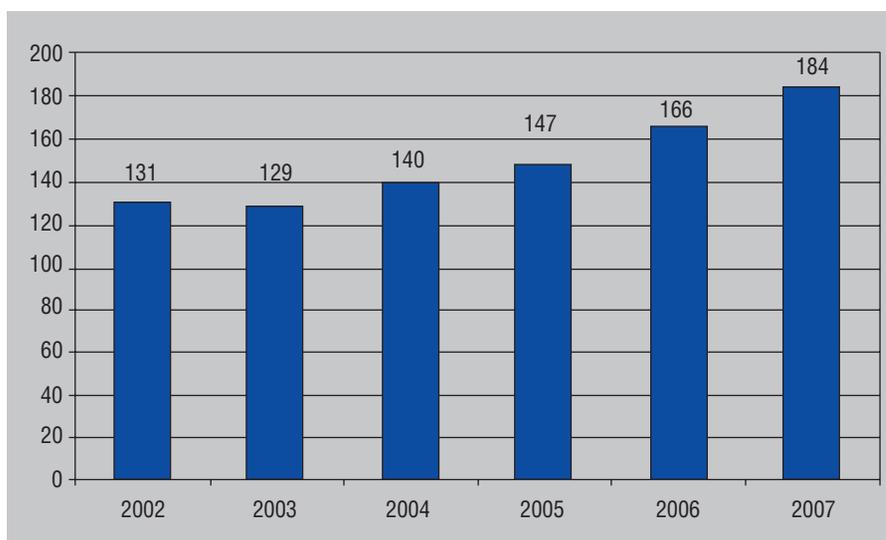
\* MBERU has been transformed into the Biotechnology-Ecology Research and Outreach Consortium (BioEROC), according to Ambali and Mswoya (2004). The authors classify BioEROC as a private research firm but no additional information could be obtained in support of this classification.

### Research output

The National Research Council of Malawi (NRCM) has produced a directory of publications by Malawian researchers, covering the period 1996-2002. The problem with this publication, however, is that it lacks in-depth analysis. It merely states that 40% of the publications within the reference period were written by Malawians, and of the publications produced by non-Malawians, 40% were co-authored by Malawians. It is further stated that the health sector has produced more publications than any other sector and that 10% of the publications in the health sector have been published by Malawians in internationally recognised journals (NRCM, no date: i).

Further information on Malawian affiliated publications was obtained from the Thomson Scientific database, for the period 2002-2007. Researchers in Malawi produced, on average, about 140 publications per year in ISI journals. Unfortunately, given the limited scope of this report and time constraints, the publications could not be disaggregated in terms of the scientific field classification of journals.

**Figure 8: Number of ISI-papers per year: 2002-2007**



**Table 49: Malawi: Number of Publications by Source Title**

Source Title	Record Count	% of 1040
International Journal of Tuberculosis and Lung Disease	74	7.1%
Lancet	47	4.5%
Tropical Doctor	46	4.4%
Journal of Infectious Diseases	44	4.2%
Transactions of The Royal Society of Tropical Medicine and Hygiene	39	3.8%
Aids	30	2.9%
American Journal of Tropical Medicine and Hygiene	27	2.6%
Tropical Medicine & International Health	20	1.9%
Bulletin of the World Health Organization	19	1.8%
British Medical Journal	15	1.4%
Physics and Chemistry of the Earth	13	1.3%
Archives of Disease in Childhood	12	1.2%
Annals of Tropical Medicine and Parasitology	11	1.1%
Annals of Tropical Paediatrics	11	1.1%

Source Title	Record Count	% of 1040
Emerging Infectious Diseases	10	1.0%
Infection and Immunity	9	0.9%
JAIDS-Journal of Acquired Immune Deficiency Syndromes	9	0.9%
Journal of Bone and Joint Surgery-British Volume	9	0.9%
Clinical Infectious Diseases	8	0.8%
Croatian Medical Journal	8	0.8%
Experimental Agriculture	8	0.8%
Journal of Clinical Microbiology	8	0.8%
Malaria Journal	8	0.8%
Plos Medicine	8	0.8%

## Size of the R&D work force

### Universities R&D workforce

The headcount of academics at the University of Malawi and Mzuzu University is shown in Tables 50 & 51. In the case of the University of Malawi, the figures for 2007 are provided and in the case of Mzuzu University the figures pertain to the 2001-2002 academic year.

