MRC Thematic Working groups- A summary

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Introduction

The report reviews the 9 thematic working groups set up by the Mauritius Research Council (MRC) in 2001 to elaborate on each of the following themes: land and land use, water resources, energy and energy efficiency, marine resources, biomedical research, biotechnology, manufacturing technology, science and technology education, information and communications technology. The main objectives of the working groups were to address problematic issues which are presently hindering development, to propose strategies and measures that could lead to improved productivity and competitively, and to provide policy guidelines to the Council.

1.0 Land and Land Use

The Land and Land Use Working Group was given the task of proposing, detailing and prioritizing research projects within the land and land use sector in Mauritius and Rodrigues. The wide scope of the task called for input from a pluri-disciplinary team from various fields of expertise comprising planning, environment, engineering, architecture, conservation, agriculture, tourism, industry, housing, land information, remote sensing and other skills. The Working Group hence, recommended a list of research topics which addresses several critical issues concerning the development of land in both Mauritius and Rodrigues.

These issues are

1. Protection of the Environment;
2. Strengthening of the existing database;
3. Capacity building in both land use planning and transport modeling;
4. Promotion of good practices at micro level;

5. Protection of Historical Buildings;
6. Coping with New Industrial Parameters;
7. Strengthening of the Social Dimension; and
8. The Tourism Industry

2.0 Water Resources

The Water Resources Working Group was set up to meet the water demand of all sectors in Mauritius, where an increase in population growth/human activities and industrialization has rendered necessary more and more water withdrawal from the environment and has brought along severe risks of water pollution. Based on an in-depth analysis of the current status of the water sector, three core measures were proposed to enhance development of the water sector and these are as follows: water resources; water utilization and; water quality. Special attention was paid to Rodrigues which usually suffers from a serious water shortage problem.

3.0 Energy and Energy Efficiency

Mauritius is devoid of any fossil fuel and hence 75% of its energy requirements are met through the import of petroleum products derived from fossil fuels and the rest comes from the sugar cane bagasse and hydro. Hence, the Energy and Energy Efficiency Working Group was set by the MRC with a view to defining priority areas for research to enable sustainable national development of Mauritius. The objective of the Working Group was to provide policy guidance to the Council on this theme and to establish a list of prioritized topics for research. Three broad themes were identified: energy planning/policy; energy efficiency and; energy conservation/ renewable energy, for instance, wind, solar, ethanol from molasses, solid waste and Ocean Thermal Energy Conversion (OTEC). Improvement of energy use in sugar cane processing, adopting

energy conservation measures, more extensive use of cogeneration in the textile sector, use of alternative fuel like LPG or ethanol in the transport sector, adoption of an electricity tariff structure to optimize load demand are some of the areas identified to require priority considerations.

4.0 Marine Resources

The Marine Resources Working Group reviewed the current status of marine resources in Mauritius and a marked degradation of the coastal zone was identified. Water quality and the health of coral reef have deteriorated mainly because of pollutants from land-based sources. In case this trend is not reversed, preservation of the coastal zone for sustainable development of the living and non-living marine resources will become almost impossible, thus putting at risk various interdependent socio-economic sectors. Global warming and sea-level rise will exacerbate the problems. Consequently, measures were proposed to enhance development of marine resources exploitation and these were classified under the following sectors that are of economic importance: coastal zone; Exclusive Economic Zone (excluding outer islands); Outer Islands (including Rodrigues) and; Fisheries and Aquaculture.

5.0 Biomedical Research

The overall objective of biomedical research is to elucidate problems associated with health service and with delivery of health care and to help understand the etiology, pathogenesis, and epidemiology of various types of diseases. It also entails the definition, diagnosis and management of diseases, their prevention and health promotion. Thus, the Biomedical Research Working Group was set up:

1. to identify and set up priorities for biomedical research;

2. to increase capacity building for research through appropriate and systematic training programmes;
3. to protect the works of the researcher through the Intellectual Property rights and;
4. to make Mauritius and Rodrigues a reference centre for Biomedical Research in the Africa Region.

