



REPUBLIC OF ZAMBIA

REPORT

OF THE COMMITTEE

ON

**EDUCATION, SCIENCE AND TECHNOLOGY FOR THE FIFTH SESSION OF
THE NINTH NATIONAL ASSEMBLY**

APPOINTED ON 19TH JANUARY, 2006

PRINTED BY THE NATIONAL ASSEMBLY OF ZAMBIA

REPORT

OF THE COMMITTEE

ON

**EDUCATION, SCIENCE AND TECHNOLOGY FOR THE FIFTH SESSION OF
THE NINTH NATIONAL ASSEMBLY**

APPOINTED ON 19TH JANUARY, 2006

PRINTED BY THE NATIONAL ASSEMBLY OF ZAMBIA

TABLE OF CONTENTS

	Page
1.0 Composition of the Committee	1
2.0 Functions of Committee	1
3.0 Meetings of the Committee	1
4.0 Procedure adopted by the Committee	1
 PART I	
5.0 The Development of Indigenous Technologies and their Application	2
5.1 Ministry of Science, Technology and Vocational Training	2
5.2 National Technology Business Centre	6
5.3 National Science and Technology Council	7
5.4 National Institute for Scientific and Industrial Research	10
5.5 Ministry of Health	14
5.6 Ministry of Agriculture and Co-operatives	15
5.7 Committee's Observations and Recommendations	19
 PART II	
6.0 Consideration of Outstanding Issues for the Action-Taken Report for 2005	20
6.1 Introduction of the use of Vernacular in Government Schools	20
6.2 Committee's Observations and Recommendations	21
6.3 National College for Management and Development Studies	21
6.4 Committee's Observations and Recommendations	22
6.5 Mansa Trades Training Institute	22
6.6 Committee's Observations and Recommendations	23
7.0 Conclusion	23

REPORT OF THE COMMITTEE ON EDUCATION, SCIENCE AND TECHNOLOGY FOR THE FIFTH SESSION OF THE NINTH NATIONAL ASSEMBLY APPOINTED ON 19TH JANUARY, 2006

Consisting of:

Mr T M Bwalya, MP (Chairman); Ms Q V Kakoma, MP; Mr J C Moonde, MP; Mr B Mushala, MP; Mrs O Nkumbula-Liebenthal, MP; Mr P G Phiri, MP; Mr E M Mudenda, MP; and Mr M Wanyambe, MP.

THE HONOURABLE MR SPEAKER
NATIONAL ASSEMBLY
PARLIAMENT BUILDINGS
LUSAKA

Sir,

Your Committee have the honour to present their Report for the Fifth Session of the Ninth National Assembly.

Functions of the Committee

2.0 The functions of your Committee are as follows:

- (i) to study, report and make recommendations to the Government through the House on the mandate, management and operations of the Ministries of Education and Science, Technology and Vocational Training and/or agencies under their portfolio;
- (ii) to carry out detailed scrutiny of certain activities being undertaken by the Ministries of Education and Science, Technology and Vocational Training; departments and/or agencies under their portfolio and make appropriate recommendations to the House for ultimate consideration by the Government;
- (iii) to make, if considered necessary, recommendations to the Government on the need to review certain policies and/or certain existing legislation;
- (iv) examine annual reports of Government Ministries and departments under their portfolios in the context of the autonomy and efficiency of Government Ministries and departments and determine whether the affairs of the said bodies are being managed according to relevant Acts of Parliament, established regulations, rules and general orders; and
- (v) to consider any Bills that may be referred to them by the House.

Meetings of the Committee

3.0 Your Committee held eleven meetings during the year under review.

Procedure adopted by the Committee

4.0 Your Committee considered and adopted the following programme of work for 2006:

- (i) consideration of submissions on the development of indigenous technologies and their application; and
- (ii) consideration of outstanding issues from the Action-Taken Report on your Committee's Report for 2005.

PART I

5.0 CONSIDERATION OF SUBMISSIONS ON THE DEVELOPMENT OF INDIGENOUS TECHNOLOGIES AND THEIR APPLICATION

SUBMISSION BY THE PERMANENT SECRETARY, MINISTRY OF SCIENCE, TECHNOLOGY AND VOCATIONAL TRAINING

5.1 The Permanent Secretary informed your Committee that the following institutions are involved in research and development of indigenous technologies:

a. **National Institute for Scientific and Industrial Research (NISIR)**

He explained that NISIR has laboratory and basic equipment and tools and it conducts research in the areas of livestock productivity and disease control, food and technological research, post harvest and food processing, nutrition, water, energy and the environment. It also conducts research in materials, nuclear energy and application, biotechnology, pesticide and toxicology, animal reproduction and physiology building and industrial research.

b. **Technology Development and Advisory Unit (TDAU) – UNZA**

Your Committee were informed that TDAU could do any job with the help of sub-contracting where necessary in the areas of appropriate (intermediate) technology. The Unit had been successful in developing food processing technology, renewable energy sources, intermediate needs of transport devices, block presses for cheaper building materials, agricultural implements and automated poultry egg incubators.

c. **School of Veterinary Medicine**

The School, which has twenty-one lecturers, has well established laboratory facilities and basic equipment such as micro centrifuge, fluorescent microscope, spectrophotometer, ultra centrifuge, histopath, processor, electrolyte and Polymerase Chain Reaction (PCR). It carries out research in animal health and production, public health–veterinary aspects, wildlife diseases/ domestic livestock/human interphase/fish diseases, environmental toxicology, and socio-economic impact of animal diseases and control.

d. **School of Mines**

The Permanent Secretary informed your Committee that the School of Mines has basic equipment and laboratory to do meaningful research in the areas of geological research, metallurgy and mineral processing, mining engineering and technology, and environmental protection.

It had been successful in the development of partly acidulated phosphate fertilizer, delineation of areas with suitable agricultural lime and exploration for gemstones using geological and remote sensing techniques.

e. **School of Medicine**

Your Committee heard that the School of Medicine is an academic institution and research is part of training of academic staff. Some of the research projects were carried out in conjunction with University Teaching Hospital in the research areas which included infectious diseases- such as HIV/AIDS, measles, tuberculosis, malaria, polio, digestive diseases, and maternal and childcare.

f. **Northern Technical College**

The College has a meteorology laboratory; a fluid laboratory; a strength of materials and engineering laboratory; physics and applied mechanic laboratory; an electrical machines laboratory; fuel injection laboratory; an electrical workshop; machining, fitting and fabrication workshops; and auto and heavy equipment repair workshops. The college has fifty lecturers.

Areas of research were in renewable energy applications, micro-enterprise development (as a strategy for promoting the self-employment career).

g. **Tropical Diseases Research Centre**

The Centre has laboratories, basic equipment and tools to perform meaningful research in the areas of malaria, HIV/AIDS, schistosomiasis, nutrition (micronutrients), and deficiency disorders.

One of the Centre's achievements were the new drugs against malaria already tested and in use as well as a programme of vitamin A capsules distribution to all children.

h. **Golden Valley Agricultural Research Trust (GART)**

Your Committee were informed that the GART is an autonomous, independent and broad based organisation with a core staff of eleven senior and eight junior management staff who are highly qualified and motivated individuals who collectively have nearly 100 years of experience.

