

Research in Action

THE NEWSLETTER OF THE MAURITIUS RESEARCH COUNCIL

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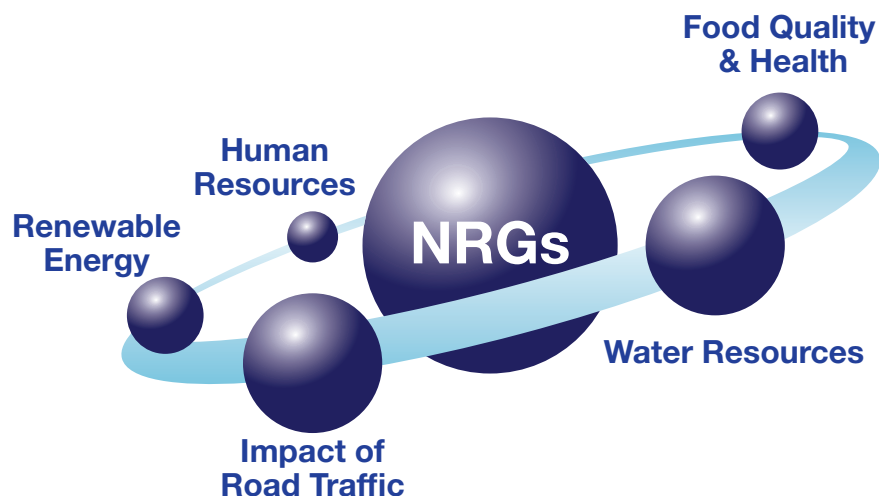
National Research Groups (NRGs)



Dr the Hon R. Jeetah initiated and launched each NRG

Following the request of the MoTESRT for the Research Community to address some pressing societal issues, the MRC has set up and coordinated 5 NRGs. The thematic groups met on five different occasions during consultative workshops. The first NRG consultative workshop titled: "A Coordinated Research Perspective on Water Resources" was held on June 20th,

2011. It was consequently followed by similar events focusing on each of the thematic group such as : "A Cross-Collaborative Exercise to Assess the Impact of Road Traffic on the Economy, Environment and Health", "A Coordinated Research Perspective on Sustainable Buildings", "Impact of Food quality on Human Health—A Research Perspective", and "Collaborative Research on the Thematic: Human Resources in Mauritius". The NRGs provide cross-collaborative platforms where institutions and experts can interact with the research community and think with an 'outside the box' mindset to first understand these pressing societal issues, then propose and investigate novel ways to tackle them. As stated by the Chairman of the MRC, Prof. S. Jugessur, "these Research Groups aim at strengthening strategic decision making and ensuring sustainability of the socio-economic development of



EDITORIAL



It is with renewed pleasure that we invite you to take cognizance of the recent activities and developments at the

Mauritius Research Council (MRC), on the occasion of the publication of our 2nd Newsletter for 2011. Under the impetus of the Ministry of Tertiary Education Science Research and Technology (MoTESRT), the MRC continues to stay abreast of the changes taking place within Mauritian society. As such, we firmly believe that Research is an increasingly exciting field in which to be involved in, as shown by the creation of our National Research Groups (NRGs) which are engaging with pressing national issues. As drivers of innovation, we have also explored new sources of energy, cutting edge data collection methods, simulation approaches and continued to form partnerships with high ranking institutions, both locally and internationally. While increasing the visibility of our research-led activities, we have also provided novel capacity building exercises for young researchers, among other future-oriented activities.

Dr A Suddhoo,
Executive Director

Mauritius in the short, medium and long terms". Memberships of such groups are sector-based, and are open to the Mauritian Diaspora as well. Key focus areas for each NRG have been identified during the consultative workshops. The reports of these research exercises will be completed at the end of the year.

TOWARDS A RESEARCH CULTURE IN MAURITIUS



Prof D Jhurry

Our guest contributor, Professor D Jhurry, Professor of Chemistry at the University of Mauritius, National Research Chair, and recipient of the Best Mauritian Scientist Award 2010 for his contribution to science and research at the national level, shares his views on how to achieve a research culture in Mauritius:

"Be it energy, climate change, limited water resources, food

security, public health issues and health care, the problems facing the globe, and Mauritius is no exception, are numerous and of a multi-disciplinary nature. It is now widely acknowledged that investment in science, research and innovation is key to economic prosperity and long-term sus-

tainable growth. This is now recognized in Mauritius. While there is a clear vision on the part of the Government of Mauritius to foster research, we still need a well-thought and shared strategy to do so. For research and innovation to take off, we need inter alia to create local research micro-climates by re-engineering existing research centres or creating new Research/Innovation Centres in the country

with a view of enhancing research efficiency. We need to develop clusters of competence and a critical mass of talents focussed on output orientation and performance. The productivity of researchers in terms of high quality research should be improved. One way of achieving this objective is to organize strategic cooperation between public and private, state and industry. Furthermore, indigenous technological know-how should be developed and upgraded. Internationally renowned R&D companies should be attracted to invest in Mauritius through incentives for example by creating "a research free-zone" in Mauritius or by providing tax exemptions. Industrial research focusing on new emerging sectors such as biomedical/pharmaceutical industries is key for Mauritius to upgrade its level of Scientific Research. Last but not least, policy makers should integrate research and technology policy in other policy areas.

I strongly believe that Tertiary Institutions should play a primordial role in developing human capital, at bachelors, masters and doctoral levels, thereby contributing to the intellectual, social and cultural resources of the country. We should also concentrate our efforts to encourage inward investment in knowledge intensive businesses and stimulate entrepreneurial activities. Research can only progress through long-term and strategically directed investment in people, equipment, infrastructure and networks. Funding is a main issue. The Government is doing its part but we need more investment in research from the Private Sector. I still believe the establishment of a new 'Corporate Scientific Responsibility' could be an incentive for our local companies to engage in research."

Prof D Jhurry

VISIT OF DR U. "SHIVRAJ" SOHUR



Dr S Sohur

As per its mandate, the MRC is actively involved in the promotion of Science and Technology. In this context, the Council

hosted the visit of Dr Shivraj Sohur from September 12th-16th 2011. Dr Sohur is an eminent scientist from the Mauritian

Diaspora who is currently an Attending Neurologist at Massachusetts General Hospital, the flagship medical teaching institution for Harvard University in Boston, U.S.A. He is also an Advisor to the Council on Biomedical Research and Global Outreach.

During his stay, this native of Espérance-Trébuchet gave a Public Lecture titled: 'Excitement and Opportunities in Biomedical Science'. After a brief introduction on his humble beginnings, Dr Sohur gave an overview of the major milestones in biomed-

cal science, and the basic and translational challenges existing within Neuroscience and Parkinson's disease research, in particular. After acknowledging the need for a more holistic approach to biomedical sciences by including the social sciences, he advocated in favour of community nursing as a means to fight chronic diseases such as Diabetes, Hypertension, Stroke and Cardiovascular conditions, locally. His presentation concluded with an interactive discussion on academic and commercial opportunities in biomedical science.

THE NATIONAL RESEARCH FORESIGHT EXERCISE (NRFE)

The Government in its 2010-2015 programme (excerpt 189) has highlighted the need to conduct a National Research Foresight Exercise. The MRC through the Ministry of Tertiary Education, Science, Research and Technology has been entrusted with the responsibility of conducting this exercise.

Foresight is a systematic, participatory, future-intelligence-gathering and medium to long

term vision-building process, aimed at present-day decisions and mobilizing joint actions. The fulcrum of the exercise will be the engagement of all stakeholders, including the research community, as well as, users and adapters of research to identify priority areas for research in Mauritius. This will be done by taking into consideration existing capabilities as well as current and future challenges. The

NRFE will provide the basis for the targeted distribution of prioritized funding for the medium to the longer term. The ultimate objective of supporting such targeted, prioritised research domains would be to assist in addressing issues of national strategic relevance and to subsequently maximize socio-economic welfare of the Mauritian society. The NRFE would comprise 3 phases, namely:

1. Inception and scoping,
2. Baseline data analysis and research priority setting,
3. Development of national scenarios and prioritized research themes. The inception and scoping phase of the exercise has been completed. The Council is currently planning and implementing subsequent phases.

MRC HERBARIUM

In the context of its Seaweed project, the MRC has started preserving some specimens for project documentation, education and identification. The process consists of fixing the seaweed sample in a solution consisting of 5% Formaldehyde and Seawater

with Calcium Bicarbonate. The advantage of this process is that it keeps both the physical appearance and the cell structure of the sample intact. Since the beginning of this initiative in June, the MRC Herbarium, has included 12 different specimens.