The main areas for research included infant and child health, adolescent health and health of the elderly; non- communicable diseases and associated risk factors; communicable diseases, maternal, prenatal and nutritional considerations. Other important components in the health service for requiring systems research will include quality assurance, communication and aspects of ethics.

6.0 Biotechnology

Biotechnology has far reaching prospects in Mauritius in the long term, provided a research pool of scientific knowledge, skills and expertise are developed and sustained over the next decade. New demands triggered by environmental degradation and climate change, in conjunction with population growth, may well provide an added impetus for the application of biotechnology to food and food crops in the future. Hence, the Biotechnology Working Group that was set up by the MRC proposed the following themes that should be focused upon in the years to come: plant biotechnology; endemic plants; cash crops; animal biotechnology; food biotechnology; medical biotechnology; marine biotechnology; environmental biotechnology and; microbial food biotechnology.

7.0 Manufacturing Technology

The role of the Manufacturing Sector in the development of Mauritius cannot be under-estimated. The emergence of manufacturing activities on an industrial scale strengthened the economic structure, making it less vulnerable to external shocks and reduced export volatility. However, research indicates that the technology employed in Mauritius is fairly low, for instance, both sugar and apparel utilize low technology. So, the Working Group on Manufacturing Technology discussed the major problems affecting this sector, and has come up with research proposals that can ensure sustained development in this area that contributes significantly to the GDP and to providing employment to a major section of the population. The Working Group has also identified new strategies that have to be adopted as a result of the challenges faced by globalization.

The Working Group reached the conclusion that for firms to be internationally competitive, entrepreneurial qualities are a pre-requisite of successful company leadership. This implies being permanently innovative in business processes, products and services, without which firms cannot compete successfully. Any check in innovations or delay in applying new technologies imply that the company is degenerating into the mode of repetition or imitation, to the detriment of a cost competitive strategy.

8.0 Science & Technology Education

The Science & Technology Education Working Group has described the research needed as background and basis for a Science and Technology revolution to take place in Mauritius. This is because there has been a gradual decline in the popularity of science amongst students in the secondary school sector. For instance, only about 30% of students would sit for science subjects at O-level; only 10% would opt for Information Technology at O-level and only 2.3% at A-level.

The Working Group identified a list of research topics that was grouped under the following main headings:

1. Science, Technology and Society;
2. Science and Technology at school level and beyond: new curricula, new teacher training, learning and assessment methods;
3. Development of Technical and Vocational Education appropriate to the need of Mauritius.

These research topics provide a solid basis for improvement in the way in which our educational institutions prepare our young people to become scientifically literate citizens and apt to develop productive careers in science, industry and technology. The Working Group concentrated on new approach to Science & Technology, appropriate curricula, new active methodology of teaching and learning links with industry, careers in Science & Technology as well as survey of present capabilities and future needs.

9.0 Information & Communications Technology (ICT)

The ICT thematic Working Group was mandated in a first instance to situate the position of Mauritius in the ICT sector. The next step was then to make a current state assessment of the level of ICT penetration in various sectors. The current number of professionals active in the field and the expected projected amount were assessed. A current state analysis of research and development in the field at the level of academia and other research institutes was also made. Further to these assessments, a number of possible initiatives to enhance and develop research in some cases, within a number of priority sectors were made.

The Working Group presented the importance of ICT to the development of Mauritius. A number of sectors that can benefit directly from ICT as a tool have been surveyed. Barriers to research in ICT, as well as incentives measures to promote ICT in Mauritius

were briefly visited. A list of prospective themes for research In ICT was given. A possible methodology to identify potential research areas in different sectors for ICT in Mauritius was recommended.

The ever-changing paradigm in many sectors of the economy due the infiltration of ICT in some way or another has made it compulsory to define a policy to allow the country to embark onto active research and development missions in the field of ICT, if we want to guarantee our survival in the global space.