**Table 50: Headcount of academic staff at the University of Malawi (2007)**

Constituent colleges	Headcount	Percent
Bunda College of Agriculture	140	20%
Chancellor College	221	32%
College of Medicine	82	12%
Kamuzu College of Nursing	56	8%
Polytechnic	198	28%
Total	697	100%

Compiled from University of Malawi Staff List, January 2007 ([www.unima.mw/downloads.htm](http://www.unima.mw/downloads.htm)).

'Academic staff' includes Professor, Associate Professor, Head of Department, Senior Lecturer, Lecturer, Assistant Lecturer and Staff Associate.

**Table 51: Headcount of academic staff at Mzuzu University (2001-2002)**

Academic staff	Headcount			% of total with doctorate
	Male	Female	Total	
Full-time	34	5	39	15%
Part-time	10	1	11	45%
Total	44	6	50	22%

Source: IAU (2003:1332)

### Public Sector R&D workforce

The NRCM has very limited influence on the S&T institutions, which affects the collection and compilation of S&T and R&D data. As a result, some of the crucial S&T data are difficult to obtain and sometimes unavailable altogether (Gausi & Kalanda, 2005:6-7).

The NRCM conducted a survey of human resources in agricultural and natural resources research in the country in 1999. Of the 243 researchers with graduate qualifications, 45 held BScs, 127 MScs and 71 PhDs. The largest concentration of PhDs was in DARS (32%) and Bunda College of Agriculture at the University of Malawi (20%). Among the sectors, agriculture accounted for 83% of total researchers, and fisheries and forestry for 8.5% each (Phiri, no date: 3).

Moreover, the 2001 Directory of S&T institutions in Malawi, compiled by the NRCM, includes the number of scientists per S&T institution. If one adds up the number of scientists for every institution that has a specified research function, a headcount of 781 is obtained.

### Trends in masters and doctoral enrolments

The numbers of masters and doctoral degrees awarded by the University of Malawi over the period 1996 to 2006 are presented in Table 52. As can be seen in the few instances where doctoral degrees exist, they were all awarded within the social sciences and humanities.

**Table 52: Masters and doctoral degrees awarded at the University of Malawi (1996-2006)**

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
<b>MASTERS</b>	12	10	38	10	40	44	50	45	0	83	55
Social sciences & humanities	9	2	14	2	23	13	13	13	0	55	32
Natural sciences, engineering & health	3	8	24	8	17	31	37	32	0	28	23
<b>DOCTORAL</b>	0	0	1	3	4	2	5	3	0	5	3
Social sciences & humanities	0	0	1	3	4	2	5	3	0	5	3
Natural sciences, engineering & health	0	0	0	0	0	0	0	0	0	0	0

Compiled from figures provided by the Malawian Department of Science & Technology, February 2007. In all likelihood, the figures for 2004 do not represent true zeros but rather a lack of statistics.

As far as Mzuzu University is concerned of the 461 students in 2007 only 13 (i.e. 3%) are postgraduate students. All of them are enrolled for the MSc Degree in Information Theory, Coding and Cryptography ([www.mzuni.ac.mw](http://www.mzuni.ac.mw)).

### Human and institutional capacity development strategies

Staff recruitment and retention has been raised by the Department of Science and Technology as a concern in its strategic plan for 2005-2010. The department realises that it is expensive to recruit and train staff for specific key technical and professional

occupations. In this regard, the institutionalisation of a result-orientated management system is seen as of paramount importance (MIST, 2005:9).