The Trust's areas of research are in the fields of conservation tillage, farm implement testing and development, soil fertility improvement, and testing of crop varieties from seed companies.

i. **Cotton Development Trust**

The Cotton Development Trust had basic equipment/ tools and six qualified researchers to perform research.

Your Committee heard that the Trust's scientific and commercial activities are organised under four themes, which include the development and improvement of cotton varieties and production technologies; breeding—conventional and biotechnology testing; agronomy—conservational tillage, variety demonstration, rotations and intercropping; entomology—pests and disease control by using biotechnology and biological control measures.

The Trust is also involved in collaborative research and professional partnership development; testing of cotton and other crop varieties; testing of agricultural inputs from various companies; conducting research and collaborating with private cotton companies and those in other sector institutions.

j. **Ministry of Agriculture and Cooperatives**

Your Committee learnt that the Ministry has the following institutions;

- **Mochipapa Research Station**

The Station conducts research in the areas of soil and crops genetic improvement and conservation, nutrition and feed resources development, and crisis mitigation in livestock dependant systems. The station has eleven research staff.

It has been successful in low cost production techniques for smallholder farmers involving both livestock and soils and crops, and improved feeding value of grass with urea.

- **Animal Production and Health**

The Station, which has basic equipment and sixteen research staff, is involved in research in epidemiology of tick borne diseases especially East Coast Fever (ECF) in Southern and Central Provinces, studies in local East Coast Fever strains, stabilise production, enhancement and quality control, and comparing cost of East Coast Fever immunisation with other options.

- **National Irrigation Research Station**

The Station has laboratory facilities, basic equipment and a core staff of seventeen to undertake research activities in vegetable crops, epidemiology of tick borne diseases, irrigation and engineering, especially tree and plantation crops, pastures, sericulture, and plant protection.

The Station had successfully identified vegetation cultivars which had been grown by farmers. Additionally, recommendations on the cultural practices had been worked out such as irrigation practices; management of pests and diseases; seed production methods for pastures and vegetables; and propagation methods for pastures and vegetables, propagation methods for fruit trees, coffee and cashew nuts.

- **Zambia Agricultural Research Institute (ZARI)**

Your Committee were informed that this Department only has basic equipment/ tools and two scientific officers and is involved in research in the development of high yielding varieties under high rainfall conditions, development of disease resistant varieties, and maintenance of soil productivity.

The Department had come up with disease tolerant varieties, as well as methods of maintaining soil productivity.

The role of the Ministry and relationship with listed institutions

Your Committee were informed that during the last four years of implementation of the Science and Technology Policy and Act, the National Science and Technology Council had put in place mechanisms to coordinate the development and application of science and technology. The National Technology Business Centre (NTBC), which was also established under the Science and Technology Act, had been working with various research institutions as well as the business community to facilitate technology transfer.

Your Committee also learnt that the Ministry had been providing policy direction, monitoring the implementation of the policies in science and technology and giving financial support where necessary.

Average rate of implementation of indigenous technologies and their acceptance, use and commercialisation

The Permanent Secretary stated that the Ministry, through the NTBC, had implemented vigorous programmes that were meant to sensitise and commercialise indigenous technologies. So far, the response had been very encouraging especially in those technologies that are affordable by medium and small-scale entrepreneurs such as block-making machines, automated incubators and the yenga press for making cooking oil.

The comparative rate of successful conclusion, acceptance, use and commercialisation of indigenous technologies in Zambia

The ministry's views were that the beginning had been quite slow but encouraging as long as indigenous technologies remained cheaper in cost but comparable to foreign technologies in performance.

Challenges in the development and application of indigenous technologies

Your Committee were informed that there were many challenges facing science and technology which included lack of industry to take up technologies for commercialisation, lack of capital for technology transfer to small-scale entrepreneurs, and limited capacity at NTBC to be able to effectively facilitate technology transfer. The institution needed sound financial capacity.

Way forward

- (a) There is need for the Government to start making deliberate directives on support to industries that adopted local technologies. Support could be in form of tax incentives, facilitation of development of locally produced goods and services through the use of local technologies.
- (b) The Science and Technology Act No. 26 of 1997 stipulated transforming of research branches in ministries into statutory scientific research institutions, and bringing them under the umbrella of the ministry responsible for science and technology. This had not been easy because of a number of factors including finances. Once this was achieved, the development and application of science and technology would be well coordinated.
- (c) Under the Fifth National Development Plan, (FNDP) priority areas for research and development have been identified in the document. Implementation of these research priorities would be the core business for the Ministry.

In addition, the Permanent Secretary submitted that the major areas of technology research in the country were health, agriculture, engineering and energy. Researchers were found to be poor marketers of their products as their focus was mainly on the laboratory and not on the outside environment where the technology was applied.

On the problem of coordinating science related institutions, the Permanent Secretary explained that each Government Ministry had its own research institute and this made co-ordination difficult. He stated that there was need to bring all these institutes under one umbrella. Your Committee were informed that discussions on this had already begun.

Regarding your Committee's concern that the bringing of all research institutes under the umbrella of one body would create an overly big statutory institute that would be difficult to manage and, therefore, ineffective, the Permanent Secretary informed your Committee that the one research institute would be put in place for co-ordination purposes only. Such an institute would help remove imbalances among various research institutions, for example in terms of funding.

On promotion of science in schools, especially in relation to girls, the witness stated that sensitisation of girls and parents was being carried out with a view to encouraging more girls to take up science subjects. The Ministry supported science camps and Junior Engineers, Technicians and Scientists (JETS) and tried to encourage girls, particularly, to take part. Bursaries had also been introduced in colleges as a way of encouraging girls. There is also a programme of sensitising employers to take up more females, not only on attachment, but for permanent employment as well, as it had been noticed that most employers preferred males. The Ministry had recently drafted a gender policy that would include more women in all aspects.

Regarding the TEVETA Fund, the Permanent Secretary explained that the fund was fully operational and bids had been received from various colleges that were engaged in various fields of training.

On whether there is need to continue spending money on science and technology instead of diverting funds to poverty and hunger alleviation, the Permanent Secretary stated that investment in science and technology is a stepping stone to poverty alleviation as research could be carried out in food security measures and improvement of herbal medicines, among other things. He stated that there is need for continuity in science and technology otherwise the country would lag further behind and this would increase the already big gap in locally trained and skilled personnel in the country to manage the industrial sector.

The Permanent Secretary also submitted that there is need for commercialisation in order to improve infrastructure and quality assurance through links to institutions like the Zambia Bureau of Standards. He concluded by explaining that there is need for co-ordination of research institutions and that policy direction is needed to ensure that priorities are set in order to avoid wastage of resources and improve research and development.

SUBMISSION BY THE DIRECTOR, NATIONAL TECHNOLOGY BUSINESS CENTRE

5.2 The Director informed your Committee that the function and reasons for the establishment of the National Technology Business Centre (NTBC) and its importance to national development in the area of science and technology is contained in the Science and Technology Act, No. 26 of 1997.

The Centre was established for the purpose of linking developed and proven technologies from various local and international sources with the business community and entrepreneurs for the production of goods and services.

The objective is to determine the viability of commercialising research products, interventions and innovations and the centre has been promoting and implementing locally developed technologies.

Your Committee were also informed that there is a prototype soya processing machine in Kalulushi which produces soymilk from soya beans and that the quality of milk was comparable to dairy milk.