Seaweed specimens on display at the MRC

ELECTRICITY GENERATION FROM COCONUT OIL

In line with the Maurice Ile Durable (MID) Project, the MRC under the aegis of the MoTERST in collaboration with Outer Islands Development Corporation (OIDC), initiated and led a project on the use of Coconut Oil as a substitute to Diesel. The ultimate goal of this initiative was to reduce the dependency of Agalega on Diesel by substituting the latter fuel with locally produced Coconut Oil to generate electricity. The study was carried out in collaboration with Central Water Authority, University of Mauritius, Ministry of Public Infrastructure, NDU, Land and Shipping, Mauritius Standards Bureau, to name but a few collaborators. Indian Oil (Mauritius) Ltd sponsored the

project by providing Diesel while OIDC provided Coconut Oil. The study entailed converting the Central Water Authority's 60 kVA generator situated at Ebène Pumping Station to run on Coconut Oil and Diesel, filtering/cleaning of Coconut Oil and running the generator on full load with

Coconut Oil and/or Diesel. It was found that:

1. Coconut Oil is a better substitute fuel than Diesel in terms of emissions, opacity and wear and tear,
2. Coconut Oil is suitable for electricity generation

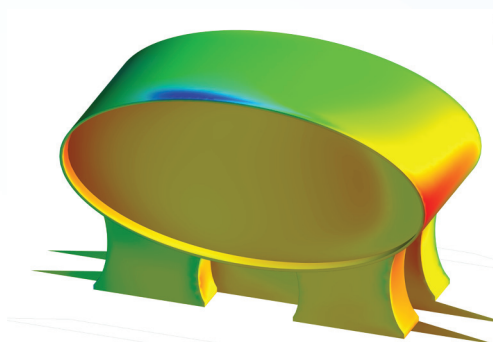


and it is recommended to transfer the technology to Agalega.



This is the first time that such a study has been carried out in the region and it might gear Agalega towards an 'Ile Durable' vision.

COMPUTER SIMULATIONS ON THE IMPACT OF CYCLONIC WIND CONDITIONS ON HIGH-RISE BUILDINGS



Predicting external surface pressure

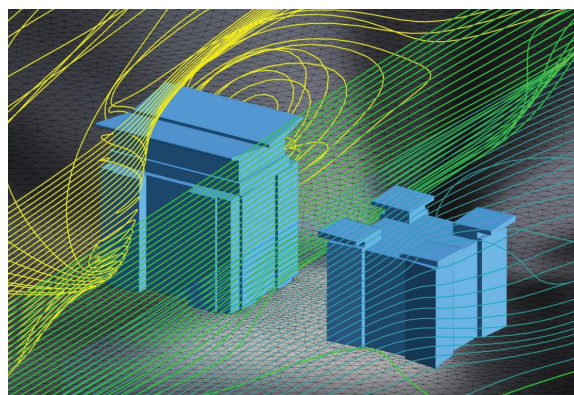
In this new era of modernisation, high-rise buildings are becoming common features of our landscape. This is particularly true for regions like Port Louis and the Cybercity. These developments, however, are being made with little or no emphasis laid on wind engineering.

A study was initiated by the MRC in an attempt to raise awareness on the above-mentioned issue and to show the need to incorporate wind environment modelling in the design phase.

Using the techniques of Computational Fluid Dynamics (CFD), the impact of wind on different buildings locally is being evaluated. So far, simulations have been carried out on four existing buildings in the Cybercity. The external surface pressures, as well as the pedestrian wind safety levels, can be

predicted and be used by engineers before and after design analysis. The preliminary results obtained till now have shown that under local cyclonic conditions, buildings may be more prone to damage depending on their shape, orientation and configuration. Predicted increase in wind speed in the passage between two buildings erected close to each other may also lead to induced

forces that must be taken into the design consideration. Due to some discrepancies between the CFD results and building standards on wind loading, there may be a need for Mauritius to adapt its own high-rise building standards.



Modelling velocity streamlines around buildings

GENDER-BASED VIOLENCE (GBV) INDICATORS PROJECT

The GBV Indicators Project has been commissioned by Gender Links, a South African NGO which operates in the area of gender mainstreaming and development processes in Southern Africa. The overall objective of this project is to set indicators which can help in the monitoring and evaluation of policies addressing Gender-Based Violence. It is being initiated in the context of the Southern African Development Community (SADC) Protocol on Gender and Development that aims to halve Gender-Based Violence by 2015. The project took the form of a nationwide survey measuring the prevalence of Gender-Based Violence (GBV) and investigated its highly challenging physical, sexual, emotional and economic aspects. The MRC's Centre for Applied Social Re-

search (CASR) was awarded the contract to adapt the data collection instrument and administer the survey in Mauritius. The exercise was implemented during the August 2010 to March 2011 period. It was the first time that a nationwide social survey conducted in Mauritius was done electronically, by using PDAs to collect data from respondents. This innovative system of data collection allows for considerable savings on resources and leaves out the possibility of human errors associated with the data entry and cleaning processes. The nationwide fieldwork was completed and the data was submitted to Gender Links in March 2011. This data will be presented into the forthcoming regional report on the extent of GBV in Mauritius, Botswana and South Africa.