Industry has also expressed concerns over the low quality of new graduates and/or professionals, in terms of their analytical and writing skills. This may be because universities are not shaping the current crop of graduates according to the needs of industry (Faiti, 2006:4).

The national S&T policy acknowledges the fact that Malawi needs to make significant strides in improving its stock of S&T human resources. The policy states that a wide range of initiatives is already in place to address the shortfall in technical work force, which includes the re-organisation and strengthening of technical, entrepreneurial and vocational education and training. To this end, the government has adopted a Technical, Vocational, Entrepreneurial Education and Training Policy. In order to achieve these objectives, the following strategies will be adopted (NRCM, 2002, Point 3.4.2):

- Strengthen university education in S&T and increase and diversify postgraduate training programmes;
- Ensure that the universities offer postgraduate studies leading to MScs and PhDs on an on-going basis;
- Create institutions constituting an inter-disciplinary bridge between different faculties;
- Promote the involvement of professional institutions in the training of S&T human resources while ensuring gender equity;
- Promote an integrated, demand-driven, competency based modular technical, entrepreneurial and vocational education and training system;
- Monitor gaps between supply of and demand for technically skilled human resources;
- Ensure the retention of S&T human resources in Malawi; and
- Undertake national surveys of S&T human resources at regular intervals in order to establish the national stock as a basis for developing human resources in all S&T fields.

## Key R&D Initiatives and Networks

### Key Initiatives

#### *Innovation strategies*

Apart from the Malawi Award for Scientific and Technological Achievement (MASTA), there are no awards that promote innovation. A technology strategy for sustainable livelihood strategy was produced by MIRTDC at the turn of the century. The strategy has identified key technologies with strong potential to impact on enterprise development in Malawi. The uptake of the strategy is however unknown. The technologies have been summarised in Table 53.

**Table 53: Key technologies that are considered instrumental in increasing the productivity of enterprises in Malawi**

Public/private	Technologies	
High potential public common assets	Renewable energy technologies	Solar energy
		Biogas technology
		Micro-hydro
		Windmill technology
	Water technologies	Water pumps
		Purification technologies
	Forestry and wildlife technologies	Beekeeping
		Utilisation of wild fruits (baobab, tamarind, marula, etc)
		Domestication of guinea fowls

Public/private	Technologies	
High potential private common assets	Food processing technologies	Improved bakery ovens
		Kachasu stills*
		Juice extractor
		Maize dehuller
		Oil expeller
		Improved produce driers
	Poultry production technologies	Egg incubator
		Feed mixer
		Brooders, laying boxes and cages
	Mining technologies	Brick making
		Salt production
		Lime production
		Ceramics and clay roofing tiles
	Handicrafts and garments technology	Fabrication of leather hand tools and leather tanning tools, manufacturing of cane furniture, etc.
Metalwork technology		

Source: Compiled from MIRTDC (no date: 43-51)

\* Kachasu = A local rum distilled from a fermented mixture of cereals and sugar

### Priority areas

The S&T policy includes a total of 17 priority sectors: (1) Education and training; (2) agriculture, food and nutrition; (3) water resources and sanitation; (4) irrigation; (5) health and population; (6) energy; (7) industry; (8) commerce; (9) environment; (10) construction; (11) communications; (12) transport; (13) natural resources ( forestry, fisheries, wildlife, and mineral resources); (14) urban and rural planning; (15) defence; (16) internal security; and (17) disability.

### Collaboration through international and regional networks

#### *Bilateral cooperation*

Malawi and Ethiopia signed an economic, trade, cultural and technical cooperation agreement in January 2006 in order to strengthen the two countries' long standing bilateral relations. The agreement served to formalise trade between the two countries, which have been engaged in informal trade since 1965. Malawi's Foreign Affairs and International Cooperation Minister commented that Ethiopia was well advanced in leather and hand craft industry, which Malawi could benefit from ([www.malawi.gov.mw/story.php?id=34](http://www.malawi.gov.mw/story.php?id=34)).