The Director added that another machine known as Mungongo Nut-Cracker was successfully launched and was given to Kaoma Women Organisation. The Mungongo Nut-Craker was also capable of processing Mpundu nuts. Further, the Director displayed some of the products that have been developed and these included the moringa herbal tea, jatropa soap, mungongo oil, diatocide, coal bricket, charcoal and bees wax.

Your Committee learnt that, through the development of indigenous technologies, the rural population of this country would benefit through raised standards of living. An example that was cited, was the incubator for rearing chickens. Your Committee were told that if villagers came together to form cooperatives, the equipment estimated at a cost of K5 million, a third of the price of the imported type, would help them produce village chickens in large numbers for them to earn income.

The Director explained to your Committee that most research institutions had no technology transfer policies that should spell out clearly, incentives to owners of indigenous scientific and technological discoveries. There is need to protect these discoveries through patents and licensing, it is necessary to reward the owners of these innovations so that their discoveries are marketed and commercialised.

The Director further explained that it is important to put a deliberate policy in popularising the use of the indigenous technologies and that imported technologies should slowly be phased out. This would result in huge foreign exchange savings.

Your Committee were also informed that there is need for the country to move at the same pace technologically with the developed world. Reverse engineering was cited as the best approach and that involvement in all recent and latest technological advancement is required especially in the areas of agriculture, road construction, hydrology and manufacturing. Zambia is at liberty to copy off shelf technologies and to improve on them so as to move forward.

Your Committee heard that, at inception in April, 2002, NTBC was supposed to have sufficient initial resources, both in terms of human resources and finances. It was envisaged that by the end of the year 2006, the centre was to sustain its operations without Government support. At the start of May, 2003, the Centre proposed a budget of about K 3 billion to the Ministry. However, what was approved was only 50% of the proposed figure. This situation worsened the Center's position resulting in under staffing and incapacity to equip the Centre to levels that would enable smooth operations.

In concluding, the Director appealed to your Committee to urge Government to seriously address the plight of the Centre if they were to make any meaningful impact in the country. He gave examples of phosphate and salt deposits dotted around the country, that could not be exploited due to lack of financial capacity.

SUBMISSION BY THE EXECUTIVE SECRETARY, NATIONAL SCIENCE AND TECHNOLOGY COUNCIL

5.3 The Executive Secretary informed your Committee that the National Science and Technology Council is a statutory body through which Government of the Republic of Zambia directs policy on the development and application of science and technology in the country. It was established by an Act of Parliament, the Science and Technology Act, No. 26 of 1997. The Council was inaugurated on 10th August, 1999 and the Secretariat was established on 1st April, 2000.

The mission of the Council is to enhance Zambia's capacity for scientific research and technological development, in order to create wealth and improve the quality of life, by promoting the development and application of science and technology.

The overall function of the Council is to enhance Zambia's capacity to promote science and technology so as to create wealth and improve the quality of life in Zambia. Your Committee heard that the specific functions of the Council included promoting the development of indigenous technological capacity, regulating research and technology and advising the Government on science and technology related policies.

The Council's role in research, development and implementation of indigenous and technologies in Zambia

The Council's role with regard to research, development and implementation of indigenous and technologies in Zambia include, *inter alia*, fostering appropriate linkages between research, manufacturing and marketing strategies through a well regulated and coordinated institutional arrangement; promoting the development of an indigenous and environmentally friendly technological capacity; and regulating research in science and technology in Zambia.

In implementing its broad mandate, which is to promote science and technology so as to improve the quality of life in Zambia, the Council had undertaken the activities set out below:

Survey of Indigenous Knowledge and Technologies Projects

The Executive Secretary informed your Committee that due to budgetary constraints, the Council had so far managed to achieve objectives (i) and (ii). Under objective (i) and (ii), the Council documented Indigenous Knowledge Technologies Support (IKTS) from Eastern and Northern Provinces. However, more provinces of the country would be included in future Indigenous Knowledge Technologies Support (IKTS) surveys so that complete information with regard to Indigenous Knowledge and Technology Systems in Zambia would be recorded and entered into the inventory.

It was anticipated that the eventual integration of Indigenous Knowledge Technologies Support (IKTS) into national development plans through the various sectoral policies was expected to contribute greatly to improvement in the productivity of the communities especially those in rural areas, thereby enhancing the efforts of reducing poverty.

Development of a National Policy on Indigenous Knowledge, Genetic Resources and Folklore

Based on the outcome of the Indigenous Knowledge Technologies (IKTS) project, the Council had facilitated the development of a draft National Policy on Indigenous Knowledge, Genetic Resource and Folklore in Zambia. The broad policy objective is to provide a means for the integration of indigenous knowledge, genetic resources and folklore into national development programmes through facilitating their sustainable utilisation, protection and development.

Monitoring, Evaluation and Coordination Framework for Scientific Research and Technological Development

In order for the Council to effectively monitor, regulate and coordinate science and technological development, the Council had developed a Monitoring, Evaluation and Coordination (MEC) Framework. The MEC was aimed at fostering better services to clients, enhance accountability to stakeholders, improving science and technology.

Development of profiles for external and Internal funding agencies

One of the major limitations in the development and utilisation of indigenous science and technologies in Zambia is insufficient funding. In line with one of the Councils' specific functions of mobilising and making available financial and material resources to research and development activities, the Council had developed profiles for external and internal funding agencies for science and technology. The profiles were an indispensable tool that would assist, not only the Council, but also research and development institutions in mobilising of recourses for various activities.

Development of Science and Technology Indicators

Science and technology indicators are yardsticks, which can be used to assess the impact of science and technology on the economic development of Zambia. To determine the impact of Research and Development in Zambia, the Council, in 2005, implemented a project to develop science and technology indicators for Zambia which covered the area of human resource, research and development facilities, output of research and costs and financing of scientific research and technological development.

Popularisation of Science and Technology

One of the major limitations in the application of indigenous science and technology is the lack of science and technology awareness among policy makers, industrialists and the general public. In view of this, the Council had carried out various science and technology awareness campaigns through publication of science and technology materials, hosting of the National Science and Technology Week and Forum and the creation of the institution website.

Setting Goals and Priorities in Science and Technological Development

Setting goals and priorities in science and technology is critical to the development of science and technology. The Council had developed common goals and priorities in science and technology in the country with a view to triggering a vision where Zambia would, on one hand use science and technology to become economically competitive on a regional and global scale and, on the other hand provide essential services, infrastructure and effective utilisation of science and technology.

Council's views on the rate of research, development and implementation acceptance and commercialisation of indigenous technologies

- *Promotion of Science and Technology (S&T)*

Your Committee heard that successful implementation, acceptance and commercialisation of technologies is a factor of several variables and promotion of

science and technology is one of the key factors. It was the Council's view that acceptance and commercialisation of technologies had been low due to inadequate promotion of science and technology activities. This could be attributed to poor funding to the sector, inadequate understanding and appreciation of science and technology by policy makers, industrialists and the general public.

- *Goals and Priorities in Research and Development (R&D) Activities*

It was the Council's view that setting correct goals and priorities in science and technology has a direct bearing on acceptance and commercialisation of science and technologies in the nation. It had been observed that Zambia has had no clear goals and priorities in science and technology. This had affected the development of the science and technology sector because Government had not disbursed appropriate funding to deserving areas in the science and technology sector. This had affected the rate at which science and technology research work was accepted by end users.