BRIC: "NURODELI"



Nurodeli Ltd (read "Nou RodeLi"), is a start up company operating as an incubatee of the MRC's Business and Research Incubator Centre (BRIC) since March 2011. Nurodeli Ltd proposes a brand new web 2.0 online yellow page directory and search engine for Mauritius by Mauritians. It is based on a dynamic business model laying emphasis on providing "business to customer" interaction and marketing solutions to busi-

nesses listed in the directory. A bunch of new functionalities that will consolidate this dynamic and modern approach will provide users with the possibility of running searches on Nurodeli.mu without logging off from their favorite Social Network medium. New features such as "job search" and "mapsearch" sections are being worked, among other surprises coming your way. (For further details: www.nurodeli.mu.)



2ND EDITION OF THE BASIC COURSE ON RESEARCH WRITING SKILLS

Sharing of knowledge generated by research is important in the progression of Mauritius towards a knowledge-based economy. Good communication skills, enhanced visibility, and recognition by the international scientific community are

important indicators of quality research and are assets for socio-economic development. In Mauritius, significant research activities are being conducted in a wide range of areas and there is a clear felt need to empower the local research community to publish their work in international journals. Internationally recognized research papers should have originality, critical approach, focus, impartiality and accuracy. In its efforts

to enhance the local research community's scientific writing skills, the Ministry of Tertiary Education, Science, Research and Technology in collaboration with the MRC initiated a Basic Course in Writing Skills for Research Journals. This 2 day course, conducted in November 2010 and July 2011, respectively, was delivered by lecturers from University of Mauritius, University of Technology, Mauritius and Mauritius Institute of Education. It covered fields such as "Social Sciences/Economics/Management", "Agriculture/

Science" and "Engineering/IT". An average of 100 participants from 30 institutions including public and private universities, various ministries, parastatal bodies and private institutions, attended the course. Most participants rated the trainers' competence; the interactive sessions and the quality of the course as Excellent. This MQA approved course is part of the MRC Researcher's Development Program aimed at building the local research base and helping the local research community to achieve excellence.



With a view to provide Technical Assistance and build capacity in the field of Intellectual Property Rights (IPR) in Mauritius, the council recently

WIPO TRAINING OF TRAINERS ON EFFECTIVE IP ASSET MANAGEMENT

organised 2 Workshops with the assistance of the World Intellectual Property Organisation's (WIPO) Technology Transfer Section:

1. "Training Programme on IP Asset Management by Small and Medium Enterprises (SMEs)"
2. "A Consultative Meeting on IP & Innovation Assessment"

The objective of this WIPO

Training Programme, held by the MRC from July 5th-8th 2011, was to impart and to develop a fundamental understanding of how IP can be deployed to protect the creativity and investment of enterprises. This Training Programme introduced for the first time in Mauritius, the IP PANORAMA multimedia toolkit, which was developed jointly by WIPO and Korean stakeholders. Besides

consolidating basic IP knowledge in Mauritius through this programme, recipients from SMEs, Universities etc, are now equipped with the skills and tools required to start planning how IP could be promoted within their own organisations. Advanced IP Training Programmes for SMEs, as well as Strategic IP Executive programmes for CEOs, are envisaged in the near future.

WIPO MEETING ON IP & INNOVATION ASSESSMENT OF RESEARCH INSTITUTIONS

The aim of this one day Consultative Meeting was to analyze the current IP legal and institutional framework, technology management status, and the comparative advantages as well as needs of Mauritius, in the use of the IP system.

The scope of the IP assessment, which was based on the use of questionnaires, focus group discussions and meetings, was also supported by the services of a consultant identi-

fied by WIPO, namely, Prof M Shariff (Director, Innovation and Commercialization Centre at Putra University, Malaysia). The discussion which followed the presentation of Prof Shariff on the findings of the assessment formed the basis for the development of proposals on innovation strategies and policies at the conclusion of the meeting.