According to the Ministry of Foreign Affairs of Greece, Malawi has yet to answer to the 2001 proposal for drafting an Economic, Scientific and Technological Assistance Agreement ([www.mfa.gr](http://www.mfa.gr)).

Norway and Malawi signed a memorandum of understanding in October 2000, with the overall objective of alleviating poverty in Malawi. The agreed programmes focused on good governance, HIV/AIDS, macro-economic reform and health sector development. Although agriculture was not defined as a priority area, Norwegian assistance has always contributed to applied research in the agricultural sector ([www.norway.mw/development/agreement/agreement.htm](http://www.norway.mw/development/agreement/agreement.htm)).

The governments of Malawi and Japan signed a technical cooperation agreement in 2006. The agreement, among others, provided a solid base for the continuation of the Japanese Technical Cooperation. The initiative serves to transfer specialised technical expertise to various sectors of the Malawian economy, e.g. telecommunications, transport, civil aviation, fisheries, health, and agriculture ([www.nationmalawi.com/print.asp?articleID=15533](http://www.nationmalawi.com/print.asp?articleID=15533)).

An agreement on bilateral cooperation between South Africa and Malawi was signed on 7 May 2007. ([www.info.gov.za/speeches/2007/07050714151001.htm](http://www.info.gov.za/speeches/2007/07050714151001.htm)). No further details are available.

### **Multilateral cooperation**

Bioscience activities in Malawi form part of the Southern African Biosciences Hub that is located at the CSIR in Pretoria. It is a NEPAD initiative under the NEPAD Science and Technology Programme. The initial focus is to drive regional cooperation (in Southern Africa), with a long term vision of creating synergy between all four regional hubs in Africa (i.e. Southern, West, East and North Africa) ([www.csir.co.za/plsql/pti0002/PTL0002\\_PGE013\\_MEDIA\\_REL?MEDIA\\_RELEASE\\_NO=7303835](http://www.csir.co.za/plsql/pti0002/PTL0002_PGE013_MEDIA_REL?MEDIA_RELEASE_NO=7303835))

### **S&T relations with South Africa**

A list of established research relations between South Africa and Malawi was produced by investigating the pattern of publication co-authorship between these two countries, as reflected in the Thomson Scientific database. This was done for the period 2004-2007 (obviously only for those 2007 publications already captured by Thomson Scientific). The results indicate Malawian researchers in the field of health and related sciences already have relations with a number of South African institutions: the Medical Research Council, the National Health Laboratory Service (of which the National Institute for Communicable Diseases is a branch), North West University, Stellenbosch University, the University of Cape Town, the University of KwaZulu-Natal, the University of the Western Cape, and the University of the Witwatersrand.

Moreover in the field of food sciences, the Universities of Pretoria and the Free State appear to have some collaboration with Malawian researchers, and in the case of fisheries research the South African collaborator is Rhodes University. The Forestry and Agricultural Biotechnology Institute (FABI) at the University of Pretoria collaborates with Malawian scientists in the field of forestry research.

### *Other cooperation/ networks*

Southern African Network for Biosciences (SANBio) is one of the four regional networks in Africa. It has been established with the regional Hub being hosted by the Council for Scientific and Industrial Research (CSIR) in the Republic of South Africa. The network covers 12 countries in the sub-region which are: Angola, Botswana, Malawi, Mauritius, Mozambique, Namibia, Lesotho, Swaziland, Seychelles, Republic of South Africa, Zambia and Zimbabwe. (CREST & High Impact Innovation, 2007).

## **Facts and Figures on brain drain**

Malawi experiences problematic health sector migration with an overall vacancy rate of 33% across the entire public health system (Record & Mohiddin, 2006). This is even more critical for certain individual occupations, as shown in Table 54.