Development of indigenous Scientific and Technological Capacity

Development of a sound indigenous scientific and technological capacity is supported by an enabling policy and legislative framework. In terms of development and commercialisation of indigenous science and technology products, the Council was of the view that this is hampered by the cost of registration of patents, conditions for registration and general lack of understanding of the importance of intellectual property issues.

Patents registration by Research and Development Institutions per Year

Records at the Patents and Companies registration Office showed that there had been no registration of patents since the year 2002. The Council's view with regard to lack of patents by Research and Development institutions is that this is due to:

- a) inconclusive research activities;
- b) lack of novelty in research findings and/or activities;
- c) the fear by researchers to disclose what can not be adequately protected through patenting; and
- d) lack of information on the role of patenting in commercialisation of technological innovations and discoveries.

- *Commercialisation of indigenous technologies in Zambia*

In terms of use and commercialisation of indigenous technologies in Zambia, the Council had observed that there was a generally low level of commercialisation of indigenous technologies. The low level of commercialisation of indigenous technologies could be attributed to various causes including the influence of imported technologies. Generally speaking, it was quite expensive to produce goods locally which could compete favourably with imported goods. As a nation there had been an increase of imported technologies in the science and technology sector during the era of the liberalisation. A high rate in consumption of imported technologies showed the nation's low innovative levels in technologies. This affected the utilisation and development of local technologies.

However, with the establishment of the National Business and Technology Center (NTBC), it was anticipated that technologies that had potential to be commercialized could be identified and supported.

Challenges with regard to application of indigenous scientific and technological discoveries

Your Committee were informed that the following were the challenges experienced with regard to application and development of indigenous scientific and technological discoveries:

- lack of appreciation of the role of indigenous science and technology in national development by policy makers and the general public as they were viewed to be inferior to foreign technologies;
- inadequate financial and material support to institutions mandated by Government to facilitate the application of scientific and technological discoveries; and
- weak linkages between industry and research and the development institutions. Most research and development activities were conducted in isolation from industry and this resulted in research outputs not being taken up by industry.

Way Forward

Your Committee were informed that in order to achieve meaningful development and application of indigenous science and technology, the following considerations should be made:

- increase awareness amongst the public, policy makers and industrialists on the pivotal role science and technology plays in national development;
- Government must strengthen the capacity of its institutions to promote the application of indigenous science and technology in the nation; and
- lobby Government to uphold its financial obligation of allocating 3% of the Gross Domestic Product to the science and technology sector.

Your Committee heard that Government needed to have the necessary legislation in place to enable the scientists work in an enabling environment which would benefit Government and the citizens. The witness further added that necessary legislation would allow for implementation and utilisation of results of scientific research.

SUBMISSION BY THE EXECUTIVE DIRECTOR, NATIONAL INSTITUTE FOR SCIENTIFIC AND INDUSTRIAL RESEARCH

5.4 The Executive Director submitted that the National Institute for Scientific and Industrial Research (NISIR) is involved in the development and adoption of technologies locally in order to contribute to national development.

In this regard, NISIR had developed various technologies in areas such as post harvest food processing, industrial minerals beneficiation, textile and ceramic utilisation, water treatment, electrical and electronic design and fabrication, plant tissue culture, application of nuclear energy and energy generation from biomass.

Developed indigenous products, processes and technologies

Your Committee was informed that NISIR had locally developed products and processes and technologies in the following areas:

(i) Carbonated fruit juice (Tip-top)

The Institution developed technical know-how for producing various carbonated drinks from local fruits such as guava, pineapple, orange, and lemon. After a Memorandum of Understanding was signed between the then National Council for Scientific Research (NCSR) and the Copperbelt Bottling Company, the know-how was transferred to the bottling company which discontinued the production of tip-top after being privatized.

(ii) Masuku wine

The Institution developed technical know-how for producing a wine from the masuku fruit. Negotiations to transfer the technical know-how for producing masuku wine to National Breweries Limited were successful. However, masuku wine was never commercially produced because of an impasse that arose following insistence by the supplier of the equipment to be availed technical know-how for producing masuku wine. The technical know-how was not given to the equipment supplier. This resulted in a refusal to supply the equipment.

(iii) Protein biscuits

The then Dairy Produce Board of Zambia requested the institution to develop a process for producing high protein biscuits. The institution successfully developed a process using milk and transferred the technical know-how to the Dairy Produce Board of Zambia which was privatised resulting in loss of this technology.

(iv) Cassava biscuits

The Institution developed technical know-how for producing biscuits from cassava flour. The technical know-how for producing biscuits from cassava flour was successfully transferred to Proccess Limited.

(v) Weaning foods

The Institution developed a formula for producing nutritious weaning foods (formula A and nutritifex) based on locally available raw materials. The formula was not transferred to any entity.

(vi) Tomato ketchup and mango juice

The institution developed processes for producing tomato ketchup and mango juice. These processes were transferred to Zambia Horticultural Products (ZAMHORT). The demise of ZAMHORT, meant the disappearance of the products.

(vii) Chalk from local gypsum

The possibility of producing various products like chalk, ceiling boards, plaster of Paris (pop) from local gypsum was evaluated. A process for producing chalk from the Lochinvar gypsum was developed and successfully transferred to Platitide Investments Limited.

(viii) Coal briquette and clay stoves

Production of coal briquettes and clay stoves from Zambian raw materials was embarked upon and the process was fully developed. Production of clay stoves had been disseminated to communities through the Japanese assistance under the grassroots project. Envirocare, a private enterprise is one of the few companies that are producing clay stoves for both local and export market.

(ix) Liquid nitrogen pump

The Institution developed a prototype pump for transferring liquid nitrogen from one container to another. The prototype had been demonstrated at shows and exhibitions. The product was yet to be transferred to an entrepreneur.

(x) Surge protection systems (for electrical / electronic equipment)

The Institution developed surge protection systems to protect equipment from voltage surges. The systems also protect cold room refrigeration equipment such as mortuaries. The institution still produces these items.

(xi) Tissue culture techniques

The Institution developed and adopted plant tissue culture techniques for propagating planting materials for cassava, potatoes and bananas. Disease-free Irish potato cultivars were produced for Zambia Seed Company. There is an ongoing project on the production of disease-free cassava planting material.

(xii) Biological tissue grafts

The Institution developed techniques for producing tissue grafts from pig skins that could be used to treat burns. The grafts were evaluated by the University Teaching Hospital (UTH) and were found to be better than conventional methods for treating burns.

(xiii) Radiation vulcanised rubber latex

The Institution had used gamma radiation to vulcanise the latex for producing medical products such as examination gloves. Medical Stores Limited collaborated with NISIR to develop environmentally friendly methods for producing such materials.

(xiv) Biogas generation

The Institution had adopted processes of producing biogas under local conditions from cow, pig and chicken manure. School science laboratories were targeted at pilot outreach for disseminating the technology. Currently, schools in Southern and Central provinces were benefiting from the technology.

(xv) Fortification of foods (sugar, maize meal)

The Zambian Government made it mandatory to fortify all the sugar sold in the country as a way of addressing the problem of malnutrition. NISIR provided the technical backup in sugar fortification. There is now maize meal fortification at hammer mill level to assist communities access the vital nutrients.