The Consultative Meeting was held with the participation of WIPO resource persons, name-

ly Mrs Y Hamano (Senior Program Officer, Patents & Innovation division, Geneva) and Mrs

Nyerere-Drage (Senior Program Officer, Regional Bureau for Africa, Geneva)



RESEARCH GRANT APPLICATION COURSE

One of the prime roles of the MRC is to foster and promote research across all fields of science. As per its Act, the Council is organizing

the needs of researchers along a typical research cycle. In this context, the MRC organized a "Research Grant Application Course" from

skills to participants in proposal writing for submission to local and international research funding agencies. The course targeted, and

was attended, by 121 young academics and researchers from tertiary education institutions and research organisations. It was serviced by experienced resource persons from University of Mauritius, University of Technology, Mauritius and the MRC. It covered a wide range of disciplines including the Life Sciences, Economics and Finance, Agriculture and Environment, Sustainable Development & Environmental Modelling, Engineering and Information & Communication Technology. The course covered the fundamental components of a typical research grant application, including the "project summary", "concept note", "statement of need", project description, budget, Gantt chart, milestones sheet, dissemination, supporting documents and checklist. The Council also provided the perspective of a funding agency on how to better package and present a proposal. This course has allowed attendees to acquire and strengthen their capacity to attract grants to further develop and support quality research in their areas of expertise.



a series of research-related training courses catering for

June to July 2011. The central objective was to impart

disciplines including the Life Sciences, Economics and

CM NETWORK MEMORANDUM OF UNDERSTANDING (MOU)



On June 22nd 2011, 8 Collaborative Mauritius (CM) Network institutions signed the CM Network MoU document pledging to commit to the CM Network initiative and its Innovation in Partnership Programme. The 8 founding CM Network Partner institutions included: the Board of Investment, Fashion and Design Institute, Mauritius Chamber of Commerce and Industry, the MRC, Mauritius Sugar Industry Research Institute, Mauritius Standards Bureau, National Productivity and Competitiveness Council,

and Tertiary Education Commission. To date, the Ministry of Foreign Affairs, Regional Integration and International Trade and the Mahatma Gandhi Institute, have also joined the CM Network initiative, totalling 10 institutions adhering to this initiative so far. In

the interim, other institutions have expressed strong interest in joining and are currently undergoing their respective internal due processes. The official handing over of the CM Network MoU document to the Heads of the 8 Founding CM Network institutions was per-

formed by Dr the Hon. Minister Jeetah, Minister of Tertiary Education Scientific Research and Technology, and held on July 28th 2011 at the Bonâme Hall, MSIRI. According to our Chairman, Prof S Jugessur, "the official signing of the MoU symbolized the important dedication between key Mauritian institutions to promote and enhance Mauritius' Innovation Culture, Capacity and Systems as an investment for the country's future". Moreover, "the Cross-institutional linkages that will be forged, will result in a unique sharing of knowledge, competencies and resources in the true spirit of collaboration for innovation which will benefit the country" pointed out our Executive Director, Dr A Sudhoo.



VISIT OF HIGH-LEVEL CHINESE DELEGATION

In line with the Government Program 2010-2015, one of the long term objectives of the Ministry of Tertiary Education Science Research and Technology (MoTESRT) is to establish a National Science Park geared towards commercialization of Research & Development (R&D). In this respect, the MoTESRT has solicited the help of the Ministry of Science and Technology (MOST), from the People's Republic of China, which is renowned worldwide for the establishment and administration of Science Parks. The MOST, through its Torch Program, operates some 84 High-Tech Parks focusing mainly on providing the necessary support system for high-tech industrialization, fostering growth of tech-based SMEs, boosting technological innovation in

enterprises, promoting development of innovation clusters and advanced upgrades in high technologies. The MOST sent a delegation of 6 high level representatives for a 4 day visit from July 11th-14th 2011. The main purpose of their visit was to explore the possibilities for initiating collaboration for the setting up of a National Science Park in Mauritius. The Delegation Members were the hosts of the MRC during their stay in the island. They had working sessions with institutions involved in



Mrs XIU Xiaoping, Deputy Director General, Torch High Tech Centre, MOST and her colleagues during a working session at the MRC.

R&D in Mauritius. Following the 4 day visit, the delegation members proposed to establish a long-term collaboration mechanism between MOST and MoTERST, through the

MRC, with the ultimate goal of facilitating the setting up of a world-class Science Park in our country.