**Table 54: Established posts and vacancies in Malawi's public health system (2004)**

Occupation	Number of established posts	% Filled
Nurses (all grades)	6 084	36%
Clinical officers	3 852	73%
Medical assistants	692	47%
Surgeons	115	15%
Medical specialists	65	5%
Anaesthesiologists	14	29%
Pathologists	22	0%
Obstetricians/gynaecologists	126	9%
Paediatricians	60	8%
Total health professionals	21 337	77%

Source: Malawi Ministry of Health, 2004, in Record and Mohiddin (2006)

## International and foreign funding of S&T

The Agricultural Research and Development Fund (ARDEF) programme is a five year Norwegian funded national programme coordinated at Bunda College (University of Malawi). The programme aims to set up an initial competitive grant scheme (CGS) to fund projects in agriculture, natural resources and related fields to effectively contribute to addressing the poverty reduction initially identified in selected pilot impact areas. An immediate outcome of the programme is to promote food security and income generation of small-scale farmers. The programme, which is running from October 2005 to June 2010, forms part of a NOK35.0 million support scheme from the Government of Norway. It is governed and managed by national structures such as the ARDEF Programme Board and ARDEF Management Group and compose of various stakeholders, including the Department of Science and Technology, Ministry of Agriculture and Food Security, Ministry of Mines, Energy and Natural Resources, Ministry of Education and Vocational Training, Ministry of Finance. (Banda, Kaunda & Kanyama-Phiri, no date)

In 2004 the Department of Meteorology announced a strategic plan to completely automate and update Malawi's weather stations with modern computerised equipment so as to improve recording and monitoring of weather data. The plan cost US\$1 million to implement and it was said that it would be jointly funded by the Malawian government and international donors. The European Union, The United Nations Development Programme and the Japanese International Corporation Agency were to be contacted with funding proposals (SciDevNet, 2004).

Apart from funding, Malawi has also been donated S&T equipment. An example is the state-of-the-art geology equipment – the International Earth Monitoring System – that was donated by the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organisation (CTBTO) in Geneva, Switzerland. It will improve Malawi's capability to detect natural disasters such as earthquakes and earth tremors, volcanic explosions and meteorites, and allow it to issue early warnings signals to its agriculture and aviation sectors (SciDevNet, 2006c). Moreover, UNESCO financially supported an S&T Chair in Renewable Energy at the University of Malawi in 1999 (UNESCO, 2007:26).

Table 55 locates the main external donors for 2002-2005 under each pillar and associated thematic area of the Malawi Poverty Reduction Strategy Paper (MPRSP). The table is derived from a summary provided by the African Development Bank. Overall, all four pillars received widespread donor attention and funding. However, the tendency for donors was to focus on sectors such as agriculture, health, education, and livelihoods, where the linkages to poverty reduction are most explicit and results can be achieved more directly (ADB, 2005:26). Only Japan explicitly concentrated on S&T in its donor support to Malawi.

**Table 55: Main donor support by MPRSP pillar and theme (2002-2005)**

Donor	Sources of growth	Agriculture	Natural resources	MSMEs	Manufacturing & agro-processing	Tourism	Small-scale mining	Enabling environment	Education	TEVET	Health	Nutrition	Safety nets	Disaster management	Political will & mindset	Security & justice	Responsive public institutions	HIV/Aids	Gender	Environment	Science & Technology	
World Bank																						
WHO																						
WFP																						
USA																						
UNDP																						
UNICEF																						
UK																						
Sweden																						
Norway																						
Japan																						
Germany																						
FAO																						
IMF																						
EU																						
Canada																						
ADB																						
	Sources of growth																					
	Agriculture																					
	Natural resources																					
	MSMEs																					
	Manufacturing & agro-processing																					
	Tourism																					
	Small-scale mining																					
	Enabling environment																					
	Education																					
	TEVET																					
	Health																					
	Nutrition																					
	Safety nets																					
	Disaster management																					
	Political will & mindset																					
	Security & justice																					
	Responsive public institutions																					
	HIV/Aids																					
	Gender																					
	Environment																					
	Science & Technology																					

Source: ADB (2005, Annex VI)