Challenges

The Executive Director informed your Committee that there had been improvement at the Institution after the recruitment of scientists, acquisition of modern equipment and rehabilitation and renovation of some laboratory infrastructure.

He, however, expressed concern on the mode of funding of the Institution, inadequate funding, recruitment and retention of staff and the disparity of salaries and conditions of service with similar institutions and urged Government through your Committee to intervene.

Recommendations

The Director submitted the following recommendations:

- (i) NISIR should be submitting its annual budgetary requirement directly to the Ministry of Finance and National Planning;
- (ii) the Ministry of Finance should provide monthly grants to NISIR directly;
- (iii) the infrastructure at the Institute should be improved to meet international standards in order for the institution to fulfil its mandate;
- (iv) salaries and conditions of service should be improved to make them similar to what is prevailing in comparable institutions so that the Institution can recruit and retain scientists and technicians; and
- (v) the Government should include NISIR as a beneficiary to the assets under the Task Force on the plunder of national wealth, soon to be disposed of. The assets of interest to the National Institute for Scientific and Industrial Research are money, houses and vehicles.

In response to the question on the Institution's interest in assets repossessed by the Task Force, the Executive Director stated that the state of all the vehicles at the Institution was very bad as all of them were more than 10 years old; and that the Institution was having difficulties in accommodating visiting scientists from other countries. He added that they had intentions to convert the houses being requested into guest houses and cut down on hotel bills.

Asked about the current staffing levels, the Executive Director told your Committee that they were facing a critical shortage of man power and indicated the following positions:

- (a) Scientists

EDUCATION LEVEL	ESTABLISHMENT	POSITIONS FILLED	VACANT
PHDs	18	4	14
MASTERS	21	5	16
BSC	18	9	9
DIPLOMA	26	9	17
CERTIFICATE	11	11	0

- (b) Support Staff

EDUCATION LEVEL	ESTABLISHMENT	POSITIONS FILLED	VACANT
DEGREE	6	3	3
PROFESSIONAL	5	5	0
DIPLOMA	10	3	7

On the extent of financial support given in the current budget, the Executive Director lamented that NISIR was not part of the budgeting process and that they had a debt of K19.9 billion but the allocation for the current year was only K6 billion.

On the question of fundraising ventures, the Executive Director explained that research work was basically consumption oriented and that it was difficult to generate money from this. He added that, the only possible areas where they could raise money was through royalties obtained from the exchange of technologies. In their circumstances, the amounts coming from this area were paltry because their discoveries were not

being produced and sold. They had gone further to form and register a company for the whole purpose of generating some possible funds for themselves.

He stated that NISIR was actively carrying out a baseline study to establish the presence of genetically modified organisms (GMOs) in Zambia. He added that NISIR was collaborating with the Zambia National Farmers Union to test farm produce before it is exported out of the country.

SUBMISSION BY THE PERMANENT SECRETARY, MINISTRY OF HEALTH

5.5 The Permanent Secretary submitted that the Ministry of Health through the National AIDS Council and the Central Board of Health is covering health research priorities which among others include HIV/AIDS/TB/Leprosy/STIs, reproductive health, child health, malaria, nutrition, diarrhoea diseases, water and sanitation, health reforms and other health related studies as listed below:

Clinical Trials of Traditional Medicine of HIV Positive People

Your Committee heard that the Government of the Republic of Zambia through the Ministry of Health, last year commenced observational clinical trials of traditional remedies on people living with HIV and AIDS.

The research effort towards finding a cure for AIDS using home grown solutions was under the auspices of the National AIDS Council's Traditional/Alternative Remedies Technical Working Group.

The trials commenced on 17th, October, 2005, at a site in Lusaka. Initially, the trials were to run for three months before a possible extension could be considered. The three herbal remedies used were Sondashi Formulation (10 clients), Mailacin (6 clients), and Mayeyanin (11 clients). After an initial three months, all the three formulations showed positive results.

List of indigenous research that has been conducted between 1990-2000

Your Committee were informed that Zambia had so far conducted three Demographic Health Surveys (DHS) and is getting ready to conduct a fourth DHS this year, 2006. The DHS provided information on performance indicators for health i.e fertility, maternal and childhood mortality, nutrition and HIV.

A number of research studies have been commissioned by the Ministry of Health through the Central Board of Health, covering public health priorities among others. Below is a list of studies completed (some have been published and some have not been published) in the following areas: HIV/AIDS/TB/Leprosy/STIs, reproductive health, child health, malaria, nutrition, diarrhoeal diseases, water and sanitation, health reforms and other health related studies like the issue of orphans in Zambia.

Implementation of the research studies

The Permanent Secretary explained that this was very difficult to determine. However, evidence from some of these studies in malaria gave impetus to the change in use from Chloroquine to Coartem.

Acceptance, use and commercialisation

Your Committee heard that as pointed out above, these aspects were difficult to determine due to lack of proper coordination of research work and funding of research studies and their utilisation as well as poor dissemination of these research findings.

Challenges

- Research policy developed but not yet in place;
- Inadequate funding;
- Poor dissemination;
- Capacity building in research among health workers.

Way forward

- Approval of research policy
- Strengthening of the National Research Advisory Committee

On the medicines that were being tested as potential cures for HIV/AIDS, the Permanent Secretary explained that eventually the number of herbal remedies being tested would be increased from three to include others. He stated that the research findings on the three remedies were being safeguarded until the tests were concluded. Further, a memorandum of understanding had been put in place to safeguard these findings.

With regard to regulating traditional healers in general, your Committee were informed that the creation of the Pharmaceutical Regulatory Authority (PRA) in 2005 was going to ensure that the Authority regulates both conventional as well as traditional medicine. He added that the Pharmaceutical Regulatory Authority was still finding its feet and had to deal with socio-ethnic and cultural issues in relation to traditional medicine.

Regarding the issue of bringing all research under one umbrella, your Committee heard that as all professionals were researchers, it would be difficult to put them under one portfolio. The Permanent Secretary explained that certain issues were specific to health specialists and difficult to be carried out by other researchers other than those in health. Further, health research involved in some cases the administration of medicine to humans and there was, therefore, the need for practicing licences. The Permanent Secretary expressed the view that the issue was one of coordination of research findings in order to find Zambia's comparative advantage.

SUBMISSION BY THE PERMANENT SECRETARY, MINISTRY OF AGRICULTURE AND COOPERATIVES

5.6 The Permanent Secretary, Ministry of Agriculture and Cooperatives submitted to your Committee that the Ministry had, through the Zambia Agriculture Research Institute and the Department of Veterinary and Livestock Development, developed, improved and actualised several indigenous technologies. The Permanent Secretary illustrated this as set out below:

Improved Traditional Bins

The improved traditional bin was made of a woven basket made from bamboo splits or twigs placed on a raised platform. The basket was plastered both in and outside with mud to prevent entry of pests into the stored grain.

Your Committee were informed that the production of cereal grains traditionally occupied a major part in the small-holder agricultural sector of Zambia. Cereals were usually stored at farm level for home consumption in a number of small traditional baskets which were inadequate and did not meet storage requirements. In most cases, grain cereals were destroyed by pests and sometimes stolen before time for human consumption or marketing. Therefore, protection of these cereal grains is important to minimise problems of food security among small holder producers.