INAUGURAL COMESA MEETING ON STI IN LUSAKA, ZAMBIA



An inaugural meeting on Science Technology and Innovation in the Common Market for Eastern and Southern Africa (COMESA) was held on July 5th-7th 2011 in Lusaka, Zambia. The main objectives were to launch the STI

Committee and to elaborate a Strategic and implementation Plan for the COMESA STI Program. The Committee discussed that knowledge and competencies in STI should be integrated and co-operation between research

institutions and industry should be fostered. Commercialization of research and development was identified as a regional need and establishment of STI parks would contribute significantly to pooling resources and efforts to achieve a critical mass of competencies in the region. Given the existence of a potential market for production and exploitation of biopolymers in the COMESA countries, the development of a Polymer Cluster Platform could be envisaged. This would be beneficial to important sectors like agriculture, food production, health, solar, textile and various other industries. The Committee recommended the setting up of a School of Regional Integra-

tion whose main objectives would be:

1. To coordinate the efforts of COMESA to improve management of resources in the region,
2. To tap economies of scale and promote trust among Member States through a mind-change,
3. To promote cooperative attitude and team-work that facilitates development of regional Clusters.

These recommendations will be used to develop a COMESA regional STI program which shall be presented in the next Summit scheduled for October 2011.

SQUARE KILOMETRE ARRAY RADIO TELESCOPE (SKA) PROJECT



One of the first 7 dishes of Meerkat which are now complete and known as "KAT-7. Image source: <http://www.ska.ac.za/>

The Department of Science and Technology of South Africa, together with the SKA Office, organized a meeting held in Pretoria, Republic of South Africa from June 21st-

22nd 2011. The Mauritian delegation, comprising the Ministry of Tertiary Education, Science, Research and Technology, the University of Mauritius (UoM) and the MRC, was led by the Permanent Secretary of the Ministry. If located in the Karoo region in the Northern Cape South Africa, this project would allow other SKA antennas in partner countries such as Mauritius, Namibia, Botswana, Mozambique, Madagascar, Zambia, Kenya and Ghana, to benefit as well. The Karoo desert is also the loca-

tion of the precursor of the SKA project: the "Meerkat" telescope. The Meeting agreed on the SKA Strategic Framework and the Implementation Framework for communication. Other issues discussed related to the SKA remote stations, including Infrastructure Support and Human Capital Development. The South African government has awarded many bursaries in line with this project. So far Mauritius has benefitted from 3 such undergraduate bursaries and 1 post-doctoral award. Moreover, situated in a strategic geographical situation, Mauritius, would form part of the longest baseline from Southern Africa (3000 km) and hence benefit from one of the most powerful techniques available for high resolution imaging of distant radio sources. In the context of this

project, a high-level South African delegation headed by the Hon Mrs N Pandor, Minister of Science and Technology came to Mauritius on September 19th for a one day official visit. They met with the Hon. R Jeetah, Minister of Tertiary Education Science Research and Technology before attending a work session at the University of Mauritius (UoM). This event was jointly organised by the MRC and UoM. The delegation later headed for a site visit of the Mauritius Radio Telescope (MRT) Project located at Bras D'Eau, along the eastern coastline of the island.



Her excellency the Hon Mrs Pandor, Prof S Jugessur Chairman of the MRC and Pro Chancellor of the UoM and Dr the Hon R. Jeetah



Mrs Pandor visiting the MRT project in Bras D'Eau together with UoM - MRT staff.

OTHER EVENTS

The Council also organized and participated in the following events and activities for the dissemination of research, as well as to promote Science, Technology and Innovation:

1. Participated in the 4th Edition of the Health, Well-Being and Sports Forum held on of June 25th-26th, 2011.
2. Collaborative Mauritius Connector Development Programme on July 28th -29th, 2011.
3. Half day Workshop on "Water Management in a Changing World and Impacts of Energy Production and Utilization Systems on the Environment" held on August 4th, 2011.
4. Seminar on "Interaction between PON1 Gln192Arg Polymorphism and Type 2 Diabetes in Indo-Mauritian

agricultural workers exposed to herbicides" held on August 10th, 2011.

5. Seminar on "Contribution of the positional candidate gene OXR1 to premature coronary heart disease and Type 2 Diabetes in the Mauritian Population" held on August 10th, 2011.
6. Seminar on the "Prevalence of Coronary Heart Disease and

Recent Evolution of Mortality from CHD in Mauritius" held on the September 7th, 2011.

7. Participated and co-organized in the "Contemporary Mauritius Conference" on September 14th-16th, 2011.
8. Co-organized a half day workshop on "Green Buildings in the New Green Economy" on September 23rd, 2011.

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