Your Committee further heard that storage of cereals up to 9–10 months required a structure, which would withstand the rigors and changes in weather and would allow the cereal grains to be kept in good quality for the entire period. The traditional improved storage bin provided a sustainable option in that it was a low cost technology and the bin was basically built using materials that were locally available among the smallholder farmers.

Regarding the level of commercialisation, the Permanent Secretary explained that it was quite difficult because it required knowledge and skill on how to construct, for farmers to come up with improved bins. These bins had therefore, not been commercialised.

Botanical Pesticides

On this innovation, the Permanent Secretary stated that synthetic pesticides had been widely used in agriculture and public health to control a variety of insect pests and vectors of plant and animal diseases. However, their use by small-scale farmers in Zambia had been erratic due to the escalating costs of synthetic pesticides. In Zambia, 70-80% of the crop were produced by smallholder farmers who were in dire need of alternative pest control technologies that were cheaper and sustainable to use.

Regarding the justification for the technology, the Permanent Secretary explained that in Zambia, some academicians, individual research scientists and organisations had expressed concern about the use of synthetic pesticides and their effect on the environment in the early 1970's and 1980's. Despite the approval for the use of some synthetic pesticides, concerns remained over their indiscriminate use. These synthetic pesticides had brought a lot of problems including:

- development of pest resistance to pesticides;
- pollution of the environment; and
- high costs.

In view of the above, alternative pest control strategies were sought, whose advantages included:

- availability of botanical pesticides sources which were cheaper than synthetic pesticides relatively safer to use and easily biodegradable.

On the level of usage, your Committee heard that botanical local (small-scale) farmers were the target in controlling insect pests for storage of agricultural produce. Among the botanical pesticides in use at the moment in Zambia include; the use of mature leaves of *Tephrosia Vogelii* (Buba) for the control of insect pests on groundnuts and the protection of cowpea seeds from the bean beetles and the use of wood ash to control insect pests.

Regarding commercialisation, your Committee were informed that due to the potential hazards of synthetic pesticides currently in use and the prohibitive prices that were beyond most of the small-scale farmers, there is need for the identified botanical pesticides to be mass-produced and marketed to the small scale farmers. Currently nothing was commercialised.

Agroforestry and improved fallows

Your Committee heard that trees play a crucial role in most farming system and provide a range of products and services to rural and urban people. As natural vegetation is cleared for agriculture and other types of development, the benefits that trees provide are best sustained by integrating trees into agriculturally productive landscapes through agroforestry.

They also heard that farmers had practiced agroforestry for years. Agroforestry focused on the wide range of use of trees on farms and in rural landscapes. Among these were fertilizer trees for land regeneration, soil health and food security, fruit trees for nutrition, fodder trees that improve smallholder livestock production, timber and fuel wood trees for shelter and energy, medical trees to combat disease, and trees that produce gums, resins or latex products. Many of these trees were multipurpose, providing a range of benefits.

Regarding the justification, the Permanent Secretary stated that agroforestry's strength is in:

- reducing poverty through increased production of agroforestry products for home consumption and sale;
- contributing to food and reducing pressure on woodlands by providing fuel wood grown on farms;
- increasing diversity of on-farm tree crops and tree cover to buffer farmers against the effects of global climate change;

- improving nutrition to lessen the impacts of hunger and chronic illness associated with HIV/AIDS; and
- augmenting accessibility to medical trees, the main source of medication for 80% of Africa's population.

Benefits on agroforestry and improved fallows to the farmer include:

- improved soil fertility;
- control and avoidance of soil erosion;
- reduction in the use of chemical fertilizer;
- improved soil structure;
- creation of fodder bank;
- provides a source of timber, firewood, medicine, bee forge, fiber and natural remedies; and
- protection of crop of through the use of a live fence, e.g around a garden.

On the usage, your Committee heard that in an improved fallow system, fast growing nitrogen fixing trees or shrubs were grown for one to three years in order to raise the fertility of the soil in a short period of time. He noted that *Sesbania sesban* was one such tree, which had been used widely as an indigenous fallow species. The trees were grown for periods of two to three years after which they were cut. Research had shown that yields could increase two to three folds.

The Permanent Secretary admitted that the commercialisation of this technology was still low.

Magoye Ripper

Regarding this technology, the Permanent Secretary submitted that in 1992, the Zambia Research Institute, together with the Agricultural Mechanisation Section of the Department of Agriculture at Magoye had developed and manufactured prototypes of the Magoye Ripper. The development of the Ripper was in response to farmers' needs for equipment to address:

- labour shortage;
- water conservation in the soil;
- soil conservation through minimum disturbance;
- timely planting; and
- low yields due to the use of a hoe.

The Permanent Secretary explained that the Magoye Ripper was a Zambian designed implement which enabled farmers to practice ox-based minimum tillage in crop production. It had a lower draft requirement and produced a furrow of even depth. The ripped field guaranteed higher yields through water harvesting and the potential of the ripper to break the hard pan. This was a big advantage over a plough. The ripping technology allowed farmers to do early land preparation and planting with a high possibility of good seed emergence. With the threat of recurrent dry spells during the rainy season in Zambia, many farmers viewed the ripping technology as a possible way to mitigate these effects if correctly used. In order to reduce costs for farmers, the ripper has been developed as an attachment to the frame of an ordinary ADP-Moldboard plough. As a result, farmers had appreciated its development and were intensively utilising it.

The Permanent Secretary noted that the Ripper had major problems as indicated by farmers who had used it as follows:

- the ripper fields had too many weeds;
- the tine of the ripper wear out quickly;
- lack of spare parts locally; and
- lack of animals, large enough to pull the ripper.

Regarding the level of commercialisation, your Committee heard that the ripper was one of the indigenous technologies that had been relatively commercialised through NGOs, cotton companies, CFU, GART and CDT. He however, noted that more effort was needed to publicise its use in order to scale up the use of the ripper.

And submitting on the research being conducted by the Department of Veterinary and Livestock Development on indigenous livestock breeds in Zambia, the Permanent Secretary informed your Committee as follows:

Feeding trials

Livestock productivity in Zambia is low and is characterised by slow growth rates, low milk production and poor productive performance. Poor reproductive performance is exhibited by low conception and low calving rates. Long calving interval is wide-spread among the traditional cattle. The major factor for low productivity is poor nutrition.

Your Committee also heard that most of the livestock in the country depend on natural grass for grazing. Other feed stuffs include crop residues such as maize stover, sorghum stover, and rice hulls and are of poor quality in terms of protein content especially during the long dry season from April to November.

According to the Permanent Secretary, the justification for this research is that the demand for livestock products such as meat and milk is high while the supply is low due to poor production. Animal draft power is also on high demand but the current oxen are small in size, poor conformation and of low traction power due to poor nutrition. In order to improve the quality and quantity of livestock products and animal draft power, it is important to improve the nutrition of livestock.

Your Committee were also informed that feeding trials had been conducted to ascertain their potential to utilise locally available feed resources such as tree legumes in order to boost the nutritional value of poor roughages. In these trials, performance parameters of interest were average daily weight gain and intake levels.

Indigenous breeds were also evaluated for milk yields potential, with supplementation. The Angoni breed showed better promise than the other two breeds i.e. the Barotse and Tonga breeds.

On the livestock production research gaps, the Permanent Secretary stated that for all the indigenous breeds performance characteristics had to be established. Performance parameters which need to be evaluated include birth weight, weaning weight and mature weight (male and female).

Characterisation of indigenous breeds

The Permanent Secretary informed your Committee that about 83%, 97% and 67% of the total cattle, goats and sheep, respectively are found in the traditional sector. He also stated that there are 14 million village chickens in the country. These indigenous breeds are very important in the rural economy and livelihood of people in the rural areas. The indigenous breeds have relative advantage over the exotic breeds. Since they have adapted well to the local environment in terms of poor feed resources, low management levels and generally they are believed to be more resistant to disease than exotic breeds.

Your Committee heard that this research is important because indigenous livestock are important in the rural economy because they provide meat, milk, eggs, hides, skins and animal draft power. They are also a source of income to most people in the rural areas. These animals are faced with extinction through cross breeding with exotic breeds in an effort to increase livestock productivity. As a result most farmers are failing to manage crossbred animals because they are sensitive to the environment and require high management levels which is inadequate in the traditional sector.

Your Committee also heard that the characterisation of indigenous breeds and their conservation baseline data had been generated through the farm animal genetic resources programme for all indigenous breeds of

livestock, under the auspices of SADC and FAO. For all the breeds, a phenotypic characterisation had been done.

As a challenge, your Committee heard that because of the history of extensive cross breeding (Batoka) programmes in Zambia there is need to do a genotypic characterisation which would establish the genetic distances between the breeds. This would help establish whether the breed (s) as they are perceived are distant enough to stand apart or have been genetically eroded.

On animal health research, your Committee heard that the livestock industry in Zambia is threatened by livestock diseases such as tick borne diseases, particularly East Coast Fever in Central, Eastern and Southern Provinces; Foot and Mouth diseases in Central, Northern and Southern Provinces; and Contagious Bovine Pleural Pneumonia in Western, North Western and Southern Provinces.

Regarding the justification for such research, the Permanent Secretary stated that livestock diseases reduced availability of livestock products and generally prevented normal trade to take place due to zoo-phyto-sanitary issues. Zambia has high potential to produce and export livestock products but this is hindered by disease. Therefore, research is necessary in order to enhance livestock productivity and facilitate livestock trade.

Your Committee further heard that as a result of research, the following vaccines had been developed and produced at the Central Veterinary Research Institute; (a) New Castle Disease Vaccine, (b) Hemorrhagic Septicemia, (c) Anthrax Vaccine, (d) Rabies vaccine and (e) Tick Borne Disease Vaccine. Other vaccines which are produced in the region include foot and mouth disease and Contagious Bovine Pleural Pneumonia vaccine. Surveillance and monitoring of livestock diseases has also been conducted.

Following the submission, your Committee wanted to know why the Ministry had not found a vaccine for the most common disease in Zambia and was relying on imported vaccines. In response, the Permanent Secretary, explained that Zambia had engaged in regional arrangement for the production of vaccines and that what was important was the strategic stocking of the important vaccines. He called for the recapitalisation of the Livestock Emergency Fund so that it could be accessible during disease outbreaks.

On what the Ministry was doing to propagate the new indigenous technologies, the Permanent Secretary submitted that the Ministry had intensified its sensitisation programme through the employment of over 500 hundred extension workers.

On the inadequate veterinary services in the country, your Committee heard that the problem emanated from the privatisation of the sector which was not accompanied by adequate monitoring mechanisms. There is also need to harmonise the work of the Livestock Development Trust and the Ministry as they are performing similar tasks.

On whether the Ministry should continue to employ scientists as opposed to having all scientists under the ministry in charge of science and technology, your Committee were informed that the Ministry needed scientists because they were engaged in applied research which required a hands on approach.

5.7 Committee's Observations and Recommendations

Your Committee observe that research and development is key to development but that Zambia, as a country, has not prioritised this sector. Consequently, there has been insufficient funding in research and development. In this regard, key institutions in research and development such as the National Science and Technology Council, the National Business and Technology Centre and the National Institute for Scientific and Industrial Research have been persistently under funded.

They also observe that where there are research facilities, these are dilapidated and or obsolete and that the cadre of research staff are mostly old and there are no young researchers joining due to a variety of factors, chief of which is lack of funding to research institutions.

Additionally, there is no deliberate Government policy to protect small industries from foreign competition much to the detriment of indigenous technologies. Your Committee observed with dismay that there has been a lot of work done by scientists in terms of technological discoveries such as the tip top drink, masuku wine and weaning food which are not being utilised due to lack of clear Government policy and intervention. There has been much work done, in terms of scientific discoveries done which is gathering dust due to lack of a clear and deliberate move by Government.

Your Committee, therefore, recommend that:

- (i) Government should treat research and development as a priority if the country is to move forward. In this regard, the Government should give clear policy directives regarding its position on research and development with relation to patenting, protection, commercialisation and use of technological discoveries;
- (ii) the Government should invest in research and development by ensuring sufficient funding not only for research and development but also for staff development and training;
- (iii) the Government should recapitalise, rehabilitate and maintain all research infrastructure;
- (iv) those discoveries that are gathering dust should be put to use;
- (v) the Government should put in place a deliberate policy to protect small industries and indigenous technology from competitors so that they can grow; and
- (vi) the National Institute for Scientific and Industrial Research should be funded directly by the Ministry of Finance and National Planning, so that they can get their funds on time. In this regard, they urge Government to increase funding to the research institutions.

PART II

6.0 CONSIDERATION OF OUTSTANDING ISSUES FROM THE ACTION-TAKEN REPORT ON THE COMMITTEE'S REPORT FOR 2005

Consideration of the Introduction of the use of Vernacular in Government Basic Schools

6.1 Your previous Committee had noted that Zambia did not have a detailed comprehensive language policy and that the new teaching methodology was merely a small component of the overall "Educating our Future" document.

Your Committee were of the view that with the introduction of the use of Zambian language for instruction, it was imperative that there should be a detailed language policy which would address concerns on the possible mismatch in policy.

In response, the Executive explained that the lack of language policy did not have direct bearing on the teaching of Zambian languages in Grade one. The New Break Through to Literacy (NBTL) was a methodology applied for literacy learning and, therefore, the skills gained are utilised to learn any language that the pupils can be exposed to. As for the use of local languages to teach other subjects, such as Science and Social Studies it may require the support of a policy in schools. But this was only possible where a comprehensive language policy was in place, complemented by having the appropriate teaching materials that should be written in local languages. This kind of innovation would be difficult to implement because of Zambia's language diversity and would demand for a broader consultation with the people of Zambia.

Committee's Observations and Recommendations

6.2 Your Committee are of the view that there is need to put a language policy in place.

REPORT ON THE TOURS UNDERTAKEN BY THE COMMITTEE BETWEEN 4TH AND 13TH SEPTEMBER, 2005

6.3 National College for Management and Development Studies

Your previous Committee observed that the college had infrastructure that was being allowed to go to waste, such as the ninety eight uncompleted blocks, and that the library and students' hostels accommodation were not sufficient to cater for the college at present, let alone the university when it comes into being. Although the college had its own water reticulation system, this had proved inadequate and more so in drought conditions as was currently the case. Further, the college's attempt to mitigate this by raising the wall of the dam using the K300 million HIPC funds had been frustrated by Lunsemfwa Hydro Power Station who had taken the matter to court in a bid to stop this project. As a consequence, the college had kept the K300 million HIPC funds idle for several years because the rules do not allow for any diversion, investment or change of use.

Arising from the observations, above, your previous Committee recommended the following:

- (i) money should be released for infrastructure that had been neglected such as the ninety eight incomplete blocks which could be converted into student hostels as has been done to a few, while the remaining blocks can be completed for other purposes where there are deficiencies before converting the college into a university;
- (ii) connected with the above, all areas of need, in terms of infrastructure, should be resolved as a matter of urgency, starting with the library which is key for any institution of learning, and the library should be stocked to levels befitting a higher learning institution; and
- (iii) the Government should ensure that the issue of inadequate water for the institution is resolved in the shortest possible time and matter of the K300 million HIPC funds that had been lying unused and not accruing any interest must be addressed.

In the Action-Take Report, the Executive explained that the Ministry's priority in 2006 would be that of infrastructure development in the college in order to enable the transformation of the college to university status. The plan therefore, was to make an assessment of the existing structures and improve on them. The Ministry planned to provide K8 billion to the college of which K6 billion is targeted at the completion of the ninety eight incomplete blocks which are to be converted into student hostels in order to accommodate enrollment that are expected to rise when the college is turned into a university.

Library Facilities

Presently, the library holds a limited number of old editions of text-books including periodicals/journals and reference books. The plan is to expand on the existing facilities using part of the funds to be allocated to the college this year and install modern research facilities as well as replacing the old volumes of books/journals with latest editions. This will be a continuous process since it requires heavy injection of capital investment to enable the college satisfy the demand for students readership and attain the level befitting a higher learning institution.

The source of water for the college is from the Mulungushi River where the College has a dam with a capacity of 375,000m³ but as the report indicated, the capacity of the dam has reduced due to silting of the river bed. The college decided to raise the dam wall in order to mitigate the problem of reduced capacity of the dam using K300 million HIPC funds,; but unfortunately Lunsemfwa Hydro Power Station put up an

injunction to the National Water Development Board rendering the funds being locked up in the bank while awaiting for the Board's decision.

The Ministry of Education would seek authority from the Budget Office to vary the K300 million originally earmarked for raising the dam wall to the improvement of water reticulation system of the college.

6.4 Committee's Observations and Recommendations

- (i) **Release of money for infrastructure:** Your Committee wish to be availed an explanation on the disparity between the K8 billion mentioned in the response in relation to the amount of K3,073,772,487 provided in the yellow book and whether in fact any meaningful rehabilitation will take place in view of this amount.
- (ii) **Library facilities:** In view of the amount of K3 billion in the yellow book being less than half of what the Ministry envisaged for the NCMD, your Committee wish to know whether in fact the library would be expanded as promised.
- (iii) **K300 million HIPC funds:** Your Committee would like to be furnished with a progress report on the same.

6.5 Mansa Trades Training Institute

Your previous Committee observed that the management and administrative crisis at the institution was mainly as a result of the lack of rapport or understanding between the Board and the management which had bred mistrust and suspicion, and that the absence of a substantive Principal was also another source of concern. Although the Board and management of the Institute has approved conditions of service, which both parties agreed were sustainable, the Ministry of Science , Technology and Vocational Training had not given approval. As a consequence, this has become another source of anxiety for staff.

The contractor who had been awarded a contract for K1.5 billion to build an administration block had not only failed to meet the deadline but also displayed poor workmanship such that the building had to be pulled down by inspectors from the Ministry of Works and Supply; and that though currently there is major rehabilitation to the infrastructure taking place, there was no corresponding rehabilitation to the equipment and machinery used in workshops, which was a key for learning as most of the equipment and machinery was obsolete or old.

Arising from the above, your previous Committee made the following recommendations:

- (i) the confusion between the Board and the Management had to be ironed out as a matter of urgency if the Institution had to move forward. In this regard, the Board was urged to expedite the recruitment of a Principal and other office bearers in management so as to give reassurance and direction to the Institution;
- (ii) the Ministry of Science, Technology and Vocational Training should, as a matter of urgency, needed to make a decision on the conditions of service to ally anxiety by the staff;
- (iii) the issue of the K1.5 billion contract needed to be re-evaluated with a view to seeing that the Government got value for its money and to ensure that the contractor delivers on the contract and in a timely manner. In this regard, your Committee expressed the view that this money would have been better used if it was given to Mansa Trades which had the manpower and expertise in construction as this would have gone a long way in empowering the Institute as well as avoiding the problems which were being experienced with the contractor; and
- (iv) the Government needed to put in place a programme of rehabilitation and replacement of equipment and machinery in the workshop as these were key for learning at such institutions.

In response, Government stated that it noted your Committee's concern regarding the confusion between the Mansa Trades Training Institute Board and Management. Your Committee were informed that as a way of bringing harmony between the Boards and Management of Trades Training Institutes, the Ministry of Science, Technology and Vocational Training organized a workshop in Kabwe for Principals and Board Chairmen to re-orient them on guidelines on the operations of management Boards. Government hopes that the re-orientation would remind the principals and Board Chairmen about their respective roles and responsibilities.

As regards the recruitment of a Principal at Mansa Trades Training Institute, your Committee were informed that the post had already been advertised and the interviews are expected to be conducted before the end of the year.

As regards your previous Committees' concern about conditions of service at Mansa Trades Training Institute, your Committee were informed that approval of Conditions of Service for staff in any of the Trades Training Institutions by the Ministry depends upon the capability of each institution to pay. The capacity is determined by assessing the income that the institution is expected to generate. However, for the institutions that depend on Government grants, the conditions of service are considered only in line with what Government is able to allocate to a particular institution in line with the Medium Term Expenditure Framework.

With regards to Mansa Trades Training Institute, their proposed conditions of service were not approved because of the above reason and this decision was already communicated to the Management Board.

Your Committee's recommendation that there should be a systematic method of replacement of machinery and equipment is noted. Governments wish to inform the Committee that efforts are being made to improve facilities at institutions of learning.

6.6 Committee's Observations and Recommendations

- (i) on the employment of a Principal, your Committee wish to be availed a definite time-frame when this will be done as, the absence of a Principal affects the administration of the institution;
- (ii) on conditions of service, your Committee are of the view that as good conditions of service are vital to the well-being of employees, there is need for support from the Ministry by way of provision of proper and clearly defined guidelines on how conditions of service should be worked out;
- (iii) as regard the K1.5 billion contract, your Committee are of the view that the Executive has not addressed the matter, they, therefore, wish to be updated on the issue; and
- (iv) on the rehabilitation and replacement of equipment and machinery, your Committee wish to be availed details on what is being done regarding the same.

7.0 Conclusion

In conclusion, your Committee wish to express their gratitude to you, Mr Speaker, and the Office of the Clerk of the National Assembly for the support rendered to them during the year under review. They are also indebted to all witnesses who appeared before them for their co-operation in providing the necessary memoranda and briefs. Your Committee are hopeful that the observations and recommendations contained in this report will go a long way in improving the education, science, technology and vocational sectors in Zambia.

May 2006
LUSAKA

T M Bwalya, MP
CHAIRPERSON

